Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works at

Land at Six Hundreds Farm, Six Hundred Drove, East Heckington, Sleaford, Lincolnshire.

Preliminary Environmental Information Report

Volume 2: Appendices

Ecotricity (Heck Fen Solar) Ltd.

Prepared by Pegasus Group | June 2022 | PINS REF: EN010123

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Preliminary Environmental Information Report

Appendix 1.1- Heckington Fen Solar Park Scoping Report

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

PINS REF: EN010123

Pegasus Group

DEVELOPMENT CONSENT ORDER APPLICATION FOR GROUND MOUNTED SOLAR PANELS, ENERGY STORAGE FACILITY, BELOW GROUND GRID CONNECTION TO BICKER FEN SUBSTATION AND ALL ASSOCIATED INFRASTRUCTURE WORKS.

ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REPORT

LAND AT SIX HUNDREDS FARM, SIX HUNDREDS DROVE, EAST HECKINGTON, SLEAFORD, LINCOLNSHIRE

ON BEHALF OF ECOTRICITY (HECK FEN SOLAR) LIMITED

PLANNING ACT 2008 THE INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017

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NOTE: THIS DOCUMENT IS DESIGNED TO BE VIEWED AS A4 DOUBLE SIDED

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January 2022 Project code P20-2370 Revision A

FIGURE LIST

INTRODUCTION

Background

1.1 Ecotricity (Heck Fen Solar) Limited ("The Applicant") has commissioned this Scoping Report relating to the Environmental Impact Assessment (EIA) of Heckington Fen Solar Park, a proposed ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (the "Energy Park") with an approximate capacity of 500 megawatts (MW) with a further 200-400MW of energy storage capacity on an area of agricultural land approximately 3.7km east of Heckington and 8.9km west of Boston within Lincolnshire. The area of land for the Energy Park measures 586.85 hectares (ha) (1450.13 acres). The EIA will also assess the cable route for the Grid connection and the above ground works needed for connection to the Bicker Fen substation. At the time of Scoping this proposal the final cable for the Grid connection has not been agreed. As a result, a wider corridor of land than needed is included within the EIA area. The Proposed Development will compromise of three elements; the Energy Park, Cable Route and above ground works at the National Grid Bicker Fen substation. These three elements form the Proposed Development for the EIA and the Development Consent Order Application (the "Development").

1.2 The Energy Park location is shown in Figure 1 – Energy Park Site Location.

1.3 The Applicant wishes to confirm under Regulation 8(1)(b) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (amended) (the "EIA Regulations") that an Environmental Statement (ES) will be provided in respect of the application for consent for this Development.

1.4 This Scoping Request forms a formal request for a Scoping Opinion under Regulation 10(1) of the EIA Regulations.

Scope of the Environmental Impact Assessment

1.5 Table 1.1 sets out how the various environmental parameters as detailed within paragraph 4 and 5 of Schedule 4 of the EIA Regulations will be considered within the ES. Where a topic has been scoped out of the ES the reasoning has been provided.

TABLE 1.1 ENVIRONMENTAL PARAMETERS

EIA Topic	**Scoped In / Out**	How / Where addressed / Reason for Scoping Out
Population	**Scoped In**	To be assessed within the Socio-Economic Chapter
Human Health	**Scoped In**	To be assessed within the relevant technical assessments such as Air Quality and Noise. There is not to be a specific chapter within the ES that considers Human Health
Biodiversity	**Scoped In**	To be assessed within the Ecology & Ornithology chapter(s).
Land	**Scoped In**	To be assessed within the Land Use and Agricultural Chapter.
Soil	**Scoped Out**	There is no known history of soil contamination on the site. The land grade and structure of the soils on the Site will be assessed within the Land Use and Agriculture Chapter.
Water	**Scoped In**	To be assessed within the Hydrology, Hydrogeology, Flood Risk and Drainage Chapter.
Air	**Scoped In**	To be assessed within the Air Quality Chapter.
Climatic Factors	**Scoped In**	To be assessed within the Climate Change Chapter
Material Assets	**Scoped Out**	It is not considered that there are any further 'material assets' to those already addressed within other EIA topics.
Cultural Heritage including Architectural and Archaeological aspects.	**Scoped In**	To be assessed within with the Cultural Heritage and Archaeology chapter.
Landscape	**Scoped In**	To be assessed within the Landscape and Visual Impact Assessment and Residential Amenity Chapters.
Risk of Major Accidents and Disasters	**Scoped Out**	The nature, scale and location of the Proposed Development is not considered to be vulnerable to or give rise to significant impacts in relation to the Risk of Accidents and Major Disasters [1]. Potential effects relating to soil conditions, surface water flooding and climate change are all considered in other chapters of the Environmental Statement. During all phases of the development (construction, operation and decommissioning) the developer would implement measures to be in accordance with the relevant health and safety legislation, regulations, and industry guidance to ensure that risks are suitably controlled and managed (for instance in relation to working near to overhead power lines or electrical infrastructure). A draft construction methodology will also be provided in the chapter on the 'Description of the Proposed Development', which would inform the Construction and Environmental Management Plan (CEMP). It is therefore considered that appropriate measures and controls could be achieved in line with the relevant legislation and processes to minimise risks to human and environmental receptors.
Interrelationship between above factors	**Scoped In**	To be assessed within each topic chapter under the heading 'Cumulative and Interactive Effects'.

1 No definition of 'major accidents and disasters' in provided in the EIA Regulations, however the IEMA Quality Mark Article on 'Assessing Risks of Major Accidents / Disasters in EIA' produced by WSP in 2016 provides the following definition "man-made and natural risks which are considered to be likely, and are anticipated to result in substantial harm that the normal functioning of the project is unable to cope with/rectify i.e. a significant effect."

1.6 The Summary section (Section 19) of this report will set out more detailed conclusions with regard to the details on the scope of each environmental topic within the ES and determine which areas are proposed to be scoped out of the EIA process.

The Applicant

1.7 Ecotricity was founded in 1995 as the world's first green energy company and now supplies customers across the UK from a growing portfolio of wind and sun parks, with all its electricity supply coming from 100% renewable energy. Ecotricity has introduced green gas to Britain and constructed Britain's first national network of electric vehicle charge points known as the Electric Highway. More recently, Ecotricity has become the first energy company in the UK to be recognised by the Vegan Society. Ecotricity also manufactures its own wind turbines in the Stroud Valleys and has a growing vegan food production company. Ecotricity is a high technology business, developing cutting edge green technology and energy for a low carbon future and generating a large number of knowledge intensive and highly skilled jobs within Gloucestershire and the UK.

1.8 Ecotricity (Heck Fen Solar) Limited, an Ecotricity company, has been formed to create and develop the Heckington Fen Solar Park.

IEMA Quality Mark

1.9 Pegasus Planning Group is an Institute of Environmental Management and Assessment (IEMA) Registered Impact Assessor and also holds the IEMA EIA Quality Mark as recognition of the quality EIA product and continuous training of our environmental consultants. A Statement of Competence will be included within the ES, outlining the relevant expertise or qualifications of the experts who prepared the ES.

Consenting Regime

1.10 The Development falls within the definition of a 'nationally significant infrastructure project' (NSIP) under Section 14(1)(a) and 15(2) of the Planning Act 2008 (the "Act") as the construction of a generating station with a capacity of more than 50MW, with a capacity in the region of 500MW.

1.11 The EIA requirement for NSIP developments is transposed into law through the EIA Regulations. The EIA Regulations specify which developments are required to undergo EIA and schemes relevant to the NSIP planning process are listed as either 'Schedule 1' or 'Schedule 2'. Those developments listed in Schedule 1 are always subject to an EIA, whilst developments listed in 'Schedule 2' must only be subject to an EIA if they are considered 'Likely to have significant effects on the environment by virtue of factors such as its nature, size or location [2].' The criteria on which this judgement must be made are set out in Schedule 3 of the EIA Regulations.

2 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, Reg 3

1.12 The Applicant has determined, upon review of the EIA Regulations, that this Development should be accompanied by an EIA. As a result, no formal Screening process has been undertaken for this Development.

The Purpose of the Scoping Report

1.13 The EIA Regulations state at regulation 10(3) that a request for a Scoping Opinion should contain:

- "a plan sufficient to identify the land;
- A description of the proposed development, including the location and technical capacity;
- An explanation of the likely significant effects of the development on the environment; and
- Such other information or representations as the person making the request may wish to provide or make."

1.14 The guidance highlighted in Planning Inspectorate Advice Note 7 Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements has also been taken into account in the preparation of this Scoping Report.

1.15 Accordingly, this Scoping Report presents:

a. A plan sufficient to identify the land for the main development (Figure 1) and the wider Environmental Impact Assessment Area (Figure 2);

b. A description of the Development (Section 2) and technical capacity (Section 2); and

c. An explanation of the likely significant effects of the Development on the environment (the Likely Environmental Effects sub-section of the technical sections 7 -18 of this Scoping Report).

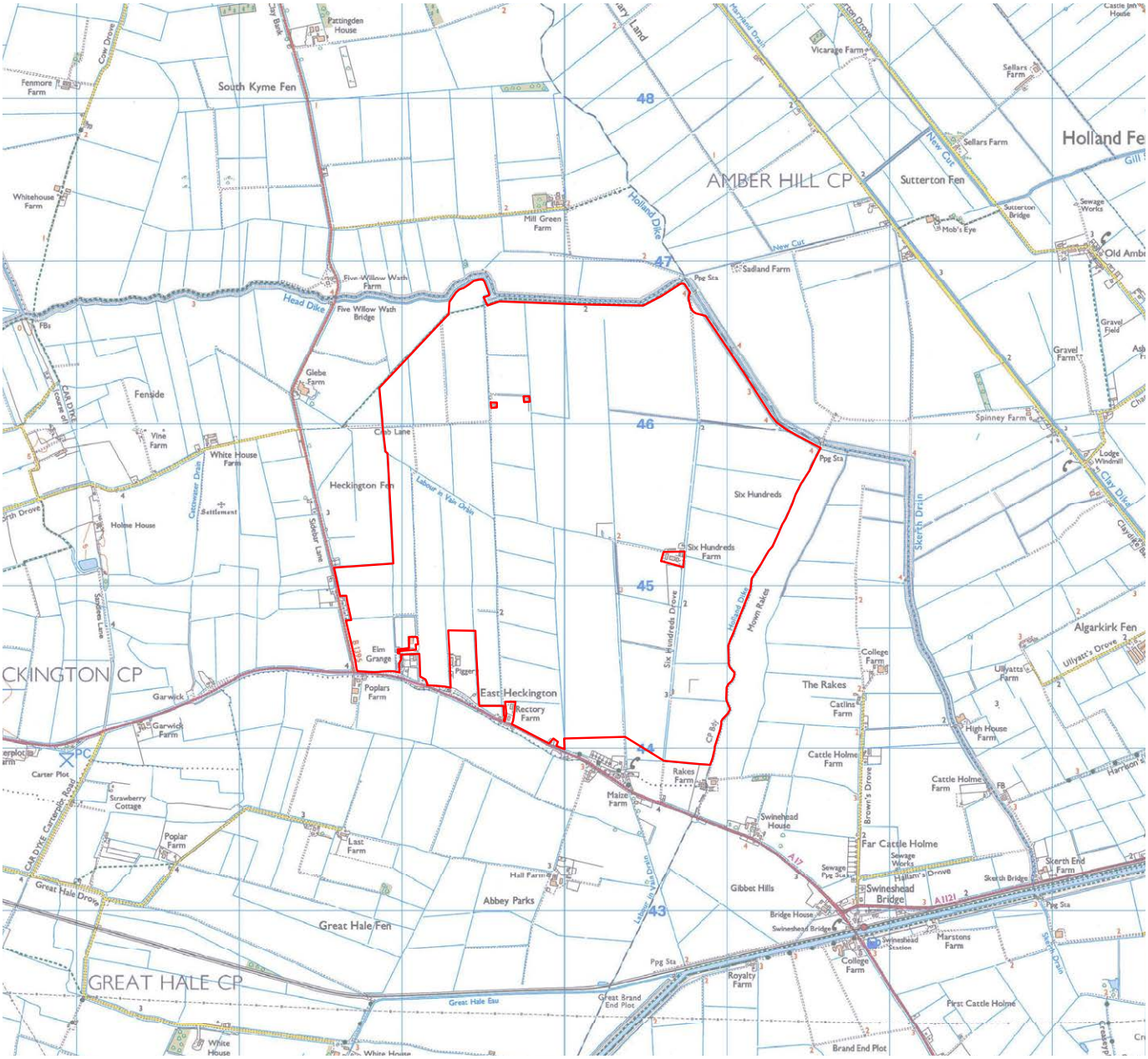


FIGURE 1-ENERGY PARK SITE LOCATION PLAN

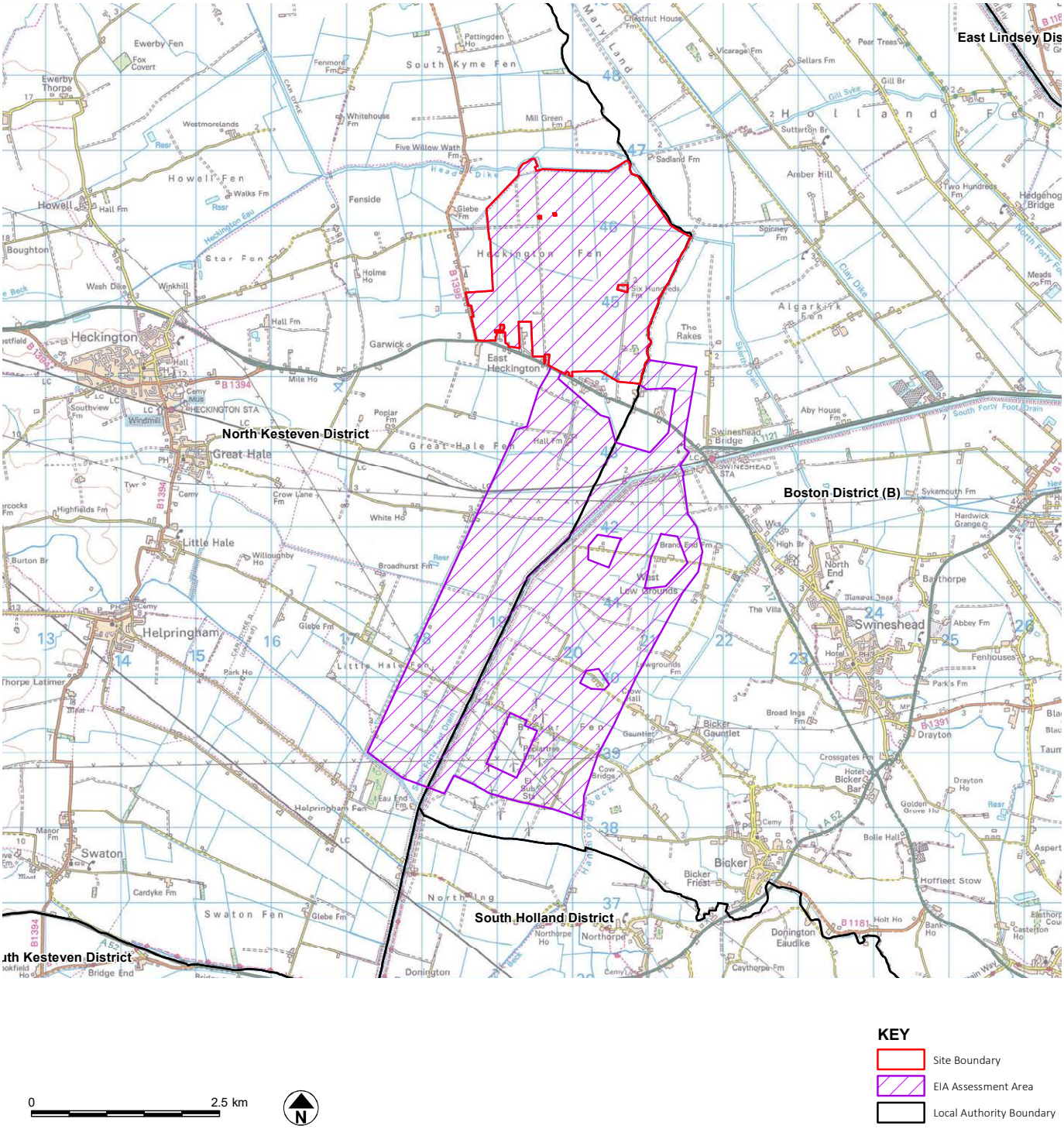


FIGURE 2 –ENVIRONMENTAL IMPACT ASSESSMENT AREA

2. PROJECT DESCRIPTION

The Development Site

2.1 The Energy Park site is bounded by Head Dike to the north, Holland Dike to the east, the A17 Sleaford to Holbeach road to the south and B1395 Side Bar Lane/ agricultural land to the west, extending to approximately 586 ha. The Energy Park site lies wholly within North Kesteven District, abutting Boston Borough boundary along the eastern edge. The Grid route connection lies wholly within the Boston Borough Council boundary.

2.2 Land within the Energy Park is in arable use and is subdivided into rectilinear parcels by long linear drainage ditches that lie principally north-south, connected east-west by shorter ditches including Labour in Vain Drain. The ditches have an engineered profile, colonised in part by emerging aquatic plant species. The Site is very flat and low-lying at between 2m and 3m Above Ordnance Datum (AOD) and is predominantly within Flood Zone 3, with a narrow ribbon of Flood Zones 2 and 1 occurring along the southern edge and south-western corner of the Site.

2.3 Six Hundreds Farm lies in the eastern third of the Energy Park site, with vehicular access gained from Six Hundreds Drove via the A17. Vehicular access is also provided via two other points further west of the A17 frontage at Rectory Farm and at Elm Grange, with tracks connecting to Crab Lane toward the northeast corner of the Energy Park site, and then to Side Bar Lane. The access tracks follow ditch alignments.

2.4 One public right of way (PROW) footpath HECK/15/1 runs along the northern boundary, crossing a small part (c.280m) of the Energy Park site; no other PROW occurs within the Energy Park site.

2.5 Overhead lines supported on wooden poles criss-cross the Energy Park site, running parallel to Six Hundreds Drove and the A17 in the south, and near the north-western boundary of the Site. An underground gas pipeline bisects the Energy Park site, extending south-north to the east of Rectory Farm.

2.6 Intermittent shrubs/hedgerows occur within or along the boundary of the Energy Park site, with tree cover limited to small woodland blocks in the eastern third of the Energy Park site.

2.7 There is one Scheduled Monument located 525m to the west of the Energy Park site boundary. This is called 'Settlement site 650yds (600m) E of Holme House'.

2.8 There are a small number of residential dwellings along the southern boundary of the Energy Park site. These properties front on to the A17. There is an extant planning consent, for a new additional needs school on the southern boundary. In recent months the old, dilapidated barn that was on this site has been demolished and new concrete footings are being laid. These works indicate that process on the construction of the new additional needs school has begun, but to date the opening date for the school has not been announced. There are further residential dwellings along the southwestern boundary of the Energy Park site, with a further cluster of properties approximately 420m from the edge of the Energy Park site boundary to the west. There is one property to north of the Energy Park

site although this is separated from the site by Head Dike-Skerth. There are no residential properties to the immediate east of the Energy Park site. Six Hundreds Farm is located within the Energy Park site boundary. This is not a residential property and is not inhabited. There are a series of small areas in the Energy Park site that are excluded from the Site boundary. These areas are a combination of farm buildings and infrastructure relating to the gas pipeline which crosses part of the Energy Park site.

2.9 The route for the proposed Grid Connection has not been finalised. At this time there are two route options being considered. Both run south from the Energy Park site, one to the east and one to the west of the South Forty Foot Drain. Both options connect into the existing Bicker Fen substation. As the assessment progresses it will be determined which of these routes will be progressed to the application stage.

2.10 Both of these routes run through similar agricultural land and some pass near to residential properties. Survey work of these two route options is being undertaken at this time to determine the optimum route. The wider area for the EIA, which includes both of these two route options is shown in Figure 2 and the scoping exercise has been undertaken based on this wider envelope.

2.11 It is proposed that the lifetime of this scheme will be 40 years.

Iterative Design and Rochdale Envelope

2.12 The Development design will evolve throughout the EIA process. An iterative design process will be utilised, whereby site-specific constraints and design criteria will be added to the site layout to guide the location of the Development infrastructure. If necessary, parts of the Development site may not be developed on in order to avoid, reduce or remove significant adverse effects.

2.13 The iterative design approach will take account of comments made during consultation, including those made in response to this Scoping Report. The ES will describe how the design of the Development has been influenced by such comments.

2.14 In order to maintain flexibility in the Development design, it is the Applicant's intension to use the 'Rochdale Envelope' [3] approach within parameter ranges which will be defined in the Project Description chapter of the ES. The Advice Note 9 clarifies in section 4 that at the Scoping stage certain matters on the design might not yet be resolved due to an iterative design process. These parameters will be considered in detail by technical authors in the ES to ensure the realistic worst-case effects of the Development are assessed for each potential receptor. This is of particular importance to maintain flexibility due to the rapid pace of change in solar PV and energy storage technology. A similar approach was used for the Cleve Hill Solar Park that was determined through the NSIP process.

3 National Infrastructure Planning: Advice Note Nine: Rochdale Envelope

The Development Proposal

2.15 Solar PV and energy storage technologies are rapidly evolving. As a result, the project parameters are required to maintain the flexibility to allow the latest technology to be utilised at the time of construction.

2.16 The Development is likely to include the following infrastructure:

(i) Solar PV modules;

(ii) PV module mounting infrastructure;

(iii) Inverters;

(iv) Transformers;

(v) Onsite cabling;

(vi) Offsite underground cabling to connect the Energy Park site to Bicker Fen National Grid substation;

(vii) Fencing and security measures;

(viii) Access tracks and construction of new accesses onto the highway;

(ix) Electrical substation improvements at Bicker Fen;

(x) An electrical compound comprising:

- An energy storage facility (expected to be formed of batteries storing electrical energy);
- A substation and control building; and
- Equipment facilitating electrical connection to the Bicker Fen National Grid infrastructure.

2.17 During the construction phase, one or more temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all parts of the EIA Assessment Site.

2.18 Installing the Grid cable from the Energy Park to the National Grid Bicker Fen substation will involve digging a trench approximately 5-10m deep across a 25m wide easement within which the grid cable will be installed. The route will require crossing the South Forty Foot Drain Local Wildlife Site (LWS) and various smaller water courses as well as major roads, rail, high pressure gas main and potentially third-party grid connections. Certain crossing points will require directional drilling as appropriate although all works will be within the easement area.

2.19 In areas around the solar array and on other parts of the Development site, opportunities for landscaping, biodiversity enhancements and habitat management will be explored.

3. TECHNICAL SPECIFICATIONS

Solar PV Modules

3.1 Solar PV modules/panels convert sunlight into electrical current (as direct current (DC)). Individual modules/panels are typically 2m long and 1m wide and typically consist of a series of poly-crystalline cells which make up each panel (60 or 72 cells per panel) several panels make up one module. The module frame is typically built from anodised aluminium.

3.2 Each module could have a DC generating capacity of between 400-600watts (W), or more depending on advances in technology.

3.3 The number of modules required at the Development will be highly dependent upon the iterative layout design process, however the initial Indicative Site Layout is shown in Figure 3.

3.4 The modules are fixed into a mounting structure in groups known as "strings". This mounting structure can be used for two different systems, a fixed panel system where the panels are fixed in one position and one angle, or a tracking system where the panel rotates on its axis to track the sun throughout the day. It has not yet been determined which technology or mounting system will be used on this development.

3.5 The number of modules which will make up each of the string is not yet known. Various factors will help to inform the number and arrangement of modules in each string, and it is likely some flexibility will be required due to accommodate future technology developments.

IMAGE OF A BIFACIAL SOLAR PANEL SYSTEM

IMAGE OF A TRACKER SOLAR PANEL SYSTEM [4]

4 Images provided by Nextracker

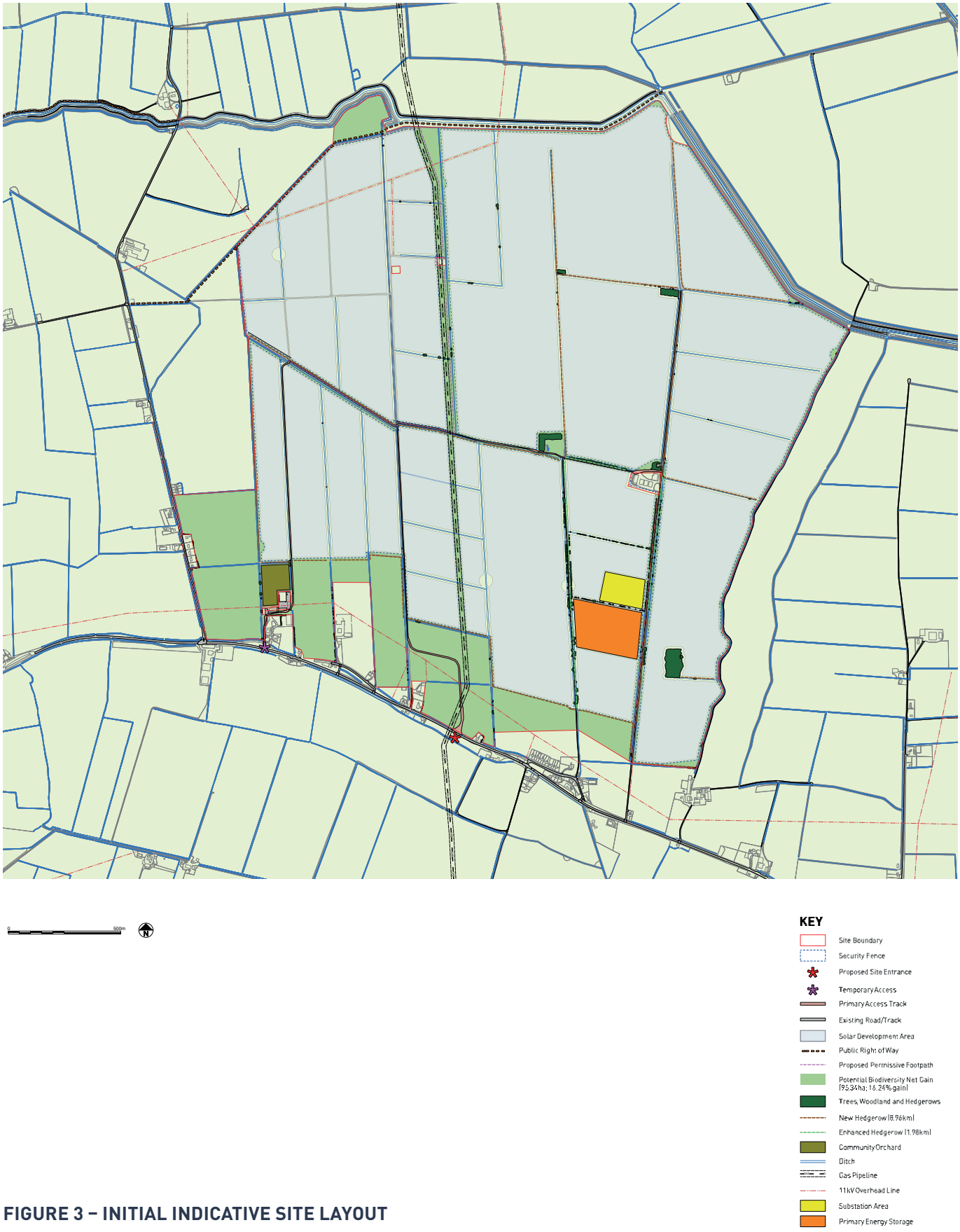


FIGURE 3 – INITIAL INDICATIVE SITE LAYOUT

Module Mounting Structures

3.6 Each row of modules will be mounted on a rack supported by galvanised steel poles driven into the ground. Various mounting structures are available however, driven poles are currently expected to be the most likely foundation solution. Between each string of panels there could be an average separation distance of approximately 3.5m to maximise generation and allow sufficient access for maintenance.

3.7 The panel modules are likely to be mounted on structures with a clearance of a maximum of 2.2m and an upper height of a maximum of 4.5m. This upper height is subject to ongoing modelling for flood heights on the Energy Park site and may be reduced within the ES.

Inverters

3.8 Inverters are required to convert the DC electricity generated by the PV modules into alternating current (AC) which allows the electricity to be exported to the National Grid. Inverters are sized to deal with the level of voltage which is output from strings of PV modules.

3.9 Central inverters are large capacity inverters with ratings above 1MW. Due to their size, they are located in a central location surrounded by the solar cells to which they are connected. The unit itself tends to be containerised with associated control and switchgear equipment within a 4m x 3.5m x 2m container. Compared with string inverters, central inverters tend to offer better efficiencies and economies of scale for PV installations exceeding 20MW.

3.10 String inverters are much smaller units with a rating normally above 100kW and tend to be better suited for smaller multi-MW installations. The units are around 1m x 1m x 0.5m in size and are installed locally next to a string(s) of solar cells.

3.11 It is currently expected that central inverters will be used rather than string. Multiple central inverters, approximately 80-100, will be distributed throughout the Energy Park site and therefore are not shown on Figure 3 at this time.

Transformers

3.12 Transformers are required to control the voltage of the electricity generated across the Energy Park Development site and efficiently transmit the power to the Development substation. A number of transformers of various sizes and voltages will be needed and will be located throughout the Energy Park Development site.

3.13 For distribution power transformers, the approximate dimensions will be 7m x 10m x 10m. For sub-distribution power transformers, the approximate dimensions will be 7m x 4m x 3m.

Onsite cabling

3.14 Onsite electrical cabling is required to connect the PV modules to inverters and the inverters to the transformers onsite. Higher rated cables are then required between the transformers and the Development substation, and between the Development substation and the energy storage facilities onsite. Extra high voltage cables will then be required to export all of the electricity produced by the Development to the existing National Grid substation at Bicker Fen.

3.15 At this time it is being determined if all the onsite cables can be laid underground or if some sections will need to be above ground.

3.16 Data cables will also be installed, typically alongside electrical cables in order to allow for the monitoring of the Development during operation, such as the collection of solar data from pyranometers.

Offsite Cabling

3.17 The proposed connection point for this Development is the National Grid Bicker Fen substation. This is an existing 400kV substation that is located approximately 6km south of the Development site. The exact route for the cable route to connect the Development to this substation is still being determined. However, all of the new offsite cabling will be laid underground in trenches or ducting. At certain points along the route, it will be necessary to drill past 'obstacles' such as roads, watercourses and other utilities. There will be no new above ground power lines for the offsite cabling.

3.18 The cable routes are still being surveyed and so more detail on the extents and locations of the cable routes cannot be offered within this Scoping Request.

3.19 As this survey work is on going and discussions with National Grid on their preferred location of the connection point into their Bicker Fen substation there is no more detail that can be provided on this route at this time, not the depth of the required trench nor the number of cables. However, these uncertainties will be defined, where possible, within the ES and if still to be finalised can be captured and assessed effectively through the 'Rochdale Envelope' approach which is being used for this ES.

Fencing and Security Measures

3.20 A fence will enclose the operational areas of the Development. The fence is likely to be a metal mesh fence of approximately 3m in height. Pole mounted closed circuit television (CCTV) system, which will face towards the Energy Park and away from any land outside of the Development site will also be deployed around the perimeter of the site. These cameras will be mounted on poles of 3.5m height located within the perimeter fence.

3.21 It is likely that lighting on sensors for security purposes will be deployed around the energy storage area and potentially at any other pieces of critical infrastructure. No areas of the Development are proposed to be continuously lit during the operational phase of this development.

Access Tracks

3.22 Access to the Development is under review but a new, previously approved point of access off the A17 will be created. This sits on the most southern boundary of the Site. This access point will be used for both construction and operational traffic. It will require the creation of a new T junction with a visibility splay of 215m, which is commensurate with a 60mph speed limit, even though the A17 is a 50mph road.

3.23 Once on site the access track will continue northwards as shown on Figure 3 connecting with minor internal access roads which will serve each parcel of the solar development. These tracks will likely be made of crushed aggregate or other suitable reinforcement.

Energy Storage Facility

3.24 It is proposed to include an energy storage facility as an associated part of the electrical infrastructure of this Development. The energy storage is proposed to be located adjacent to the Development substation either in a series of individual containers or housed within a larger building(s). It is estimated at this time that the storage capacity of this site would be approximately 200-400MW. A maximum of 6.04 ha is set aside for this element of the Energy Park Development, with a maximum height of 4.5m.

3.25 The energy storage system includes batteries, inverters and system controllers but its final design has not yet been determined. Any system installed will be strenuously tested during the factory and pre-commissioning testing regime before being given the final sign off to energise.

Development Substation and Control Building

3.26 The Development substation will consist of electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Development to the National Grid. The maximum dimensions of the main substation are proposed to be 180m x 130m x 15m. There may be smaller sub-stations distributed throughout the site with dimensions around 7m x 3m x 3m.

3.27 The Development substation is also expected to include a control building which will include office space and welfare facilities as well as operational monitoring and maintenance equipment. The dimensions of this control building and compound are dependent on further assessment work and so, in accordance

with the Rochdale Principle, cannot be stated in this Scoping Request but are expected to be approximately 10m x 10m x 3m.

Electricity Export Connection to National Grid

3.28 The electricity generated is expected to be exported via a connection from the Development to the existing National Grid Electricity Transmission (NGET) 400kV Bicker Fen substation.

3.29 This Development will require an extension of approximately 45m^2 to the substation either to the southwest or northeast (to be determined by National Grid). The installation of a new generation bay with electrical equipment for connection to the Transmission system will be required. The new equipment will look similar to the units already installed at the National Grid Bicker Fen site. It is expected that the maximum height of this new unit will be 15m, which is similar to the units already installed at Bicker Fen.

Rochdale Envelope

3.30 The details that have been listed above in Section 3 offer the known details of the Development at this time but have also tried where possible to indicate where the details of the scheme are not yet known.

3.31 However, these uncertainties will be defined, where possible, within the ES and if still to be finalised can be captured and assessed effectively through the 'Rochdale Envelope' approach which is being used for this ES.

4. PHASES OF DEVELOPMENT

Construction

4.1 The construction phase of the Development is currently anticipated to last up to 18 months but will be dependent on the final design and the findings of the access and traffic assessment. The types of construction activities that may be required include (but are not limited to):

- Importing of construction materials;
- Culverting some ditches on the Site;
- The establishment of the construction compound – this will likely move over the course of the construction process as each phase is built out;
- Creation of a new access point for the Site (A17);
- Installing the security fencing around the Site;
- Importing the PV panels and the energy storage equipment;
- Erection of PV frames and modules;
- Digging of cable trench and laying cables for connection to the National Grid Bicker Fen substation;
- Laying of overhead cables on Site and digging cable trenches and laying cables;
- Installing transformer cabins;
- Construction of onsite electrical infrastructure for the export of generated electricity
- New habitat creation; and
- Installing new technical equipment at the National Grid Bicker Fen substation.

Construction Traffic Management Plan

4.2 A draft Construction Traffic Management Plan (CTMP) will be developed as part of the EIA which will guide the delivery of materials and staff onto the Development Site during the construction phase. The principles of the draft CTMP will be available for comment as part of the consultation process to ensure that the comments of local residents and stakeholders are taken into account in its development.

Temporary Construction Compounds

4.3 A main temporary construction compound will likely be established close to the Development site entrance. Smaller temporary compounds will be located across the Development as the site is built out in its various phases, currently proposed to be 3. As each of these phases is completed it will be connected to Bicker Fen substation and start the export of electricity to the National Grid. For clarification, the construction process will take place as one continuous process, so when Phase 1 is completed, Phase 2 would start.

Temporary Roadways

4.4 Depending on weather conditions during construction, temporary roadways (e.g. plastic matting) may be utilised to access parts of the Development site.

Site Reinstatement and Habitat Enhancement

4.5 Depending on the season, work needed for habitat enhancement may start during or after construction is completed. A draft Landscape and Ecological Management Plan will be submitted as part of the EIA. This document will set out the proposals for the land and how it will be managed through the operational life of the scheme. It is proposed that the lifetime of this scheme will be 40 years.

Operation

4.6 During operation of the Development, human activity on the Site will be minimal and would be restricted principally to vegetation management, equipment maintenance and servicing, replacement of any components that fail and monitoring to ensure the continued effective operation of the Development.

4.7 There is a proposed 'Community Orchard' as part of the ecological enhancements of the Energy Park. At this time, it is hoped that children of the additional needs school, as well as other community groups, would be able to access this orchard. The access arrangements to such a community asset are still to be finalised, but will be discussed over the formal consultation process for this proposal. Local residents will also be able to use the proposed permissive footpath that would offer an extension to the existing footpath in the northwest corner of the Site (Ref: Heck/15/1).

Decommissioning

4.8 The Development will be decommissioned at the end of its approved operational phase. All PV modules, mounting poles, cabling, energy storage equipment, inverters, transformers etc would be removed from the Development. These items would be recycled or disposed of in accordance with good practice and market conditions at the time. A Decommissioning Plan, to include timescales (expected to take 6-12 months) and transportation methods would be agreed in advance with the Local Planning Authority.

4.9 At this time the applicant has been advised by National Grid that the additional electricity transformer unit that will be installed at the National Grid Bicker Fen substation for the Development will be removed as part of the decommissioning process. However, the extended concrete pad at Bicker Fen will remain. This extended concrete pad will be in the ownership of National Grid. Therefore, the larger footprint of Bicker Fen substation will remain after the solar park is decommissioned.

4.10 The effects of decommissioning are often similar to, or to a lesser magnitude than, the construction effects and will be considered where possible in the relevant sections of the ES. However, there can be a high degree of uncertainty regarding decommissioning as engineering approaches and technologies evolve over the operational life of the Development.

5. LEGISLATIVE AND PLANNING FRAMEWORK

Introduction

5.1 The ES will include a chapter setting out the legislative and planning framework. A summary of that framework at the time of writing this Scoping Report is provided in this section.

5.2 Under the Planning Act (2008) the Development constitutes an NSIP. The Development falls under the NSIP consenting regime because it consists of:

- "the construction or extension of a generating station" (Section 14 (1)(a) of the Act); and
- "its capacity is more than 50 megawatts" (Section 15 (2) of the Act).

5.3 Section 105 of the Planning Act (2008) states the Secretary of State must have regard, as the decision maker to an application for an order granting development consent where a national policy statement (NPS) does not exist for the development, to any Local Impact Report and to any other matters which relate to and are important to the decision. This may include a variety of national planning and local planning documents, including other relevant NPSs.

5.4 Although there is not currently an NPS which provides specific policy in relation to solar PV and energy storage development, in previous applications where no NPS applies, the Secretary of State has applied relevant NPSs as if these NPSs governed the development in question [5]. Therefore, three current NPSs which have provisions relevant to the Development, in the opinion of the authors, have been identified. The provisions of the NPSs considered relevant by the authors are outlined below, together with other considerations relevant to the planning framework such as the draft NPS, which is expected to be enacted by the time this application and ES is submitted to PINS.

National Policy Statements

Overarching National Policy Statement for Energy (EN-1)

5.5 The overarching NPS for Energy (EN-1) [6] was adopted in July 2011 and sets out the overall national energy policy for delivering major energy infrastructure.

5.6 Part 2 of the statement sets out the Central Government policy context for major energy infrastructure. It comprises the need to meet legally binding targets to cut greenhouse gas emissions; transition to a low carbon economy; decarbonise the power sector; reform the electricity market; secure energy supplies; replace outdated energy infrastructure; and widen objectives of sustainable development.

5.7 Paragraph 3.2.3 sets out more detail around the importance that Central Government attaches to the need for new energy infrastructure and to its energy policy, including combatting climate change, by stating that:

"The Government considers that, without significant amounts of new large-scale energy infrastructure, the objectives of its energy and climate change policy cannot be fulfilled."

5 See decisions on Triton Knoll Electrical System Order 2017, Tidal Lagoon (Swansea Bay) Order 2015, Glyn Rhonwy Pumped Storage Generating Station Order 2017, Cleve Hill Solar Park 2020 and Little Crow Solar Park 2021

6 Department of Energy and Climate Change July 2011, 'National Policy Statement for Energy (EN-1)

5.8 Paragraph 3.3.2 then states clearly that new generating capacity, because of the need to ensure energy security, is a key objective of Government energy policy:

"The Government needs to ensure sufficient electricity generating capacity is available to meet maximum peak demand, with a safety margin or spare capacity to accommodate unexpectedly high demand and to mitigate risks such as unexpected plant closures and extreme weather events"

5.9 The benefits of an energy mix in ensuring a secure energy supply are also recognised in that the characteristics of different types of electricity generation, including renewable energy and other technologies, can complement each other.

5.10 Part 4 sets out a number of assessment principles against which applications are to be decided, including the presumption to grant consent for applications for energy NSIPs, and the need to balance potential benefits against potential adverse impacts.

5.11 Paragraphs 4.2.2 and 4.2.3 provide national policy on what an ES for a NSIP project should contain:

"To consider the potential effects, including benefits, of a proposal for a project, the IPC [now the Planning Inspectorate] will find it helpful if the applicant sets out information on the likely significant social and economic effects of the development, and shows how any likely significant negative effects would be avoided or mitigated. This information could include matters such as employment, equality, community cohesion and well-being.

For the purposes of this NPS and the technology-specific NPSs the ES should cover the environmental, social and economic effects arising from pre-construction, construction, operation and decommissioning of the project."

5.12 Paragraph 4.2.4 then sets out how the assessment of the ES by the decision maker should be carried out:

"When considering a proposal, the IPC should satisfy itself that likely significant effects, including any significant residual effects taking account of any proposed mitigation measures or any adverse effects of those measures, have been adequately assessed. In doing so the IPC should also examine whether the assessment distinguishes between the project stages and identifies any mitigation measures at those stages. The IPC should request further information where necessary to ensure compliance with the EIA Directive."

5.13 Part 5 then sets out guidance on generic impacts for the Applicant's assessment and decision-making on the application. These impacts concern air quality and emissions; biodiversity; aviation; coastal change; dust and various other pollution control related matters; flood risk; historic environment; landscape and visual; land use; noise and vibration; socio-economics; traffic and transport; waste; and water quality and resources.

5.14 Where these generic impacts are relevant to the Development, the proposed approach to the EIA is set out in the relevant technical section of this Scoping Report.

National Policy Statement on Renewable Energy Infrastructure (EN-3)

5.15 The National Policy Statement on Renewable Energy Infrastructure (EN-3) [7] was adopted in July 2011 and provides national planning policy in respect of renewable energy infrastructure.

5.16 Paragraph 1.1.1 of EN-3 underlines the importance of the generation of electricity from renewable sources by stating:

'Electricity generation from renewable sources of energy is an important element in the Government's development of a low-carbon economy. There are ambitious renewable energy targets in place and a significant increase in generation from large-scale renewable energy infrastructure is necessary'

5.17 Whilst EN-3 provides assessment and technology-specific information on certain renewable energy technologies, comprising biomass/waste, offshore wind and onshore wind, this does not include solar PV development (in the current (2011) version of EN-3).

National Planning Policy Statement for Electricity Networks (EN-5)

5.18 The National Policy Statement on Electricity Networks Infrastructure (EN-5) was adopted in July 2011. Whilst EN-5 principally covers above ground electricity lines of 132 kV or above, paragraph 1.8.2 confirms that EN-5 will also be relevant if the electricity network constitutes an associated development for which consent is sought, such as a generating station. EN-5 is therefore relevant to the Development, as a grid connection is proposed.

5.19 Part 2 of EN-5 sets out a number of assessment and technology specific matters. Paragraph 2.2.2 points out that the location of electricity networks will often be determined by the particular generating station and the existing electricity network. Part 2 sets out particular generic impacts concerning biodiversity and geological conservation, landscape and visual, noise and vibration, and electric and magnetic field effects.

5.20 Where these generic impacts are relevant to the Development, the proposed approach under the ES to address the technical matter is set out in the relevant technical section of this Scoping Report.

5.21 In 2021 The Department for Business, Energy, and Industrial Strategy (BEIS) consulted on a suite of new draft national policy statements for energy infrastructure. These include specific policies relating to, and supporting, solar energy.

Draft Overarching National Policy Statement for Energy (EN-1) – September 2021

5.22 Draft NPS (EN1) recognises that:

'To produce enough energy required for the UK and ensure it can be transported to where it is needed, a significant amount of infrastructure is needed at both local and national scale. High quality infrastructure is crucial for economic growth, boosting productivity and competitiveness.' (para. 2.1.2)

7 Department of Energy and Climate Change, July 2011, ¨ National Policy Statement for Renewable Energy Infrastructure (EN- 3

5.23 The draft EN-1 NPS then goes on to look into the development constraints on renewable energy within the UK and how these constraints should be considered and assessed to enable sound planning decisions. It states:

'Applicants should seek to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification) and preferably use land in areas of poorer quality (grades 3b, 4 and 5) except where this would be inconsistent with other sustainability considerations. Applicants should also identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed.' (para. 5.11.8)

5.24 The Draft NPS confirms that the Secretary of State should ensure that applicants do not site their scheme on the best and most versatile agricultural land without justification. The document states that:

'Little weight should be given to the loss of poorer quality agricultural land (in grades 3b, 4 and 5), except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy.' (para. 5.11.14).

5.25 On the issue of best and most versatile agricultural land, the Draft NPS for Renewable Energy (EN-3) states that

'land type should not be a predominating factor in determining the suitability of the site location' (para. 2.48.13)

5.26 Draft EN-3 also states that

'whilst the development of ground mounted solar arrays is not prohibited on sites of agricultural land classified 1, 2 and 3a, the impacts of such are expected to be considered.' (para 2.48.15).

5.27 The Draft NPS recognises that

'where previous management of the site has involved intensive agricultural practice, solar sites can deliver significant ecosystem services value in the form of drainage, flood attenuation, natural wetland habitat, and water quality management.' (para. 2.50.11).

5.28 The Draft NPS continues:

'The maximum impact case scenario will be assessed, and the Secretary of State will consider the maximum adverse effects in its consideration of the application and consent.' (para. 2.50.11).

5.29 Although this NPS is in draft format at this stage, it is expected that by the time this application is submitted for consideration to the Secretary of State the draft NPS of EN-1, EN-3 and EN-5 will have been adopted. Therefore, in the preparation of this ES it is proposed that all assessment methodologies should strive to follow the advice provided within these draft National Planning Statements.

Draft National Policy Statement for Renewable Energy Infrastructure (EN3) – September 2021

5.30 Draft NPS (EN3) recognises that:

'Solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation worldwide. Solar farms can be built quickly and, coupled with consistent reductions in the

cost of materials and improvements in the efficiency of panels, large-scale solar is now viable in some cases to deploy subsidy-free and at little to no extra cost to the consumer. The government has committed to sustained growth in solar capacity to ensure that we are on a pathway that allows us to meet net zero emissions. As such solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector' (para. 2.47.1)

5.31 At the time of writing, these revised policies remain in draft and are not yet adopted policy. It is expected that the revised suite of energy NPSs will come into force in the early part of 2022 and in advance of the submission of the Application. In the meantime, these draft NPS remain an important and relevant considerations in preparing the environmental chapters.

Climate Change and Net Zero

5.32 The Climate Change Act 2008 commits the UK Government by law to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050. In April 2021, the Government announced that it will seek to reduce emissions by 78% by 2035 compared to 1990 levels as part of its sixth carbon budget.

5.33 The UK's carbon budgets place a restriction on the total amount of greenhouse gases the UK can emit over a five-year period. The UK is currently in the third carbon budget period (2018 to 2022). In 2021 the Climate Change Committee [8] (an independent statutory body established under the Climate Change Act 2008) reported that the UK is currently on track to meet its target of a 37% reduction in emissions compared to 1990 by 2022, but not to meet its targets outlined by the fourth and fifth carbon budgets; a 51% reduction compared to 1990 levels by 2025 and a 57% reduction compared to 1990 levels by 2030. The Committee said that the Government will have to 'introduce more challenging measures' if the UK is to meet future carbon budgets and the net zero target for 2050.

5.34 In October 2021 the Government published its Net Zero Strategy [9] which sets out policies and proposals for meeting the carbon budget targets and its vision for a decarbonised economy by 2050. The document states that low carbon power is expected to become the predominant form of energy in 2050; accounting for approximately 50% or higher share of final energy consumption (up from 10% in 2019) as it displaces petrol in light vehicles and gas for heat in homes. The Net Zero Strategy is intended to accompany the Government's Ten Point Plan for Green Industrial Revolution (November 2020) [10] which sets out its plans to put the UK at the forefront of the global green economy.

5.35 The Energy White Paper 2020 [11] sets out the UK Government's goal of a fully decarbonised, reliable, and low-cost power system by 2050. Although the White Paper envisaged achieving an overwhelmingly decarbonised power system during the 2030s, the Government revised ambition sets 2035 as the date by which all the UK's electricity will need to come from low carbon sources, subject to security of supply, whilst meeting a 40-60% increase in demand.

8 Committee on Climate Change- 2021 Progress Report to Parliament

9 Net Zero Strategy: Build Back Greener- HM Government, October 2021
10 Ten Point Plan for a Green Industrial Revolution – HM Government, November 2020
11 Energy White Paper – Department for Business, Energy & Industrial Strategy, December 2020

National Planning Policy Framework

5.36 The National Planning Policy Framework ("the NPPF") was revised on 20th July 2021 and is a material consideration in planning decisions. Whilst the NPPF does not contain any specific policies for NSIP development, paragraph 5 of the NPPF states that, as well as the NPSs, NSIPs are to be determined in accordance with:

"any other matters that are relevant (which may include the National Planning Policy Framework)."

5.37 The NPPF sets out that the purpose of the planning system is to contribute to the achievement of sustainable development, which can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs. The UK and members of the United Nations have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030 – these address social progress, economic well-being and environmental protection. There are number of specific instances under the NPPF where this presumption does not apply, including as set out by paragraph 182, where development requires Appropriate Assessment under the Birds or Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna ("the Habitats Directive").

5.38 Paragraph 152 of the NPPF applies a number of core planning principles that are to underpin planning decision making, including the following which is specifically relevant to renewable energy development:

"support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radial reductions in greenhouses gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure".

5.39 Chapter 14 sets out the objectives for planning in meeting the challenge of climate change. Paragraph 152 states that planning is identified as playing a key role in helping shape places to secure radical reductions in greenhouse emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to all three strands of sustainable development.

5.40 Whilst the Local Planning Authorities (LPAs) are not the determining authority, paragraph 156 of the NPPF sets out that in order to increase the use and supply of renewable energy LPAs need to recognise the responsibility of all communities to contribute to energy generation from renewable sources. Paragraph 158 then makes it clear that LPAs should not require applicants to demonstrate the overall need for renewable energy.

5.41 The NPPF also provides guidance on a number of environmental matters; where these matters are relevant to the Development, the proposed approach to the EIA to address the technical matter is set out in the relevant section of this Scoping Report. The ES Planning Chapter will describe all relevant matters contained within the NPPF.

5.42 Chapter 15 of the NPPF sets out the objectives for the planning system in conserving and enhancing the natural environment. Paragraph 174 states that the planning system should contribute to and enhance the natural and local environment by, protecting and enhancing valued landscapes, geological conservation interests and soils; recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity where possible. Paragraph 180 states when determining applications, LPAs should seek to conserve and enhance biodiversity by encouraging opportunities to incorporate biodiversity in and around developments. Paragraph 120 states that planning policies and decisions should encourage the effective use of land by re-using that which has previously been developed, provided that it is not of high environmental value.

5.43 Paragraph 174 states that LPAs should take into account the economic and other benefits of the best and most versatile (BMV) agricultural land. The footnote at paragraph 175 notes that where significant development of agricultural land is demonstrated to be necessary, LPAs should seek to use areas of poorer quality.

5.44 The NPPF also provides guidance on the weight to be given to policies in existing plans and emerging plans. Paragraph 219 states that beyond the 12-month period after the NPPF was introduced, that the weight to be given to relevant policies in existing plans will depend on their degree of consistency with the NPPF. Paragraph 48 states the weight to be given to relevant policies in emerging plans will depend on the stage of preparation of the plan, the extent to which there are unresolved objections and the degree of consistency with the NPPF.

National Planning Practice Guidance (NPPG)

5.45 The NPPG pulls together planning practice guidance for all planning related matters. The Planning Practice Guidance for Renewable and Low Carbon Energy dates from June 2015. The opening paragraph of the NPPG insofar as it relates to renewable and low carbon energy proposals states that:

'increasing the amount of energy from renewable and low carbon technologies will help to make sure the UK has a secure energy supply, reduce greenhouse gas emissions to slow down climate change and stimulate investment in new jobs and businesses.'

5.46 The NPPG further notes that planning has an important role in the delivery of new renewable and low carbon energy infrastructure in locations where the local environmental impact is acceptable.

5.47 In considering applications, paragraph 7 of the NPPG makes it clear that:

- the need for renewable or low carbon energy does not automatically override environmental protections;
- cumulative impacts require particular attention, especially the increasing impact that wind turbines and large-scale solar farms can have on landscape and local amenity as the number of turbines and solar arrays in an area increases;
- local topography is an important factor in assessing whether wind turbines and large-scale solar farms could have a damaging effect on landscape and

recognise that the impact can be as great in predominately flat landscapes as in hilly or mountainous areas;

- great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting;
- proposals in National Parks and Areas of Outstanding Natural Beauty, and in areas close to them where there could be an adverse impact on the protected area, will need careful consideration;
- protecting local amenity is an important consideration which should be given proper weight in planning decisions.

5.48 Paragraph 13 of the NPPG sets out the particular planning considerations relating to large scale ground-mounted solar photovoltaic farms. It states that these can have a negative impact on the rural environment, particularly in undulating landscapes. However, the NPPG notes that the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively. In providing further guidance on the particular factors that a local planning authority will need to consider in the assessment of large-scale solar farms, the NPPG advises:

- encouraging the effective use of land by focusing large scale solar farms on previously developed and non-agricultural land, provided that it is not of high environmental value;
- where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays. (See also speech by the Minister for Energy and Climate Change, the Rt Hon Gregory Barker MP, to the solar PV industry on 25 April 2013 and written ministerial statement on solar energy: protecting the local and global environment made on 25th March 2015)
- that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use;
- that the proposal's visual impact, the effect on landscape of glint and glare and on neighbouring uses and aircraft safety should be considered;
- the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;
- the need for, and impact of, security measures such as lights and fencing;
- great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. Depending on their scale, design and prominence, a large-scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset;
- the potential to mitigate landscape and visual impacts through, for example, screening with native hedges;
- the energy generating potential, which can vary for a number of reasons including, latitude and aspect.

5.49 The guidance adds that the approach to assessing cumulative landscape and visual impact of large-scale solar farms is likely to be the same as assessing the impact of wind turbines. However, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography the area of a zone of visual influence could be zero.

Local Development Plans

5.50 The Development Plan does not carry the same weight under the Act in respect of decision making on NSIPs as it does with the determination of planning applications that are made under the Town and Country Planning Act 1990. Although the NPSs are the primary consideration for NSIP applications, the Development Plan is still an important consideration. In relation to this proposal, the scheme sits within two local authority areas, North Kesteven and Boston, and the county authority of Lincolnshire County Council, each of which is subject to its own Development Plan regime.

North Kesteven

5.51 The relevant Development Plan comprises the Central Lincolnshire Local Plan, adopted by the Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) on 24 April 2017, and replacing the Local Plans of the North Kesteven District Council, the City of Lincoln, and West Lindsey District Council.

Central Lincolnshire Local Plan

5.52 The Local Plan contains the following policies of most relevance, based on the proposed land-use of the Development and designations on the Proposals Map.

5.53 Policy LP1 - Presumption in Favour of Sustainable Development sets out a desire to deliver sustainable growth that brings benefits for all sectors of the community. When considering development proposals, the Central Lincolnshire districts of West Lindsey, Lincoln City and North Kesteven will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF. The districts will always work proactively with applicants to find solutions which means that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in Central Lincolnshire.

5.54 LP2 – The Spatial Strategy and Settlement Hierarchy advises that;

'the spatial strategy will focus on delivering sustainable growth for Central Lincolnshire that meets the needs for homes and jobs, regenerates places and communities, and supports necessary improvements to facilities, services and infrastructure. Decisions on investment in services and facilities, and on the location and scale of development, will be assisted by a Central Lincolnshire Settlement Hierarchy. Renewable energy generation is listed as one of the land uses that are acceptable in principle within the countryside elements of the hierarchy.'

5.55 LP13 - Accessibility and Transport states that;

'all developments should demonstrate, where appropriate, that they have had regard to the [listed] criteria'. An appropriate Transport Statement / Assessment and/ or Travel Plan should be submitted with proposals, with the precise form being dependent on the scale and nature of development and agreed through early discussion with the local planning or highway authority.'

5.56 LP14 - Managing Water Resources & Flood Risk states that 'all development proposals will be considered against the NPPF, including application of the sequential and, if necessary, the exception test. Through appropriate consultation and option appraisal, development proposals should demonstrate:

"a. that they are informed by and take account of the best available information from all sources of flood risk and by site specific flood risk assessments where appropriate;

b. that there is no unacceptable increased risk of flooding to the development site or to existing properties;

c. that the development will be safe during its lifetime, does not affect the integrity of existing flood defences and any necessary flood mitigation measures have been agreed with the relevant bodies;

d. that the adoption, ongoing maintenance and management of any mitigation measures have been considered and any necessary agreements are in place;

e. how proposals have taken a positive approach to reducing overall flood risk and have considered the potential to contribute towards solutions for the wider area; and

f. that they have incorporated Sustainable Drainage Systems (SuDS) in to the proposals unless they can be shown to be impractical."

5.57 LP17 - Landscape, Townscape & Views states that to protect and enhance the intrinsic value of our landscape and townscape, including the setting of settlements, proposals should have particular regard to maintaining and responding positively to any natural and man-made features within the landscape and townscape which positively contribute to the character of the area, such as (but not limited to) historic buildings and monuments, other landmark buildings, topography, trees and woodland, hedgerows, walls, water features, field patterns and intervisibility between rural historic settlements. Where a proposal may result in significant harm, it may, exceptionally, be permitted if the overriding benefits of the development demonstrably outweigh the harm: in such circumstances the harm should be minimised and mitigated.

5.58 The Policy also states that:

"All development proposals should take account of views in to, out of and within development areas: schemes should be designed (through considerate development, layout and design) to preserve or enhance key local views and vistas, and create new public views where possible. Particular consideration should be given to views of significant buildings and views within landscapes which are more sensitive to change due to their open, exposed nature and extensive

intervisibility from various viewpoints."

5.59 The Policy advises that in considering the impacts of a proposal, the cumulative impacts as well as the individual impacts will be considered.

5.60 LP18 - Climate Change and Low Carbon Living states that development proposals will be considered more favourably if the scheme would make a positive and significant contribution towards one or more of a number of principles which are listed in order of preference under the policy). The third of these is 'Energy production', where development could provide site based decentralised or renewable energy infrastructure. The infrastructure should be assimilated into the proposal through careful consideration of design. Where the infrastructure may not be inconspicuous, the impact will be considered against the contribution it will make. Proposals which are poorly designed and/or located and which have a detrimental impact on the landscape, the amenity of residents, or the natural and built environment, will be refused.

5.61 LP19 - Renewable Energy Proposals states that proposals for non-wind renewable technology will be assessed on their merits, with the impacts, both individual and cumulative, considered against the benefits of the scheme, taking account of the following:

- The surrounding landscape and townscape;
- Heritage assets;
- Ecology and diversity;
- Residential and visual amenity;
- Safety, including ensuring no adverse highway impact;
- MoD operations, including having no unacceptable impact on the operation of aircraft movement or operational radar; and
- Agricultural Land Classification (including a presumption against photovoltaic solar farm proposals on the best and most versatile agricultural land).

5.62 Proposals will be supported where the benefit of the development outweighs the harm caused and it is demonstrated that any harm will be mitigated as far as is reasonably possible.

5.63 LP21 - Biodiversity and Geodiversity states that all development should: protect, manage and enhance the network of habitats, species and sites of international, national and local importance (statutory and non-statutory), including sites that meet the criteria for selection as a Local Site; minimise impacts on biodiversity and geodiversity; and seek to deliver a net gain in biodiversity and geodiversity.

5.64 LP21 states also that:

'Development proposals should create new habitats, and links between habitats, in line with Biodiversity Opportunity Mapping evidence to maintain a network of wildlife sites and corridors to minimise habitat fragmentation and provide opportunities for species to respond and adapt to climate change. Development should seek to preserve, restore and re-create priority habitats, ecological networks and the protection and recovery of priority species set out in the Lincolnshire Biodiversity Action Plan and Geodiversity Action Plan. Development proposals should ensure opportunities are taken to retain, protect and enhance

biodiversity and geodiversity features proportionate to their scale, through site layout, design of new buildings and proposals for existing buildings.'

5.65 LP21 also addresses the issue of mitigation:

'Any development which could have an adverse effect on sites with designated features and / or protected species, either individually or cumulatively, will require an assessment as required by the relevant legislation or national planning guidance. Where any potential adverse effects to the biodiversity or geodiversity value of designated sites are identified, the proposal will not normally be permitted. Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/or species.'

5.66 LP21 also states that:

In exceptional circumstances, where adverse impacts are demonstrated to be unavoidable, developers will be required to ensure that impacts are appropriately mitigated, with compensation measures towards loss of habitat used only as a last resort where there is no alternative. Where any mitigation and compensation measures are required, they should be in place before development activities start that may disturb protected or important habitats and species.'

5.67 LP25 - The Historic Environment states that development proposals should protect, conserve and seek opportunities to enhance the historic environment of Central Lincolnshire. In instances where a development proposal would affect the significance of a heritage asset (whether designated or non-designated), including any contribution made by its setting, the applicant will be required to undertake a number of actions, in a manner proportionate to the asset's significance.

5.68 LP26 - Design and Amenity states that:

'All development, including extensions and alterations to existing buildings, must achieve high quality sustainable design that contributes positively to local character, landscape and townscape, and supports diversity, equality and access for all. Development proposals will be assessed against a number of relevant design and amenity criteria.'

5.69 Part E of LP55 - Development in the Countryside sets out the basis on which proposals for non-residential developments will be supported in rural locations, provided that:

a. The rural location of the enterprise is justifiable to maintain or enhance the rural economy or the location is justified by means of proximity to existing established businesses or natural features;

b. The location of the enterprise is suitable in terms of accessibility;

c. The location of the enterprise would not result in conflict with neighbouring uses; and

d. The development is of a size and scale commensurate with the proposed use and with the rural character of the location

5.70 Part F of LP55 – Agricultural Diversification states that:

'Proposals involving farm-based diversification will be permitted, provided that the proposal will support farm enterprises and providing that the development is:

a. In an appropriate location for the proposed use;

b. Of a scale appropriate to its location; and

c. Of a scale appropriate to the business need.'

5.71 Part G of Policy LP55 states that:

'Proposals should protect the best and most versatile agricultural land so as to protect opportunities for food production and the continuance of the agricultural economy. With the exception of allocated sites, development affecting the best and most versatile agricultural land will only be permitted if:

a. There is insufficient lower grade land available at that settlement (unless development of such lower grade land would be inconsistent with other sustainability considerations); and

b. The impacts of the proposal upon ongoing agricultural operations have been minimised through the use of appropriate design solutions; and

c. Where feasible, once any development which is permitted has ceased its useful life the land will be restored to its former use, and will be of at least equal quality to that which existed prior to the development taken place (this requirement will be secured by planning condition where appropriate).

5.72 The Local Plan Review 2019 is proposed to replace the Local Plan adopted in 2017. It addresses a range of issues including climate change. An Issues and Options consultation in June and July 2019 was followed by a Draft Local Plan consultation between 30 June and 24 August 2021.

Boston Borough Council

South East Lincolnshire Local Plan 2011-2036

5.73 The Joint Strategic Planning Committee comprises of Boston Borough, South Holland District and Lincolnshire County Councils who collectively have created a single Local Plan for Southeast Lincolnshire. The Local Plan 2011-2036 was adopted in March 2019. The Local Plan contains the following policies of most relevance, based on the proposed land-use of the Development and designations on the Proposals Map:

5.74 Policy 31 – Climate Change and Renewable and Low Carbon Energy states that with the exception of Wind Energy the development of renewable energy facilities, associated infrastructure and the integration of decentralised technologies on existing or proposed structures will be permitted provided, individually, or cumulatively, there would be no significant harm to:

1. visual amenity, landscape character or quality, or skyscape considerations;

2. residential amenity in respect of: noise, fumes, odour, vibration, shadow flicker, sunlight reflection, broadcast interference, traffic;

3. highway safety (including public rights of way);

4. agricultural land take;

5. aviation and radar safety;

6. heritage assets including their setting; and

7. the natural environment. Provision should be made for post-construction monitoring and the removal of the facility

and reinstatement of the site if the development ceases to be operational.

5.75 Policy 28 - The Natural Environment seeks to protect internationally, nationally or locally-designated sites and protected or priority habitats and species as well as addressing gaps in the ecological network. Section 2 specially relates to nationally or locally designated sites:

a. development proposals that would directly or indirectly adversely affect these assets will not be permitted unless:

i. there are no alternative sites that would cause less or no harm; and

ii. the benefits of the development at the proposed site, clearly outweigh the adverse impacts on the features of the site and the wider network of natural habitats; and

iii. suitable prevention, mitigation and compensation measures are provided.

5.76 Section 3 specifically relates to addressing gaps in the ecological network: a. by ensuring that all development proposals shall provide an overall net gain in biodiversity. Four criteria for completing this are listed.

5.77 The Plan advises that that South East Lincolnshire's progress in relation to the Government target for 30% of electricity used from renewable sources, 15% of all energy used from renewable sources and the 34% cut in greenhouse gases by 2020 and 80% by 2050 is contained within the 'South East Lincolnshire's Carbon Challenge' (para. 7.5.7).

5.78 The Plan advises also that South East Lincolnshire is within The Fens National Character Area. The Local Plan Area is notable for its large-scale, flat, open landscape with extensive vistas to level horizons. The level, open topography shapes the impression of huge skies which convey a strong sense of place, tranquillity and inspiration. Planning proposals shall assess their implications against the information contained in the:- Landscape Character Assessment of Boston Borough or the Strategic Landscape Capacity Study for South Holland, as well as the Lincolnshire Historic Landscape Characterisation Project, the Lincolnshire Historic Environment Record (HER), the Boston Town and Rural Historic Environment Baseline Studies and the Conservation Area appraisals (see Policy 29: The Historic Environment) to protect landscape character and quality, skyscape and visual amenity.

5.79 Policy 29 – The Historic Environment states that to respect the historical legacy, varied character and appearance of South East Lincolnshire's historic environment, development proposals will conserve and enhance the character and appearance of designated and non-designated heritage assets, such as important known archaeology or that found during development, historic buildings, conservation areas, scheduled monuments, street patterns, streetscapes, landscapes, parks (including Registered Parks and Gardens), river frontages, structures and their settings through high-quality sensitive design.

5.80 In relation to development proposals, Policy 29 states that where a development proposal would affect the significance of a heritage asset (whether designated or non-designated), including any contribution made to its setting, it should be informed by proportionate historic environment

assessments and evaluations (such as heritage impact assessments, desk-based appraisals, field evaluation and historic building reports) that:

1. identify all heritage assets likely to be affected by the proposal;

2. explain the nature and degree of any effect on elements that contribute to their significance and demonstrating how, in order of preference, any harm will be avoided, minimised or mitigated;

3. provide a clear explanation and justification for the proposal in order for the harm to be weighed against public benefits; and

4. demonstrate that all reasonable efforts have been made to sustain the existing use, find new uses, or mitigate the extent of the harm to the significance of the asset; and whether the works proposed are the minimum required to secure the long-term use of the asset.

6. ENVIRONMENTAL IMPACT ASSESSMENT

EIA Process and Methodology

6.1 The purpose of the EIA is to identify the likely 'significance' of environmental effects (beneficial or adverse) arising from a Proposed Development. In broad terms, environmental effects are described as:

- Adverse – detrimental or negative effects to an environmental resource or receptor;
- Beneficial – advantageous or positive effect to an environmental resource or receptor; or
- Negligible – a neutral effect to an environmental resource or receptor.

6.2 It is proposed that the significance of environmental effects (adverse, negligible/ neutral or beneficial) would be described in accordance with the following 7-point scale:-

6.3 Significance reflects the relationship between two factors:

- The magnitude or severity of an effect (i.e. the actual change taking place to the environment); and
- The sensitivity, importance or value of the resource or receptor.

6.4 The broad criteria for determining magnitude are set out in Table 6.1.

6.5 It is worth noting that the degrees of magnitude defined in the table below can be both positive and negative, as a development can result in a positive effect on the environment.

6.6 The sensitivity of a receptor is based on the relative importance of the receptor using the scale in Table 6.2.

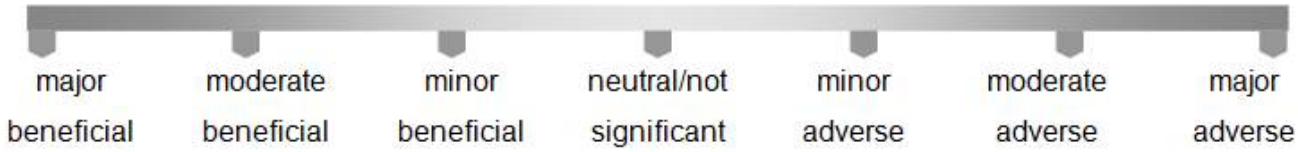


TABLE 6.1: DEGREES OF MAGNITUDE AND THEIR CRITERIA

Magnitude of Effect	Criteria
High	Total loss or major/substantial alteration to elements/features of the baseline (pre-development) conditions such that the post development character/composition/ attributes will be fundamentally changed.
Medium	Loss or alteration to one or more elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible / detectable but the underlying character / composition / attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

TABLE 6.2: DEGREES OF SENSITIVITY AND THEIR CRITERIA

Sensitivity	Criteria
High	The receptor / resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Medium	The receptor / resource has moderate capacity to absorb change without significantly altering its present character, or is of high and more than local (but not national or international) importance.
Low	The receptor / resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor / resource can accommodate change without material effect, is of limited importance.

6.7 Placement within the 7-point significance scale would be derived from the interaction of the receptor's sensitivity and the magnitude of change likely to be experienced (as above), assigned in accordance with Table 6.3 below, whereby effects assigned a rating of Major or Moderate would be considered as 'significant'.

TABLE 6.3: LEVEL OF EFFECT

Magnitude of Change	Sensitivity of Receptor				
		High	Medium	Low	Negligible
	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor to Moderate	Negligible
	Low	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

6.8 The above magnitude and significance criteria are provided as a guide for specialists to categorise the significance of effects within the ES. Where discipline-specific methodology has been applied that differs from the generic criteria above, this will be clearly explained within the given chapter under the heading of Assessment Approach in the ES.

6.9 As can be seen from Table 6.3 when an environmental effect is assessed as having a major or moderate degree of significance it is deemed to be "significant". These are the shaded cells in Table 6.3. When such a significant effect occurs consideration of mitigation solutions or enhancements to minimise the effect (which can include design alterations) will be considered. It should be noted at this point that mitigation can come in the form of embedded design through design alteration to resolve a significant effect and mitigation through additional measures. Once these mitigations and enhancements have been assessed the degree of significance may decrease to minor/moderate, minor or negligible. If such a level of environmental effect occurs the Proposed Development is no longer considered as creating a "significant effect". If an environmental effect remains "significant" (i.e. major/moderate) the assessing planning authority must weigh up the planning balance and determine if this significant, negative/positive environmental effect is outweighed by some other planning gain prior to determining the planning application.

6.10 A level of effects would be assigned both before and after mitigation.

Mitigation

6.11 Standard measures and the adoption of construction best practice methods to avoid, minimise or manage adverse environmental effects, or to ensure realisation of beneficial effects, are assumed to have been incorporated into the design of the Development and the methods of its construction from the outset.

6.12 Where mitigation measures are proposed that are specific to an environmental theme (i.e. ecological measures incorporated into the landscaping scheme, exclusion of areas of archaeological significance from development etc) and incorporated into the design.

6.13 Where the assessment of the Development has identified potential for adverse environmental effects, the scope for mitigation of those effects, for example by way of compensatory measures, has been considered and is outlined in the appropriate technical chapter. It is assumed that such measures would be subject to appropriate DCO requirements.

6.14 Where the effectiveness of the mitigation proposed has been considered uncertain, or where it depends upon assumptions of operating procedures, then data and/ or professional judgement has been introduced to support these assumptions.

Residual Effects

6.15 The assessment process will conclude with an examination of the residual effects after mitigation has been applied, i.e. the overall predicted (likely) effects of the Development.

CUMULATIVE AND IN COMBINATION EFFECTS

Cumulative Effects

6.16 Within EIA, cumulative effects are generally considered to arise from the combination of effects from the Proposed Development and from other proposed or permitted schemes in the vicinity, acting together to generate elevated levels of effects. Examples of these kinds of effects that can be readily appreciated could include:

- Traffic generated from developments, affecting the surrounding road network;
- Air quality effects from developments; and
- Discharges to the water environment.

6.17 In order to determine the assessment area for the visual assessment a Screened Zone of Theoretical Visibility (SZTV) was applied to the EIA Assessment Area. This looked at the maximum solar panel height of 4.5m. There is the potential that other elements of the development would be taller than 4.5m, but these would be set back from the Energy Park boundaries and so it was deemed at this stage to consider the expanse of the panels rather than the maximum height of a locally occurring structures within the Energy Park site.. This looked at 5km area to determine the likelihood of a cumulative effect being visible from outside of this area and considered both North Kesteven District and Boston Borough Council's planning registers. This SZTV has shown that there are few, even theoretical opportunities to see the Development from over 5km away from the site and it has therefore been determined reasonable to consider possible cumulative developments

within this area. If a wider cumulative assessment area is needed for a specific environmental topic this will be highlighted in their assessment text. For reference, the Ecology and Ornithology Assessment will be assessing a 10km area for the ecological cumulative impact. This larger area has been confirmed by AECOM who are the environmental advisors for North Kesteven District Council (NKDC) for this application.

6.18 A list of known developments to be considered with regards cumulative effects has been complied and is presented within Table 6.4 and shown in Figure 4. This list will be reviewed as the EIA process continues and if further major application sites enter the planning system within this 5km area they will be added to the cumulative assessment. Also, if any of these cumulative sites are "built out" they will no longer be cumulative, but instead will form the baseline. At this time the table below includes sites that have been screened but not yet submitted as a planning application. Unless otherwise agreed, developments whose applications for consent have not yet been submitted at the time of finalising the ES are unlikely to be included in the cumulative assessments given the large degree of uncertainty over the likelihood of an application being submitted and the final design of those sites.

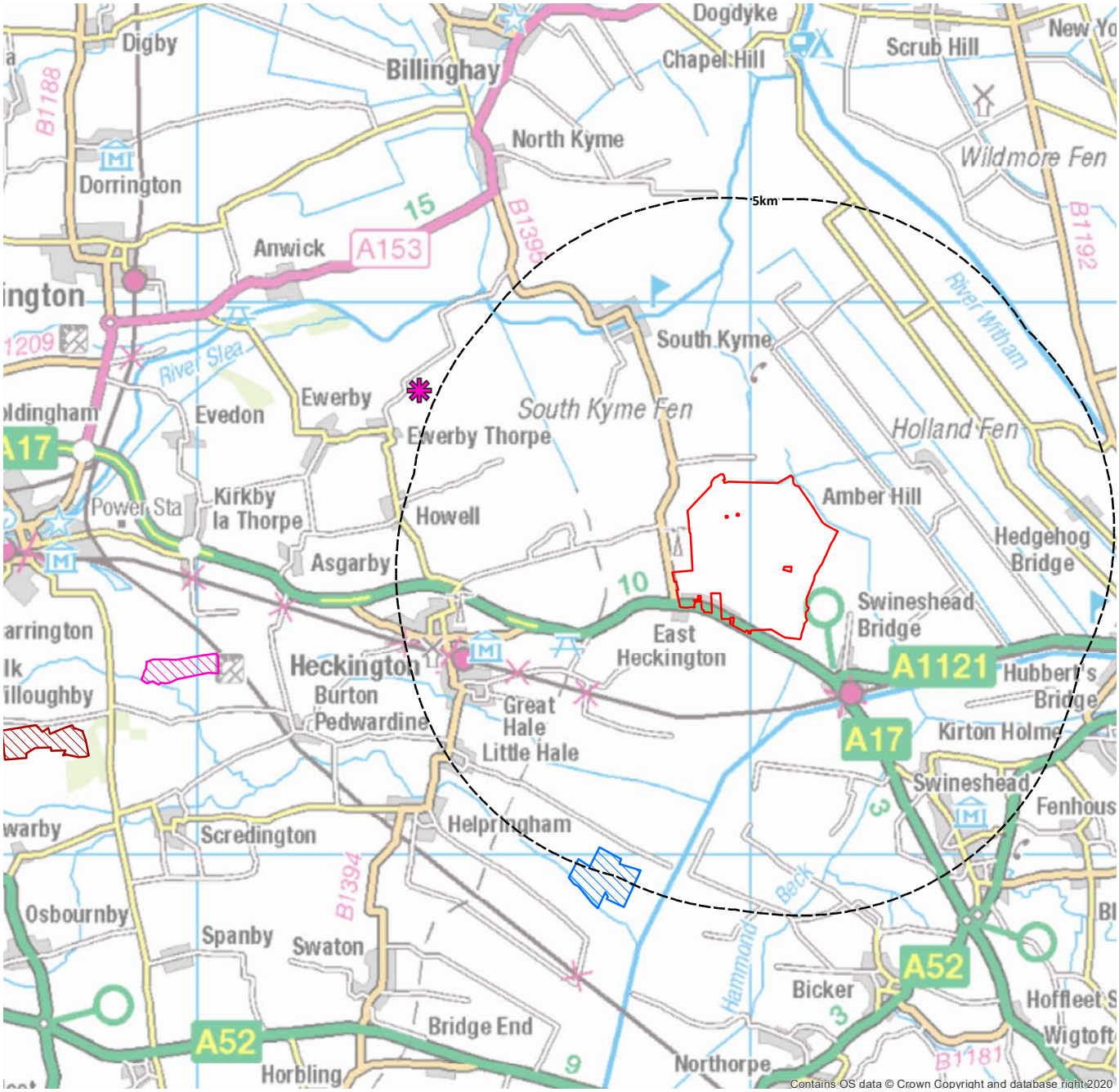


FIGURE 4 – CUMULATIVE SITES PLAN

6.19 All of the sites in Table 6.4 below are large scale ground mounted solar. At this time there are no known major developments within 5km of the Development site that are not solar farm developments. As stated above, if by the time of submission any major applications, which are not solar, come forward to planning they will be included within the cumulative assessment.

6.20 These cumulative sites will be considered within each specialist technical chapter rather than as a standalone chapter within the ES.

TABLE 6.4: PROJECTS CONSIDERED IN THE CUMULATIVE ASSESSMENT

Site	Nature of Development/Planning Status
Land At Little Hale Fen	21/1337/EIASCR – Screening Opinion Proposed solar farm (up to 49.995MW generating capacity) and associated infrastructure including grid connection cabling to Bicker Fen Substation. Determined that this proposal was not an EIA. (October 2021)
Land To the North Of White Cross Lane, Burton Gorse, Sleaford	19/0863/FUL – Proposed Solar Farm (32MW) and associated development including substation, inverter cabins, switchgear and communication buildings and access tracks. Approved 7th October 2021
Land South Of Gorse Lane Silk Willoughby Sleaford Lincolnshire	19/0060/FUL Erection of Solar PV park (circa 20MW) electricity generating capacity including inverters, substations, office building, store, perimeter fencing, access tracks, temporary construction compound and associated development. Approved April 2019
Land At Ewerby Thorpe	14/1034/EIASCR – Screening Opinion Erection of solar array with generating capacity of up to 28MW and associated infrastructure Determined that this proposal was not EIA (July 2014)
Land North West Of Bicker, Vicarage Drove Solar Farm	B/21/0443 Proposed construction and operation of a solar photovoltaic farm, battery storage and associated infrastructure, including inverters, batteries, substation compound, security cameras, fencing, access tracks and landscaping. Validated 5th October 2021 – not yet determined

Site Selection and Consideration of Alternatives

6.21 The EIA Regulations (Schedule 4, Paragraph 2) require for inclusion in an ES:

"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects"

6.22 The main alternatives to the Proposed Development which the Applicant has considered include:

- The 'No Development' Alternative; and
- Alternative Designs.

6.23 The applicant has an existing option to lease on the Energy Park Site due to a previous planning permission for the a 66MW wind park (Ref:09/1067/S36). This remains a valid consent (subject to BEIS approving an application to extend the life of the permission) but has not been able to be progressed due to a 'Grampian Condition' that requires radar mitigation. As no viable mitigation has been identified which is likely to be acceptable to the MOD the wind park cannot be built out. As a result, this approved wind park will not form part of the baseline as the Applicant has committed to not building the wind turbines and associated infrastructure if the proposed Energy Park is consented and built.

6.24 The Applicant has therefore looked at the Energy Park site to determine if any other form of renewable energy generation can be installed. Various environmental constraints were applied to the Energy Park site to determine if it was viable for ground mounted solar development. Initial environmental constraint assessment work determined that the Energy Park site is suitable for ground mounted solar development.

6.25 The ES requires that 'Alternative Sites' are considered as part of the assessment process. As a result, these same environmental constraints will be applied to the land form within a similar distance (up to 9km) to the connection at National Grid Bicker Fen substation to determine if another area of land would be a viable alternative site for a solar park development of this scale and with this generation capacity.

6.26 The ES will also consider the alternative design process for this Site and the design iterations that will be progressed as detailed environmental information is formulated for the Development site.

6.27 The alternative assessment within this ES will not consider alternative technologies on any of the alternative sites that are identified, nor will it consider alternative renewable energy sources. It has already been determined that the Energy Park site is suitable for large scale onshore wind power (bar a Grampian Condition) but that this would not be built out if the Energy Park becomes operational.

Determining the Baseline

6.28 The specifics of how the baseline will be determined for each environmental assessment topic is outlined in the relevant technical topic within this Scoping Request. However, the following main steps will be taken:

- Data search for Historical Records within and in 5-10km (depending on topic) of the EIA Site as shown on Figure 2;
- GIS mapping for known environmental assets within the EIA Site and assessment area (e.g. mapping of heritage assets);
- Planning Application search for Energy Park site and surrounding area to determine planning decisions that need to be considered within the baseline and those that form the cumulative assessment;
- Confirmation that the approved 66MW wind farm on the Energy Park Site will not form part of the baseline as it will not be built if the Energy Park is constructed;
- Review of planning policy;
- Site surveys to gather information on the current environmental status of the EIA assessment area;
- Topographic survey of the whole of the Energy Park site to determine ground levels; and
- Determining and mapping the existing environmental constraints on the EIA site and its immediate surrounding area (e.g. proximity of residential dwellings).

Structure of the Environmental Statement

6.29 6.7.1 The Applicant has appointed a team of specialist consultants to consider planning and environmental matters in relation to the Proposed Development and to provide input into the production of this Scoping Report, as listed in Table 6.5 below. The technical assessment work undertaken by each of the consultants listed has directly informed the consideration of likely significant effects within their respective disciplines.

TABLE 6.5 CONSULTANT TEAM

Discipline	Company
Planning	Pegasus Group
Environmental Impact Assessment	Pegasus Group
Landscape and Visual	Pegasus Group
Transport and Access	Pegasus Group
Flood Risk and Drainage	JBA Consulting
Ecology and Ornithology	Ecotricity
Archaeology and Cultural Heritage	Pegasus Group
Socio Economic	Pegasus Group
Air Quality	Hoare Lea
Arboriculture	To be confirmed
Agriculture	Kernon Countryside Consultants
Noise and Vibration	Hoare Lea
Climate Change	LUC
Glint & Glare	To be confirmed

6.30 The proposed structure of the ES is set out in Table 6.6.

TABLE 6.6 PROPOSED STRUCTURE OF THE ENVIRONMENTAL STATEMENT

Non-Technical Summary	
Chapter 1	Introduction
Chapter 2	EIA Methodology & Public Consultation
Chapter 3	Site Description, Site Selection and Iterative Design Process
Chapter 4	Proposed Development
Chapter 5	Planning Policy
Chapter 6	Landscape and Visual Impact
Chapter 7	Residential Amenity
Chapter 8	Ecology
Chapter 9	Ornithology
Chapter 10	Hydrology, Hydrogeology and Flood Risk
Chapter 11	Cultural Heritage
Chapter 12	Socio Economic
Chapter 13	Noise
Chapter 14	Climate Change
Chapter 15	Transport & Access
Chapter 16	Air Quality
Chapter 17	Agriculture
Chapter 18	Glint & Glare
Chapter 19	Miscellaneous – to include Major Accidents & Disasters, H&S at Work, Telecoms, TV & Utilities
Chapter 20	Summary
Chapter 21	Glossary

6.31 As stated above, cumulative impacts would be included within each technical assessment chapter and then summarised in the Summary chapter.

6.32 As detailed under Schedule 4(4) of the EIA Regulations the possible impacts on human health may be deemed necessary to form part of the ES. At this time the reasonable views on the potential impact on human health from this development would be limited to possible noise and air/ dust pollution from the construction phase and through construction traffic. This potential impact will be considered within the relevant technical chapters, rather than as a standalone chapter within the ES.

6.33 For completeness, the opening section of the ES will present the following information.

Introduction

6.34 Chapters 1-3 of the ES will provide an introduction to the ES, the assessment scope and methodology and details of the Application Site location and current use and alterative designs considered.

6.35 In accordance with the EIA Regulations this chapter of the ES will include an outline of the main reasonable alternatives studied by the Applicant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects (Regulation 14(2) and Schedule 4 of the EIA Regulations).

Proposed Development

6.36 Chapter 4 will provide a comprehensive description of the Proposed Development, including consideration of construction and operation.

Planning Policy

6.37 Chapter 5 will provide a summary of the planning policy that should be considered when determining this planning application. It will outline National through to Local policy.

7. LANDSCAPE AND VISUAL IMPACT AND RESIDENTIAL AMENITY

Introduction

7.1 This section sets out the proposed scope and assessment methodology for the Landscape and Visual chapter of the ES for the proposed solar and energy storage development at Heckington Fen, Lincolnshire.

Preliminary Baseline Conditions

The Development Site

7.2 The Energy Park site is bounded by Head Dike to the north, Holland Dike to the east, the A17 Sleaford to Holbeach road to the south and B1395 Side Bar Lane/ agricultural land to the west, extending to approximately 586 ha (Figure 1). The Development site lies wholly within North Kesteven District (NKDC), abutting Boston Borough Council boundary along the eastern edge. The grid route connection lies wholly within Boston Borough Council (BBC).

7.3 Land within the Energy Park is in arable use and is subdivided into rectilinear parcels by long linear drainage ditches that lie principally north-south, connected east-west by shorter ditches including Labour in Vain Drain. The Energy Park site is very flat and low-lying at between 2m and 3m AOD and is predominantly within Flood Zone 3, with a narrow ribbon of Flood Zones 2 and 1 occurring along the southern edge and south-western corner of the Energy Park site. Flood Risk (Figure 6).

7.4 Six Hundreds Farm lies in the eastern third of the Energy Park site, with access gained from Six Hundreds Drove via the A17. Two further access tracks lie off the A17 adjacent Rectory Farm in the centre of the Energy Park site and at Elm Grange in the southwest corner, these in turn connect to Crab Lane toward the northeast corner of the Energy Park site, and then to Side Bar Lane.

7.5 One public right of way (PROW) footpath HECK/15/1 runs along the northern boundary, crossing a small part (c.280m) of the Energy Park site; no other PROW occurs within the Energy Park site. These features can be seen on the Environmental Designations Plan Figure 5.

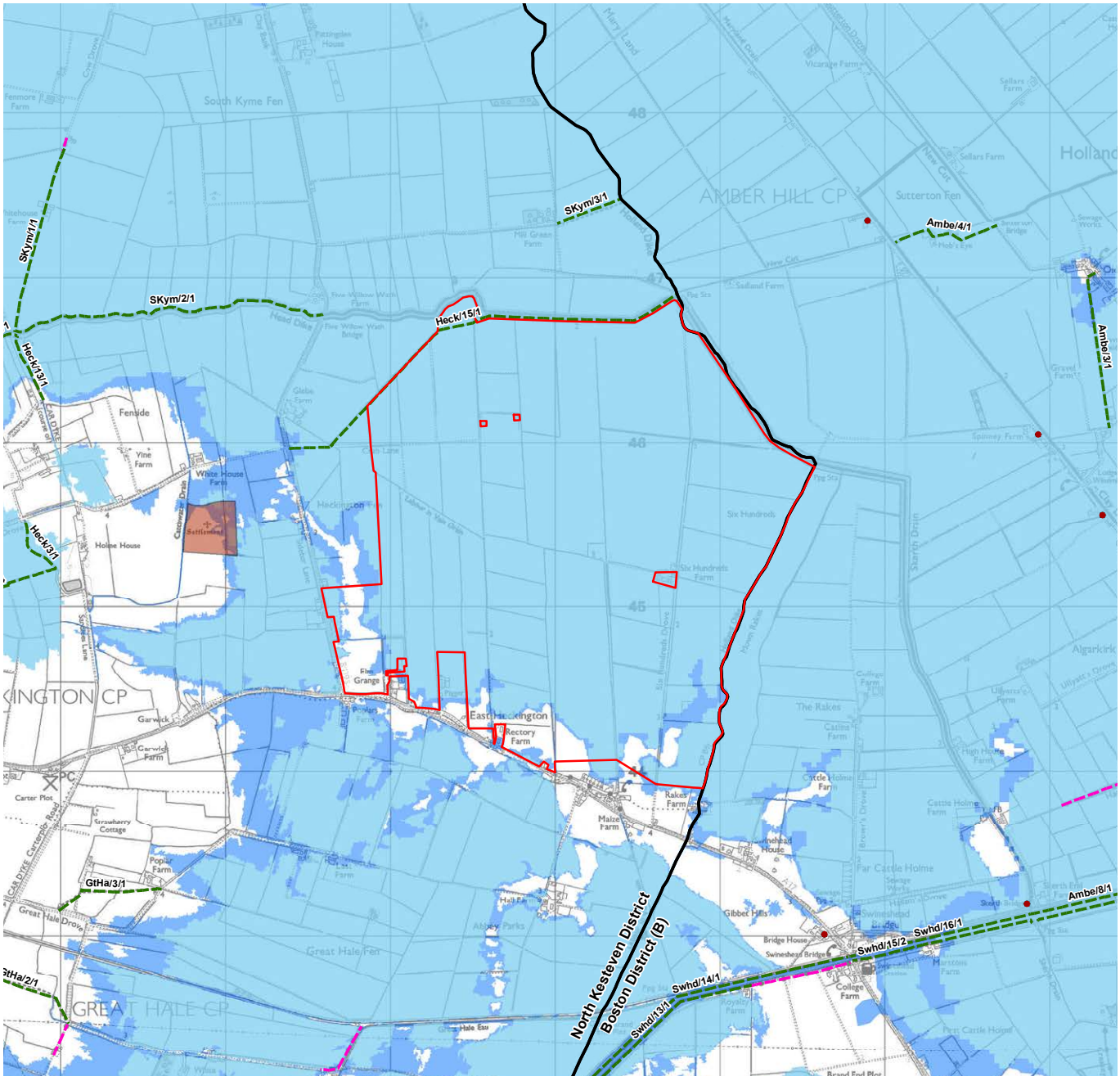


FIGURE 5 – ENVIRONMENTAL DESIGNATIONS PLAN

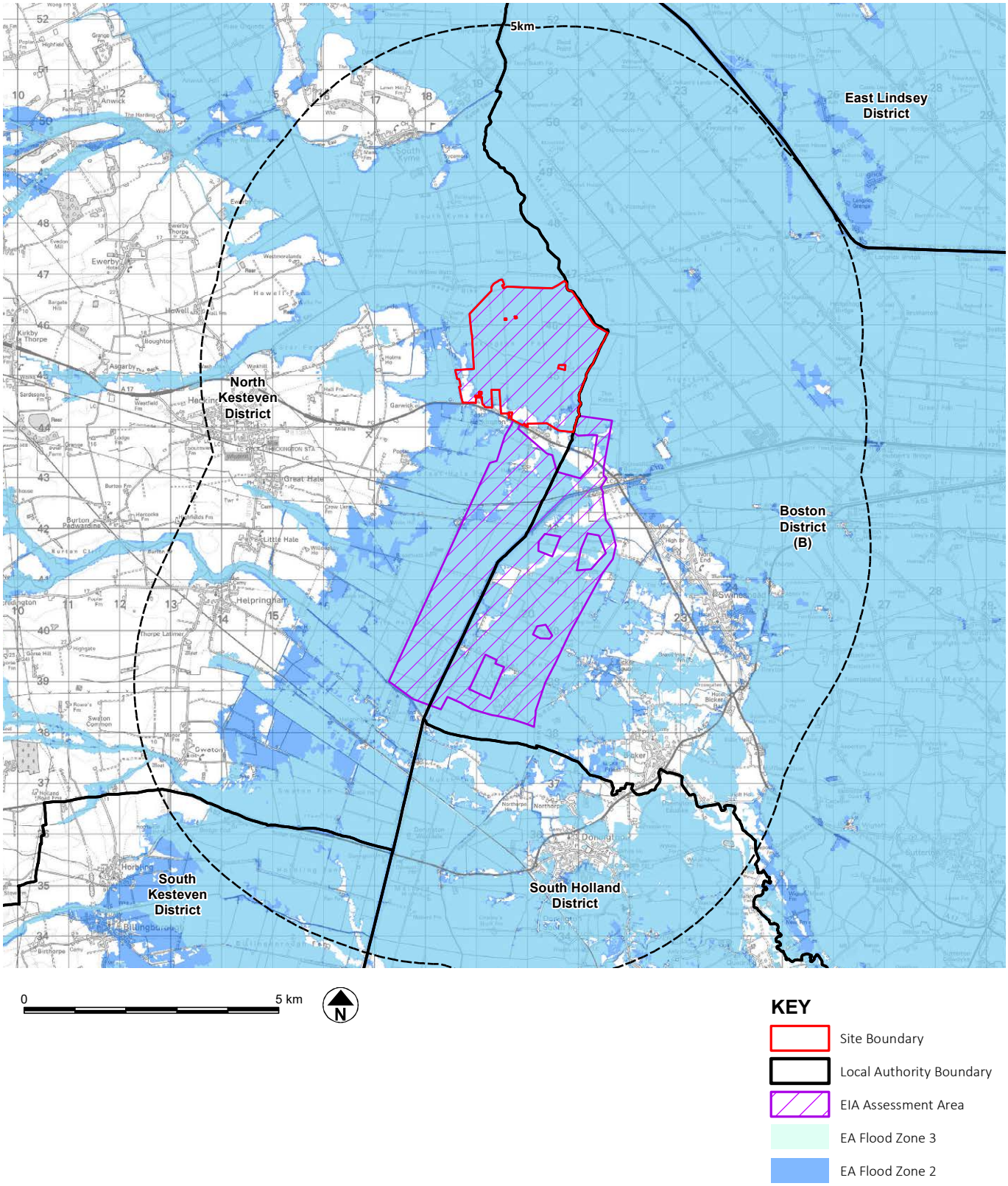


FIGURE 6 – FLOOD RISK PLAN

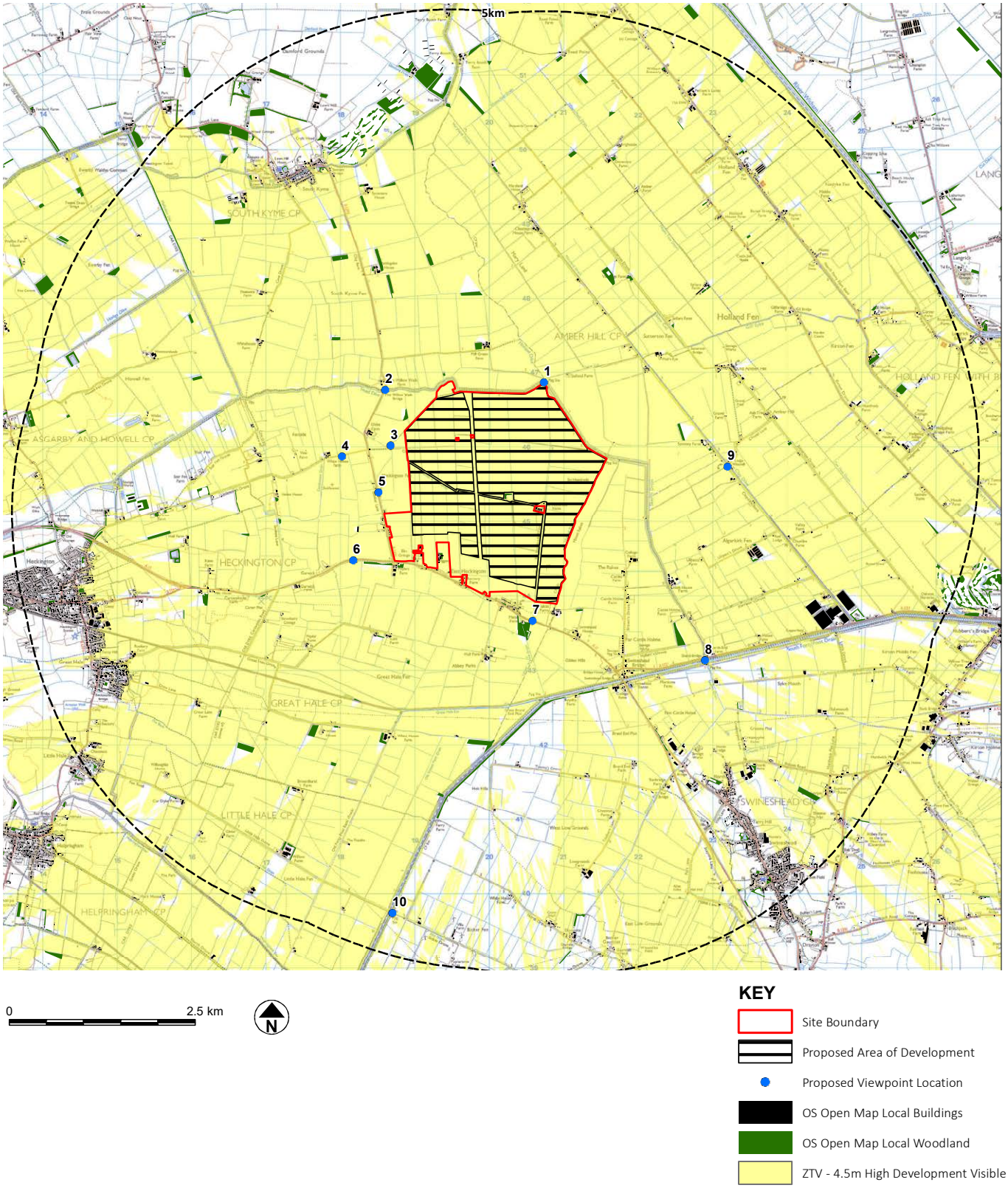


FIGURE 7 – SCREENED ZTV AND PROPOSED VIEWPOINT LOCATION PLAN

7.6 Overhead lines supported on wooden poles criss-cross the Energy Park site, running parallel to Six Hundreds Drove and the A17 and bisecting the north western corner of the Energy Park site. An underground gas pipeline bisects the Energy Park Site, extending south-north to the east of Rectory Farm.

7.7 Intermittent shrubs/hedgerows occur within or along the boundary of the Energy Park Site, with tree cover limited to small woodland blocks in the eastern third of the Site.

Surrounding Area

7.8 Sporadic linear residential (2-storey houses and bungalows) and commercial development occur at East Heckington, along the A17 and Side Bar Lane.

7.9 Street lights (approximately 10m high) flank the A17 through East Heckington.

Visual Context

7.10 Visual receptors include residential properties and farmhouses along the A17 and Side Bar Lane, farmhouses to the north of Head Dike and east of Holland Dike; PROW users of footpath HECK/15/1; and road users travelling along the A17 and Side Bar Lane.

7.11 Locally occurring built form and trees/ shrubs screen views toward the Energy Park Site, but the flat landform and scarcity of trees and/or hedgerows allows open views into and across the Energy Park Site from the much of the surrounding transport routes and publicly accessible locations Screened ZTV (see Figure 7). Views from nearby residential and commercial properties are partly screened by tree and shrub planting within the curtilage of those properties.

National Landscape Character Areas

7.12 The Energy Park falls within National Character Area 46 The Fens, shown on Landscape Character Areas (Figure 8). Key characteristics of relevance to the Development site are described at pages 7-8:

"Expansive, flat, open, low-lying wetland landscape influenced by the Wash estuary, and offering extensive vistas to level horizons and huge skies throughout, provides a sense of rural remoteness and tranquillity...

Overall, woodland cover is sparse, notably a few small woodland blocks, occasional avenues alongside roads, isolated field trees and shelterbelts of poplar, willow and occasionally leylandii hedges around farmsteads, and numerous orchards around Wisbech. Various alders, notably grey alder, are also used in shelterbelts and roadside avenues.

The predominant land use is arable – wheat, root crops, bulbs, vegetables and market gardening made possible by actively draining reclaimed land areas. Associated horticultural glasshouses are a significant feature. Beef cattle graze narrow enclosures along the banks of rivers and dykes and on parts of the salt marsh and sea banks.

Open fields, bounded by a network of drains and the distinctive hierarchy of rivers (some embanked), have a strong influence on the geometric/rectilinear landscape pattern. The structures create local enclosure and a slightly raised landform, which is mirrored in the road network that largely follows the edges of the system of large fields. The drains and ditches are also an important ecological network important for invertebrates, fish including spined loach, and macrophytes...

Settlements and isolated farmsteads are mostly located on the modestly elevated 'geological islands' and the low, sinuous roddon banks (infilled ancient watercourses within fens). Elsewhere, villages tend to be dispersed ribbon settlements along the main arterial routes through the settled fens, and scattered farms remain as relics of earlier agricultural settlements. Domestic architecture mostly dates from after 1750 and comprises a mix of late Georgian-style brick houses and 20th-century bungalows."

7.13 The cable route will fall within either further Fens landscape character area or an area called 'A1-Holland Reclaimed Fen'. However, as stated earlier all cabling for the Grid connection will be via underground cabling.

Local Landscape Character Areas

7.14 In the North Kesteven Landscape Character Assessment [12] (LCA) shown on Landscape Designations Plan (Figure 9), paragraph 1.6 states:

"There are no nationally designated landscape areas within North Kesteven."

7.15 The LCA identifies three broad landscape character types within the district running north-south; the site falls within The Fens Regional Landscape Character Type in the east of the district, and the Fenland Landscape Character Sub-Area. Stated Key Characteristics at paragraph 9.1 are:

"The Fenland landscape sub-area occupies the whole of the eastern part of the District from the Lincoln gap to the boundary with south Kesteven near Swanton.

12 (David Tyldesley and Associates for North Kesteven District Council, September 2007 – accessed via NKDC website 13th Dec 2021).

Low lying very flat relief.

Occasional small islands of slightly higher land.

Very large, rich arable fields divided up by drainage channels.

A hierarchy of rivers and drains and ditches creating linear patterns across the landscape.

The geometric road pattern follows the drainage pattern with small roads raised above the level of the fields, running from east to west.

Generally extensive vistas to level horizons and huge skies, apart from the north easterly direction where the Lincolnshire Wolds provide a marked "Upland" horizon.

Sparse woodland cover though some occasional trees surrounding farmsteads and some shelter belts, particularly poplars.

Intensively farmed and managed it is almost entirely a man-made landscape.

Except for scattered farmsteads and farm buildings the sub-area is unsettled.

Prominent power lines and large-scale agricultural buildings"

7.16 The Energy Park site displays these key characteristics.

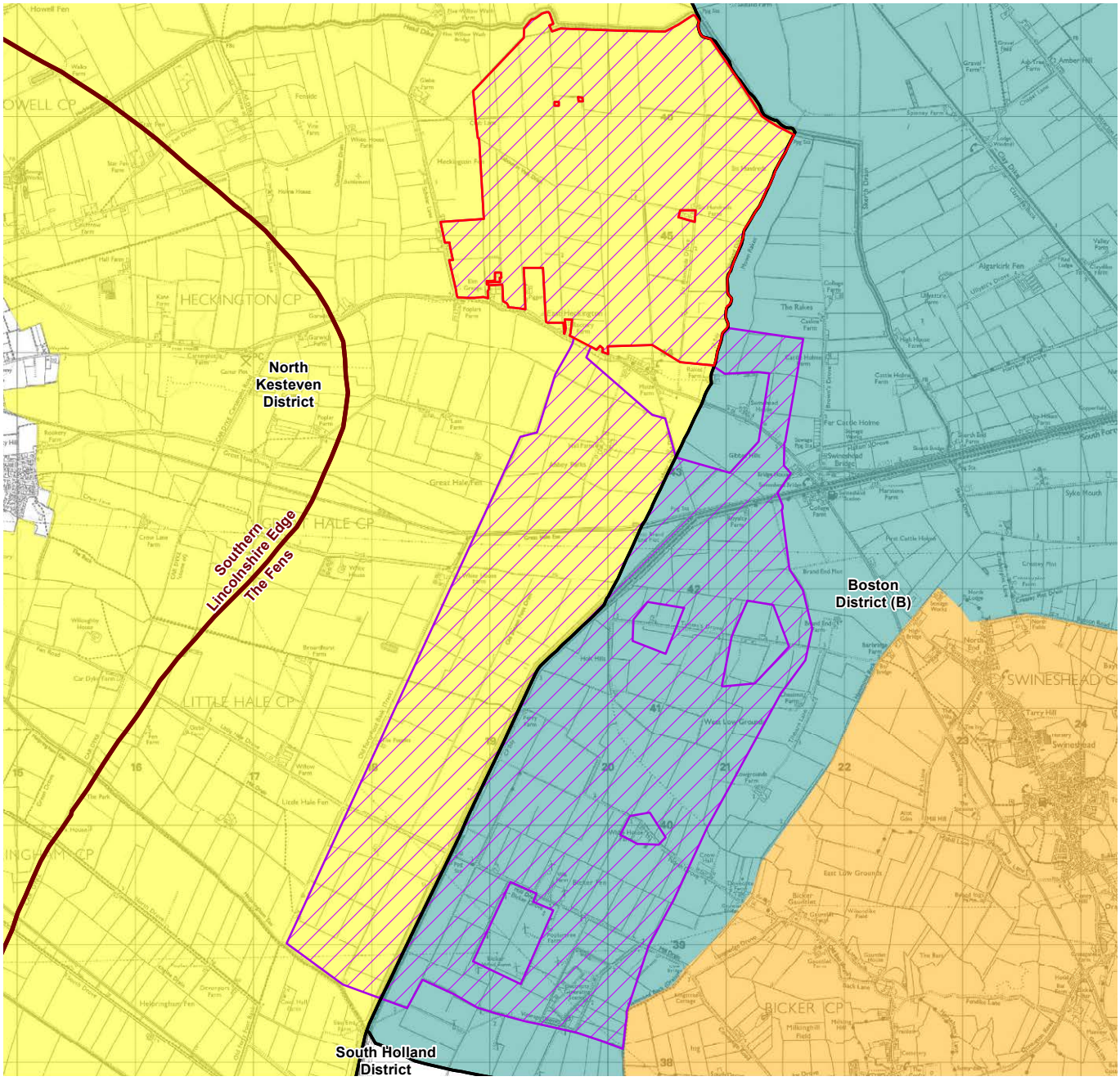


FIGURE 8 – LANDSCAPE CHARACTER AREAS

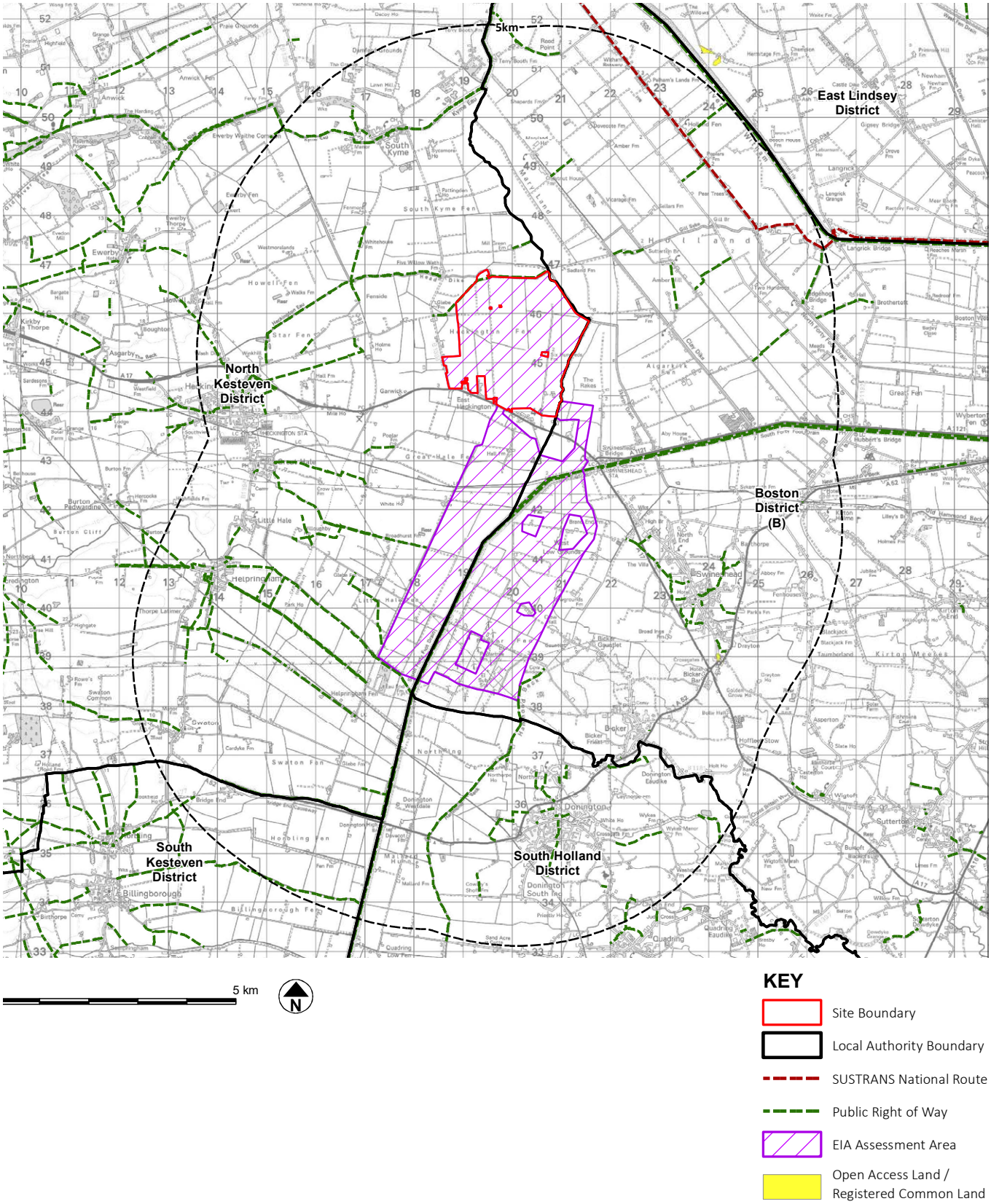


FIGURE 9 – LANDSCAPE DESIGNATIONS PLAN

Likely Significant Effects

7.17 The North Kesteven Landscape Character notes that this is a sparsely settled area of flat landscape with few woodlands. Delineation and subdivision of land is primarily by drainage ditches, with some hedgerows occurring within the Site.

7.18 Likely significant effects may occur from construction and operation of the proposed solar farm arising from a high magnitude of change with the introduction of solar farm infrastructure and proposed landscape planting (hedgerows) in a very flat and visually open landscape.

7.19 A night-time assessment will also take place to take into account any effects that may occur at night (mainly through lighting on the Energy Park site). At this time lighting is expected to be very limited when the Energy Park is operational.

Mitigation and Enhancements

7.20 The proposed layout of the Energy Park (shown of Figure 3) incorporates a number of built-in mitigation measures such as reduction in the extent of the area for the solar panels and energy storage and refinements to the layout to provide physical separation from nearby residential and commercial properties. These refinements have come about through onsite assessments and using the topographic data to understand the levels of the Energy Park site and locate items of electrical equipment on the higher areas of ground. At this stage these elements that have been considered in the design would be considered as 'masterplanning' rather than mitigation through design and the landscape and visual assessment is ongoing and may inform further design mitigation once it has been completed.

7.21 Footpath HECK/15/1 would remain open and useable throughout construction and operation of the Energy Park. Land to the north of footpath HECK/15/1 would remain as land for ecological net gain, with proposed solar panels limited to land to the south. A 10m wayleave is to be retained along the gas pipeline corridor; it is proposed to establish a permissive footpath along a section of this corridor, which would be seeded and managed to promote biodiversity. The new permissive footpath would extend to about 2.9km, looping back to join Crab Lane.

7.22 Offsets from internal and boundary watercourses and vegetation are proposed to safeguard these features and to ensure continued maintenance access.

7.23 Existing trees are sparse within the Site, but these would be protected throughout construction and operation of the proposed development. Existing intermittent hedgerows within the eastern area of the Site would be protected and enhanced with gapping-up using appropriate species, totalling a length of around 2km. New hedgerows would be established along the southern and western edges of the solar panels, and within the Site to provide more than 9km of new hedgerows.

7.24 The proposed substation compound and energy storage area are proposed to be located toward the southeast corner of the Energy Park Site. Some visual screening would be provided by an existing woodland block.

Assessment Methodology

7.25 The detailed Methodology for the LVIA is set out at Appendix A to this document.

7.26 This LVIA would be undertaken with regards to best practice as outlined within the following publications:

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition, 2013) - Landscape Institute / Institute of Environmental Management and Assessment;
- Visual Representation of Development Proposals (2019) - Landscape Institute Technical Guidance Note 06/19;
- An Approach to Landscape Character Assessment (2014) - Natural England;
- An Approach to Landscape Sensitivity Assessment - To Inform Spatial Planning and Land Management (2019) - Natural England.

7.27 The Study Area for the Landscape and Visual Impact Assessment (LVIA) would cover a 5km radius from the proposed solar park. However, the main focus of the assessment would be a radius of 1km from the Energy Park as it is considered that even with clear visibility the proposals would not be readily perceptible in the generally flat landscape beyond this distance.

7.28 A large area of land to the south of the redline boundary for the Energy Park has been identified for a potential underground cable route to connect it to the National Grid substation at Bicker Fen. Whilst the exact cable route has yet to be designed, it is anticipated that the extent of the land area available would enable the developer to avoid the removal of any significant landscape features (such as isolated /small areas of trees or short sections of hedgerow). Therefore, the LVIA will primarily focus on the potential landscape and visual amenity effects of the Energy Park and not of the operational stages of the underground cable route. The LVIA will consider the construction effects of the laying of the new Grid cable and the construction, operation and decommissioning phase of the new above ground equipment at the National Grid Bicker Fen substation.

7.29 The Methodology at Appendix A sets out criteria for the assessment of:

- Overall sensitivity of landscape and visual receptors, with regard to value and susceptibility;
- Effects on Landscape Elements;
- Effects on Landscape Character;
- Effects on Visual Amenity; and,
- Significance of Landscape and Visual Effects.

7.30 In order to determine the assessment area for the visual assessment a Screened Zone of Theoretical Visibility (SZTV) was applied to the EIA Assessment Area. This looked at the maximum solar panel height of 4.5m. There is the potential that other elements of the development would be taller than 4.5m, but these would be set back from the Energy Park boundaries and so it was deemed at this stage to consider the expanse of the panels rather than the maximum height of locally occurring structures within the Energy Park site.

7.31 A range of representative viewpoint locations which would inform the LVIA of the solar park are set out on the Screened Zone of Theoretical Visibility (SZTV) and Proposed Viewpoint Locations Plan at Figure 7.

7.32 It should be noted that the SZTV identifies locations from where there would be a theoretical direct line of sight towards the proposed solar park, based on available topography data and OS mapping. The extent to which the proposed development is actually visible would be ascertained during site visits and assessed as part of the LVIA.

7.33 The selected viewpoints are all from publicly accessible locations such as public rights of way and the roads network. The viewpoints are not intended to be an exhaustive list of locations from where the proposed solar park may be visible. However, they are representative of different distances from the Site and directions of view. The proposed viewpoint locations would be discussed and agreed with landscape officers at North Kesteven District Council and Boston Borough Council.

7.34 Photomontages would be produced from an agreed selection of the viewpoint locations.

7.35 A separate Residential Visual Amenity Assessment (RVAA) will be carried out and would follow on from the findings of the LVIA.

7.36 The scope and study area of residential properties included within the RVAA would be informed by the findings of the LVIA, postcode data and consultations with North Kesteven District Council, Boston Borough Council and Lincolnshire County Council together with subsequent requests from the residents themselves following a public consultation event.

7.37 Residential properties to be included within the scope of the RVAA would be confirmed based on the findings of the LVIA. However, given the type and scale of the Energy Park and the dispersed nature of the surrounding residential properties, the likelihood of any significant visual effects is anticipated to be restricted to those within the immediate surroundings of the site, due mainly to the predominantly flat local topography and the limited vertical elevation of the proposed solar arrays and energy storage equipment.

7.38 The proposed methodology for the RVAA is set out at Appendix B to this document. It is based on the following best practice guidance:

- the Landscape Institute's 'Guidelines for Landscape and Visual Impact Assessment' 3rd Edition (GLVIA3); and,
- 'Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19' (LI TGN 2/19).

7.39 The RVAA would consider whether the visual effect of the proposed Energy Park has exceeded the Residential Amenity Threshold. In order to cross this threshold, the visual effects arising from the proposed Energy Park would need to be of such a degree and significance that the residential property would be uninhabitable due to the effects on living conditions.

Significance Criteria

7.40 The significance criteria for the topics of LVIA and Residential Amenity can be found in Appendix A and B.

Assessment of Cumulative Effects

7.41 Identification of third-party solar farm and energy developments within the vicinity of the Application Site that may have the potential to give rise to cumulative effects will be agreed with North Kesteven District Council, Boston Borough Council and Lincolnshire County Council. The cumulative and any in-combination effects on landscape and visual receptors arising from the combined effects of the proposed development and the identified third party developments will be described. Where there are no cumulative effects, this will also be stated.

7.42 The cumulative assessment will be supported by a Cumulative Sites Plan Figure 4 which will identify the location of the agreed third-party sites, and a Cumulative ZTV will be prepared for each (in combination with the proposed development). The Cumulative ZTVs will be used to inform Cumulative Viewpoint selection that will be subject to assessment. The sites that have been identified to date within the assessment area are stated in Table 6.4 in Section 6 and shown of Figure 4 of this Scoping Request.

7.43 With respect to cumulative effects on landscape resources the Guidelines for Landscape and Visual Impact states:

"7.19 Cumulative landscape effects may result from adding new types of change or from increasing or extending the effects of the main project when it is considered in isolation. For example, the landscape effects of the main project may be judged of relatively low significance when taken on their own, but when taken together with the effects of other schemes, usually of the same type, the cumulative landscape effects may become more significant."

7.44 With respect to visual matters, cumulative effects arise where the visibility of other proposals overlaps with that of the Proposed Development to incur an incremental effect. Cumulative effects relate to landscape character and visual amenity. Within cumulative assessment, the proposals may be viewed in combination, in succession, or sequentially.

7.45 Cumulative effects on landscape features and elements, landscape character and night-time character will also be described.

8. ECOLOGY & ORNITHOLOGY

Introduction

8.1 The ecology and ornithology chapter of the ES will assess the likely impact of the Development upon ecological resources within and surrounding the proposed development site and the grid connection area. This section sets out the proposed approach that will be taken in the assessment, together with a summary of information that is currently available regarding the ecological value of the site.

8.2 This report will provide an overview of the proposed assessment methodology for an EIA, the relevant legislation and guidance, and the current baseline conditions at the site in relation to ecology and ornithology. The report also considers the potential impacts of the proposed development and the further surveys required to complete the EIA for the proposed development.

8.3 The exact grid connection route has not been finalised however an outline of potential effects and survey requirements is considered. Figure 2 accompanying this report shows the proposed Development site, and grid connection corridors being considered within the EIA Area.

Preliminary Baseline Conditions

8.4 The following further work has been identified to complete the assessment:

Solar and Energy Storage

- Completion of Phase 1 Survey
- A Phase 2 botanical survey of water course and to assess the presence of scarce arable species
- Reptile surveys
- Great crested newt surveys
- Completion of badger surveys
- Completion of otter and water vole surveys
- Bat surveys starting in autumn 2021 extending into spring and summer 2022 (activity transects and static recorder survey).
- Bat roost assessment of any trees or structures within corridor of grid connection route
- Wintering bird surveys

Grid Connection Route

- Phase 1 survey of grid connection route and botanical surveys if considered appropriate
- Reptile and Amphibian surveys if considered appropriate after Phase 1 survey. This will include eDNA survey in suitable water bodies that are located within the EIA site and within 50m of it (access allowing)
- Bat roost assessment of any trees or structures within corridor of grid connection route
- Badger survey of grid connection route
- Otter and water vole survey of grid connection route
- Breeding bird survey of grid connection route
- Wintering bird Surveys

8.5 Permission was granted for a 22-wind turbine wind park on the site in February 2013. As part of that application many ecological surveys and assessments were undertaken, including ornithological surveys conducted in 2007/8 and then updated in 2014/15. Ecological surveys were conducted in 2009/10 and then updated in 2017/18. The cumulative impact of the wind turbines is not assessed as these will not be built if the solar park is consented and subsequently constructed.

8.6 A high-level walk over survey of a potential grid connection route was carried out in 2017, whilst this was in relation to the wind park, the route is expected to be similar.

8.7 Whilst most of these surveys are now considered to be out of date, they do provide useful background data. There has been little change in the use of the land (intensive arable production) since these surveys where completed, therefore it is unlikely that there have been any significant changes in the ecology of the area.

8.8 The habitat surveys completed have been conducted adopting the methods outlined in the Handbook for Phase 1 Habitat Survey published by the Nature Conservancy Council (2010). This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential that might warrant further study. The ornithological surveys were conducted following the survey guidelines at the time and included a breeding bird survey, surveys to investigate use of the area during the non-breeding period and vantage point surveys to assess bird flightlines and use of the area by foraging birds.

Designated Sites: Desk Study

8.9 There are no European statutory designated sites (Ramsar, Special Areas of Conservation (SAC) & Special Protection Areas (SPA) or national sites Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserve (LNR) within 10km of the site. The nearest SSSI is Horbling Fen SSSI located 11.5km to the southwest of the site, designated for its geological interest. The Wash, situated approximately 17km to the southeast of the site at its nearest point, is the nearest SAC, SPA and Ramsar site.

8.10 There are no non-statutory designations within the site. Cole's Lane Ponds LWS is located 6km southeast of the site. The site consists of two ponds surrounded by bankside trees and scrub. There is an area of wet grassland to the west and north of the smaller pond. The South Forty Foot Drain LWS is located approximately 1km to the south of the site. This is a man-made watercourse with bankside vegetation comprising rough neutral grassland, scrub, and trees. The site is a good corridor linking the centre of Boston with the River Witham. Heckington Grassland Site of Nature Conservation Interest (SNCI) is located approximately 5km to the east of the site. This site consists of grassland bordered by hedgerows and is used by a variety of breeding and over-wintering birds. Old Wood South Kyme SNCI is located approximately 5km to the north of the site, and is an area of woodland with Ash coppice, scrub, Elm, and tall herbs. Figure 10: Ecological Designations Plan, is a plan that shows the location of these designations.

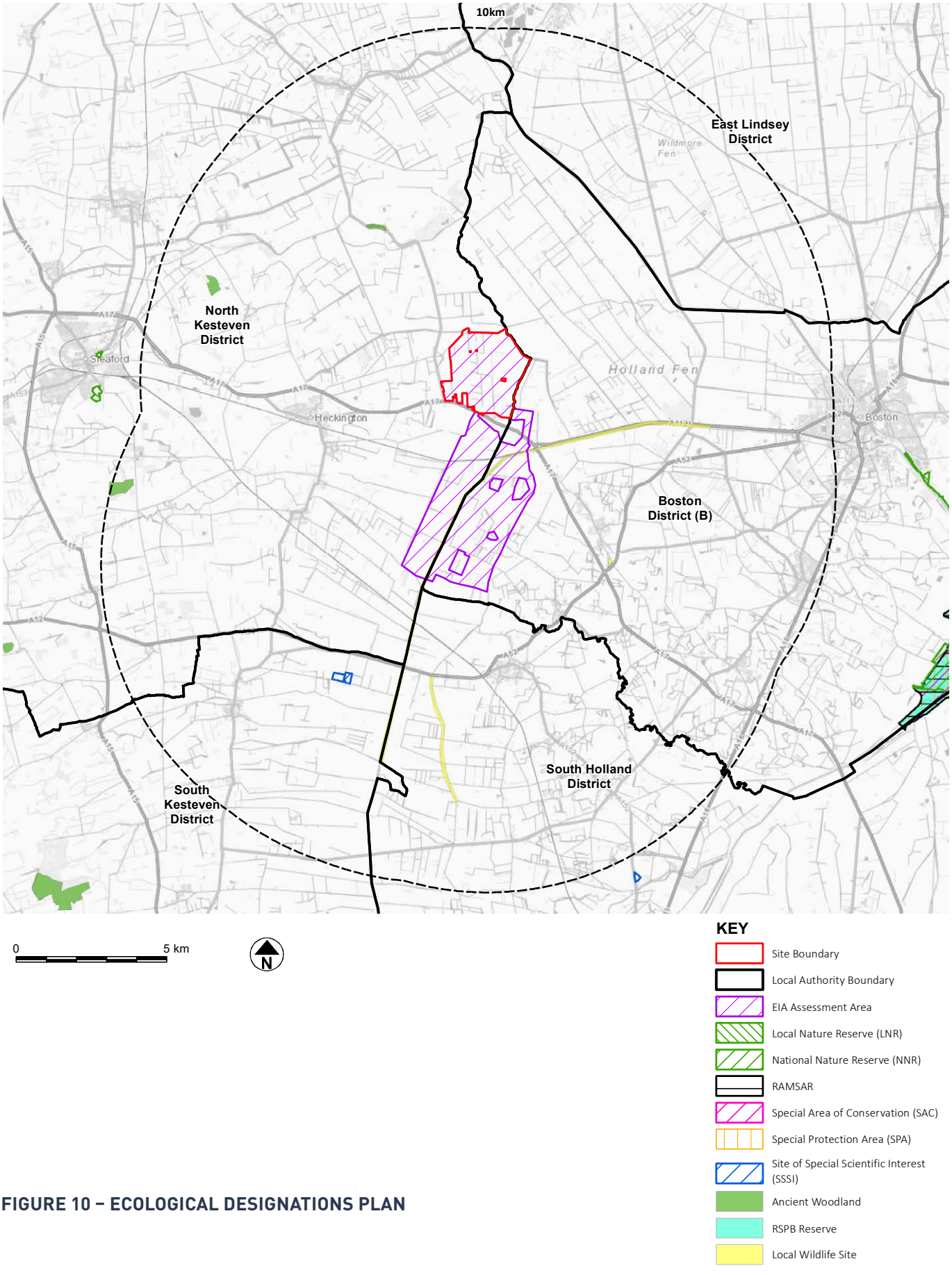


FIGURE 10 – ECOLOGICAL DESIGNATIONS PLAN

Priority Habitats

8.11 Priority habitats are present within the site in the form of short sections of hedgerow, and potentially also arable field margins where these are managed for biodiversity under Stewardship agreements.

8.12 The Energy Park site is not located within an area identified within the Local Plan policies map as an area suitable for landscape scale biodiversity enhancement but there are several small woodlands that are individually identified as suitable for enhancement. These woodlands would not be affected by the proposed development, so there are no conflicts in relation to any defined "Biodiversity Opportunity Areas".

Agri-Environment Schemes

8.13 Approximately 10.5ha of the Energy Park site are held under agri-environmental schemes, in the form of enhanced headlands by way of buffer strips.

Desk Study Protected Species

8.14 Environmental records for sites obtained in 2018 revealed the following items, it should be noted that for the ES these records will be reviewed and presented for information up to 2022:

Amphibians

8.15 One great-crested newt record dating back to 1977 from the 1km grid square to the west of the site. Several common amphibian records were revealed from the area surrounding the site but not within the site.

Reptiles

8.16 Two historical grass snake records were revealed from the 1km grid square north of the site, dating from 1977.

Mammals (except Bats)

8.17 There are numerous mammal records including water vole, otter, brown hare, badger within 5km of the site but only records of brown hare within the site.

Bats

8.18 There are records of at least 11 species of bat within 15km of the site (Common pipistrelle, Soprano pipistrelle, Brown Long Eared, Leisler's Natterer's, Whiskered, Serotine, Noctule and Myotis sps) but no records from within the site.

8.19 A further request as the ES progresses will be made to the Lincolnshire Environmental Records Centre (LERC) to update these records.

Phase 1 Habitat Survey

8.20 A phase 1 habitat survey was carried out during site visits in 2009 and 2010. An updated phase 1 habitat survey was carried out in 2017 and 2018. A further phase 1 habitat survey has been commissioned in 2021 which will include the Grid connection route in 2022.

8.21 This solar park development site is made up of approximately 586ha of farmland situated in the Fens Natural Area. The area comprises largely of Six Hundreds Farm situated to the south and west of the main Head Dike-Skerth Drain and north of the A17 trunk road. The farm consists of arable farmland with large open fields growing winter wheat, winter barley and winter sown oilseed rape. The arable fields are generally cultivated right up to the field margins resulting in very few areas of botanical or ecological importance.

Hedges, Woodland, and Individual Trees

8.22 There are three plantations of mainly small young deciduous trees within the site, largely to provide pheasant cover. These are located to the north, northwest and west of Six Hundreds Farm. The plantation south of Six Hundreds Farm is more mature and contains some standard Ash and Oak trees. There are two short lengths (in total approximately 380m) of species-poor hedgerows on the site, to the south of Six Hundreds Farm, with Hawthorn, Blackthorn, Ash, Dog Rose, and Bramble; and there are a few standard trees and areas of scattered scrub.

Drainage Ditches

8.23 The land is drained by a network of drainage ditches which also act as field boundaries; many of these are less than 1m deep and 1.5m wide. Some of these hold water on a permanent basis and others are only seasonally wet ditches. Many of the dry ditches were choked with vegetation including *Typha*, sedges, rank grasses and some bramble. Some of the major drains present were more than 2m deep and up to 3.5m wide and permanently held water and contained plants such as Frogbit (*Hydrocharis morsus-ranae*) and Broad-leaved Pondweed (*Potamogeton natans*) as well as *Phragmites* and other riparian vegetation. The main drainage ditches are managed by Black Sluice Internal Drainage Board, and the remainder are maintained every year by the landowner.

8.24 Head Dike-Skerth Drain is an Environment Agency main river which runs along the northern edge of Six Hundreds Farm before passing in a north-west to south-eastern direction separating Six Hundreds Farm from Spinney Farm. Head Dike-Skerth Drain is a large, deep, canalised permanently wet drain approximately 5m wide with steep sides. There are two pumping stations just off the northern site boundary which allow the water level of the drains across the site to be regulated by moving water into the Head Dike-Skerth Drain. Permanently wet drains approximately 2m wide run parallel to the Head Dike-Skerth Drain on each side. Holland Dyke forms the eastern boundary of the site. This is also a permanently wet drain which drains into Head Dike-Skerth Drain at Trinity College Pumping Station.

Grassland

8.25 The arable fields were generally cultivated right up to the field margins resulting in very few areas of botanical or ecological importance. A few of the intensively farmed arable fields and most of the tracks were bordered by broad rough species grassland. Head Dike-Skerth Drain runs between two built-up earth banks, with smaller drains on either side. These banks are grassed and used for grazing sheep and cattle.

Buildings

8.26 There are 12 buildings on the site. At Six Hundreds Farm buildings there were four modern agricultural barns, a single storey barn/stables, a two-storey barn, an open-fronted barn, a small electricity building and two semi-detached disused two storey houses, the houses had an overgrown mature garden with fruit trees, surrounded by tall hedges. These buildings will remain on the site if the solar park became operational.

Species surveys

Flora

8.27 None of the plant species recorded during the survey are specifically protected by the Wildlife and Countryside Act (WCA) 1981 (as amended) or considered rare nationally or locally (e.g., Preston et al. 2002). Also, none are listed as Species of Principal Biological Importance on Section 41 of the NERC Act 2006 or as Priority Species listed on the national BAP (UK BAP 2007). These surveys will be updated.

Amphibians

8.28 Common frog, and common toad were recorded in several of the sections of drains surveyed. No great crested newts were recorded during trapping in 2009. However, in one of water samples collected in 2017 returned a 1 in 12 potential for the presence of great crested newt DNA.

Reptiles

8.29 The site is largely unsuitable for reptiles due to the lack of suitable rough grassy areas for foraging or breeding. No casual observations of basking reptiles were made at the site during the phase 1 visits. The grassy banks adjacent to the canalised Head Dike-Skerth Drain may possibly support a relict population of reptiles. However, this area is beyond the development footprint and will not be affected by the solar park construction.

Water vole

8.30 Some of the ditches on the site, which permanently hold water appeared to provide potentially suitable habitat for water voles. However, no evidence of water voles was observed at the site. American mink (*Neovison vison*), a major predator of water voles, were recorded on the site in 2009. During the 2018 survey mink were again observed and numerous scats (dropping) were recorded. This indicated a resident population of mink. Mink can cause the extinction of water vole populations and prevent re-colonisation. Their continued presence along with the fact that large parts of the ditch network are only seasonally wet, may explain the lack of water voles.

Hazel dormouse

8.31 There is no habitat suitable for hazel dormice within the site, and no historic evidence of the presence of hazel dormice in the area.

Bats

8.32 Extensive surveys in 2009/10 recorded a low number of (common pipistrelle) bats using the site. Out of a total of 97 hours of bat transect surveys only 212 bat passes were recorded on the site. Activity concentrated around Holland Dike and Head Dike-Skerth Drain, the larger woodland block and the buildings. Records of small numbers of myotid bats (likely to be Daubenton's (*Myotis daubentonii*)) and a possible brown long-eared bat were observed on the site. The highest concentration of bats was along the banks of Head Dike-Skerth Drain to the north of the site.

8.33 Extensive surveys in 2009 recorded a low number of (common pipistrelle) bats using the site. Out of a total of 97 hours of bat transect surveys only 212 bat passes were recorded on the site. Activity concentrated around Holland Dike and Head Dike-Skerth Drain, the larger woodland block and the buildings. Records of small numbers of myotid bats (likely to be Daubenton's (*Myotis daubentonii*)) and a possible brown

long-eared bat were observed on the site. The highest concentration of bats was along the banks of Head Dike-Skerth Drain to the north of the site.

8.34 Static bat detectors were deployed in 2017 in six locations representing different habitat across the site (a total 140 detector nights). This recorded a low level of common pipistrelle activity, a very low level of myotis sp. bat (most probably Daubenton's bat) and one Serotine bat pass. Bat activity was found to be virtually entirely associated with water courses, woodland, hedgerows, and ditches with no evidence of use of open field areas.

8.35 The extended phase 1 survey in April 2018 recorded no significant change in the extent of suitable bat foraging habitat on the site and no significant changes in building where small common pipistrelle bat roosts were identified in 2009. The 2018 survey recorded no significant change in potential bat roost sites in trees identified in 2009.

8.36 The continued intensive arable cultivation across Lincolnshire and associated use of pesticides combined with national declines in flying invertebrates (food source of bats) means that unless there is change in habitat this will continue to provide poor foraging habitat for bats.

Badger

8.37 In April 2018 a total of six badger setts were recorded within the surveys area along with seven latrines. There were two larger setts with multiple active holes, whilst the remainder were single hole outlier setts. No badgers were recorded on the site in 2009. All the setts are within hedge banks or ditch banks and not within arable fields. The latrines, which are used by badgers for marking territory boundaries, were very well used in certain parts of the site indicating that there are probably two separate badger clans using the site. Initial results from the surveys in 2021 indicate that badgers are still present on the site although some of the setts identified in 2017 are no longer being used.

Bird surveys

8.38 Surveys in 2009 covered a larger area than the proposed solar park. There was a total of 54 species recorded during the breeding bird survey of which 44 species (959 pairs) bred. In 2021 the breeding bird survey covered only the solar park area. This survey recorded 40 species (645 pairs) of 32 species. Wintering bird surveys conducted during 2009/10 recorded 92 species. The majority of wintering birds were recorded flying over the site or in the riparian habitat along the major water courses on the boundary of the site. However large numbers of wood pigeon and blackhead gull were recorded using the open arable fields along with skylark and the occasional flocks of lapwing and golden plover.

Grid Connection Route

8.39 The exact route of the grid connection has yet to be agreed. It is assumed it will be to the substation approximately 7km to the south of the site boundary. This will involve a trench approximately 5-10m deep across a 25m wide easement within which the grid connection will be installed. The route will require crossing the South Forty Foot Drain LWS and various smaller water courses and well as major roads, rail, high pressure gas main and potentially third-party grid connections. These crossing points will require direct drilling as appropriate although all works will be within the easement area.

8.40 In 2017 a walk over survey of a broad corridor was carried out. This indicated that the habitat within the corridor was similar to that found on the site being largely intensive arable farmland divided by wet and dry ditches and the occasional hedgerow. The bird fauna was made up of common farmland birds with addition of common wetland birds on the South Forty Foot Drain. There is potential habitat for badger, otter, water vole, reptiles and amphibians. During the 2017 walk over survey badger setts were recorded on the east and west bank of the South Forty Foot Drain.

8.41 The following further work has been identified to complete the assessment:

Solar and Energy Storage

- Completion of Phase 1 Survey
- A Phase 2 botanical survey of water course and to assess the presence of scarce arable species
- Reptile surveys
- Great crested newt surveys
- Completion of badger surveys
- Completion of otter and water vole surveys
- Bat surveys starting in autumn 2021 extending into spring and summer 2022 (activity transects and static recorder survey).
- Bat roost assessment of any trees or structures within corridor of grid connection route
- Wintering bird surveys

Grid Connection Route

- Phase 1 survey of grid connection route and survey botanical surveys if considered appropriate
- Reptile and Amphibian surveys if considered after Phase 1 survey. This will include eDNA survey if suitable water bodies are located within the Development or within 50m (access allowing)
- Bat roost assessment of any trees or structures within corridor of grid connection route
- Badger survey of grid connection route
- Otter and water vole survey of grid connection route
- Breeding bird survey of grid connection route
- Wintering bird Surveys

Summary

8.42 The site is an intensively managed arable site to produce grain, oils, and beans, the vast majority of which is exported to mainland Europe for animal feedstocks. Overall, the site is of low nature conservation value and supports a low density of common farmland birds and low density of bats. The riparian habitat along drains and the main river provide some habitat of slightly higher biodiversity importance

Likely Significant Effects

8.43 Whilst subject to detailed design the proposed site area at present is approximately 586ha with the solar park extending to approximately 491ha. This area includes approximately 2.42ha for the substation and energy storage (6.04ha). Outside of the solar park there will be approximately 95ha of arable farmland enhanced to create new wildlife habitat plus a further 1.8ha in the form of a community orchard and a further 10.9km of new / enhanced hedgerow.

8.44 The solar panels will be placed at least 9m from all ditches and water course within what is currently arable farmland. At this time there is not planned to be any removal of existing hedgerows, woodlands, or buildings within the site.

Grid Connection Route

8.45 The grid connection is estimated to be around 6.8 and 9km in length. The easement is expected to be no more than 25m wide. This will be a temporary land use and will be returned to original land use following construction.

Potential Effects of the Development

8.46 Removal of native vegetation, which may result in the loss or fragmentation of habitat and consequently displacement or death of fauna species. The solar panels, fencing, substation, and energy storage will all be located within open arable fields although access tracks and ditches crossings may impact on habitat surrounding the arable fields. However, the grid route may require removal and replacement of hedgerows.

8.47 Although there is no intention to remove any trees of hedgerows from this Development, as surveys continue items might be removed if they are dead or cause a health and safety risk to workers on the Development site. These removals would have the potential to impact on bat populations using the site due to removal of mature trees suitable for roosting and hedgerows suitable for foraging. The exact grid route is still to be determined and may require the removal and replacements of short sections of hedgerows.

8.48 Disturbance could occur to breeding birds due to any necessary tree and hedgerow removal. As stated above there is not intended to be any removal of existing tree or hedgerows on Energy Park site. Of the 646 pairs of breeding birds recorded in spring 2021 only 118 pairs of two species (skylark & yellow wagtail) were recorded breeding in open fields. Thus, for most breeding birds there is limited risk of disturbance although there is potential risk of disturbance to two species during the breeding season and potential loss of habitat. If significant effects are identified appropriate mitigation measure will be identified.

8.49 There is the potential for disturbance to badgers due to construction close to their setts. The survey works undertaken in 2021 has identified that none of the setts were present in 2008, indicating that they are likely to be 'outlier setts'. As a result by the time the Energy Park is constructed these setts may no longer be in use or may have located to other areas within the Energy Park site. It is proposed that prior to any construction taking place the locations of the setts will be surveyed again. It is proposed that within the design of the Energy Park a 30m buffer to any sett will be applied to ensure that panels and other infrastructure items are located suitable distances from the setts. There is also the potential for disturbance to otters and water voles during construction if the survey work determines that these species are present.

8.50 There is also the potential for indirect impacts on flora and fauna including fragmentation of habitat, altered hydrology, change in microclimate and pollution. There is a potential increased risk of contaminated run-off throughout construction, with potential to impact on habitats within water courses and potential introduction of weedy and invasive species.

8.51 There is the potential for noise pollution during and after construction which may affect bird activity, and light pollution during construction may also affect bat activity on the site.

8.52 The species assessment will consider the effects of the solar panels and associated infrastructure on birds, bats, and general ecology during the operation of the proposed development.

8.53 The potential for the Energy Park to attract or displace populations, and impacts associated with collision risk and barrier effects, will be assessed where significant effects are likely to occur.

8.54 The potential impact of the security fencing in relation to potential barrier to mammal movements will be assessed. Badger are known to be present on the Energy Park site and appropriate mitigation measures, such as mammal gates, will be considered.

8.55 There will be a detailed assessment of potential impacts of the solar development on Internal Drainage Board (IDB) controlled water courses in particular in relation to proximity to water courses and impact of fencing.

Potential Effects of Grid Connection

8.56 The Grid route may require removal and replacements of short sections of hedgerows. It is unlikely that there will be long term impacts. However, the grid connection route will cross numerous water courses and drainage ditches including the South Forty Foot Drain. TheIDB will be consulted to ascertain the need for specific assessment where crossing of IDB controlled water courses is identified. It is likely that direct drilling beneath relevant water courses will be adopted to minimise any potential effects.

8.57 Ecotricity is committed to implementing accepted best practice guidelines during construction, operation, and decommissioning phases; best practice will enable any effects on ecology to be avoided or minimised.

8.58 Where significant effects on ecology are identified, measures to prevent, reduce and, mitigate these effects will be proposed. Measures may include:

- the appointment of an Ecological Clerk of Works (ECoW) during the construction phase.
- strict adherence to Pollution Prevention Guidance and construction best practice guidelines.
- implementation of effective water management during all phases of the development via a site drainage plan and measures to control and treat any waste waters before release into the wider environment.
- rapid reinstatement of habitats through the construction phase, to enable successful regeneration of natural habitats as swiftly as possible.
- careful timing of construction activities to avoid potential effects on protected species and
- regular ecological surveys for all protected species and implementation of appropriate mitigation, through consultation with the relevant statutory organisations, as required.

8.59 The Environment Act has recently been passed by parliament which includes a requirement for NSIPs to deliver Biodiversity Net Gain (BNG), although detailed secondary legislation and guidance has yet to be published. A full BNG calculation using Biodiversity Metric 3 will accompany a draft Landscape and Ecological Management Plan (LEMP) as part of the EIA submission. Details of the LEMP will be finalised after all the surveys and assessment have been completed however it is likely to include:

- Creation of species-rich grasslands within solar park area.
- Creation of approximately 95 ha of new habitat in areas around the solar park including:
- Creation and species rich grassland and scrub habitat for pollinators;
- Creation of habitats to southwest of solar park to provide both new wildlife habitat and visual screening; and
- Potentially a Community Orchard
- Integration of bat roosting boxes into appropriate built structures and suitable trees;
- Retention and creation of bat commuting and foraging corridors along appropriate routes and hedgerows throughout the site;
- Creation of suitable habitat for reptiles;
- Creation of artificial holts for otters;
- New hedgerows;
- Enhancement of existing gappy hedgerows;
- Positive conservation management of existing hedgerows; and
- Public access and interpretation within parts of the solar park. This will be designed to minimise any disturbance by walkers and particularly dogs to the core BNG area.

8.60 Consultation shall be undertaken with the following organisations, to ensure appropriate management of potential impacts to protected species and habitats:

- Lincolnshire County Council;
- Boston Borough Council;
- North Kesteven District Council;
- Natural England;
- Environment Agency;
- Royal Society for the Protection of Birds;
- Lincolnshire Wildlife Trust; and
- Buglife.

Assessment Methodology

8.61 The approach taken to the assessment of ecological and ornithological effects will follow the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland. These guidelines set out the process for assessment through the following stages:

8.62 Describing the ecological baseline through survey and desk study;

- Identifying and evaluating 'Important Ecological Features' (IEFs);
- Identifying and characterising the likely effects on IEFs;
- Determining the significance of effects in the absence of mitigation;
- Describing mitigation, compensation measures associated with the development and assessing residual significance;
- Proposed biodiversity net gain (BNG); and
- Identification of monitoring requirements.

8.63 The Ecology and Ornithology ES chapters will form the ecological assessment. The ES chapters will be supported by technical appendices detailing the desk study results, consultation, survey methodologies and results (including figures, tables, photographs, and maps).

8.64 Where necessary, the chapter and technical appendices will be supported by Confidential Annexes containing sensitive information that should not be presented in the public domain in order to prevent harm to protected species.

8.65 The chapters will include measures to mitigate likely adverse effects, either by sensitive design or applied techniques, and will outline measures to enhance biodiversity, as well as the requirement for associated monitoring and adaptive management.

8.66 A standalone Biodiversity Net Gain Report and draft Landscape and Ecological Management Plan will be submitted with the ES to summarise the proposed approach to land management within the Development site, including mitigation and enhancement measures as necessary.

Relevant Legislation and Guidance

8.67 The ecological assessment will be carried out in accordance with the requirements set out in the following legislation and guidelines:

- The Conservation of Habitats and Species Regulations 2010 ("the Habitats Regulations");
- Planning Inspectorate Advice Note Ten in relation to Habitats Regulations Assessment (HRA);

- Council Directive 2009/147/EC on the Conservation of Wild Birds ("the Birds Directive");
- Wildlife and Countryside Act 1981 (as amended);
- Natural Environment and Rural Communities Act (NERC) 2006;
- National Planning Policy Framework (2021);
- National Policy Statements (NPS) EN-1, EN-3 and EN-5 and their new drafts;
- Environment Act (2021) and subsequent regulation as they are adopted;
- UK Post-2010 Biodiversity Framework, which supersedes and subsumes the UK Biodiversity Action Plan (UK BAP);
- Lincolnshire Biodiversity Action Plan;
- National Pollinator Strategy;
- CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom (2016);
- Natural England Evidence Review of the impact on solar farms on birds, bats and general ecology 2016;
- Solar Parks: maximising environmental benefits (TN101);
- Royal Society for the Protection of Birds (RSPB) guidance on solar power; and
- Greater Lincolnshire Local Nature Recovery Strategies.

Updated Desk Based Assessment

8.68 The desk-based assessment for the original wind park application will be updated to gather any relevant, pre-existing information relating to the Development site. Good EIA practice includes identification of any new statutory and non-statutory designated sites of nature conservation interest within a potential zone of influence of the Development, as well as collation of historical species records in the area.

8.69 These records will inform ongoing survey efforts and provide a historical and regional context for the assessment. In the first instance, records of notable and protected species will be obtained from the LERC and National Biodiversity Network. In light of initial requests and survey results, further information and data requests will be made to other sources, such as specialist species recorders.

General Approach

8.70 The assessment methodology has been developed with reference to the CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom and from considerable experience of Ecological Impact Assessments (EcIA) relating to similar developments throughout the UK.

Significance Criteria

Determining Sensitivity Value

8.71 The baseline conditions will be examined and IEFs identified based on their conservation status and the local populations observed. The nature conservation value of the ecological interests is defined according to Table 8.1.

TABLE 8.1: APPROACH TO DETERMINING SENSITIVITY VALUE OF ECOLOGICAL RECEPTORS

Level of value	Ecological features
International	An internationally designated site (e.g., SAC/SPA/Ramsar) or site meeting criteria for international designations. This includes candidate site species present in internationally important numbers (e.g. >1% of biogeographic populations).
National	A nationally designated site SSSI, or a NNR, or sites meeting the criteria for national designation. Species present in nationally important numbers (e.g. >1% UK population). Cited species that are connected to SSSI or NNR. Large areas of priority habitats listed on Annex 1 of the Habitats Directive and smaller areas of such habitats that are essential to maintain the viability of that ecological resource. Birds of Conservation Concern.
Regional	Species present in regionally important numbers (e.g. >1% regional population). County, vice-county or other local authority-wide area
Local	Sites designated as LNRs, LWS, or equivalents that may be designated according to criteria at the local authority level. Other species or habitat of conservation interest, e.g. species or habitat include in Local Nature Recovery Strategies.
Less than local	Usually widespread and common habitats and species. Receptors falling below local value are not considered in detail in the assessment process unless they have policy implications for the Development e.g. legally/protected species.

Identifying effects and determining magnitude

8.72 An effect is defined as a change in distribution or status of a receptor as a result of the Proposed Development and can be adverse, neutral or positive. In assessing the magnitude of likely effects, the identified effect will be characterised according to the sensitivity of the receptor and the potential for recovery from temporary adverse conditions, taking into account the fact that different sources of change can result in reversible, permanent or temporary effects, that different effects have different probabilities of occurring, and that some changes may be positive (beneficial). The criteria that will be used in the assessment for describing the overall magnitude of a likely effect are summarised in Table 8.2.

TABLE 8.2: EFFECT MAGNITUDE

Effect Magnitude	Description
High Negative	High effects may include those that result in large-scale, long-term or permanent, usually irreversible changes in a receptor, and likely to change its ecological integrity. These effects are likely to result in overall changes in the conservation status of a habitat or species population at the location(s) under consideration. In terms of extent, they will typically affect more than 20% of the area of a habitat receptor, or lead to the loss of more than 20% of a defined population in the case of a species receptor.
Medium Negative	Medium effects may include moderate-scale permanent changes in a receptor, or larger-scale temporary changes, which may in some circumstances be considered to change the integrity of a receptor. This may mean that there are temporary changes in the conservation status of a habitat or population at the location(s) under consideration, but these are usually reversible and unlikely to be long-term. In terms of extent they will typically affect between 5% and 20% of the area of a habitat receptor, or lead to the loss of between 5% and 20% of a defined population in the case of a species receptor.
Low Negative	Low effects may include those that are small in magnitude, result in small scale temporary changes and where integrity is not affected and are typically reversible. These effects are unlikely to result in overall changes in the conservation status of a habitat or species population at the location(s) under consideration, but it does not exclude the possibility that mitigation or compensation will be required. In terms of extent they will typically affect between 1% and 5% of the area of a habitat receptor, or lead to the loss of between 1% and 5% of a defined population in the case of a species receptor.
Neutral / Negligible	There is no perceptible change in the ecological receptor. As a guide, less than 1% of the population or area is predicted to be affected.
Positive	The changes in the ecological receptor are considered to be beneficial. This may include an increase in area or quality of habitat or an increase in species diversity or population size

8.73 In the case of designated sites with quantified populations, magnitude will be assessed against the size of the cited population and/or the most recently reported population size in the common standards monitoring (CSM) cycle. Effects on populations outside designated sites will be assessed within an appropriate geographical scale, typically either at a national scale, or at the regional scale.

Determining Significance

8.74 In accordance with the CIEEM guidelines, a significant effect, in ecological terms, is defined as 'an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'.

8.75 The term 'integrity' is used in accordance with the definition adopted for designated sites, as the "...coherence of ecological structure and function...that enables it to sustain the habitat, complex of habitats and/or levels of populations of species for which it was classified". For non-designated sites/species this can be amended to "the coherence of ecological structure and function, that enables it [in this case, the area being considered; e.g., region] to maintain the levels of populations of species in its/their pre-development condition". Maintaining integrity therefore refers to the maintenance of the conservation status of a habitat or species population at a specific location or geographical scale.

8.76 The approach adopted will aim to determine whether an effect is significant or not significant on the basis of a discussion of the variables that characterise it. The significance of an effect is linked to the geographical scale at which the receptor is valued but does not necessarily depend on the value of the receptor or its legal protection.

Assessment of Cumulative Effects

8.77 The purpose of a cumulative effect assessment is to identify effects that might not be significant on their own but become significant when considered in combination with effects from other plans or developments. A search radius of 10 km from the Proposed Development site boundary will be applied for the cumulative assessment and all developments likely to impact ecological receptors will be considered. This area of search is twice the area of search for designated sites considered in the assessment of effects of the Development in isolation. This wider search area has been agreed with AECOM who are the environmental consultants NKDC have brought on board to assist them in the assessment of this Development.

9. HYDROLOGY, HYDROGEOLOGY, FLOOD RISK & DRAINAGE

Introduction

9.1 This section of the ES will be prepared by Jeremy Benn Associates Limited (JBA) and the scoping assessment detailed below provides information in terms of the scoping for the hydrogeology, hydrogeology and flood risk section within the relevant chapter of the ES. The ES chapter will identify and describe the nature and significance of the effects likely to arise in relation to hydrogeology during both the construction and operational phases. The chapter will set out the existing baseline environment in relation to hydrogeology and assesses the potential impacts of the construction and operation of the Heckington Fen Energy Park and the Grid cable route on groundwater quality and levels.

Preliminary Baseline Conditions

Location and topography

9.2 The proposed development area is located near Heckington Fen in Lincolnshire, approximately 6km east of the village of Heckington and 11km west of Boston. The A17 borders the south of the site, while Labour in Vain (drainage channel) border the western side. The north of the site is bordered by Head Dike and Skerth Drain, while the eastern side is bordered by agricultural field boundaries.

9.3 The extent of the study area for this assessment is shown in Figure 11: Energy Park Topography Plan (below).

9.4 The majority of the Energy Park site is within Flood Zone 3, with some sections of the Energy Park falling within Flood Zone 2 and Flood Zone 1. These areas can be seen on the Environmental Designations Plan Figure 5.

9.5 The Energy Park is situated on the Lincolnshire Fens, a coastal plain in the east of England which comprises a large area of broad flat marshland supporting a rich biodiversity. Topography within the Energy Park is only a few metres above sea level and slopes very gently towards the north-east. The lowest point is at 0.77m AOD in the northern part adjacent to Head Dike, while the highest point is 3.3m AOD at the southern border. This can be seen on the Energy Park Location Plan at Figure 1.

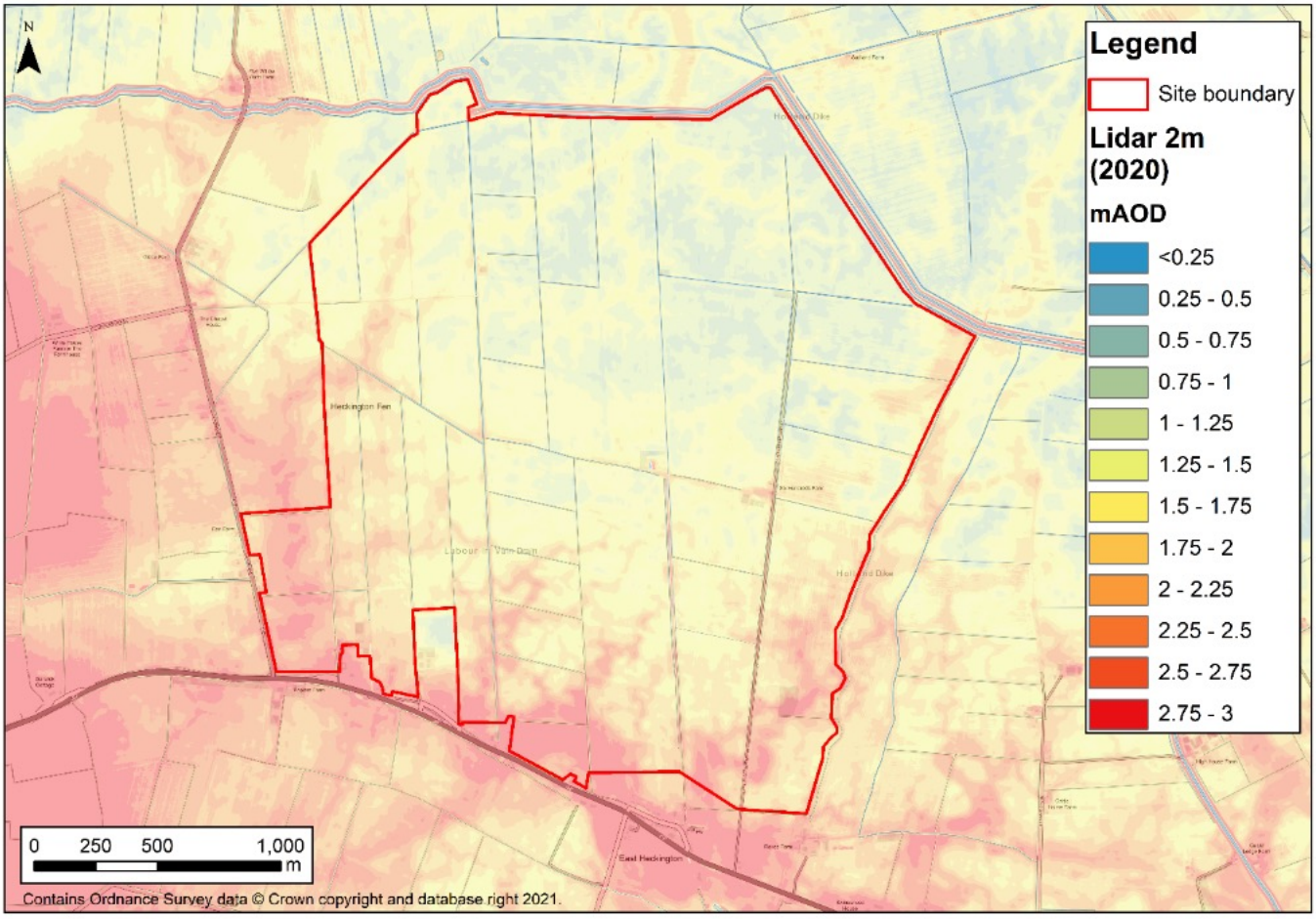


FIGURE 11: ENERGY PARK TOPOGRAPHY PLAN

Geology and soils

9.6 Information on the soils and geology of the site and surrounding area has been derived from Soilscapes online viewer, 1:50,000 British Geological Survey (BGS) geology mapping (BGS online map viewer) and the BGS online borehole archive. The geology beneath the site is summarised in Table 9.1.

Soils

9.7 Soils are described as loamy and clayey floodplain soils of coastal flats with naturally high groundwater. Fertility is lime-rich to moderate, and the soils are mostly drained into marginal ditches in most fields.

Made Ground

9.8 Made Ground refers to lithology that is made up of artificial material, or the reworking of natural material used to create a new landform. Made Ground is likely to be present in areas of historic and present residential and industrial buildings, where the ground may have been prepared for construction. Also, it is commonly contained in areas of landfill or other waste management sites.

9.9 It is unlikely that Made Ground exists beneath the site boundary.

Superficial geology

9.10 The BGS 1:50000 mapping indicates that the Energy Park site is entirely underlain by tidal flat deposits comprising a consolidated soft silty clay, with layers of peat, sand and basal gravel. Approximately 500 m to the west of the Energy Park site, deposits of glacial till overlay the tidal flats and extend 7 km to the south-west.

9.11 A BGS borehole record (BGS Ref: TF24SW2) located approximately 1.5 km east of the Energy Park site documented the tidal flat deposits as comprising 2.6m of grey clay underlain by black silt and gravels. Located on the Energy Park site's southern boundary, another BGS borehole (BGS Ref: TF14SE2) recorded 2.44 m of silt underlain by 1.27 m of sands and gravels.

9.12 The thickness of the deposits increases from ~4 m on the southern boundary of the Energy Park, to 13 m at a location 3.4 km to the east, and up to 16 m thick some 4km to the north.

9.13 Therefore, from the borehole records it is anticipated that the tidal flat deposits within the south-west part of the Energy Park site are around 4 m thick and increase in thickness towards the north-east of Energy Park.

Bedrock geology

9.14 The BGS geology mapping shows that the bedrock underlying the Energy Park comprises the Jurassic age West Walton Formation in the south-west half and the Ampthill Clay Formation in the north-east half. The West Walton Formation is described by the BGS as comprising calcareous mudstones, silty mudstone and siltstones, with subordinate fine-grained sandstones and argillaceous limestones. It is estimated to be up to 20-40 m in thickness and dips approximately 5 degrees to the east.

9.15 Conformably overlying the West Walton Formation, the Ampthill Clay Formation consists of smooth or slightly silty mudstone with grey argillaceous limestone nodules and is estimated to be up to 50m in thickness.

9.16 BGS borehole records (BGS Ref: TF14SE2; TF14SE4/A) located on the West Walton Formation, documented the bedrock as

comprising brown-grey clay, with sporadic argillaceous limestone nodules down to 135 metres below ground level (mbgl). At depths greater than 100 mbgl, the records noted the clay becoming slightly sandy with stone beds present. However, the borehole records did not distinguish the West Walton Formation from the underlying Oxford Clay Formation. Hence, the thickness of West Walton at the Energy Park site is unknown. Groundwater was encountered in the West Walton Formation at 71 mbgl (Ref: TF14SE4/B).

9.17 Two borehole records located on the Ampthill Formation approximately 4 km to north of the Energy Park site (BGS Ref: TF15SE28; TF25SW14) described the bedrock as comprising hard, dark olive grey, laminated silty clays with shell fragments.

Mining and mineral extraction

9.18 The Coal Authority online viewer [13] has been reviewed for the area. The Energy Park site is not within a Coal Authority Mining Reporting Area and there are no mine entry records shown within the Energy Park boundary.

13 http://mapapps2.bgs.ac.uk/coalauthority/home.html

Summary of site geology

9.19 A summary of the geological stratigraphy likely to be present at the site is shown in Table 9.1.

TABLE 9 1: STRATIGRAPHY OF LITHOLOGIES UNDERLYING THE SITE

Age	Formation/Group	Description	Thickness
Quaternary Period	Tidal flats	Grey clay underlain by black silt and gravels.* Layers of peat and silty clay may also be present**	~4m, increasing towards the north-east*
Jurassic	Ampthill Clay Formation (Ancholme Group)	Mudstone, mainly smooth or slightly silty, pale to medium grey with argillaceous limestone (cementstone) nodules; some rhythmic alternations of dark grey mudstone in the lower part; topmost beds are typically pale grey marls with cementstone.**	Up to 50m**
	West Walton Formation (Ancholme Group)	Brown-grey clay, with sporadic argillaceous limestone nodules. Clay becoming slightly sandy at greater depths, with stone beds present.**	20-40m**
Sources: *BGS borehole log records **BGS Online Lexicon of Named Rock Units			

Hydrogeology

Aquifer designation and vulnerability

9.20 The superficial tidal flat deposits are classified as 'unproductive' by the Environment Agency (EA). However, BGS borehole record TF24NW2, 3.4 km east of the site, is noted to have encountered groundwater within layers of silty sand. The groundwater here is likely to form part of perched aquifer, where water is found within higher permeability silty sandy layers surrounding by lower permeability silty clays.

9.21 Both the West Walton and Ampthill Clay Formations are also classified as 'unproductive'. Most borehole records did not encounter any groundwater. However, one borehole (Ref: TF14SE4/B), located 1.6 km south-west of the site found a small quantity of water at a depth of 71 mbgl within a thin limestone bed. At this depth, the water was likely found within the underlying Oxford Clay Formation.

9.22 The EA's catchment data explorer shows that the site does not lie within a groundwater management catchment.

TABLE 9.2- AQUIFER DESIGNATIONS

Group	Formation	Classification
Superficial	Tidal flats	Unproductive
Bedrock	Ampthill Clay Formation	Unproductive
	West Walton Formation	Unproductive

Groundwater source protection zones

9.23 Source Protection Zones (SPZs) are used to protect areas of vulnerable groundwater that is used for abstraction and where water quality is of high importance (such as drinking water abstractions). SPZs are categorised into three zones, 1-3, with 1 being of highest risk of contamination, and 3 representing the lowest risk but still within the groundwater catchment.

9.24 There are no SPZs recorded within 2 km of the site. The closest is located approximately 8.5 km to the west.

Aquifer properties and groundwater flow

9.25 Since both the superficial deposits and bedrock lithologies underlying the site are designated as 'unproductive', there is negligible groundwater flow within the site area down to depths of at least 70-100 mbgl. At this depth, the Kellaways Formation, which underlies the Oxford Clay Formation, forms a confined Secondary A aquifer below the site.

Groundwater abstraction and discharges

9.26 Data requests were made to both the EA and NKDC. NKDC have stated that they have no details on local ground water abstractions and have advised that local checks are also made by the EA. Once this information is received it will be used in the assessment to determine the baseline of the site and then determine if the Development will have any effect on the groundwater abstraction and discharges.

Likely Significant Effects

9.27 Construction activities on the Energy Park will include the clearance of vegetation, topsoil stripping, establishment of compound areas, excavation and site levelling/re-profiling to create development platforms, preparation of site roads and construction of foundations. In the areas for Grid cables to be laid expected works are limited to digging open trenches, which will be back filled once the cable is laid or where needed Grid cables will be direct drilled under existing features. There may be the need to create access tracks to appropriate points along this new Grid route. The flood risk effect and surface water drainage effect of these new access roads will be determined.

9.28 Compaction of the ground caused by construction plant and an increase in the extent of impermeable surfaces associated with access roads and compound areas have the potential to impact upon the rate of surface water infiltration to the aquifer below.

9.29 Construction activities also have the potential to give rise to the contamination of waters resulting from spilled hydrocarbons/petrochemicals from construction plant.

9.30 During the operational phase, there is the potential for the contamination of water resulting from the flushing of silts and hydrocarbons from areas of hardstanding.

Likely mitigation measures

9.31 The development proposals will include measures to prevent, reduce and offset significant adverse effects upon hydrology, drainage and flood risk with regards to the surface water receptors. Being 'built-in' to the proposals from the outset, the assessment of the significance of effects will include consideration of these 'embedded' mitigation measures. Such measures are likely to include protecting critical infrastructure from flood risk. However, specific measures are not anticipated to be required for the groundwater environment.

9.32 The EIA supporting the application is likely to include a Construction Environmental Management Plan (CEMP). Any construction phase mitigation measures would be secured through implementation of the measures set out in this document.

9.33 In terms of operational phase mitigation measures, whilst a surface water management strategy is anticipated, again measures relating to groundwater are unlikely to be anticipated for the proposed development.

Assessment Methodology

9.34 Characterisation of the hydrogeological baseline will depend on a review of readily available online resources such as geological and hydrogeological mapping, as well as obtaining Freedom of Information (FoI) requests for groundwater data and water supplies.

9.35 Consultation with key stakeholders (Lead Local Flood Authority (LLFA), EA and IDB) have begun and will confirm the scope of any technical work required to inform the chapter, agree assessment methodologies and the design principles to be applied to ascertain compliance with the relevant policy, legislation and guidance in respect of hydrogeological issues.

9.36 A walkover survey will be undertaken to facilitate an understanding of the baseline water environment and the general landform of the site and surrounding area and to define the scope/specifications of technical assessments/surveys. Nonetheless, it is not anticipated that any additional surveys will be required with respect to the groundwater environment for the proposed development.

9.37 The assessment will be undertaken in accordance with the current legislation and policy guidance that is relevant to the groundwater environment.

9.38 The methodology for the assessment of potential impacts follows the generic EIA methodology guided by IEMA (2016) and current government guidance, and is based on the following principles:

- The type of effect (long-term, short-term, or intermittent; positive, negative or neutral);
- The probability of effect occurring:
- Receptor sensitivity; and
- The magnitude (severity) of the effect.

9.39 In addition to this assessment will look to follow the planning policy guidance in the NPPF, NPG and draft NPG's, Land Drainage Act 1991 and the Water Framework Directive.

9.40 A test for the implications for the development for Flood Risk will be completed as required under Planning Policy. This will form part of the planning bundle but will sit outside of the EIA. This is required as the Energy Park site is mainly within Flood Zone 3 and part within Flood Zone 2. Planning Policy requires the need for any Flood Risk Assessment to demonstrate that it can pass such a test and show that despite the increased flood risk of the site it is still the 'best' location for the development.

Significance Criteria

Principal receptors and their sensitivity

9.41 Following the data gathering and analysis, potential hydrogeological receptors have been identified around the development area. These include all groundwater features downstream/down gradient of the development areas that may be potentially affected by activities associated with the proposed development. The approach adopted for identification of receptors involved separating those that could potentially be significantly affected from those that will not be affected, on account of the benefit of environmental measures incorporated in the proposed developments, or due to their location outside of the relevant surface water or groundwater catchments.

9.42 From consideration of the Scoping Opinion and baseline characterisation, a sensitivity classification has been allocated to each identified hydrogeological receptor, and these are set out in Table 9 3.

TABLE 9 3 - SUMMARY OF POTENTIAL ENVIRONMENTAL RECEPTORS

Receptor Type	Receptor	Sensitivity	Reasoning
Groundwater	Superficial tidal flat deposits	Very low	Unproductive aquifer with very limited groundwater flow. Any groundwater present will be locally perched
	West Walton Formation and Ampthill Clay Formation (unproductive aquifer)	Very low	Unproductive aquifer with very limited groundwater flow. Any groundwater present will be locally perched

Assessment of Cumulative Effects

9.43 In accordance with national planning policy, other development schemes within the catchment of the Head Dike/Skerth Drain will be expected to incorporate measures to ensure that development does not increase flood risk elsewhere. This area will, in some locations, expand beyond the proposed 5km cumulative assessment area. Similarly, and relevant to the groundwater environment, these other development schemes will be required to include measures to provide pollution control such that water quality is not adversely affected.

9.44 On account of policy requirements, it is envisaged that the Proposed Development will be categorised as 'nil detriment' in terms of off-site/downstream hydrogeology related impacts. On this basis, it is highly unlikely that there will be any cumulative effects within the catchment of the Head Dike/Skerth Drain and the low productivity aquifers that underlie it.

10. CULTURAL HERITAGE

Introduction

10.1 This section sets out the proposed scope and assessment methodology for the Cultural Heritage chapter of the ES for the proposed solar and energy storage development at Heckington Fen, Lincolnshire.

10.2 A staged programme of archaeology and built heritage assessment will be undertaken to provide information regarding the significance of heritage assets and the potential impact of the proposed development thereupon, as detailed in paragraph 194 of the NPPF (2021). The first stage will comprise a Heritage Desk-Based Assessment (DBA) providing an historic environment baseline, an archaeological assessment, and setting assessments. The second stage will comprise a geophysical survey: a remote-sensing technique to prospect for buried archaeological remains within the site. The need for, and scope and timing of, intrusive investigations (e.g. trial trenching) and mitigation will be negotiated and agreed with Lincolnshire County Council Archaeology Officers once the heritage desk-based assessment and geophysical survey are complete.

Preliminary Baseline Conditions

Archaeology

10.3 From an initial review of Lincolnshire Historic Environment Record (HER) data, which was procured in August 2021 for a 2km radius measured from the boundaries of the main site area, it is noted that much evidence for prehistoric and Roman settlement and activity is recorded c.0.5-1.5km to the west of the site (e.g. HER refs. MLI60731, MLI90708, MLI84683) and that indications of Roman salt-working were identified in the centre of the site by a geophysical survey carried out for a previous proposal for wind turbines here (HER refs. MLI87647, MLI87891, MLI87892) (Figure 12). Although not yet added to the HER, recent and ongoing archaeological work to the east of the site has revealed further evidence of Roman activity in this location.

Built Heritage (Setting)

10.4 One Scheduled Monument and four Grade II Listed Buildings lie within a 2km radius of the main site (Figure 13). From an initial review, it is considered that the following designated heritage assets may be sensitive to the development proposals: Scheduled Monument of 'Settlement site 650yds (600m) E of Holme House' (NHLE ref. 1004927) located c.525m west of the site; and the Grade II Listed Building of St John the Baptist (NHLE ref. 1360489) located c.1km north-east of the site.

10.5 It is acknowledged that other designated heritage assets within and/or outlying a 2km radius of the site may also be sensitive, especially given the flat and low-lying landscape character allowing for long-ranging views towards/from assets and so these will be considered within the assessment. The main assessment area will be 5km from the EIA Area. If there are any heritage assets just outside this 5km assessment area, professional judgement will be used to determine if they need to be included within the assessment.

Likely Significant Effects

10.6 The Proposed Development comprises the construction of a ground mounted solar park and energy storage facility with associated equipment and infrastructure, new underground Grid cable from the Energy Park to National Grid Bicker Fen substation and above ground works at the National Grid substation.

10.7 Ground clearance and preparation, piling for solar arrays, excavation of cable trenches and drainage runs, provision of access, and landscaping may truncate and/or remove buried archaeological remains within the Energy Park and result in varying degrees of harm to their heritage significance. Given their finite nature, development effects upon any buried archaeological remains within the site would be direct, long-term, permanent, and adverse.

10.8 The Proposed Development may alter the setting of designated heritage assets such that could result in a degree of harm to their heritage significance. Such effects would be indirect, temporary in terms of being limited to the operational lifespan of the Energy Park, and adverse.

Assessment Methodology

Planning Legislation

10.9 This application will be for a Development Consent Order (DCO) and the planning context of the assessment will be considered in that context. Legislation relating to the built historic environment is primarily set out within the Planning (Listed Buildings and Conservation Areas) Act 1990, which provides statutory protection for Listed Buildings and Conservation Areas.

10.10 Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 states that:

"In considering whether to grant planning permission [or permission in principle] for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State, shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses."

10.11 With regards to development within Conservation Areas, Section 72 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 states:

"In the exercise, with respect to any buildings or other land in a conservation area, of any powers under any of the provisions mentioned in subsection (2), special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area."

10.12 Notwithstanding the statutory presumption set out within the Planning (Listed Buildings and Conservations Area) Act 1990, Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that all planning applications are determined in accordance with the Development Plan unless material considerations indicate otherwise.

10.13 National policy and guidance are set out in the Government's National Planning Policy Framework (NPPF) published in July 2021. The NPPF needs to be read as a whole and is intended to promote the concept of delivering sustainable development.

10.14 Heritage assets are defined in Annex 2 of the NPPF as:

"A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the Local Planning Authority (including Local Listing)"

10.15 The NPPF goes on to define a designated heritage asset as a:

"World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under relevant legislation"

10.16 Section 16 of the NPPF relates to 'Conserving and enhancing the historic environment' and states at paragraph 195 that:

"Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal".

10.17 Paragraph 197 goes on to state that:

"In determining planning applications, local planning authorities should take account of:

- ***the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;***
- ***the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and***
- ***the desirability of new development making a positive contribution to local character and distinctiveness".***

10.18 With regard to the impact of proposals on the significance of a heritage asset, paragraphs 199 and 200 are relevant and read as follows:

"When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;

b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly

exceptional".

10.19 Paragraph 201 reads as follows:

"Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

a) the nature of the heritage asset prevents all reasonable uses of the site; and

b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and

c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and

d) the harm or loss is outweighed by the benefit of bringing the site back into use".

10.20 Paragraph 202 goes on to state:

"Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use".

10.21 Paragraph 203 of the NPPF states that:

"The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset".

10.22 As per footnote 63 of the NPPF, non-designated assets of archaeological interest which are demonstrably of equivalent significance to a Scheduled Monument will be subject to the policies for designated heritage assets.

10.23 Overall, the NPPF confirms that the primary objective of development management is to foster the delivery of sustainable development, not to hinder or prevent it. Local Authorities should approach development management decisions positively, looking for solutions rather than problems so that applications can be approved wherever it is practical to do so.

10.24 Additionally, securing the optimum viable use of sites and achieving public benefits are also key material considerations for application proposals.

Guidance

10.25 All work will be undertaken in accordance with all relevant heritage industry guidance and best practice, including:

- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA) 2014);
- Planning Practice Guidance (PPG) 'Conserving and Enhancing the Historic Environment' (MHCLG, updated February 2018);
- Historic Environment Good Practice Advice in Planning Note 1: The Historic Environment in Local Plans (Historic England 2015);
- Historic England Advice Note 12: Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England 2019);
- Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2nd Edition; Historic England 2017);
- Geophysical Survey in Archaeological Field Evaluation (English Heritage 2008);
- Standard and Guidance for Archaeological Geophysical Survey (CIfA 2014); and
- Guidelines for the use of geophysics in archaeology: questions to ask and points to consider (EAC 2015).

Assessment Methodology

10.26 The historic environment baseline will be informed by detailed analysis of the received Lincolnshire Historic Environment Record data; selected reports of previous archaeological investigations; historic aerial photographs of the site, held by Historic England Archives; historic maps and relevant documentary records of the site, held by Lincolnshire Archives and available online; and a site walkover survey, with any above-ground remains of archaeological or historic interest being subject to a descriptive and photographic record. The archaeological assessment will identify and describe known heritage assets within the site and study area (including any features observed during the site walkover), consider the potential for currently-unknown buried archaeological remains within the site, and assess their possible level of significance and the likely nature and scale of development impacts thereupon.

10.27 The setting assessments will seek to establish if and to what degree the site contributes through setting to the significance of designated heritage assets, assess the likely impacts of the proposed development thereupon, and identify design measures to mitigate harm as appropriate. The assessments will be undertaken in accordance with the industry-standard methodology provided by Historic England in their Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2017). This promotes an iterative approach as follows:

- Step 1: assess which assets would be affected and identify their setting.
- Step 2: assess the degree to which these settings and views make a contribution

to the significance of the heritage asset(s) or allow significance to be appreciated.

- Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it.
- Step 4: explore ways to maximise enhancement and avoid or minimise harm.
- Step 5: monitor outcomes.

10.28 The setting assessments will consider all designated heritage assets located within a minimum 2km radius measured from the boundaries of the main site area. The assets will be identified through a search of the National Heritage List for England (NHLE). Zone of Theoretical Visibility models prepared as part of the Landscape and Visual Impact Assessment (LVIA) will be used to assist with scoping (Step 1). Photomontages may be prepared by the LVIA to illustrate visibility of the proposed development. A shortlist of assets requiring full detailed assessment (Steps 2 to 4) and the location of viewpoints for any photomontages will be agreed with the LPA's Conservation Officer and Historic England.

10.29 A geophysical survey will be carried out across the main development site as part of the EIA. Given the size of the site, the constraints posed by agricultural regimes, and the project timetable, the area will be divided into four parcels and each awarded to a different contractor. The same survey type and data collection technique will be used across the entire site, and each contractor will prepare a Written Scheme of Investigation. for the approval of Lincolnshire County Council Archaeology Officers prior to commencement. Pegasus will act as Quality Assurance on all written outputs to ensure consistency and will prepare a summary note of the results to facilitate dialogue with the LPA regarding further archaeological investigation and/or mitigation. In line with the approaches taken elsewhere the geophysical survey of the underground cable route will be undertaken if the scheme is consented and prior to construction commencing

EIA Approach

10.30 The archaeology and heritage assessments will consider the following potential effects:

- Construction Phase: physical (direct) effects upon buried archaeological remains within the site as a result of truncation;
- Construction Phase: non-physical (indirect) effects upon the significance of heritage assets within the site environs as a result of changes to setting; and
- Operational Phase: non-physical (indirect) effects upon the significance of heritage assets within the site environs as a result of changes to setting.

Significance Criteria

10.31 The impact assessments will consider the following in respect of each identified heritage receptor (asset):

- the asset's heritage significance;
- the anticipated level of harm to that significance (comparable to 'magnitude'); and
- whether that level of harm would comprise a significant effect.

10.32 Determination of each of the above has been undertaken in accordance with a robust methodology, formulated within the context of current best practice, recent case law, the relevant statute and policy provisions, and key professional guidance. The rationale for each is set out within the following three sections, alongside the relevant criteria and terminology used in their articulation.

Determining Heritage Significance

10.33 In accordance with the levels of significance articulated in the NPPF (2021), three levels of heritage significance are identified and will be utilised for the purposes of the assessment. These are presented in Table 10.1.

TABLE 10.1 HERITAGE SIGNIFICANCE

Significance	Qualifying Criteria
Designated heritage assets of the highest significance	Grade I and II* Listed Buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, World Heritage Sites and Registered Battlefields. Conservation Areas of especial historic interest. *Also, non-designated archaeological remains of demonstrably equivalent significance to that of Scheduled Monuments (NPPF (2021) footnote 68).
Designated heritage assets of less than the highest significance	Grade II Listed Buildings and Grade II Registered Parks and Gardens. The majority of Conservation Areas.
Non-designated heritage assets	Buildings, monuments, sites, places, areas or landscapes identified as having a degree of significance meriting consideration in planning decisions, but which are not formally designated heritage assets (as defined within the PPG).

10.34 Sites, buildings or areas that have no heritage significance would not be considered heritage assets under the provisions of the NPPF (2021) and would not be considered as heritage receptors for the purposes of EIA.

Determining Level of Harm to Heritage Significance

10.35 Potential development effects upon the significance of known and potential heritage assets identified within the site will be determined with reference to harm and/or benefit, as defined within the NPPF (2021). The identification of harm would apply where the proposals would be anticipated to reduce an asset's heritage significance. The identification of heritage benefit would apply where the proposals would be anticipated to enhance (increase) heritage significance.

10.36 Where harm to the significance of a designated heritage asset is identified, it will be discussed in terms of it being either 'substantial' or 'less than substantial', as per the terms of NPPF (2021) paragraphs 200 and 201. The NPPF does not apply these same harm criteria to non-designated heritage assets.

10.37 Harm to the significance of non-designated heritage assets is treated separately under NPPF (2021) paragraph 203, which requires that in weighing applications that directly or indirectly affect non-designated heritage assets, "a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset".

10.38 The methodology that will be adopted for the purposes of EIA in identifying levels of development effect upon the significance of designated and non-designated heritage assets will directly reflect the NPPF's position and language in this regard (Table 10.2).

10.39 Professional judgement is used in defining the anticipated level of harm to the significance of non-designated heritage assets for the purposes of the present chapter; all determinations are fully qualified within the text.

Assessment of Significant Effects ('Significance of Effect')

10.40 In determining whether any identified harm to heritage significance would translate into a significant effect for purposes of EIA, a quantitative matrix-led approach will be avoided as this would over-simplify the assessment findings. Instead, determinations will be based upon professional judgement and will be presented qualitatively and with full justification. This approach directly reflects key concepts in current planning policy and heritage guidance and is advocated by Historic England.

10.41 Ultimately, a statement of whether any identified harm does or does not represent a significant effect will be provided in respect of each cultural heritage receptor using the following terminology: 'Significant' or 'Not Significant'.

Assessment of Cumulative Effects

10.42 All proposed and permitted development schemes within a 5km radius of the site will be considered for the assessment of cumulative and in-combination effects.

TABLE 10.2 LEVEL OF HERITAGE HARM / BENEFIT

Level of Harm / Benefit	Qualifying Criteria
Heritage Benefit	The asset's significance would be enhanced and/or better revealed. This would weigh in favour of the Proposed Development in the planning balance. It would be a desirable outcome, consistent with all key policy objectives and industry guidance provisions.
No Harm	The asset's significance would be preserved. This would be consistent with the NPPF's core sustainability objective, as well as all other relevant statute and policy provisions, including the Planning (Listed Buildings & Conservation Areas) Act (1990) s.66(1) and s.72(1), and NPPF (2021) paragraphs 199–208.
Less than Substantial Harm	The designated asset's significance would be reduced, but still, on balance, substantively preserved. Where 'less than substantial' harm has been identified, an attempt is made to qualify more precisely that level of harm, with reference to the heritage interests defined within the PPG and Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England 2019). NPPF (2021) paragraph 202 provides that such less than substantial harm should be 'weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use'.
Substantial Harm	The designated asset's significance would be subject to such a serious impact (reduction) that its significance would be "either vitiated altogether or very much reduced" (2013 High Court Ruling). Substantial public benefit or satisfaction of the four criteria provided within NPPF (2021) paragraph 201 would be required to outweigh this level of harm. Without this, the NPPF directs that consent should be refused.
Harm to Non-Designated Heritage Assets	Harm to the significance of a non-designated heritage asset would comprise a material consideration for the decision-taker. As per NPPF (2021) paragraph 203, a balanced judgement would be required having regard to the scale of any harm or loss and the significance of the heritage asset.

11. SOCIO ECONOMICS

Introduction

11.1 This chapter will consider the socio-economic effects of the Proposed Development. Likely significant effects on social and economic conditions will arise directly from the uses provided as well as the employment opportunities created both during the construction and following the completion of the Development.

Preliminary Baseline Conditions

Economic Development Policy

11.2 The UK has a central policy objective of achieving "strong, sustainable and balanced growth", as stated in Build Back Better: Our Plan for Growth (2021) which sets out a range of ambitions relating to national economic development designed to realise this core policy objective. The ambitions contained with the Plan for Growth emphasise the need to stimulate growth through the private sector, broaden the UK's economic base and to promote investment, skills development and employment creation across the UK as a whole. In addition to the general focus on economic growth nationally there is a clear policy emphasis on securing economic benefits arising from changes in the energy mix and investment in renewable energy developments.

11.3 These policy needs are further emphasised by their translation into relevant local planning policies for economic growth.

Likely Significant Effects

11.4 The assessment will consider the effect of the Development on socio-economic and receptors during the three phases of the development: construction, operation and decommissioning.

Construction Phase

11.5 During construction phase, direct effects on socio economic receptors could arise through:

- Transport and onsite assembly/ installation of the components: spend on the transport and installation could stimulate economic impacts in the UK in the form of jobs and GVA supported in this part by the Development supply chain. The scale and spatial distribution of these direct impacts will depend on the locations of the companies carrying out the activities and where they source their labour from.
- Construction of associated infrastructure: Any investment in access tracks and other supporting infrastructure would support jobs and GVA in its supply chain. Again, the scale and spatial distribution of the impact will depend on the location of the contractors and the areas of which they source their labour.

11.6 In addition to these direct impacts there is scope for indirect effects on socio economics. These indirect effects will occur in the supply chain of the companies providing goods and services to the development. It is difficult to predict the likely scale of indirect effects, but it is likely to be some impact associated with activities that take place to the Development site.

Operational Phase

11.7 Once constructed, there will be an ongoing requirement for operation and maintenance which could stimulate impacts in a similar way to the construction activities, but to a much lesser extent. These impacts are expected to be modest overall. The applicant already has their O&M branch based in Louth, Lincolnshire. The operation of the scheme will continue to require the employment and possible expansion of the team within the County.

11.8 There will be community features included within the final Indicative Site Layout. At this time, the draft Indicative Site Layout Plan (Figure 3) has a community orchard and an extension to the PROW through the creation of a permissive footpath that would create a loop walk in the local area. To date the local area has a limited public rights of way routes due to historical drainage issues in the wider landscape. It is proposed that access to the community orchard would be accessed via agreement with the Parish Council for certain community groups.

Decommissioning

11.9 The operational phase of the Development is expected to last for 40 years. Once this has passed the Energy Park Site will need to be decommissioned. The cost of this additional activity could generate further direct and indirect socio-economic impacts and effects similar to those of the construction phase. However, the scale of these impacts is outside of the scope of this assessment due to the uncertainty over the nature and costs of this activity, particularly as the sector, engineering approaches and technologies evolve over the lifetime of the Energy Park.

Assessment Methodology

11.10 There is no legislation relevant to the assessment of socio-economic effects, but national planning and economic development policy are a relevant consideration in the scoping assessment for socio-economic effects.

11.11 The methodology has been developed with reference to good practice EIA guidelines, such as that published by IEMA and from considerable experience of socio-economic impact assessment of similar developments.

11.12 The socio-economic assessment will consider the extent to which the impacts set out above will materialise within the three primary areas:

- The local planning authorities where the whole of Development is located (Lincolnshire County Council, North Kesteven District Council and Boston Borough Council)
- The Lincolnshire Region
- The National Impact area – England

11.13 To gain a clear understanding of the scale and nature of the proposed socio-economic effects, published statistical information and bespoke research sources will be used to establish existing conditions and indicate where the Proposed Development is likely to have an effect in the future. Consultation with appropriate bodies will be undertaken to establish current baseline conditions with respect to local facilities and capacities. These will include, but are not limited to, Local Planning Authorities, County Council, Police Force, Fire Service, Education Facilities and Health Services etc.

11.14 The socio-economic effect of the Proposed Development will be evaluated by:

- assessing the effect of the economically active elements of the residential population on the labour market and the prospects for employment;
- reassessing the effect of the Proposed Development on recreational and leisure facilities; and
- consulting the local authority, community groups, business representatives and police as appropriate.

11.15 Where necessary, as a result of these assessments, mitigation strategies will be devised to ensure adequate and/or enhanced facilities and services provision for residents of the area.

Significance Criteria

11.16 The process for determining significance for this Development would follow the criteria outlined in Section 6 of this Scoping Request.

Assessment of Cumulative Effects

11.17 As proposed within the wider ES methodology the cumulative assessment area is 5km. There are a number of solar farm sites that fall within this 5km area and all with be considered within the cumulative assessment to determine if the socio-economic impacts generated by them during construction would have a cumulative impact or either construction or operational phases of the Proposed Development.

12. NOISE

Introduction

12.1 During construction, noise and vibration could arise from both activities on the Energy Park site and the Grid cable route and National Grid Bicker Fen substation. These would include items such as the construction of onsite access tracks, solar panels, energy storage units, the substation, new Grid cable route and associated infrastructure at Bicker Fen substation. The movement of construction traffic relates to traffic both on the Energy Park site and travelling on public roads to and from the whole of the Development will also be considered.

12.2 During operation of the Energy Park, the main potential source of noise would be associated with electrical and mechanical plant; both the equipment located within the individual solar arrays and that proposed at the onsite substation and energy storage area. It is considered likely that an additional electrical unit will be required at the Bicker Fen substation. This will be considered as part of the assessment. Operation of the Energy Park may also be associated with some light vehicle traffic for maintenance purposes.

Preliminary Baseline Conditions

12.3 The baseline noise environment at and around the Energy Park was previously characterised as part of the assessment of the Heckington Fen Wind Park development. This included a detailed noise survey over a period of several weeks between March and April 2011.

12.4 The noise environment in the surrounding area is generally characterised by 'natural' sources, such as wind disturbed vegetation, birds and farm animals. Occasional military aircraft were also noted and, to the south of the site, road traffic on the A17 and A1121 is a significant source of noise. Intermittent local road and agricultural vehicle movements were also noted in the vicinity of the Energy Park.

12.5 Since the previous survey in 2011, it is considered unlikely that the background noise environment in the area would have changed significantly, outside of the periods of restrictions associated with the Covid-19 pandemic. Therefore, the previous survey undertaken is considered representative of the noise environment for noise-sensitive receptors neighbouring the Energy Park site. Measurements undertaken at locations distant from the A17 will be considered representative of similar receptors along the proposed cable connection route.

Guidance

12.6 The Noise Policy Statement for England (NPSE, DEFRA, 2010) and NPPF, NPS and draft NPS include general planning guidance on noise and introduces the principles of adverse noise effects (which should be mitigated and reduced to a minimum) and significant adverse noise effects (which should be avoided). The NPPF also notes that tranquil areas which have remained relatively undisturbed by noise and which are prized for their recreational and amenity value should be identified and protected.

12.7 The online Planning Practice Guidance (PPG, Department for Communities and Local Government, 2014, updated 2019) provides more detailed information on the relevance of noise to the planning process and on defining effect thresholds, although these are not precisely defined and need to

be considered on a case-by-case basis.

12.8 Professional Practice Guidance on Planning and Noise (ProPG, Association of Noise Consultants, Institute of Acoustics, Chartered Institute of Environmental Health, 2017) provides practitioners guidance on a recommended approach to the management of noise in the context of the planning system. Although focussed on new residential development, it encourages good acoustic design processes and highlights the importance of considering noise as an early part of development design.

12.9 BS 5228 Parts 1 and 2 (British Standard Institute, 2009, amended 2014) provide guidance on a range of considerations relating to construction noise and vibration including general control measures, estimating likely levels and example criteria.

12.10 BS 4142 (British Standard Institute, 2014 amended 2019) provides an objective method for rating the likelihood of complaint from industrial and commercial operations. It also describes the means of determining noise levels from fixed plant installations and determining the background noise levels that prevail on a site. Current Government advice to local planning authorities in England refers to BS 4142 as being the appropriate guidance for assessing commercial operations and fixed building services plant noise.

12.11 Operational noise and its propagation can be modelled using the standard methodology set out in ISO 9613-2: Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation' (International Standards Organisation, 1996). Reference will also be made against the draft EN-1 Section 5.14 and draft EN-3 Section 2.54.1, if these drafts have come into force at time of completion of the ES.

Approach/Proposed Scope of Assessment

Study Area

12.12 The assessment will consider noise sensitive residential locations in the vicinity of the Energy Park and cable connection route, which are considered highly sensitive to noise due to the rural nature of the area, there are a limited number of properties within the local area. There is also a planning consent for a new additional needs school on land next to the southern boundary of the site. This school is not yet built or operational, but its presence will be considered within the noise assessment as a highly sensitive future receptor.

12.13 Based on experience of similar developments, noise-sensitive locations will be considered within a region of approximately 250m from the boundary of the potential solar development areas and 1km from the proposed on-site substation and energy storage area. Along the cable connection route, dwellings within a 500m distance of particularly noisy works and additional plant proposed at the Bicker Fen substation (if relevant) will be considered.

Desk and field survey methods

12.14 A desktop review will be undertaken using available mapping and address data of the potential noise-sensitive receptors in the study area.

12.15 As discussed above, the previous survey data measured at a representative sample of the noise-sensitive receptors closest to the Energy Park site can be referenced to

characterise existing baseline noise levels in the area for the purpose of assessing the potential noise impacts of the Energy Park site.

Consultation

12.16 The approach to baseline noise characterisation and impact assessment methodology will be discussed with the Environmental Health Departments of both North Kesteven District Council and Boston Borough Council.

Likely Significant Effects

12.17 Operational noise effects would be associated with electrical and mechanical plant proposed as part of the Development. Whilst noise produced by the solar arrays themselves is expected to be minimal, associated electrical plant such as transformers and inverters can generate noise which is typically tonal in nature, making it potentially more noticeable. The proposed on-site substation and energy storage area can include larger electrical plant (also tonal in nature and with higher noise emissions), as well as ancillary cooling units, which will also require particular consideration. Discussion with National Grid indicate that there is the need for additional electrical equipment for the connection to the National Grid Bicker Fen substation. The presence of this additional equipment will also need to be taken into account.

12.18 There is a potential for adverse impacts to be created if some of these plant items are not suitably located or designed. Potential noise levels will be predicted on the basis of representative noise data for the plant units potentially installed, on a worst-case basis. The model will be developed using the ISO 9613-2 methodology based on the supplied data, indicative layout information and experience of similar installations. These predicted levels will be assessed relative to the existing baseline background noise levels at the relevant receptors, accounting for the potential character of the noise, in accordance with BS 4142. The greater the difference between predicted operational noise levels and baseline levels, the greater the impact (after also accounting for a number of contextual factors).

12.19 Primary mitigation will first involve reviewing the design of the Energy Park site to maximise (where possible) the distance from areas including noise-generating plant from noise-sensitive receptors. The detailed design of the Energy Park, including final plant locations and selections, can be controlled through DCO requirements to achieve suitable noise limits at neighbouring noise-sensitive properties.

12.20 In assessing the effects impacts of construction or decommissioning noise and vibration, it is accepted that the associated works are of a temporary nature. Assessment of the temporary effects impacts of construction is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required.

12.21 Although most on-site construction activities will be limited in intensity and extent (see below), some works along the connection route to the Bicker Fen substation could be associated with potentially significant impacts. Specifically, horizontal drilling may be required in some areas along this route. The potential impacts associated with this activity will

be predicted by referencing typical activity emission levels and likely variations in noise levels at surrounding receiver locations, using the methodology set out in BS 5228 Part 1. This standard also provides guidance on assessing the resulting noise levels based on a range of considerations including the absolute level of the noise. If considered necessary, suitable mitigation and management measures can be secured in the CEMP through planning conditions.

Issues Proposed to be Scoped Out

12.22 In this instance, the nature of the works to construct or decommission the Energy Park infrastructure is such that activities will be limited to a relatively low intensity and/or duration. Construction and decommissioning noise is therefore not expected to represent a significant effect provided that appropriate working methods and hours are adhered to (aside from potential impacts of the cable connection route considered above).

12.23 Similarly, the intensity of traffic associated with the construction, particularly heavy goods vehicles which are most likely to generate adverse noise impacts, is expected to be relatively limited. For roads that already include moderate to high traffic levels, the potential for significant noise effects due to changes in traffic flow associated with the construction or decommission would require large increases of 30% or more in the baseline traffic levels (overall or HGV only) which is considered unlikely. For roads that currently include more limited levels of traffic, although a traffic increase due to construction may be noticeable it would be associated with low absolute noise levels such that their temporary impact is also unlikely to be significant.

12.24 Although some construction activities, such as piling operations or vibratory rolling techniques, can generate vibration levels in close proximity to their use, they are considered unlikely to be used at the Energy Park or with such a limited extent that significant levels are unlikely. Occasional momentary vibration can arise when heavy vehicles pass dwellings at very short separation distances, but again this is not sufficient to constitute a risk of significant effects in this instance. The situation for the decommissioning phase would be similar.

12.25 Accordingly, site-specific predictions and assessments of construction or decommissioning noise and vibration are not warranted in this instance for most activities (aside those set out above). Suitable management and enhancement measures will however be described in the CEMP and CTMP, final versions of which can be controlled as DCO requirements, to control hours of the works and minimise noise and vibration impacts of construction/decommissioning activities and associated traffic.

12.26 Vehicular movements during the operational phase of the Site would be very limited and unlikely to be associated with any significant noise effects and so can also be scoped out.

12.27 Based on experience of similar installations, the plant likely to be used at the Site would generate insignificant levels of vibration at the boundary of the Site and so this aspect can also be scoped.

Assessment Methodology

Overview of Assessment of Significance

12.28 Residential receptors are considered highly sensitive. Magnitude of impact scale will be defined on the basis of the principles set out in the NPSE and PPG planning guidance: this will be determined using thresholds of Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL). These thresholds will be based on the above-referenced guidance documents and the draft NPS.

12.29 The sensitivity of the receptor and the magnitude of impact will both be used to determine the significance of effect. Moderate or major levels of effect are considered to be significant within the meaning of the EIA Regulations and mitigation will be considered. Minor or negligible effects are not considered significant, but enhancement measures will be considered to minimise the effects where possible.

Significance Criteria

12.30 The process for determining significance for this Development would follow the criteria outlined in Section 6 of this Scoping Request except that a low and medium magnitude of impact for a highly sensitive receptor would represent minor and moderate effects respectively.

Assessment of Cumulative Effects

13.1 As proposed within the wider ES methodology the cumulative assessment area is 5km. There are a number of solar farm sites that fall within this 5km area and all with be considered within the cumulative assessment to determine if the noise generated by them is likely to have a cumulative impact on either construction or operational phases of the Development.

13. CLIMATE CHANGE

Introduction

13.2 Climate change is regarded as an important environmental, social and economic policy concern and this is relevant to project level assessment and decision-making. Therefore, in line with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended in 2018) (the 'EIA Regulations'), the assessment will consider the following:

- Emissions reduction[14]: the potential effects of the Proposed Development on climate change, with measures included in the project to reduce the emissions of both direct and indirect greenhouse gases (GHGs); and
- Climate change adaptation: both the vulnerability of the Proposed Development to climate change and also the implications of climate change for the predicted impacts of the project, as assessed by the other topic specialists ('in-combination climate impacts').

13.3 The two direct forms of GHG emissions are:

- Carbon dioxide (CO_2), nitrogen oxide (NOx) and aerosol particulate matter (PM) emissions arising from road traffic during the construction and operational phases; and
- CO_2 emissions from the use of onsite combustion plant during construction and operation.

13.4 The two indirect forms of GHG emissions are:

- Off-site CO_2 emissions arising from the demand for energy produced using fossil fuels (e.g. electricity for heating, cooling, lighting and charging electric vehicles); and,
- Embodied carbon arising from the materials and systems which form the temporary and permanent structures and is a result of the extraction and manufacture of materials, fabrication, transport to site, waste and also the future demolition and potential for re-use.

13.5 Whilst particulate matter is not precisely a GHG, it is important to consider emissions of PM, as these are light-absorbing and consequently contribute to the rise in global temperatures (positive radiative forcing), but conversely also reflect a portion of the sunlight and so play a role in increasing the albedo, which moderates the temperature increase (negative radiative forcing). PM associated with vehicles is predominately in the form of black carbon or soot, which when released into the atmosphere will act to absorb heat and have a warming effect on the climate. Dust generally refers to larger particles (>10 µm in diameter) and whilst this will have the same warming effect, it will likely be less due to the increased weight of the particles causing deposition to ground to occur quickly.

13.6 Climate change is a relatively new topic in EIA. Guidance is evolving and there is no prescribed way in which climate change should be incorporated into an ES. However, in line with best practice, the proposed assessment reflects the IEMA's 'Environmental Impact Assessment Guide

14 Also known as 'climate change mitigation' and this is not to be confused with EIA mitigation. Climate change mitigation seeks to specifically reduce a development's GHG emissions. EIA mitigation is measures that aim to avoid, prevent, reduce or offset any identified significant adverse effects of a development

to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA Guidance 2017) and IEMA's 'Environmental Impact Assessment Guide to: Climate Change Resilience and Adaption' (2020) (IEMA Guidance (2020).

13.7 To ensure both emissions reduction and climate change adaptation are fully considered it is proposed that the ES chapter is split into two sections for clarity on likely effects.

Preliminary Baseline Conditions

13.8 Data on greenhouse gas (GHG) emissions is available from the National Atmospheric Emissions Inventory. As this data presents information on GHG emissions at a local authority scale, it cannot be related directly to the assessment of emissions associated with the Proposed Development. It does, however, provide useful context with respect to the key current sources of GHG emissions in the surrounding area. The Proposed Development is located within the administrative boundary of North Kesteven District Council, with the exemption of the Grid connection which lies wholly within Boston Borough Council. As such, the assessment will provide a breakdown of available GHG emissions from sectors relevant to the Proposed Development within these two administrative areas.

13.9 The baseline for direct and indirect CO_2 emissions will also consider the current site use, including existing carbon stock and/or release of GHG emissions. If available, the baseline for direct emissions associated with transportation will reflect the existing use of the site and immediate surrounds of the area.

13.10 The effects of a changing climate on the Proposed Development will largely be assessed in relation to the site as defined by the site boundary and its immediate surroundings.

13.11 The assessment for climate change adaption will use future baseline weather conditions in the final decade of the Proposed Development's life-cycle (40 years), as it is considered appropriate to undertake the assessment based on the full construction and operational phase timescales. As such, the assessment will ascertain whether these conditions would affect the Proposed Development or potentially alter other predicted impacts of the project. The UK Climate Projections (UKCP18)[15] highlight key changes in weather conditions that may affect the Proposed Development or exacerbate other predicted impacts if not considered as part of the project design and elsewhere in the ES:

- Summers will become hotter and drier;
- Winters will become milder and wetter;
- Soils will become drier on average;
- Snowfall and the number of very cold days will decrease; and
- Storms, heavy and extreme rainfall days (rainfall greater than 25mm) and heatwaves will become more frequent.

13.12 If necessary, sea level rise and storm surges will also be considered, using the relevant UKCP18 data.

15 Met Office (2021) UK Climate Change Projections 18 Key Results https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/ukcp18-project-news/index

Likely Significant Effects

Emissions Reduction

13.13 The generation of GHG emissions during construction will be inevitable. Embodied GHG emissions will also be generated during the production of the solar panels and associated infrastructure. However, these emissions will be offset during the early operational years of the Development, which will have an overall net positive significant effect on emissions reduction. The Development is for the installation of around 500MW of solar electricity generation and approximately 200-400MWMW of energy storage, and as such would be one of the largest solar schemes in the UK. Such a development would lead to a significant reduction in CO2 released from the generation of electricity from fossil fuel sources, with the creation of an energy storage facility enabling the renewably generated electricity to be released on to the Grid when it is required.

13.14 Alongside the installation of the renewable energy the land will be removed from intensive agriculture. Currently, to retain the fertility of the soil for arable farming, chemical fertilisers are applied to the land. The production of fertilisers is energy intensive and commonly involves the combustion of fossil fuels. In addition to this, the application of fertiliser generates nitrous oxide ($N0_x$) which is a GHG. $N0_x$ has a far greater global warming potential than CO_2 (265 times more by weight as CO_2). Use of these fertilisers will discontinue for a 40 year period, which will also result in the land reaching organic status when returned to arable crop production after decommissioning.

13.15 During the operational lifetime, it is intended that a low-density flock of sheep will graze the site. There is also a considerable area of the site that is to be used for ecological enhancements and habitat creation. It is expected that these measures will also have a positive effect in terms of carbon sequestration and storage.

Climate Adaptation

13.16 The IEMA Guidance (2020) states that there are two key elements to assessing climate change adaptation in EIA:

- Project resilience: described as "the risks of changes in the climate to the project (i.e. the resilience or conversely the vulnerability of a project to future climate changes)."
- In-combination effects: described as "the extent to which climate exacerbates or ameliorates the effects of the project on the environment."

13.17 Adopting a precautionary approach, prior to detailed consideration of proposed mitigation measures, both are scoped in for further assessment at this stage (as detailed further below under 'Assessment Methodology').

Assessment Methodology

Legislation, guidance and policy

13.18 In addition to the IEMA guidance the following legislation, guidance and policy will be referred to:

- The Paris Agreement 2015;
- The Glasgow Climate Pact 2021;
- The UK Climate Change Act 2008;
- The Carbon Budgets Order 2009;
- Overarching National Policy Statement for Energy (EN-1);
- Draft National Policy Statement for Renewable Energy Infrastructure (EN-3);
- National Policy Statement for Electricity Networks Infrastructure (EN-5);
- National Planning Policy Framework 2021;
- The Building Regulations Approved Document Part L, Current Requirements: Part L 2013 Incorporating 2016 Amendments;
- National Planning Practice Guidance 2019;
- The Central Lincolnshire Local Plan 2012-2036 (Adopted 2017);
- The Central Lincolnshire Local Plan Review; and,
- North Kesteven District Council's Climate Emergency Strategy and Action Plan 2020.

Emissions Reduction

13.19 The approach to the assessment will be best practice and in accordance with IEMA Guidance (2017). The guidance presents a series of principles developed by IEMA, stating that all GHG emissions are arguably significant and contribute to climate change, with combined effects bringing us closer to the scientifically defined environmental limit for climate change.

13.20 The assessment will consider the emissions of the Proposed Development based on a full life-cycle GHG assessment and ways in which these emissions can be reduced. This covers all direct GHG emissions arising from activities undertaken on the site during the construction, operation and maintenance, and decommissioning of the Proposed Development, as well as indirect emissions embedded within the construction materials arising as a result of the energy used for their production, and emissions arising from the transportation of materials, waste and construction workers.

13.21 The emissions reduction assessment will be a quantified assessment where possible. The global climate will be the direct receptor. Direct impacts upon the global climate will have subsequent effects on global ecosystems and the species which they support.

13.22 The approach to the assessment will consider the full life-cycle of the Proposed Development and potential sources of GHG emissions. GHG emissions offset through the production of lower carbon electricity compared to grid average emissions during the operational phase will be accounted for within the GHG emissions calculations.

13.23 Baseline and full life-cycle GHG emissions will be quantified using a calculation-based methodology aligned with the GHG Protocol[16].

16 World Business Council for Sustainable Development and World Resources Institute (2001) The GHG Protocol, A Corporate Accounting and Reporting Standard.

Significance of Effects

13.24 With respect to emissions reduction, there are no established thresholds for assessing the significance of the contribution an individual project can make towards climate change. However, section 6 of the IEMA Guidance (2017) states:

"GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be considered to be significant."

13.25 Appendix C of the IEMA Guidance (2017) also refers to the following principles:

"Where GHG emissions cannot be avoided, the EIA should aim to reduce residual significance of a project's emissions at all stages."

"Where GHG emissions remain significant but cannot be farther reduced... approaches to compensate the project's remaining emissions should be considered."

13.26 The significance of likely effects (including beneficial effects) will therefore be determined by using baseline road traffic data and with reference to stated commitments to reasonable and deliverable measures to reduce emissions in accordance with established thresholds and/or other benchmarks for performance, including relevant policy and guidance.

13.27 In line with IEMA Guidance (2017), mitigation will be considered as early as possible in accordance with the hierarchy for managing project related GHG emissions: (1) Avoid, (2) Reduce, (3) Substitute and (4) Compensate.

Climate Change Adaptation

13.28 The approach will reflect IEMA Guidance (2020). The guidance presents a framework for the consideration of climate change resilience and adaptation in EIA.

13.29 This Guidance states that there are two key elements to assessing climate change adaptation in EIA:

- Project resilience: described as "the risks of changes in the climate to the project (i.e. the resilience or conversely the vulnerability of a project to future climate changes."
- In-combination effects: described as "the extent to which climate exacerbates or ameliorates the effects of the project on the environment."

13.30 Consistent with the guidance, the approach will describe future climate scenarios that will be developed through the use of the UKCP18 high emissions scenario (RCP8.5 - Representative Concentration Pathways) for the final decade of the Proposed Development's operational life (40 years), which will be utilised for the future baseline. The projected change in the range of climatic conditions will be the 50% and 90% probability as per the IEMA Guidance (2020) which considers this RCP to provide a suitably conservative approach. This RCP will be used to indicate the projected temperature, and precipitation in the administrative region of the East Midlands which encompasses the Proposed Development and study area.

13.31 For in combination effects, the assessment will consider the effects on receptors under the current conditions and the future proposed climate conditions. It will include receptors from other technical topics that are likely to be affected by the

changes in annual mean temperatures and annual changes in summer and winter precipitation. In particular, the assessment will identify whether the potential impacts of the Proposed Development will be better or worse under the future baseline, altering the vulnerability of receptors and the identified significance of effects.

Significance of Effects

13.32 As there is no legislative definition of 'significance', the conclusion as to whether an effect is significant and its magnitude comes down to professional judgement, reflecting the determination of magnitude and sensitivity. For project resilience, significance should reflect the aims/ purpose of the project. For example, as an energy project such as this has the purpose of providing electricity supply, an impact which temporarily removes this supply should be considered potentially significant. For in-combination climate impacts, this judgement should be guided by the significance criteria established for the individual topic areas.

13.33 The receptor in terms of project resilience to climate change will be the Proposed Development itself and land within the area as defined by the site boundary.

Topics Potentially Scoped in for Further Assessment

13.34 Project resilience is scoped in for further assessment as projected climate change has the potential to impact on the project's ability to supply electricity.

13.35 For in-combination effects, each environmental topic chapter's respective effects and corresponding mitigation measures will be considered as part of the assessment. Environmental topic chapters will consider the future proposed climate conditions; however these changes will be more relevant to receptors identified in some topic chapters than others. The assessment of in-combination effects in the ES will include proportionate discussion on the potential for significant effects on identified receptors and justify the topic chapters which have been scoped out of the assessment.

13.36 At this stage, it is not possible to say conclusively which topics will be scoped into the assessment as there is insufficient data available on likely effects. However, the following topics may require further consideration. Scoping is intended to act as an iterative process so will continue as the assessment work progresses.

13.37 Landscape and Visual Amenity: Implications of changes in average temperatures, precipitation and extreme weather events will be given further consideration for landscape character, including any proposed planting associated with the Proposed Development.

13.38 Cultural Heritage: consideration will be given as to whether changes in temperature and rainfall patterns could affect above and below ground heritage assets. For example, waterlogged archaeological sites are susceptible to changes and fluctuations within the water table.

13.39 Flooding and Drainage: consideration of climate change will form an integral part of the assessment of flood risk and will be cross-referenced in this assessment. Decreased rainfall could also lead to seasonal and prolonged drying out of watercourses which may affect groundwater recharge and aquatic ecology.

13.40 Ecology: increased rainfall and flooding events, coupled with rising temperatures, may modify UK flora and fauna over time, with shifts in species' ranges. Natural England's 'Climate Change Risk Assessment and Adaptation Plan' sets out the risks and threats posed by current climate change projections. In association with the RSPB, Natural England has also published a Climate Change Adaptation Manual which details the potential effects of climate change on different habitat types.

Topics Potentially Scoped out for Further Assessment

13.41 At this stage, it is anticipated that the following topics will not require further consideration. Scoping is intended to act as an iterative process, however, so will continue as the assessment work progresses.

13.42 Air Quality: An increase in winter rainfall and/or in heavy rain days could lead to a possible decrease in relevant pollutant concentrations, with a decrease in summer rainfall leading to a possible increase in concentrations. Overall, however, at this stage, it is not anticipated that air quality conditions at the Site will fail to meet relevant air quality objectives as a consequence of projected climate change.

13.43 Noise: As a result of higher temperatures, any building services equipment that provides cooling for components of the Proposed Development will be required to operate at a higher intensity and for longer periods in the future, resulting in increased noise emissions. However, at this stage, this is not considered likely to increase the significance of overall noise emissions associated with the development.

13.44 Transport and Access: Increased rainfall/storms have the potential to lead to traffic disruption during flooding episodes. Increased summer temperatures may cause some disruption and discomfort, although this is unlikely to be a significant concern, particularly for the operational phase of the development.

13.45 Ground Conditions: The projected increase in rainfall/possible storm events has the potential to result in the mobilisation of ground contaminants when the soil is saturated leading to potential consequences for human health or water quality. During the projected warmer and drier summers, there is potential for soil to become airborne leading to impacts on air quality and human health. However, as the site is not considered to be contaminated, it is likely that this topic can be scoped out of the climate change adaptation assessment.

13.46 Socio-Economics and Human Health: Recent flooding events in the UK highlighted the extent to which economic activity and human welfare can be affected by flooding from increased rainfall. Temperatures are also likely to increase, which may lead to overheating concerns, particularly during construction. However, at this stage, it is considered that this topic can be scoped out of the climate change adaptation assessment.

Significance Criteria

13.47 The process for determining significance for this Development has been defined in the earlier in this section for Climate Change.

Assessment of Cumulative Effects

13.48 With respect to emissions reduction, climate change is, in essence, a cumulative effect and all GHG emissions from projects are arguably significant to the receptor (the global climate). All developments which will be included in the cumulative assessment are likely to involve the generation of direct, indirect and embodied greenhouse gas emissions during construction and further emissions during operation. It is not possible to compare the level of these emissions against a 'baseline' of those associated with the previous use of the sites, or any existing developments which would be replaced by the new developments. However, it is considered appropriate to assume that all developments will be required to meet relevant standards for emissions reduction and to comply with related planning policy. On this basis, it is considered appropriate to assume that any applications that are consented include 'reasonable' measures to avoid, reduce and/or offset the generation of GHG emissions and therefore that no significant cumulative effects will be anticipated.

13.49 Climate change adaptation is largely a project specific consideration, namely the resilience of the project in question to climate change and the extent to which projected climate change could alter the predicted impact judgements. Project resilience is not likely to be affected by the presence of other developments and therefore will be scoped out of the cumulative assessment. In relation to the other ES technical assessments and possible interactions with other developments, potential cumulative 'in combination climate impacts' will be given further consideration as the assessment work progresses.

14. TRANSPORT & ACCESS

Introduction

14.1 The Transport and Access chapter of the EIA will be prepared with reference to the Institute of Environmental Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic', as appropriate.

14.2 This section of the Scoping Report sets out the proposed methodology for the assessment of the proposed development against transportation matters. In particular, the methodology would consider the potential effects of the proposed development on the local highway network.

Relevant Policy and Guidance

14.3 The transport impact of the proposed development will be considered with reference to local and national guidance and policy contained in the NPS and draft NPS, National Planning Practice Guidance (NPPG), National Planning Policy Framework (NPPF), IEMA Guidelines for the Environmental Assessment of Road Traffic, the Design Manual for Roads and Bridges and the 4th Lincolnshire Local Transport Plan (2013), as appropriate.

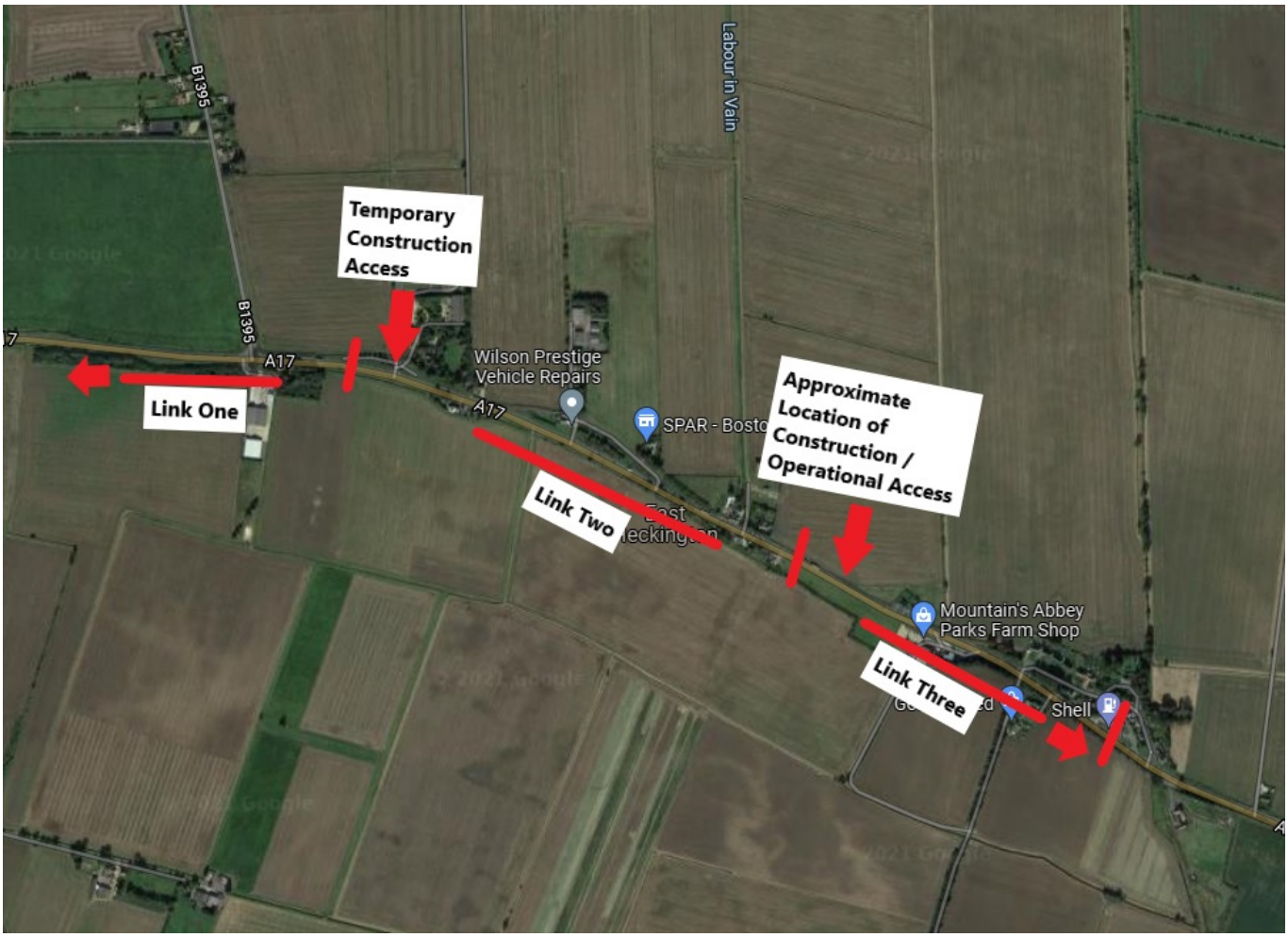


FIGURE 14 – INDICATIVE TRAFFIC LINK LOCATIONS

Preliminary Baseline Conditions

14.4 At this stage, it is proposed that Annual Average Daily Traffic (AADT) will be assessed at three links along the A17. Automatic Traffic Count (ATC) surveys will be carried out to provide the baseline traffic flows at each link. It is not considered necessary to extend the assessment to the B1395 or Six Hundreds Drove, given that both the construction and operational access is proposed direct from the A17. It is therefore anticipated that there will be no traffic impact in these locations. The proposed link extents are indicatively shown previously at Figure 14.

14.5 Given the temporary nature of the construction traffic, it is considered appropriate to consider this against the baseline survey year, which is anticipated to be in 2022. A future year of 2027 is proposed for the consideration of operational traffic, on the basis that all construction activities at the site will be complete. Subject to the highway authority's views, we will write separately in due course to agree an appropriate Trip End Model Presentation Program) (TEMPro) growth rate.

Likely Significant Effects

14.6 Access to the Energy Park is proposed via a new priority junction with the A17, in the position of the previously consented wind farm access. This new access point has not yet been built. This access will be used for both construction and operational purposes of the Energy Park. Whilst this access is being constructed, temporary access is proposed via an existing vehicular access with the A17 which currently provides access to land adjacent to Elm Grange Studios. Access via this route will cease once the main access is completed.

14.7 Access will also be required for construction of the new Grid cable route. This route has not yet been determined, but the ES will consider the access routes the construction team will need to take to complete the necessary works for laying of the cable. The Application will also need construction and operational access to the Bicker Fen substation to install and maintain the new equipment at this existing substation. There is already access to this substation and it is being determined with National Grid if it is possible to continue to use this existing access track.

14.8 The proposals will also be supported by a draft Construction Traffic Management Plan (CTMP). This will summarise the traffic movements anticipated throughout the construction period and the associated mitigation measures to be agreed with the highway authority at LCC. A scope for the draft CTMP will be agreed with LCC in due course.

14.9 Operational traffic will be minimal. There will be a need for regular maintenance checks for the electrical equipment and energy storage facility on the Energy Park. There will also be those involved in the maintenance of the ecological enhancement areas and the shepherd with his flock for grazing the site. The number of vehicles needed for the operational phases is not known at this time, but they are expected to be no more than a few vehicle movements each day.

14.10 The traffic for the decommissioning period is expected to be similar to the movement numbers in construction. However, the decommissioning period is expected to around 6-12 months, so less than the construction phase (estimated to be 18mths).

14.11 The minimal traffic movements for the operation of the Development would not lead to an increase in traffic number of 30% which is a threshold IEMA uses to determine if an impact has the potential to be significant (see below in methodology). It is therefore proposed to scope out the operational transport requirements of the Development from the Environmental Assessment as there is little likelihood that these will form a significant environmental effect.

Assessment Methodology

14.12 IEMA rules will be applied to define the threshold impacts for development traffic which will inform the scale and extent of the transport chapter work. On this basis, links where the traffic flows are expected to increase by more than 30%, or where HGV flows are expected to increase by more than 30% as a result of the proposed development will be considered. Links in proximity to sensitive receptors, where traffic flows are expected to increase by more than 10% as a result of the proposed development will also be considered. Sites that are considered to be sensitive receptors with reference to IEMA are Conservation Areas, schools, health facilities, community facilities and congested junctions. Any sensitive receptors will be agreed with the highway authority at LCC in due course.

14.13 Where the predicted increase in traffic and HGV flow is lower than these thresholds then the significance of the effects can be considered to be low or not significant, then it is considered that detailed assessment is not required.

14.14 The transport chapter would provide an assessment of the predicted impact on the local highway network by using pre-defined significance criteria set out within the IEMA guidance. Those criteria will be based on the net change in journeys as a result of construction and operational traffic values and any mitigation to be delivered as part of the proposals. The significance criteria would establish the magnitude of any beneficial or adverse effects the proposed development will have on the transport network.

14.15 Liaison will take place with highway officers at the highway authority as appropriate.

14.16 In summary, with reference to the IEMA guidance, it will consider the forecast impacts of the proposed Development on the following throughout the construction phase of the development:

- driver severance and delay.
- accidents and safety.
- hazardous and dangerous loads; and
- dust and dirt

14.17 Given that there are anticipated to be limited pedestrians within the vicinity of the site (noting the absence of footway provision on the northern side of the A17), it is not considered necessary to consider the impacts of the development on:

- pedestrian severance;
- pedestrian delay.
- pedestrian amenity; and
- fear / intimidation.

14.18 The residual impacts of the scheme, taking into account any proposed mitigation would then be assessed and confirmed. Other impacts including noise and vibration will be considered by other disciplines throughout the EIA.

Preliminary discussions of mitigation and enhancement measures

14.19 With regards to the completed and operational Proposed Development, many mitigation measures are embedded into the design of the scheme. If further likely significant effects are determined, where possible, mitigation measures will be proposed so that residual effects are not significant

Significance Criteria

14.20 The process for determining significance for this Development would follow the criteria outlined in Section 6 of this Scoping Request.

Assessment of Cumulative Effects

14.21 Discussions are in the early stages with the two Local Planning Authorities and the County Council Highway team to determine what sites they wish to see in any cumulative assessment for construction traffic.

14.22 At this time, it is proposed to include all those sites which are listed in Section 6 of this Scoping Report. If further sites are requested by the Highways Department at the County Council, they will also be included within the cumulative assessment.

15. AIR QUALITY

Introduction

15.1 An Air Quality Assessment will be undertaken by the Applicant's air quality consultants, Hoare Lea, to determine the likely significant air quality effects as a result of the Proposed Development and assess their significance. The proposed method of assessment for identifying likely significant environmental effects associated with construction, operation and decommissioning phases of the Proposed Development is described in this chapter. The Air Quality Assessment will address impacts from the EIA Assessment Area as a whole. The results of the assessment will be presented in the ES and relevant mitigation measures considered to address any adverse significant effects and to minimise harm to nearby receptors. The residual effects will be assessed and presented in the ES.

Preliminary Baseline Conditions

Local Air Quality Monitoring

15.2 The EIA Assessment Area is located approximately 11.3 km west of its nearest Air Quality Management Area (AQMA), 'Haven Bridge AQMA' which is located in Boston Borough Council's (BBC) administrative area and which has been declared for exceedances of the annual mean nitrogen dioxide (NO_2) air quality objective (AQO).

15.3 The EIA Assessment Area is partly located within North Kesteven District Council's (NKDC) administrative area and partly within BBC's. The EIA Assessment Area is also located in close proximity to the administrative areas of East Lindley District Council (ELDC), South Kesteven District Council (SKDC) and South Holland District Council (SHDC).

15.4 Automatic monitoring is currently undertaken by SHDC, but not by NKDC, SKDC or BBC. Monitoring data for ELDC is currently unavailable and as such the number of monitoring sites that are in operation is unknown at this stage.

15.5 SHDC operate two automatic monitoring stations within its administrative area, the closest of which is CM1 which is located 16.2 km away from the EIA Assessment Area, respectively. Recent monitoring data from 2015 to 2020 for automatic monitoring station CM1 and a visual representation of the location of the automatic monitoring station is shown in Figure 15.

15.6 The pollutant concentrations recorded in 2020 are not considered to be representative of "normal" air quality conditions. Whilst it is expected that as a result of the COVID-19 pandemic behaviours will change in the future, the impact of this on air quality long-term is currently unknown and therefore the use of 2020 data will be omitted from any analysis, but has been included for information.

TABLE 15.1: AUTOMATIC MONITORING DATA

Automatic Monitoring Station and Distance (km) from EIA Assessment Area (approx.)	Objective	2015	2016	2017	2018	2019	2020
NO_2							
CM1 (SHDC), Spalding Monkhouse School, 16.2 km, Urban Background	Annual mean (µg/m^3)	10.5	12.7	10.8	9.4	9.3	8.5
	Number of hours with concentrations >200 µg/m^3	0	0	0	0	0	0
PM_{10}							
CM1 (SHDC), Spalding Monkhouse School, 16.2 km, Urban Background	Annual mean (µg/m^3)	15.4	13.5	11.8	13.1	13.7	10.8
	Number of days with concentrations > 50 µg/m^3	1	2	0	1	0	0

15.7 Further to this, a wide network of diffusion tubes is utilised by NKDC, SKDC, BBC and SHDC to monitor annual mean NO_2 concentrations across their administrative areas.

15.8 There are no diffusion tubes located in the immediate vicinity of the EIA Assessment Area, however there are two diffusion tubes located between approximately 2.5km and 4.5 km distant, with one situated in NKDC's administrative area and the other in SHDC's provides the latest annual mean NO_2 concentrations at the nearest diffusion tube locations to the EIA Assessment Area for the years 2019 and 2020. The locations of the diffusion tubes are illustrated in Figure 15.

FIGURE 15 DIFFUSION TUBE LOCATIONS AND AUTOMATIC MONITORING STATIONS IN THE VICINITY OF THE EIA AREA. CONTAINS OS DATA © CROWN COPYRIGHT AND DATABASE RIGHTS 2021

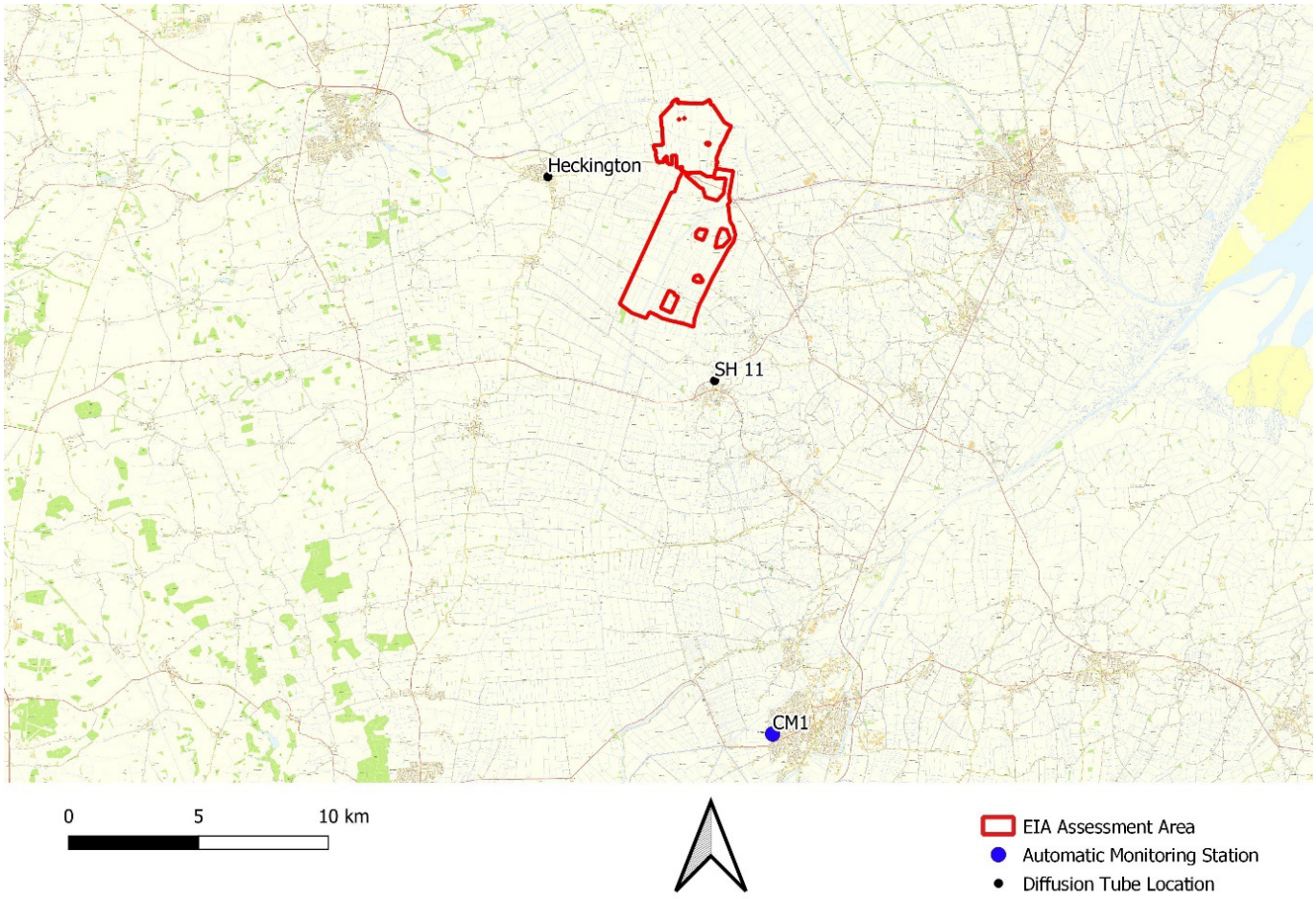


TABLE 15.2: DIFFUSION TUBE DATA

Diffusion Tube ID	Diffusion Tube Name	Site Type	Distance from EIA Assessment Area	2019	2020
Heckington (NKDC)	Heckington	Kerbside	4.3	17.3	14.6
SH 11 (SHDC)	A52 Donington	Roadside	2.5	15.5	-

15.9 As noted above, monitoring data for 2020 has been included for information only. There have been no exceedances of the annual mean NO_2 objective of 40 µg/m^3 at either diffusion tube near in 2019, which is the only year with available monitoring data at these locations. The location with the highest concentration in 2019 was Heckington, located at the intersection between B1394 Station Road and B1394 Boston Road, monitoring 17.3 µg/m^3 or 43% of the annual mean objective. As such it is considered likely that no exceedances of the annual mean objective will be experienced in the vicinity of the EIA Assessment Area.

15.10 The 1-hour mean AQO for NO_2 is 200 µg/m^3 and should not be exceeded more than 18 times within a year under the AQMA. In line with Local Air Quality Management Technical Guidance (LAQM.TG(16))[17], exceedances of the 1-hour mean NO_2 objective are unlikely to occur where the annual mean concentration is below 60 µg/m^3. Concentrations at nearby diffusion tubes shown show that the 1-hour mean NO_2 objective is unlikely to be exceeded at these locations.

Defra Predicted Concentrations

15.11 The background concentrations have been obtained from the national maps published by Defra[18]. These estimated concentrations are produced on a 1km by 1km grid basis for the whole of the UK. The EIA Assessment Area falls into 36 grid squares. Predicted concentrations for these grid squares for NO_2, PM¬10 and $PM_{2.5}$ are provided in Table 15.3 for 2021.

TABLE 15.3 ESTIMATED ANNUAL MEAN BACKGROUND CONCENTRATIONS IN 2021 IN µg/m^3

Year	Background		
	NO_2	PM_{10}	$PM_{2.5}$
2022	6.4–7.6	15.2–16.0	8.2–8.7

15.12 It can be seen that the modelled background NO_2 concentrations are below the objective levels for NO_2, PM_{10} and $PM_{2.5}$ in 2022.

Baseline Surveys

15.13 An air quality monitoring survey is proposed to gain a better understanding of NO_2 concentrations in the vicinity of the EIA Assessment Area. Monitoring will be undertaken using diffusion tubes in triplicate (i.e. three tubes in each location) for a period of six months in line with the Defra Diffusion Tube Calendar. The data collected would be used to inform model verification if dispersion modelling is required. Monitoring locations will be informed by likely construction vehicle routing and discussed and agreed with Environmental Health Officers at both BBC and NKDC prior to commencement.

17 Defra (2021) Local Air Quality Management Technical Guidance (TG16) – [online] (Last accessed: 03/12/2021), Available at: https://laqm.defra.gov.uk/documents/LAQM-TG16-April-21-v1.pdf

18 Defra (2018) Background Pollution Maps – [online], (Last accessed: 03/12/2021), Available: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

Likely Significant Effects

Construction and Decommissioning Phase Emissions

15.14 During the construction and decommissioning phases of the Proposed Development, there is potential for air quality impacts associated with road traffic emissions from construction vehicles.

15.15 The impacts of the decommissioning phase are often similar to, or of a lesser magnitude than the concentrations generated during the construction phase. Therefore, decommissioning will not be assessed separately.

Operational Phase Emissions

15.16 Limited effects may occur in the operational stage of this development from the movement of vehicles over the site for maintenance.

Issues Proposed to be Scoped Out

15.17 The following aspects are proposed to be scoped out of the air quality ES Chapter as they are expected to have no likely significant effects:

- Impacts to air quality at sensitive human and ecological receptors due to fugitive dust emission during the construction phase as mitigation is expected to be inherent. A construction dust risk assessment will be undertaken to inform appropriate mitigation and appended to the outline Construction Environmental Management Plan (oCEMP) as detailed below;
- Impacts to air quality at sensitive human and ecological receptors from non-road mobile machinery (NRMM) as emissions of NO_X and PM_{10} will be required to adhere to emissions standards, therefore the effects of construction plant on local air quality would be insignificant; and
- Impacts to air quality at sensitive human and ecological receptors from the operational phase of the Proposed Development as traffic flows are expected to be minimal and no combustion plant will be present on site.

19 DECC (2011) Overarching National Policy Statement for Energy [online] (Last accessed: 03/12/2021), Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

Assessment Methodology

Legislation and Guidance

15.18 The Air Quality Assessment will be undertaken in line with the following legislation and guidance documents:

- National Policy Statement (NPS) EN-1 (2011)[19] and draft NPS (2021)[20];
- National Policy Statement (NPS) EN-3 (2011)[21] and draft NPS EN-3 (2021) [22] ;
- The National Planning Policy Framework (NPPF) 2021[23];
- Planning Practice Guidance (PPG)[24];
- Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction[25];
- Environmental Protection UK (EPUK), and IAQM Land-Use Planning & Development Control: Planning for Air Quality [26];
- Defra Local Air Quality Management Technical Guidance (LAQM.TG(16))16 ;
- Central Lincolnshire Local Plan (2017)[27]; and
- South East Lincolnshire Local Plan (2019)[28].

19 DECC (2011) Overarching National Policy Statement for Energy [online] (Last accessed: 03/12/2021), Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

20 Department for Business, Energy and Industrial Strategy (2020) Draft Overarching National Policy Statement for Energy - [online] (Last accessed: 03/12/2021), Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015233/en-1-draft-for-consultation.pdf

21 DECC (2011) National Policy Statement for Renewable Energy Infrastructure [online] (Last accessed: 03/12/2021), Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/37048/1940-nps-renewable-energy-en3.pdf

22 Department for Business, Energy and Industrial Strategy (2020) - [online] (Last accessed: 03/12/2021), Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015236/en-3-draft-for-consultation.pdf

23 Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework, Department for Communities and Local Governments, London

24 Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance, London

25 Institute of Air Quality Management (2016) Guidance on the assessment of dust from demolition and construction v1.1 – [online], (Last accessed: 03/12/2021), Available at: iaqm.co.uk/text/guidance/construction-dust-2014.pdf

26 Environmental Protection UK and Institute of Air Quality Management (2017), Land-Use Planning & Development Control: Planning For Air Quality v1.2 – [online] (Last accessed: 03/12/2021), Available at: iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

27 Central Lincolnshire (2017) Central Lincolnshire Local Plan – [online] (Last accessed: 03/12/2021), Available at: https://www.n-kesteven.gov.uk/EasySiteWeb/GatewayLink.aspx?alId=54815

28 South East Lincolnshire (2019) South East Lincolnshire Local Plan – [online] (Last accessed: 03/12/2021), Available at: http://www.southeastlincslocalplan.org/wp-content/uploads/2019/02/Local-Plan-text-March-2019.pdf

Study Area

15.19 The study area will cover a wide zone of influence (i.e. 5km from the EIA Assessment Area). The diffusion tube monitoring and detailed dispersion modelling that are proposed to be undertaken for the construction phase, if required, will be included within this zone.

Potential Sensitive Receptors

15.20 IAQM guidance advises the need for a construction dust assessment if there are human receptors within 50m of the boundary of the site, or within 50m of construction vehicle trackout routes, and if there are ecological receptors within 50m of the site boundary or the trackout routes. There are sensitive human receptors within 50m of the site boundary and within 50m of the potential construction vehicle routes, however, there are no ecological sites within the 50m distance of the site or trackout routes.

15.21 The impacts from road emissions during the construction phase at sensitive human receptors along construction routes will be considered where the change in traffic flows exceed the relevant EPUK/IAQM criteria. At this stage it is not considered likely that there will be any sensitive ecological receptors within 200m of any roads affected by construction traffic. This will be confirmed with Transport Consultants and Ecologists for the Proposed Development.

15.22 The sensitive receptors that will be considered in the Air Quality Assessment include the e existing sensitive receptors in the vicinity of the EIA Assessment Area and potential construction routes, including residential properties and schools

Potential Effects

Construction and Decommissioning Dust

15.23 The works being undertaken during the construction phase include earthworks, construction and trackout. It is anticipated that dust and particulate matter emissions produced during construction phase activities would be inherently controlled through the implementation of an outline Construction Environmental Management Plan (oCEMP). Therefore, the effects of dust and particulate matter emissions released during the construction phase of the Proposed Development from on-site activities are unlikely to be considered significant and have been scoped out of the ES.

Construction and Decommissioning Traffic

15.24 Construction traffic generation is unknown at this time, but subject to traffic generation this may require modelling in order to assess its impacts.

15.25 If the change in flow exceeds the criteria in the EPUK and IAQM guidance document 'Land Use Planning and Development Control: Planning for Air Quality' (January 2017), i.e. greater than 100 Heavy Duty Vehicles (HDVs) as an annual average daily traffic (AADT) (outside of an AQMA), then the impact of the traffic on existing receptors will be assessed quantitatively.

15.26 If required, dispersion modelling will be used to predict concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors adjacent to roads affected by the Proposed Development. Modelling will be carried out following Government guidance and using an appropriate model ('ADMS-roads'). Dispersion modelling calculations will be

verified using data gathered in the baseline air quality survey and Local Authority monitoring stations, where appropriate.

15.27 Model predicted concentrations would be compared to the current statutory standards and objectives. The air quality impact at existing sensitive human and ecological receptors will be described using terms outlined in the EPUK/IAQM guidance. These terms are derived from the percentage change in concentration relative to the air quality assessment level and with the total long-term average concentration during the construction of the Proposed Development. The EPUK/IAQM impact descriptors are Substantial, Moderate, Slight and Negligible.

15.28 Appointed transport consultants for the Proposed Development will provide construction traffic data. If construction traffic flows do not exceed the above criteria, impacts will be scoped out of the assessment, however this will be determined when data becomes available and agreed with the Environmental Health Officer at the Local Planning Authority.

Significance Criteria

Construction and Decommissioning Phases

15.29 The significance of effects at sensitive receptors will be described as Major, Moderate, Minor or Negligible. The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine its significance, on a scale of large or high, medium, small or low and negligible. Professional judgement is used throughout this process.

Assessment of Cumulative Effects

15.30 Discussions are in the early stages with the two Local Planning Authorities Environmental Health teams to determine what sites they wish to see in any cumulative assessment for air quality impacts due to construction traffic, if dispersion modelling is required.

15.31 At this time, it is proposed to include all those sites listed in Section 6 of this Scoping Report that will be operational at the peak construction year. If further sites are required by the Environmental Health Teams of the Local Councils, they will also be included within the cumulative assessment.

16. LAND USE AND AGRICULTURE

Introduction

16.1 This topic considers the potential effects of the Proposed Development on agricultural land and businesses. In particular the topic considers the agricultural land quality of the area, and the extent to which land quality and soil resources will be affected.

Preliminary Baseline Conditions

16.2 Agricultural land can be graded according to its inherent limitations for agricultural use. Grade 1 is excellent quality and Grade 5 is very poor quality. Grade 3 is divided into subgrades 3a "good" and 3b "moderate" quality land. Grades 1, 2 and 3a are defined as the "best and most versatile" in the NPPF.

16.3 The Proposed Development site is shown on the published "provisional" Agricultural Land Classification (ALC) maps, published in the 1970's, as a mixture of Grade 1 "excellent" and Grade 2 "very good" quality.

16.4 Natural England published a strategic map showing predictive likelihood of Best and Most Versatile land (BMV) for the region in 2017. The Development site is shown on the predictive maps as mostly in the "high likelihood of BMV (>60% area BMV)", as is all the land surrounding.

16.5 Land on the eastern edge of Heckington has been graded in the past as Grades 2 and subgrade 3a, but no survey data was available for this site.

16.6 In order to inform the assessment, we have carried out an Agricultural Land Classification survey. Given the size of the Development site the survey has been carried out at a semi-detailed scale. This has involved 138 auger locations on a regular 200 metre grid across the site. The Development site is 586ha in size. No auger measurements were taken for the EIA area where the cable route to Bicker Fen will be laid. This was not included as the cable will be laid via underground trenching/moling and so there will be no loss of agricultural land.

16.7 In addition, the farming circumstances of the farm businesses involved will be investigated via interview and site survey as appropriate.

Likely Significant Effects

16.8 The Energy Park has the potential to affect the agricultural land quality of the site. This could result in the temporary loss of the arable use of the agricultural land of BMV or lower quality (operational life is 40 years) on the Energy Park. The Energy Park site will be farmed during the operational lifetime as sheep grazing. This could be mitigated by careful construction methodologies, including during the decommissioning stage. This will be considered within the assessment. There will be no long-term effects on the land used for the laying of the Grid cable to Bicker Fen as after the trench is dug and cable laid it will return to its current land use.

16.9 The proposed Development has the potential for adverse and beneficial economic impacts for the businesses affected, and this will be considered and assessed.

Assessment Methodology

16.10 The assessment will consider the agricultural land quality of the site, and the extent to which the proposed Development will affect the inherent land quality. It will consider the method of construction and the impact this would have on soil

qualities. It will consider the potential for removal of the panels and therefore the reversibility of the impact, and it will consider the extent to which agricultural use can continue during the life of the proposed development.

16.11 The potential loss of agricultural land will be considered by reference to the guidance in the NPPF (2021), The Town and Country Planning (Development Management Procedure) (England) Order 2015, Planning Practice Guidance, the Local Plan, and the draft NPS.

16.12 Implications of solar farm developments on agricultural land are considered further in draft NPS EN-3 and the national Planning Practice Guidance (PPG): Renewable and Low Carbon Energy, June 2015. Paragraph 013[29] of this guidance sets out a number of factors that should be considered by the Local Planning Authority (LPA) in the determination of a planning application for large-scale solar farms. The second bullet of which states that:

"where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays. See also a speech by the Minister for Energy and Climate Change, the Rt Hon Gregory Barker MP, to the solar PV industry on 25 April 2013[30] and written ministerial statement on solar energy: protecting the local and global environment made on 25 March 2015."[31].

16.13 Draft EN-3, at paragraph 2.48.13, however recognises that "land type should not be a predominating factor in determining the suitability of the site location."

16.14 This Energy Park is utilising an area of over 586ha of agricultural land. Of this 490ha is currently proposed to be used for energy generation and the remaining area to be used for ecological enhancements. Of this 490ha, for the energy generation, 51% of the site is Grade 3b land or below and therefore considered to be poorer quality land. The remaining 49% of the area for energy generation is a combination of Grade 3a (124.36ha), Grade 2 (54.22ha) and Grade 1 (33.1ha) land which is considered Best and Most Versatile (BMV).

16.15 As a result, the ES will include a site search exercise that will consider other areas of land within a similar connection distance to the National Grid Bicker Fen substation, which are of a similar size to the Energy Park (490ha) and are not BMV land. Such a site search will help to demonstrate that the Energy Park site is not an unreasonable site for an Energy Park development when considering the constraint of agricultural land grade.

16.16 Such a site search exercise will show the acceptability of the Energy Park site for compliance with this draft NPS. The site search will be prepared and will accompany the DCO application.

16.17 There is no set methodology for such a site search exercise to determine acceptability against the PPG or draft NPS. However, many solar farm applications have completed such a site search, which have been considered by Local Planning Authorities and PINS and deemed compliant when determining ground mounted solar farm application.

29 NPPG: Renewable and Low Carbon Energy, Paragraph 013, reference ID: 5-013-20150327 (as at 27/03/2015)
30 Speech by the Minister for Energy and Climate Change: www.gov.uk/government/speeches/gregory-barker-speech-to- the-large-scale-solar-conference
31 Written Ministerial Statement on Solar Energy: Protecting the local and global environment: https://questions-statements.parliament.uk/written-statements/detail/2015-03-25/HCWS488

16.18 It is proposed that the constraints to be applied to the site search exercise for Agricultural Land Classification are as follows:

- Site must be within 8km from the National Grid Bicker Fen substation. The Heckington Fen Development site is proposing to connect into the Bicker Fen substation and new underground Grid cabling of approximately 8km will be required to make this connection. There is known grid capacity at this substation and for a development of this size there would not be capacity at a lower grid connection for example, 132kV or 33kV;
- Aspect of the land facing south-east through to south west;
- None of the alternative sites are to be allocated under the Local Plans for other purposes, such as residential;
- 100m buffer from residential development, 10m buffer to other existing buildings, 10m buffer for roads either side and 10m buffer from railway lines either side;
- No Ecological designations on the site – such as SSSI, SAC, SPA, NNR, LNR, Ancient Woodlands, Woodland, RSPB Reserves or Ramsar;
- Landscape and Heritage Assets such as Conservation Areas, Green Belt, AONB, World Heritage Sites, Schedule Monuments, Listed Buildings, Battlefields, Open Access and Registered Common Land, Country Parks and Registered Parks and Gardens are to be avoided;
- Agricultural Land Classification – sites that are low Grade (Grade 3b, 4 and 5 or Previously Developed). As this Energy Park site has Grade 2 within it Grade 3a land/sites will also be considered;
- Similar Area of land (490ha) to allow for a similar size scheme of development; and
- Sites within Flood Zone 2 and 3 land.

Significance Criteria

16.19 Land of "best and most versatile" quality is considered to be a receptor of high sensitivity. Whilst Natural England estimate that BMV land accounts for 42% of farmland in England[32], such that this is not a rare resource, it is nevertheless identified as a resource worthy of protection. Land of subgrade 3b, 4 and 5 is considered to be a resource of moderate/ medium sensitivity.

16.20 Full-time farm businesses are considered to be a resource of moderate/medium sensitivity. Farms can normally adapt to change brought about by a raft of different factors, and accordingly are not highly sensitive to change. Part-time farm businesses are considered to be of low sensitivity. Consultation with LCC and their members has identified concerns about the loss of agricultural land for developments. This consultation has requested that the economic effects the loss of the agricultural element of the land (from arable to low intensity grazing) is considered.

16.21 In terms of magnitude of impacts, for this assessment it is proposed that the loss of more than 50 ha of BMV land will be considered to be a large/major magnitude, losses of 20-50 ha are of moderate/medium magnitude and losses of less than 20 ha to be of low magnitude. This magnitude criteria is set by Natural England advice that within the Local Authority planning system they only seek

32 Natural England Technical Information Note 049, 2012

to be consulted on planning application where 20+ha of agricultural land is to be lost through a change of use. Below 20ha (even if the land in BMV) Natural England do not require to be consulted.

Assessment of Cumulative Effects

16.22 Consideration will be given to the cumulative sites that are identified in Section 6 of this Scoping Report and any additional ground mounted solar sites, with a 5km area that have entered the planning system by the time this application is submitted. Consideration will not be given to other forms of development that may be removing 20ha or more of BMV agricultural land for their development.

16.23 Sites which come forward which are smaller than 20ha will not be included within the cumulative assessment as a development of this size would not normally be considered for its impact for loss of agricultural land within the UK planning system as Natural England do not require to be consulted on areas of agricultural land less than 20ha (regardless of agricultural grade).

17. GLINT AND GLARE

Introduction

17.1 A glint and glare assessment will be undertaken to assess the likely impact of solar reflection on receptors within the Development's surrounding environment.

17.2 Glint and glare in this context is the effect of reflected sunlight causing harm or discomfort to a sensitive receptor. A glint can be defined as the momentary receipt of a bridge of light and a glare can defined as the receipt of a bright light over an extended or continuous period of time .

Preliminary Baseline Conditions

17.3 There are currently no solar PV modules in the vicinity of the proposed Development, and therefore no glint and glare effects associated with them. Other reflection effects occur from windows, glasshouses, car windscreens and water bodies, including the sea.

Likely Significant Effects

Relevant Legislation Guidelines and Policy

17.4 Glint and glare assessments are sometimes required to accompany planning applications for solar developments, depending on the determining planning authority's judgement for their need. There are no guidelines setting out a particular methodological approach.

17.5 The draft NPS EN-3 states in Section 2.52:

"Solar PV panels are designed to absorb, not reflect, irradiation. However, the Secretary of State should assess the potential impact on glint and glare on nearby homes and motorists...

17.6 There is no evidence that glint and glare for solar farms interferes in any way with aviation navigation or pilot and aircraft visibility or safety. Therefore, the Secretary of State is unlikely to give any weight to claims of aviation interference as a result of glint and glare from solar farms."

17.7 A geometric assessment will be undertaken to identify the potential for solar reflections to impact on sensitive receptors such as properties and vehicles moving along the road network. The assessment is proposed to be limited to ground based receptors and will exclude aviation receptors. The nearest active airfield is Boston Aerodrome which is 14km to the east. At this distance significant glint and glare impacts are extremely unlikely which is supported by the sentiment of the draft EN-3.

Assessment Methodology

17.8 The proposed assessment methodology will adhere to the following sequence:

1. Identify the receptors of concern;

2. Choose appropriate receptor locations based on the above;

3. Define the proposed solar park area and choose an appropriate assessment resolution;

4. Undertake geometric calculations to determine whether a solar reflection may occur, and if so, when it will occur;

5. If a reflection can occur, determine whether the reflecting panels will be visible from the identified receptor location. If the panels are not visible from the location then no reflection can occur;

6. If it calculated that a reflection will occur, consider the location of the solar reflection with respect to the location

of the sun in the sky, its angle above the horizontal and the time of day the reflection could occur;

7. Consider both the solar reflection from the proposed solar park and the location of the direct sunlight with the respect of the receptor's position;

8. Consider the solar reflection with respect to the published studies; and

9. Determine whether the solar refection is likely to be a significant nuisance or a hazard to safety;

10. Propose mitigation in the event that a significant impact is identified.

Significance Criteria

17.9 The process for determining significance for this Development would follow the criteria outlined in Section 6 of this Scoping Request.

Assessment of Cumulative Effects

17.10 Discussions are in the early stages with the two Local Planning Authority' (NKDC & BBC)s Environmental Health teams to determine what sites they wish to see in any cumulative assessment for operational glint and glare.

17.11 At this time, it is proposed to include all the sites which are listed in Section 6 of this Scoping Report. If further sites are requested by the Environmental Health Teams of the Local Councils, they will also be included within the cumulative assessment.

18. MISCELLANEOUS ISSUES

Introduction

18.1 This chapter will consider minor topics that can be grouped into a single chapter to ensure that they are considered in the EIA process, but at this time their effects are expected to not be significant, or they can be resolved with a technical design mitigation so they will not result in a significant residual effect. The topics that are to be included within the chapter are:

- Electric, Magnetic and Electromagnetic Fields;
- Telecommunications, Television Reception and Utilities; and
- Waste

Preliminary Baseline Conditions

Electric, Magnetic and Electromagnetic Fields

18.2 Power frequency electric magnetic and electromagnetic fields (EMFs) arise from generation, transmission, distribution and use electricity and occur around power lines and electricity cables and around domestic, office or industrial equipment that uses electricity. Electric fields are the result of voltages applied to electrical conductors and equipment. Fences, scrubs and buildings can block electric fields. Magnetic fields are produced by the flow of current, however, most materials do not readily block magnetic fields. The intensity of both electric fields and magnetic fields diminishes with increasing distance from the source.

18.3 Electric fields depend on the operating voltage of the equipment. Magnetic fields depend on the electrical currents flowing and are not significantly limited by most common materials. Typically, ground level magnetic fields from underground cables fall much more rapidly with distance that those from a corresponding overhead line but can be higher at small distances from the cable.

Telecommunications, Television Reception and Utilities

18.4 Solar parks have the potential to affect the existing utility infrastructure below ground. To identify any existing infrastructure constraints, both consultation and desk-based studies will be undertaken. Consultation with the relevant telecommunication and utility providers is a routine part of the solar development and consultees will include water, gas and electricity utilities providers and telecommunications providers as appropriate.

18.5 There is a known high pressure gas pipeline that runs through a section of the site. This is shown on Figure 3: Initial Indicative Site Layout.

Waste

18.6 At this stage the exact quantities and types of waste likely to be generated during the construction and decommissioning stages are not known. However, it is expected that the waste streams will include:

- Welfare facility waste;
- Waste chemicals, fuels and oil;
- Waste metal;
- Waste water from dewatering and excavations;
- Waste water from cleaning activities (e.g. wheel wash);
- Packaging; and
- General construction waste (e.g. paper, cardboard wood etc)

Likely Significant Effects

Electric, Magnetic and Electromagnetic Fields

18.7 The Department for Business, Energy and Industrial Strategy (BEIS) guidance states that 'overhead power lines at voltage up to and including 132kV, underground cables at voltages up to and including 132kV and substations at and beyond the publicly accessible perimeter' are not capable of exceeding the International Commission on Non-Ionizing Radiation Protection (ICNIRP) exposure guidelines and therefore no assessment is required for these and other type of infrastructure listed on the Energy Networks Association website .

18.8 Therefore, the scope of the assessment of EMFs in the ES will be limited to the operational impact/consideration of any cables associated with the Development which exceed 132kV. The only part of the development likely to exceed this voltage is the underground export cables between the onsite substation and the existing National Grid Bicker Fen substation which will likely be an underground 400kV cable.

Telecommunications, Television Reception and Utilities

18.9 18.3.3 AAoccur if the utilities on the Energy Park site were not correctly mapped and therefore the pilled foundations broke any of the underground infrastructure that could be crossing the Site. Once this information is known through consultation and the appropriate mapping of these constraints for any layout design, the risk of a significant effect will be removed.

Waste

18.10 Creation of any waste in the construction and decommissioning phases of the development will need to be removed from the Development site and disposed of correctly and according to lawful requirements at that time. If items can be recycled this will be the first-choice option for the Development.

18.11 The Transport and Access Chapter of the ES will consider the transport movements of the waste created by the Development.

18.12 Given that the operators receiving the waste materials resulting from the Development will be subject to their own regulating procedures, there is no requirement for further consideration of waste to be undertaken, beyond the volume of traffic generated during the construction phase resulting from its transportation.

Assessment Methodology

Electric, Magnetic and Electromagnetic Fields

18.13 There is no direct statutory provision in the planning system relating to protection from EMFs. Guidance published in 2012 by the then Department for Energy and Climate Change (DECC) (which became part of the Department for Business, Energy & Industrial Strategy in July 2016) suggests that guidelines for both public and occupational exposure published by the (ICNIRP) in 1998 should be taken into account .

Telecommunications, Television Reception and Utilities

18.14 Consultation will be made with the relevant utility companies to determine the infrastructure that crosses the site. This information will be used to inform the layout design.

Waste

18.15 A Site Waste Management Plan (SWMP) will be created before the scheme is constructed and then decommissioned. It is anticipated that this detail will be secured via DCO requirement and would not be included within the ES due to the parameter outline of the EIA process rather than an assessment against a detailed design.

Significance Criteria

18.16 The process for determining significance for the Miscellaneous topics would follow the criteria outlined in Section 6 of this Scoping Request.

Assessment of Cumulative Effects

18.17 It is not expected that there will be any cumulative effects for any of these Miscellaneous topics. However, the cumulative sites that have been listed in Section 6 of this Scoping Report will be considered as well as any more that have entered the planning system before planning submission and are deemed necessary for inclusion.

Waste

18.18 Consultation with the Planning Inspectorate (PINS) in December 2021 raised the need to include waste within the cumulative assessment. Discussions highlighted a wish for the waste streams from the cumulative solar farm sites, if being built out and decommissioned at the same time, to be considered within the ES.

18.19 It is the Applicant's intention that at decommissioning, if technically possible, the components of the solar panels should be recycled. Currently there is not the national demand for solar panel recycling on a commercial scale and so investment has not been in developing a UK based recycling facility for solar panels. The technology for solar panel recycling is still at the research and design stage. Industry predictions are that the demand and design will have progressed by 2030, so that a UK based solar panel recycling plant should be operational.

18.20 Such cumulative waste stream options will be considered at the decommissioning phase and would be outlined in the decommissioning plan that would be required via DCO requirement. An assessment of this phase at this stage would not offer a realistic conclusion of the significance of the waste/recycling stream for this development and will therefore be scoped out of this assessment.

19. SUMMARY & CONCLUSIONS

19.1 A summary chapter will be included at the end of the ES, providing a synopsis of the findings of the EIA. This will include, as discussed with PINS in the pre-planning consultation, a summary of the cumulative impacts from this Development.

19.2 A statement outlining the relevant experience and competence of the experts who have undertaken the assessment and prepared the technical chapters within the ES will also be included.

19.3 A non-technical summary of the findings will also be prepared, as required by the EIA Regulations.

19.4 This Scoping Report represents notification under Regulation 8(1)(b) of the EIA Regulations that the applicant will undertake an EIA in respect of the Scheme and produce an ES to report the findings of the EIA.

19.5 It also represents a formal application to PINS under Regulation 10 of the EIA Regulations for a 'Scoping Opinion' as to the information to be provided within the ES that will form part of the DCO application. The report has identified the environmental effects that are considered to have the potential to be significant and proposes the approach to be used in assessment that will be undertaken for the EIA to characterise and understand the significance of these effects. The prescribed consultees are invited to consider the contents of this report and comment accordingly with the statutory 42 day time period.

19.6 For clarification, Table 19.1 presents a summary of the proposed scope of the technical topics as well as which elements of these topics that are proposed to be scoped out and the rationale behind this decision.

TABLE 19.1: SUMMARY OF PROPOSED SCOPE OF TECHNICAL TOPICS

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out of Assessment	Rationale for Scoping Out
Landscape & Visual	Assessment of likely effects on landscape features and character (including night time), and views and visual amenity during construction, operation and decommissioning. Photomontages from key viewpoints will be prepared in year 1 and 15 of operation.	Lighting Assessment for Construction, Operation and Decommissioning	Any lighting during the construction phase would be temporary and lighting during operation would be limited to doorway and emergency lighting at the onsite substation to ensure 24/7 safe access in needed.
Ecology & Ornithology	The EcIA will include consideration of designated sites and protected and/or notable habitats and species. Effects considered include habitat loss, disturbance and indirect impacts such as water course pollution during construction. Operational effects include disturbance during maintenance and management of the new habitat areas. Phase 1 ecology surveys are being undertaken and further surveys will be undertaken for the whole of the Development site.	None	N/A
Hydrology, Hydrogeology, Flood Risk & Drainage	Hydrological modelling of the Energy Park site will be completed to determine the surface water flood levels. Consultation with LLFA, IDB and Environment Agency (EA) will be completed to ensure the design of the Energy Park is compliant with flood risk and drainage needs. Coastal and Surface Water flooding will be considered in all phases of the Development. Flooding will be considered in all phases of the Development.	None	N/A

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out of Assessmen	Rationale for Scoping Out
Cultural Heritage	It is proposed to undertake an assessment of impact on both the physical effects on heritage assets (on the Energy Park site) and effects on the setting including changes to visual intrusion, noise, severance, access and amenity. Archaeological assessment work is proposed to take place as geophysical survey on the Energy Park site. Any further physical survey assessment work will be determined following consultation with Historic England and Lincolnshire County Archaeologist. The assessment area for determining assets to be considered will be 5km from the EIA Area.	No pre-determination physical assessment of the land to be used for the Cable Route to connect to National Grid Bicker Fen substation.	Any effects due to the trenching work and cable laying to below ground assets would be minimal and can effectively be mitigated through a watching brief. Such an approach has been deemed acceptable for other DCO Energy Schemes such as Cleve Hill Solar Farm and Little Crow Solar Farm.
Socio Economics	Assessment of effects including temporary employment during construction and decommissioning, creation of long-term employment opportunities during the operational phase and change of land use and improved permissive access to the Energy Park site through footpath and Community Orchard.	None	N/A
Noise & Vibration	Baseline noise monitoring data from the 2011 noise survey will be undertaken at locations representative of surrounding noise sensitive receptors. An assessment of operational plant noise will be undertaken.	Noise Assessment for the construction process and construction traffic. Noise Assessment for vehicles linked to the Operational Phase of the Energy Park including the Grid Connection. Ground-borne vibration from the construction, operation and decommissioning of the scheme.	Noise from the construction process and traffic movements can be effectively controlled via DCO requirements and good operating practices. Traffic movements to the Development will be minimal and unlikely to lead to any significant effect. No major vibration sources are envisaged to be introduced as part of the Development and as such there will be no associated vibration effects.

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out of Assessment	Rationale for Scoping Out
Climate Change	Assessment will consider the effects from emissions reductions and climate change adaptation from the Development.	Alterations in air quality conditions as a consequence of climate change. Increases in noise from cooling equipment due to higher temperatures. Increases in rainfall which could lead to a flooding episodes on the Development Site which in turn effect delivery options. Airborne particulates from soil increasing through changes in climate factors. Effects of higher temperatures in summer months on the construction teams and the need for climate change adaptation.	Rainfall may increase in winter and decrease in summer. However, it is not expected that air quality condition will fail to meet relevant objectives. Unlikely that an increase in the operating hours or intensity of any cooling equipment would lead to a significant effect on overall noise conditions Flooding implications of the development are to be assessed in the Hydrology, Hydrogeology, Flood Risk and Drainage section of the ES. The effects on Human Health are already to be assessed in Air Quality and Noise Chapters of the ES and there is no evidence of existing soil contamination that could effect health through becoming airborne. Temperatures may become higher in the summer months for construction works but appropriate guidelines for the protection of the workers on the Development Site would remove any significant effect.
Transport & Access	Construction vehicle movements associated with the Development will be established and assessed in terms of impact on the local highway network. This will include an assessment of the impact on driver severance, driver delay, accidents & safety, hazardous & dangerous loads and dirt and dust. Criteria/requirements for the above assessment will be considered and discussed with the Local Highway Authority given the temporary construction impacts.	Within the construction phase the assessment will not consider the impact on pedestrian severance, pedestrian delay, pedestrian amenity and fear/intimidation. Operational vehicle movements due to low numbers of vehicles. Assessment for the decommissioning phase due to uncertainties in relation to future traffic flows and transport infrastructure.	There is no footpath provision on the northern side of the A17 at the Energy Park access, therefore there will be limited pedestrians within the vicinity of the Energy Park site. Operational vehicle movements will be scoped out due to low vehicle numbers. Decommissioning will be scoped out due to uncertainties in relation to future traffic flows and transport.
Air Quality	Qualitative dust assessment to identify measures to be included within an outline CTMP. Suitable mitigation measures for construction and decommissioning plant and motorised equipment to be included within the outline CTMP.	Impacts to air quality at sensitive human and ecological receptors from construction and decommissioning process. Impacts to air quality at sensitive human and ecological receptors from non-road mobile machinery. Impacts to air quality at sensitive human and ecological receptors from the operational phase of the Development.	Any dust or emissions particles that are released as part of the construction of the decommissioning process would be dealt with by an outline CTMP. Emissions of NO_x and PM_{10} will be required to adhere to emissions standards and therefore effects on local air quality would be insignificant. Traffic flows are expected to be minimal, and no combustion plant will be present on the Development site.

Environmental Topic	Proposed Scope of Assessment	Element Proposed to be Scoped Out of Assessment	Rationale for Scoping Out
Land Use & Agriculture	An Agricultural Land Classification survey of the Energy Park site has determined that it includes BMV land. A site search will be applied to consider other sites within a similar distance to the National Grid Bicker Fen substation of a lower agricultural land grade (3a-5), but with the potential to generate a comparable level of renewable energy generation.	No ALC survey will be undertaken on land where the new Grid cable is to be laid.	Once the cable is laid the land will return to its current use and so there will be no loss or alteration to land use.
Glint & Glare	An assessment will be undertaken to identify the potential for solar reflections to impact on sensitive receptors for both orientation options to inform design development.	Aviation Facilities	Draft NPS EN-3 states that there is no evidence that glint and glare effects aviation interests.
Waste	Description of the potential streams of waste of construction and decommissioning phases and estimated volumes.	No consideration of the waste from the site once it has been passed to waste operators.	Waste operators are subject to their own regulating procedures.
Telecommunications	To identify any existing telecoms infrastructure constraints, operators will be consulted and a desk-based assessment will be completed.	Operational and Decommissioning Phases	Once these services have been correctly mapped any pilled foundations would avoid breaking any of the underground infrastructure. Later phases would not have this risk attached to them.
Electric, Magnetic & Electromagnetic	Survey to determine the electric fields of new cables laid with an operating voltage of 132kV or above.	No cables less than 132kV during construction and decommissioning phases.	Effects are no found for lower voltage cables and would not be present when the cables are not operating.

19.7 There are further environmental topics that are proposed to be scoped out of the ES. Some of these topics have been defined by the possible factors outlined in Schedule 4 (4) of the EIA Regulations. They are summarised below in Table 19.2.

TABLE 19.2: SUMMARY OF TECHNICAL TOPICS 'SCOPED OUT' OF ES

Environmental Topic	Rationale for 'Scoping Out' of the ES
Major Accidents and Disasters	As the design of the Development evolves in preparation for the DCO application, it will become clear that there are no real risks or serious possibilities of a Major Accident or Disaster event interacting with the Development. There are various health and safety considerations particularly for workers during construction and decommissioning of the Development. Workers are in the closest proximity to the Development and as a result are considered to be the most at-risk group. Comprehensive health and safety assessments are an essential part of the construction process and would be carried out prior to construction by the contractor in accordance with legislation. The construction of the Development would be managed in accordance with the Health and Safety at Work Act 1974 and would comply with all other relevant Health and Safety Regulations, including: • The Construction (Health, Safety and Welfare) Regulations, 1996: • Construction (Design and Management) Regulations 2015; and • Electricity Safety, Quality and Continuity Regulations, 2002. The Development would operate to Health and Safety Executive 'Health and safety in the new energy economy: Meeting the challenge of major change" published in August 2010. The risk of a major accident from surface water flooding or coastal defence breach will also be mitigated through design and appropriate management strategies for the Energy Park site during construction, operation and decommissioning. There are three main battery storage options currently used within the industry. These are Li-ion, LIP/LEP (Lithium-Ion Phosphate) and Flow Storage technologies. • Li-ion is an established technology that has been used in mobile phones/laptops and electric vehicles for many decades and can be scaled up to utilise it for storage on a Site such as this. The battery cells are housed in purpose-made containers, which include an extremely efficient and intelligent management system as well as state of the art cooling and fire suppression systems. • The systems can detect the off-gases predating the thermal runway event and shut down the malfunctioning cell/rack safely. The sensors used to do this are sensitive down to 1pmm (parts per million) • Lithium-Ion Phosphate as a technology has a higher thermal runaway temperature threshold and hence, improved battery safety. • Flow Storage uses electrolyte in an aqueous form which is inherently safe and non-flammable. Flow batteries are housed in similar purpose-made containers with slightly different management and support systems but ultimately functioning in the same as the Li-ion batteries. There is a potential fire risk associated with certain types of batteries such as lithium ion, which is reduced by cooling systems designed to regulate temperatures to within safe parameters. The battery manufacturers undertake extensive testing and analysis to assess fire risk, from which the following recommendations are made:

Environmental Topic	Rationale for 'Scoping Out' of the ES
	• Do not install batteries where temperatures routinely approach or exceed 80°C – this would not occur at the Energy Park Site; • Do not install batteries near heating equipment or heat sources – this would not occur at the Energy Park Site; • Protect the installation area from flooding – it is likely that this will be done on the Energy Park Site with the introduction of mitigations which would prevent or reduce the flow of water across the Energy Park Site; and • Ensure that installation areas comply with the appropriate local fire, electrical and building code requirements – this would be case with the Energy Park Site. Systems such as multi-spectrum infrared flame detectors and suppression features would be installed to detect and suppress fire to minimise the effect of any fire. The Energy Park design will include adequate separation between battery stations to ensure that an isolated fire would not become widespread and lead to a major incident. The risk of fire is small and therefore not likely to lead to any major accidents or disasters as this has been mitigated by the design of the equipment and the design of the Energy Park site. Once the system is commissioned, regardless of the technology used, the whole installation will report to and be monitored continuously by a central Operations and Maintenance Centre where engineers and technology experts will ensure that it is operating optimally and safely 24 hours a day, 7 days a week. It is therefore proposed that this will be scoped out of the ES.
Soil	There is no history of soil contamination on the Development site nor have activities taken place that would be a high risk to unknown soil contamination as the Energy Park site has always been in agricultural land use. Therefore, there is no reason to expect any form of land contamination of the Energy Park site. The land grade and soil structure of the Energy Park will be considered and contained within the Land Use and Agricultural Chapter of the ES.
Material Assets	It is not considered that there are any further 'material assets' to those already addressed within the other EIA topics.
Human Health	The possible effect on human health will be considered within the ES but not within its own standalone chapter. It will be considered within the Noise and Air Quality Assessments and therefore the scope of effects on Human Health have been shaped by their assessment criteria and scope of works.

20. GLOSSARY

AADT	Annual Average Daily Traffic
AC	alternating current
ALC	Agricultural Land Classification
AOD	above ordnance datum
AQMA	Air Quality Management Area
AQO	Air quality objective
ATC	Automatic Traffic Count
BAP	Biodiversity Action Plan
BBC	Boston Borough Council
BEIS	The Department of Business, Energy and Industrial Strategy
BGS	British Geological Survey
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
CCTV	close circuit television
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists
CLJSPC	Central Lincolnshire Joint Strategic Planning Committee
CO2	Carbon dioxide
CTMP	Construction Traffic Management Plan
DBA	Desk-Based Assessment
DC	direct current
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
EA	Environment Agency
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
ELDC	East Lindley District Council
EMF	electromagnetic fields
EN1	Overarching National Policy Statement for Energy
EN3	National Policy Statement for Renewable Energy
EN5	National Policy Statement for Electricity Networks Infrastructure
EPUK	Environmental Protection UK
ES	Environmental Statement
FoI	Freedom of Information
GHG	greenhouse gases
GIS	Geographic Information System
Ha	hectare
HDV	Heavy Duty Vehicles
HER	Historic Environment Record
IAQM	Institute of Air Quality Management
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDB	Internal Drainage Board
IEF	Important Ecological Features
IEMA	Institute of Environmental Management and Assessment
IPC	Now the Planning Inspectorate
LCA	Landscape Character Area
LCC	Lincolnshire County Council
LEMP	Landscape and Ecological Management Plan
LERC	Lincolnshire Environmental Records Centre
LIP/LEP	Lithium-Ion Phosphate
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserve

LOAEL	Lowest Observed Adverse Effect Level
LPA	Local Planning Authority
LWS	Local Wildlife Site
LVIA	Landscape and Visual Impact Assessment
mblg	metres below ground level
MOD	Ministry of Defence
N2O	nitrous oxide
NERC	Natural Environment and Rural Communities Act
NGET	National Grid Electricity Transmission
NHLE	National Heritage List for England
NKDC	North Kesteven District Council
NNR	National Nature Reserve
NOx	nitrogen oxide
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
NPS	National Policy Statement
NRMM	non-road mobile machinery
NSIP	Nationally Significant Infrastructure Project
oCEMP	Outline Construction Environmental Management Plan
MW	Megawatt
PM	particulate matter
PPG	Planning Practice Guidance
PROW	Public right of way
PV	Photovoltaic
RCP	Representative Concentration Pathways
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SHDC	South Holland District Council
SKDC	South Kesteven District Council
SNCI	Site of Nature Conservation Interest
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SPZ	Source Protection Zones
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
SZTV	Screened Zone of Theoretical Influence
TEMPro	Trip End Model Presentation Program
UKCP18	UK Climate Projections 2018
W	watts
WCA	Wildlife and Countryside Act
ZTV	Zone of Theoretical Influence
µm	mircometre

APPENDIX A:

SAMPLE LANDSCAPE AND VISUAL IMPACT ASSESSMENT METHODOLOGY

1. LANDSCAPE AND VISUAL IMPACT ASSESSMENT METHODOLOGY

1.1 This Landscape and Visual Impact Assessment (LVIA) has been undertaken with regards to best practice as outlined within the following publications:

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition, 2013) - Landscape Institute / Institute of Environmental Management and Assessment;
- Visual Representation of Development Proposals (2019) - Landscape Institute Technical Guidance Note 06/19;
- An Approach to Landscape Character Assessment (2014) - Natural England;
- An Approach to Landscape Sensitivity Assessment - To Inform Spatial Planning and Land Management (2019) - Natural England.

1.2 GLVIA3 states within paragraph 1.1 that "Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity." [1]

1.3 GLVIA3 also states within paragraph 1.17 that when identifying landscape and visual effects there is a "need for an approach that is in proportion to the scale of the project that is being assessed and the nature of the likely effects. Judgement needs to be exercised at all stages in terms of the scale of investigation that is appropriate and proportional." [2]

1.4 GLVIA3 recognises within paragraph 2.23 that "professional judgement is a very important part of LVIA. While there is some scope for quantitative measurement of some relatively objective matters much of the assessment must rely on qualitative judgements" [3] undertaken by a landscape consultant or a Chartered Member of the Landscape Institute (CMLI).

1.5 GLVIA3 notes in paragraph 1.3 that "LVIA may be carried out either formally, as part of an Environmental Impact Assessment (EIA), or informally, as a contribution to the 'appraisal' of development proposals and planning applications." [4]

[1] Para 1.1, Page 4, GLVIA, 3rd Edition
[2] Para 1.17, Page 9, GLVIA, 3rd Edition
[3] Para 2.23, Page 21, GLVIA, 3rd Edition
[4] Para 1.3, Page 4, GLVIA, 3rd Edition

1.6 The effects on cultural heritage and ecology are not considered within this LVIA.

Study Area

1.7 The study area for this LVIA covers a 5km radius from the site. However, the main focus of the assessment was taken as a radius of 1km from the site as it is considered that even with clear visibility the proposals would not be readily perceptible in the landscape beyond this distance.

Effects Assessed

1.8 Landscape and visual effects are assessed through professional judgements on the sensitivity of landscape elements, character and visual receptors combined with the predicted magnitude of change arising from the proposals. The landscape and visual effects have been assessed in the following sections:

- Effects on landscape elements;
- Effects on landscape character; and
- Effects on visual amenity.

1.9 Sensitivity is defined in GLVIA3 as "a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change or development proposed and the value related to that receptor."[5] Various factors in relation to the value and susceptibility of landscape elements, character, visual receptors or representative viewpoints are considered below and cross referenced to determine the overall sensitivity as shown in **Table 1**:

Table 1, Overall sensitivity of landscape and visual receptors

	VALUE			
SUSCEPTIBILITY		**HIGH**	**MEDIUM**	**LOW**
	HIGH	High	High	Medium
	MEDIUM	High	Medium	Medium
	LOW	Medium	Medium	Low

[5] Glossary, Page 158, GLVIA, 3rd Edition

1.10 Magnitude of change is defined in GLVIA3 as "a term that combines judgements about the size and scale of the effect, the extent over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration." [6] Various factors contribute to the magnitude of change on landscape elements, character, visual receptors and representative viewpoints.

1.11 The sensitivity of the landscape and visual receptor and the magnitude of change arising from the proposals are cross referenced in Table 11 to determine the overall degree of landscape and visual effects.

2. EFFECTS ON LANDSCAPE ELEMENTS

2.1 The effects on landscape elements are limited to within the site and includes the direct physical change to the fabric of the land, such as the removal of woodland, hedgerows or grassland to allow for the proposals.

Sensitivity of Landscape Elements

2.2 Sensitivity is determined by a combination of the value that is attached to a landscape element and the susceptibility of the landscape element to changes that would arise as a result of the proposals – see pages 88-90 of GLVIA3. Both value and susceptibility are assessed on a scale of high, medium or low.

2.3 The criteria for assessing the value of landscape elements and landscape character is shown in **Table 2**:

Table 2, Criteria for assessing the value of landscape elements and landscape character

HIGH	Designated landscape including but not limited to World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty considered to be an important component of the country's character experienced by a high number of people. Landscape condition is good and components are generally maintained to a high standard. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has an elevated level of tranquillity. Rare or distinctive landscape elements and features are key components that contribute to the landscape character of the area.

[6] Glossary, Page 158, GLVIA, 3rd Edition

MEDIUM	Undesignated landscape including urban fringe and rural countryside considered to be a distinctive component of the national or local landscape character. Landscape condition is fair and components are generally well maintained. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has a moderate level of tranquillity. Rare or distinctive landscape elements and features are notable components that contribute to the character of the area.
LOW	Undesignated landscape including urban fringe and rural countryside considered to be of unremarkable character. Landscape condition may be poor and components poorly maintained or damaged. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has limited levels of tranquillity. Rare or distinctive elements and features are not notable components that contribute to the landscape character of the area.

2.4 The criteria for assessing the susceptibility of landscape elements and landscape character is shown in **Table 3**:

Table 3, Criteria for assessing landscape susceptibility	
HIGH	Scale of enclosure – landscapes with a low capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with no or little existing reference or context to the type of development being proposed. Nature of existing elements – landscapes with components that are not easily replaced or substituted (e.g. ancient woodland, mature trees, historic parkland, etc). Nature of existing features – landscapes where detracting features, major infrastructure or industry is not present or where present has a limited influence on landscape character.
MEDIUM	Scale of enclosure – landscapes with a medium capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc.

	Nature of land use – landscapes with some existing reference or context to the type of development being proposed. Nature of existing elements – landscapes with components that are easily replaced or substituted. Nature of existing features – landscapes where detracting features, major infrastructure or industry is present and has a noticeable influence on landscape character.
LOW	Scale of enclosure – landscapes with a high capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with extensive existing reference or context to the type of development being proposed. Nature of existing features – landscapes where detracting features or major infrastructure is present and has a dominating influence on the landscape.

2.5 Various factors in relation to the value and susceptibility of landscape elements are assessed and cross referenced to determine the overall sensitivity as shown in **Table 1**.

2.6 Sensitivity is defined in GLVIA3 as "a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change or development proposed and the value related to that receptor." [7] The definitions for high, medium, low landscape sensitivity are shown in **Table 4**:

Table 4: Criteria for assessing landscape sensitivity	
HIGH	Landscape element or character area defined as being of high value combined with a high or medium susceptibility to change. Landscape element or character area defined as being of medium value combined with a high susceptibility to change.
MEDIUM	Landscape element or character area defined as being of high value combined with a low susceptibility to change. Landscape element or character area defined as being of medium value combined with a medium or low susceptibility to change. Landscape element or character area defined as being of low value

[7] Glossary, Page 158, GLVIA, 3rd Edition

	combined with a high or medium susceptibility to change.
LOW	Landscape element or character area defined as being of low value combined with a low susceptibility to change.

Magnitude of Change on Landscape Elements

2.7 Professional judgement has been used to determine the magnitude of change on individual landscape elements within the site as shown in **Table 5**.

Table 5: Criteria for assessing magnitude of change for landscape elements	
HIGH	Total loss/gain of a landscape element.
MEDIUM	Partial loss/gain or alteration to part of a landscape element.
LOW	Minor loss/gain or alteration to part of a landscape element.
NEGLIGIBLE	No loss/gain or very limited alteration to part of a landscape element.

3. EFFECTS ON LANDSCAPE CHARACTER

3.1 Landscape character is defined as the "distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse." [8]

3.2 The assessment of effects on landscape character considers how the introduction of new landscape elements physically alters the landform, landcover, landscape pattern and perceptual attributes of the site or how visibility of the proposals changes the way in which the landscape character is perceived.

[8] Glossary, Page 157, GLVIA, 3rd Edition

Sensitivity of Landscape Character

3.3 Sensitivity is determined by a combination of the value that is attached to a landscape and the susceptibility of the landscape to changes that would arise as a result of the proposals – see pages 88-90 of GLVIA3. Both value and susceptibility are assessed on a scale of high, medium or low.

3.4 The criteria for assessing the value of landscape character is shown in **Table 2**.

3.5 The criteria for assessing the susceptibility of landscape character is shown in **Table 3**.

3.6 The overall sensitivity is determined through cross referencing the value and susceptibility of landscape character as shown in **Table 1**.

Magnitude of Change on Landscape Character

3.7 Professional judgement has been used to determine the magnitude of change on landscape character as shown in **Table 6**:

Table 6, Criteria for assessing magnitude of change on landscape character	
HIGH	Introduction of major new elements into the landscape or some major change to the scale, landform, landcover or pattern of the landscape.
MEDIUM	Introduction of some notable new elements into the landscape or some notable change to the scale, landform, landcover or pattern of the landscape.
LOW	Introduction of minor new elements into the landscape or some minor change to the scale, landform, landcover or pattern of the landscape.
NEGLIGIBLE	No notable or appreciable introduction of new elements into the landscape or change to the scale, landform, landcover or pattern of the landscape.

4. EFFECTS ON VISUAL AMENITY

4.1 Visual amenity is defined within GLVIA3 as the "overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or

backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area." [9]

4.2 The effects on visual amenity considers the changes in views arising from the proposals in relation to visual receptors including settlements, residential properties, transport routes, recreational facilities and attractions; and representative viewpoints or specific locations within the study area as agreed with the Local Planning Authority.

Sensitivity of Visual Receptors

4.3 Sensitivity is determined by a combination of the value that is attached to a view and the susceptibility of the visual receptor to changes in that view that would arise as a result of the proposals – see pages 113-114 of GLVIA3. Both value and susceptibility are assessed on a scale of high, medium or low.

4.4 The criteria for assessing the value of views are shown in **Table 7:**

Table 7, Criteria for assessing the value of views	
HIGH	Views with high scenic value within designated landscapes including but not limited to World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty, etc. Likely to include key viewpoints on OS maps or reference within guidebooks, provision of facilities, presence of interpretation boards, etc.
MEDIUM	Views with moderate scenic value within undesignated landscape including urban fringe and rural countryside.
LOW	Views with unremarkable scenic value within undesignated landscape with partly degraded visual quality and detractors.

4.5 The criteria for assessing the susceptibility of views are shown in **Table 8**:

[9] Page 158, Glossary, GLVIA3

Table 8, Criteria for assessing visual susceptibility	
HIGH	Includes occupiers of residential properties and people engaged in recreational activities in the countryside using public rights of way (PROW).
MEDIUM	Includes people engaged in outdoor sporting activities and people travelling through the landscape on minor roads and trains.
LOW	Includes people at places of work e.g. industrial and commercial premises and people travelling through the landscape on major roads and motorways.

4.6 Sensitivity is defined in GLVIA3 as "a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change or development proposed and the value related to that receptor." [10] The definitions for high, medium, low visual sensitivity are shown in **Table 9**:

Table 9, Criteria for assessing visual sensitivity	
HIGH	Visual receptor defined as being of high value combined with a high or medium susceptibility to change. Visual receptor defined as being of medium value combined with a high susceptibility to change.
MEDIUM	Visual receptor defined as being of high value combined with a low susceptibility to change. Visual receptor defined as being of medium value combined with a medium or low susceptibility to change. Visual receptor defined as being of low value combined with a high or medium susceptibility to change.
LOW	Visual receptor defined as being of low value combined with a low susceptibility to change.

[10] Glossary, Page 158, GLVIA, 3rd Edition

Magnitude of Change on Visual Receptors

4.7 Professional judgement has been used to determine the magnitude of change on visual receptors as shown in **Table 10**:

Table 10, Criteria for assessing magnitude of change for visual receptors	
HIGH	Major change in the view that has a defining influence on the overall view with many visual receptors affected.
MEDIUM	Some change in the view that is clearly visible and forms an important but not defining element in the view.
LOW	Some change in the view that is appreciable with few visual receptors affected.
NEGLIGIBLE	No notable change in the view.

5. SIGNIFICANCE OF LANDSCAPE AND VISUAL EFFECTS

5.1 The likely significance of effects is dependent on all of the factors considered in the sensitivity and the magnitude of change upon the relevant landscape and visual receptors. These factors are assimilated to assess whether or not the Proposed Development will have a likely significant or not significant effect. The variables considered in the evaluation of the sensitivity and the magnitude of change is reviewed holistically to inform the professional judgement of significance.

5.2 A likely **significant** effect will occur where the combination of the variables results in the Proposed Development having a definitive effect on the view. A **not significant** effect will occur where the appearance of the Proposed Development is not definitive, and the effect continues to be defined principally by its baseline condition.

5.3 Within **Table 11** below, the major effects highlighted in grey are considered to be significant in terms of the EIA Regulations. It should be noted that whilst an individual effect may be significant, it does not necessarily follow that the Proposed Development would be unacceptable in the planning balance. The cross referencing

of the sensitivity and magnitude of change on the landscape and visual receptor determines the significance of effect as shown in **Table 11**:

Table 11, Significance of landscape and visual effects

		Sensitivity		
		HIGH	**MEDIUM**	**LOW**
Magnitude of Change	**HIGH**	Major	Major	Moderate
	MEDIUM	Major	Moderate	Minor
	LOW	Moderate	Minor	Minor
	NEGLIGIBLE	Negligible	Negligible	Negligible

6. TYPICAL DESCRIPTORS OF LANDSCAPE EFFECTS

6.1 The typical descriptors of the landscape effects are detailed within **Table 12**:

Table 12, Typical Descriptors of Landscape Effects

MAJOR BENEFICIAL	The landscape resource has a high sensitivity with the proposals representing a high beneficial magnitude of change and/or the proposed changes would: - enhance the character (including value) of the landscape; - enhance the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development; - enable a sense of place to be enhanced.
MODERATE BENEFICIAL	The landscape resource has a medium sensitivity with the proposals representing a medium beneficial magnitude of change and/or the proposed changes would: - enhance the character (including value) of the landscape; - enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development; - enable a sense of place to be restored.
MINOR BENEFICIAL	The landscape resource has a low sensitivity with the proposals representing a low beneficial magnitude of change and/or the proposed changes would: - complement the character (including value) of the landscape; - maintain or enhance characteristic features or elements; - enable some sense of place to be restored.

NEGLIGIBLE	The proposed changes would (on balance) maintain the character (including value) of the landscape and would: - be in keeping with landscape character and blend in with characteristic features and elements; - Enable a sense of place to be maintained.
NO CHANGE / NEUTRAL	The proposed changes would not be visible and there would be no discernible change to landscape character.
MINOR ADVERSE	The landscape resource has a low sensitivity with the proposal representing a low adverse magnitude of change and/or the proposed changes would: - not quite fit the character (including value) of the landscape; - be a variance with characteristic features and elements; - detract from sense of place.
MODERATE ADVERSE	The landscape resource has a medium sensitivity with the proposals representing a medium adverse magnitude of change and/or the proposed changes would: - conflict with the character (including value) of the landscape; - have an adverse effect on characteristic features or elements; - diminish a sense of place.
MAJOR ADVERSE	The landscape resource has a high sensitivity with the proposals representing a high adverse magnitude of change and/or the proposed changes would: - be at variance with the character (including value) of the landscape; - degrade or diminish the integrity of a range of characteristic features and elements or cause them to be lost; - change a sense of place.

7. TYPICAL DESCRIPTORS OF VISUAL EFFECTS

7.1 The typical descriptors of the visual effects are detailed within **Table 13**:

Table 13, Typical Descriptors of Visual Effects

MAJOR BENEFICIAL	The visual receptor is of high sensitivity with the proposals representing a high magnitude of change and/or the proposals would result in a major improvement in the view.
MODERATE BENEFICIAL	The visual receptor is of medium sensitivity with the proposals representing a medium magnitude of change and/or the proposals would result in a clear improvement in the view.
MINOR BENEFICIAL	The visual receptor is of low sensitivity with the proposals representing a low magnitude of change and/or the proposals would result in a slight improvement in the view.

NEGLIGIBLE	The proposed changes would be in keeping with, and would maintain, the existing view or where (on balance) the proposed changes would maintain the quality of the view (which may include adverse effects which are offset by beneficial effects for the same receptor) or due to distance from the receptor, the proposed change would be barely perceptible to the naked eye.
NO CHANGE/ NEUTRAL	The proposed changes would not be visible and there would be no change to the view.
MINOR ADVERSE	The visual receptor is of low sensitivity with the proposals representing a low magnitude of change and/or the proposals would result in a slight deterioration in the view.
MODERATE ADVERSE	The visual receptor is of medium sensitivity with the proposals representing a medium magnitude of change and/or the proposals would result in a clear deterioration in the view.
MAJOR ADVERSE	The visual receptor is of high sensitivity with the proposals representing a high magnitude of change and/or the proposals would result in a major deterioration in the view.

8. NATURE OF EFFECTS

8.1 GLVIA3 includes an entry that states "effects can be described as positive or negative (or in some cases neutral) in their consequences for views and visual amenity." [11] GLVIA3 does not, however, state how negative or positive effects should be assessed, and this therefore becomes a matter of professional judgement supported by site specific justification within the LVIA.

[11] Para 6.29, Page 113, GLVIA 3rd Edition

APPENDIX B:

SAMPLE RESIDENTIAL VISUAL AMENITY ASSESSMENT METHODOLOGY

1. RESIDENTIAL VISUAL AMENITY ASSESSMENT METHODOLOGY

1.1 The Residential Visual Amenity Assessment (RVAA) would draw upon the overarching best practice within the Landscape Institute's 'Guidelines for Landscape and Visual Impact Assessment' 3rd Edition (GLVIA3) and 'Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19' (LI TGN 2/19).

1.2 The Technical Guidance Note advises in paragraph 1.6 that:

> **"It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing new development in the landscape. In itself this does not necessarily cause a planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions where they did not exist before." [12]**

1.3 In accordance with the LI TGN 2/19, the RVAA would comprise a four stage process including:

1) Definition of the scope and study area for the assessment – informed by the description of the Proposed Development, defining the study area extent and scope of the assessment with respect to the properties to be included;

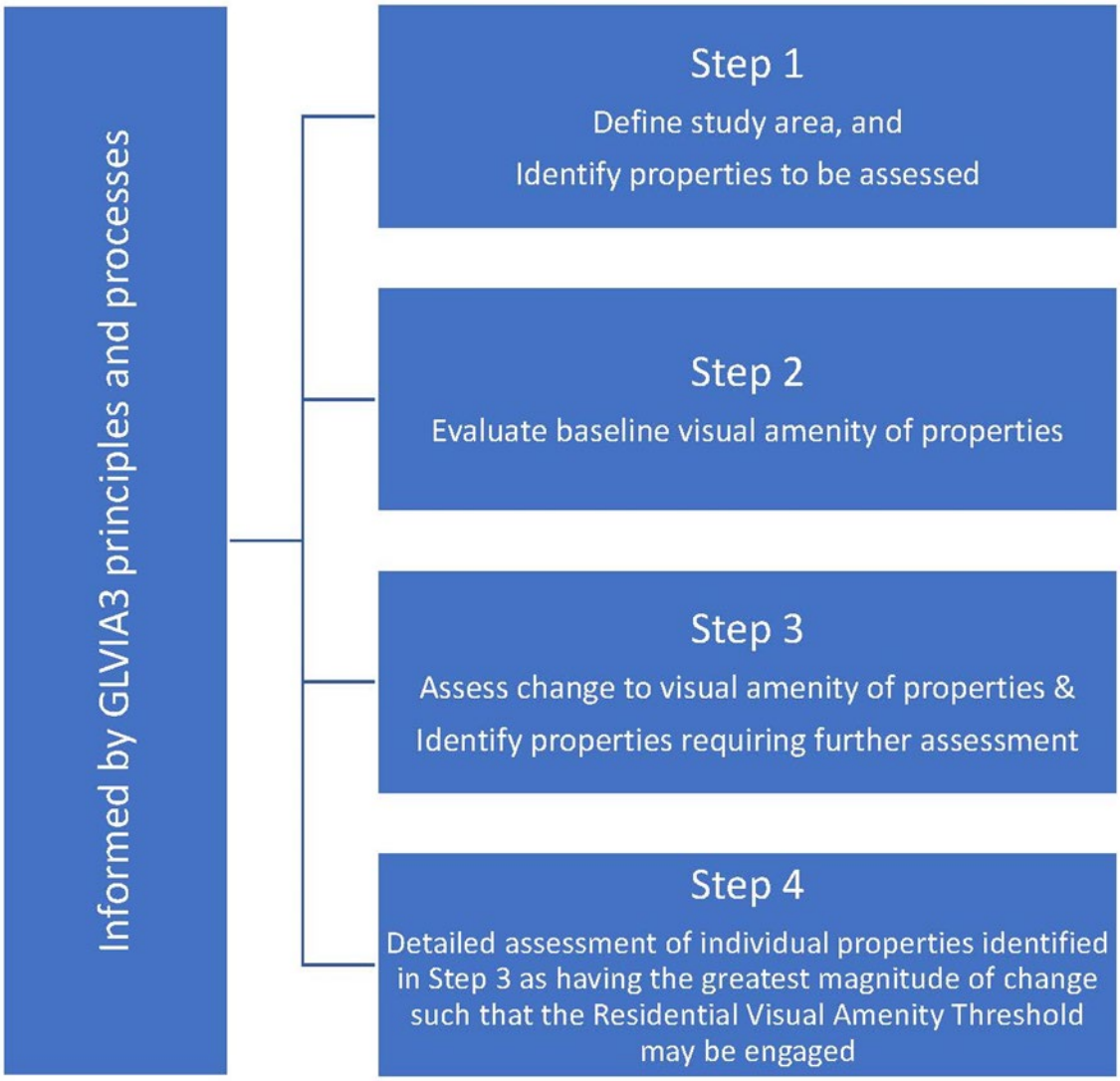
2) Evaluation of the baseline visual amenity for the surrounding residential properties – having regard to the landscape and visual context and the development proposed;

3) Assessment of the likely change to the visual amenity of the residential properties in accordance with GLVIA3 principles and processes; and

4) Further assessment in respect of the acceptable threshold for residential visual amenity and living conditions in the public interest.

1.4 The process is summarised within the diagram below as an extract on page 7 of the Technical Guidance Note 2/19 as shown below:

[12] Paragraph 1.6, Technical Guidance Note 2/19, Residential Visual Amenity Assessment



Definition of the Scope and Study Area

1.5 The scope and study area of residential properties included within the RVAA would be informed by the findings of the LVIA, post code data and consultations with North Kesteven District Council and Boston Borough Council, together with subsequent requests from the residents themselves following a public consultation event.

1.6 The LI TGN 2/19 advises in Paragraph 4.4:

> **"There are no standard criteria for defining the RVAA study area nor for the scope of the RVAA, which should be determined on a case-by-case basis taking both the type and scale of proposed development, as well as the landscape and visual context, into account."**

1.7 LI TGN 2/19 continues at paragraph 4.5 that:

> **"…Simply being able to see a proposed development from a property is no reason to include it in the RVAA."**

1.8 Paragraph 4.7 of LI TGN 2/19 further advises that:

> **"…However, other development types including potentially very large but lower profile structures and developments such as road schemes and housing are unlikely to require RVAA, except potentially of properties in very close proximity (50-250m) to the development…."**

1.9 Residential properties to be included within the scope of the RVAA would be confirmed based on the findings of the Landscape and Visual Impact Assessment. However, given the type and scale of the proposed solar PV development and the dispersed nature of the surrounding residential properties, the likelihood of any significant visual effects is anticipated to be restricted to those within the immediate surroundings of the site, due mainly to the predominantly flat local topography and the limited vertical elevation of the proposed solar arrays (to a maximum height of +4.5 metres above ground level (AGL)).

1.10 Furthermore, with regard to the **Indicative Site Layout Plan at Figure 3**, it is noted that areas of Potential Biodiversity Net Gain area are proposed which would provide separation between the proposed solar panels and the residential properties adjacent to the Site's proposed red line boundary.

1.11 A large area of land to the south of the solar park has been identified for a potential underground cable route to connect it to the substation at Bicker Fen. Whilst the exact cable route has yet to be designed, it is anticipated that the extent of the land area available would enable the developer to avoid the removal of any significant landscape features (such as isolated / small areas of trees or short sections of hedgerow). Therefore, the RVAA will focus on the potential visual amenity effects of the solar arrays and associated infrastructure, and not of the underground cable route.

1.12 At this stage it is anticipated that the scope of the RVAA would encompass residential properties located in close proximity to the red line boundary of the solar park:

1) To the south - along of the A17 (eg to the north of Maize Farm; Rectory Farm; Elm Grange and any residential property associated with the 'Piggery' identified on the OS mapping);

2) To the west of the redline boundary - along Sidebar Lane (the B1395) as far north as the junction with Littleworth Drove;

3) To the east of the redline boundary – Rakes Farm; and,

4) Within the redline boundary itself – Six Hundreds Farm.

1.13 It is noted that (based on OS mapping), there do not appear to be any residential properties adjacent to the north of the redline boundary.

1.14 Distant views of the solar PV development may be perceptible beyond the extent of these residential properties within the study area. However, even with clear visibility, the effects on residential visual amenity and living conditions are not anticipated to be significant or unacceptable beyond this identified scope.

1.15 Where appropriate and in line with the guidance set out at paragraph 4.8 within LI TGN 2/19, the effects on clusters of similar properties may be considered through the assessment of representative visual amenity, rather than from each individual property:

> **"Properties are normally assessed individually, but if their outlook and / or views are in all aspects the same (for example if a development is visible from the rear gardens only of a small row of houses) they could be assessed as one (group)…."**

1.16 Letters would be sent to each of the identified residential properties (based upon post code data) to request access to the individual properties, curtilages and private gardens for the assessment. If no response is received, 'proxy viewpoints' would be undertaken from publicly accessible locations as close as possible to the residential property in question. If this is not possible, proxy viewpoints would be undertaken from within the site itself facing back towards the residential property.

Evaluation of the Baseline Visual Amenity

1.17 The evaluation of baseline visual amenity would consider the type, nature, extent and quality of the existing views from the residential properties including building curtilages, private gardens and driveways. LI TGN 2/19 advises in paragraph 4.11 that:

> **"When evaluating the baseline, it is recommended that the following aspects are considered:**
>
> - **the nature and extent of all potentially available existing views from the property and its garden / domestic curtilage, including the proximity and**

relationship of the property to surrounding landform, landcover and visual foci. This may include primary / main views from the property or domestic curtilage, as well as secondary / peripheral views; and

- **views as experienced when arriving at or leaving the property, for example from private driveways / access tracks." [13]**

1.18 In accordance with the principles and processes of GLVIA3, the visual effects would be determined by cross-referencing the sensitivity of the visual receptor with the magnitude of change arising from the proposed solar PV development. Residential properties are generally considered to be of high sensitivity within GLVIA3. However, TGN 2/19 advocates a further detailed review and refined survey of the residential properties in question with regards to the potential sensitivities in relation to the proposed solar PV development.

1.19 Higher sensitivity areas of the residential properties might include:

- Views from ground floor windows on principal elevations of the building and are likely to correspond to primary living rooms such as lounge, dining rooms, kitchens or conservatories; and
- Views from rear gardens or heavily frequented parts of a garden where an appreciation of the surrounding landscape is likely to be fundamental to the enjoyment of the space.

1.20 Lower sensitivity areas of the residential properties might include:

- Views from upper floor windows on principal elevations of the building likely to correspond to bedrooms and study / office rooms;
- Views from front gardens or parts of the curtilage to the building where it is likely that the focus of attention is on an activity such as gardening rather than on the surrounding landscape;
- Views from windows on side elevations and from windows likely to correspond to utility rooms, bathrooms, etc; and
- Views from parts of the garden or building curtilage with a purely functional purpose such as a driveway or storage area, etc or land worked as part of a business.

[13] Paragraph 4.11, Technical Guidance Note 2/19, Residential Visual Amenity Assessment

Assessment of the Magnitude of Change on the Residential Properties

1.21 Visual amenity is defined within GLVIA3 as:

> **"The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area." [14]**

1.22 Visual effects on the surrounding residential properties could potentially arise through the introduction of the solar arrays, energy storage structures, security fencing, CCTV poles, transformer boxes, access tracks etc located within the proposed solar PV development. The solar arrays are typically of lower profile and elevation with the panels fixed at a maximum height of +4.5 metres above ground level (AGL). The tallest element of the Proposed Development would be the main substation with maximum proposed dimensions of 180m x 130m x 15m.

1.23 Visual effects can also arise through the removal of landscape features such as woodlands, hedgerows or trees to expose views of the solar arrays. However, there are few such features within the red line boundary of the solar farm.

1.24 In general terms, the magnitude of change on the residential properties will decrease with increasing distance from the site and due to the proportion of intervening landform, buildings, woodlands, hedgerows and trees within the view. The magnitude of change arising from the solar PV development also considers any proposed landscape and visual mitigation measures (such as the proposed Potential Biodiversity Net Gain areas) as a residual effect. Other influencing factors affecting the magnitude of change might include:

- Whether the view of the solar arrays is in a direct or oblique angle from the primary orientation or active frontage of the property;
- The extent to which the view is obstructed by vegetation, landform or other built structures; and
- The extent to which the current view is influenced by existing built structures (e.g. buildings, roads, pylons and transmission lines, etc).

1.25 The magnitude of change on the surrounding residential properties would be assessed on the following scale:

[14] Page 158, Glossary, GLVIA3

- High – a change in the view that on balance has a defining influence on the overall visual amenity of the residential receptor;
- Medium – some change in the view that on balance is clearly visible and forms an important but not a defining influence on the overall visual amenity of the residential receptor;
- Low – some change in the view that on balance is visible although has a subservient influence on the overall visual amenity of the residential receptor; and
- Negligible – no change or small to imperceptible visual influence on the overall visual amenity of the residential receptor.

1.26 The likely significance of effects is dependent on all of the factors considered in the sensitivity and the magnitude of change upon the residential receptors. These factors are assimilated to assess whether or not the proposed solar PV development will have a likely significant or not significant effect. The variables considered in the evaluation of the sensitivity and the magnitude of change is reviewed holistically to inform the professional judgement of significance.

1.27 A likely significant effect will occur where the combination of the variables results in the Proposed Development having a definitive effect on the view. A not significant effect will occur where the appearance of the Proposed Development is not definitive, and the effect continues to be defined principally by its baseline condition.

1.28 The matrix below demonstrates the relationship between sensitivity and magnitude of change based on the specific criteria given. At all times, professional judgement is used to determine the overall significance of visual effects. The major effects highlighted in dark grey are considered to be significant in terms of the EIA Regulations. The moderate effects highlighted in light grey are potentially significant, and a summary justification is provided as to whether the effect in question is significant or not significant. It should be noted that whilst an individual effect may be significant, it does not necessarily follow that the proposed solar PV development would be unacceptable, either in terms of the public interest test or when considering the planning balance in relation to the other benefits arising from the solar PV development.

1.29 The relationship between sensitivity and magnitude of change is indicated within the schedule below:

		Sensitivity		
		HIGH	**MEDIUM**	**LOW**
Magnitude of Change	**HIGH**	Major	Major	Moderate
	MEDIUM	Major	Moderate	Minor
	LOW	Moderate	Minor	Minor
	NEGLIGIBLE	Negligible	Negligible	Negligible

1.30 Judgement concerning the acceptable threshold for living conditions and residential visual amenity in the public interest

1.31 In this final stage, and only for those residential properties identified as experiencing a major significant effect in the previous stage, a further judgement is required to determine whether the visual effect in question has exceeded the Residential Amenity Threshold. LI TGN 2/19 advises that this is a matter for professional judgement explained in narrative with clear, unambiguous and rational conclusions. The visual effects arising from the Proposed Development would need to be of such a degree and significance that the residential property would be uninhabitable due to the effects on living conditions.

Pegasus Group

DESIGN ENVIRONMENT PLANNING ECONOMICS HERITAGE

RIBA Royal Institute of British Architects

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Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report
Appendix 1.2- Scoping Opinion

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

The Planning Inspectorate
Yr Arolygiaeth Gynllunio

SCOPING OPINION:

Heckington Fen Solar Park

Case Reference: EN010123

Adopted by the Planning Inspectorate (on behalf of the Secretary of State) pursuant to Regulation 10 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

17 February 2022

TABLE OF CONTENTS

1. INTRODUCTION

1.0.1 On 07 January 2022, the Planning Inspectorate (the Inspectorate) received an application for a Scoping Opinion from Ecotricity (Heck Fen Solar) Limited (the Applicant) under Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) for the proposed Heckington Fen Solar Park (the Proposed Development). The Applicant notified the Secretary of State (SoS) under Regulation 8(1)(b) of those regulations that they propose to provide an Environmental Statement (ES) in respect of the Proposed Development and by virtue of Regulation 6(2)(a), the Proposed Development is 'EIA development'.

1.0.2 The Applicant provided the necessary information to inform a request under EIA Regulation 10(3) in the form of a Scoping Report, available from:

http://infrastructure.planninginspectorate.gov.uk/document/EN010123-000015

1.0.3 This document is the Scoping Opinion (the Opinion) adopted by the Inspectorate on behalf of the SoS. This Opinion is made on the basis of the information provided in the Scoping Report, reflecting the Proposed Development as currently described by the Applicant. This Opinion should be read in conjunction with the Applicant's Scoping Report.

1.0.4 The Inspectorate has set out in the following sections of this Opinion where it has not agreed to scope out certain aspects/ matters on the basis of the information provided at as part of the Scoping Report.

1.0.5 Before adopting this Opinion, the Inspectorate has consulted the 'consultation bodies' listed in Appendix 1 in accordance with EIA Regulation 10(6). A list of those consultation bodies who replied within the statutory timeframe (along with copies of their comments) is provided in Appendix 2. These comments have been taken into account in the preparation of this Opinion.

1.0.6 The Inspectorate has published a series of advice notes on the National Infrastructure Planning website, including Advice Note 7: *Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping* (AN7). AN7 and its annexes provide guidance on EIA processes during the pre-application stages and advice to support applicants in the preparation of their Environmental Statement (ES).

1.0.7 Applicants should have particular regard to the standing advice in AN7, alongside other advice notes on the Planning Act 2008 (PA2008) process, available from:

https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/

2. OVERARCHING COMMENTS

2.1 Description of the Proposed Development

(Scoping Report Section 2)

ID	Ref	Description	Inspectorate's comments
2.1.1	Paragraph 2.1 and Figure 2	Description of the Site Location	Paragraph 2.1 states that the Grid connection route lies wholly within the Boston Borough Council boundary. Figure 2 however shows that the 'EIA Area', which includes the Grid Connection route, is located in both the North Kesteven District and Boston Borough. The ES should ensure that both text and figures align and are correct.
2.1.2	3.17-3.18	Cable/grid connection route	The Scoping Report states that the offsite cable routes from the development site and National Grid Bicker Fen substation approximately 6km south site are still being surveyed and more detail on the extents and locations of the cable routes cannot be offered within this Scoping Request. The ES should clearly define the Proposed Development and its components and identify any likely significant effects for the whole Proposed Development including the cable route and substation.
2.1.3	Paragraph 2.17	Construction Compounds	The ES should provide details regarding the location, construction, operation, decommissioning and proposed duration of construction compounds required and assess where significant effects are likely to occur. This should include details of any measures proposed to enhance the sustainability of construction compound set up (e.g. use of renewable energy, rainwater harvesting etc).
2.1.4	Paragraph 2.17	Temporary Roadways	The ES should provide details regarding the location, construction, operation, decommissioning and proposed duration of temporary

ID	Ref	Description	Inspectorate's comments
			roadways required and assess where significant effects are likely to occur.
2.1.5	Section 2, paragraphs 2.12 - 2.14	Maximum Parameters and Project Description	The ES should describe the following as part of the Proposed Development description: • The maximum parameters of the Proposed Development including the maximum footprint of development, the maximum size and heights of development components and the likely capacities for output and storage; • The likely foundation design for the solar panels and their construction method including any relevant piling method; • The locations and voltages of overhead and underground cables; • Public Rights of Way proposals; and • Details of all of the components of the Proposed Development.
2.1.6	Paragraphs 2.11, 4.8 and 4.10	Decommissioning	The Scoping Report description identifies a 40-year lifetime of the Proposed Development, and the effects of decommissioning are anticipated to be of a similar, or lower, magnitude than the construction effects. The Scoping Report however acknowledges that the decommissioning phase is uncertain as technology is likely to evolve over the operational phase of the Proposed Development. The Scoping Report states that a Decommissioning Plan will be agreed with the Local Planning Authority. The Inspectorate would expect to see this secured through the inclusion of an Outline Decommissioning Plan or similar with the Application. The ES should clearly set out if and how decommissioning is to be assessed and any components which may remain following decommissioning.

ID	Ref	Description	Inspectorate's comments
2.1.7	N/A	Maintenance	Maintenance is noted as being required. A number of aspect chapters reference this. However, the Scoping Report does not set out what maintenance may involve. It is noted that effects are likely to be similar to those during construction however the frequency and scale of maintenance is not explained. The ES should clearly explain what maintenance would be required, how this is assessed and any likely significant effects arising from such activity.
2.1.8	N/A	'the site', 'the development site' 'the Energy Park Site'	The Scoping Report uses these terms interchangeably, as such it can be unclear to the reader as to which areas of the Proposed Development the comment relates. The ES should clearly assess the likely significant effects arising from all components of the Proposed Development, the solar panel energy park site, the cable route and the substation as well as any offsite works.

2.2 EIA Methodology and Scope of Assessment

(Scoping Report Section 6)

ID	Ref	Description	Inspectorate's comments
2.2.1	N/A	Scoping table	The Inspectorate advises the use of a table to set out the key changes in parameters/options of the Proposed Development presented in the Scoping Report to that presented in the ES. It is also advised that a table demonstrating how the matters raised in the Scoping Opinion have been addressed in the ES and/or associated documents is provided.
2.2.2	Table 6.4	Cumulative Impact Assessment	The ES should set out how projects included in the assessment were identified and, where possible, agreed with the local authority. The assessments should consider all relevant types of development and not be limited to solar farm projects. The Inspectorate also notes that Table 6.4 does not include any of the solar farms currently registered with the Inspectorate's National Infrastructure Team. The ES should consider whether regional scale likely significant effects could occur with other large scale solar projects e.g. arising from changes in land use and disposal of waste.
2.2.3	Figure 4	Cumulative Impact Assessment	Figure 4 depicts the 5km search area used for the cumulative impact assessment however this shows the main energy park site only and not the cable route and works at Bicker Fen substation, which also form part of the Proposed Development. The search area should relate to the whole development.
2.2.4	N/A	Mitigation and monitoring	Any measures identified to minimise likely significant effects should be consulted on with relevant consultation bodies such as Natural England. Mitigation measures should be clearly identified and justified

ID	Ref	Description	Inspectorate's comments
			in the ES with an explanation provided on how this mitigation would be secured through the DCO process.
2.2.5	N/A	Transboundary	The Scoping Report makes no reference to transboundary effects on the environment of any European Economic Area (EEA) state. Given the nature, scale and location of the Proposed Development, the Inspectorate does not consider that it has the potential for significant transboundary effects on the environment of any EEA State. The ES however should confirm whether the Proposed Development has potential to give rise to significant transboundary effects.

3. ENVIRONMENTAL ASPECT COMMENTS

3.1 Landscape and Visual Impact and Residential Amenity

(Scoping Report Section 7)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments'
3.1.1	n/a	n/a	No matters have been proposed to be scoped out of the assessment

ID	Ref	Description	Inspectorate's comments
3.1.2	3.4 and 3.15	Type of Panels	The Scoping Report states that a decision has not been taken in relation to whether stationary or tracking panels will be used or whether onsite cables can be laid underground. Where the potential panel solutions are widely different in their physical characteristics, the ES should give consideration to the worst-case impact of the panel types, as well as considering the maximum parameters of development. The ES should consider the impact of both overhead lines and undergrounding where this remains uncertain.
3.1.3	7.30	Assessment	The Scoping Report states that the assessment will be based on the height of the solar panels. It does however recognise that other components are higher, for example the substation and battery storage components. The ES should include an assessment which is based on the worst-case scenario, recognising all components of the Proposed Development and their potential locations.
3.1.4	3.21	Lighting	The Scoping Report notes that no areas are proposed to be continuously lit however lighting on sensors will be deployed. The ES should ensure that this intermittent lighting is assessed in relation to likely significant effects on humans and/or ecology. The ES should

ID	Ref	Description	Inspectorate's comments
			explain how the lighting design has been developed to minimise light spill and avoid direct intrusion into nearby properties.

3.2 Ecology and Ornithology

(Scoping Report Section 8)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.2.1	n/a	n/a	No matters have been proposed to be scoped out of the assessment

ID	Ref	Description	Inspectorate's comments
3.2.2	8.9	The Wash Special Protection Area (SPA) and Ramsar sites	The ES should consider the potential for the Proposed Development site to provide functionally linked land for bird species associated with the Wash SPA and Ramsar sites, or flight paths in the event that overhead line infrastructure is proposed.
3.2.3	8.48-8.54	Vegetation clearance	The ES should explain how phasing and methods of vegetation disturbance will avoid disturbance of protected species. Relevant measures should be secured by a DCO requirement.
3.2.4	8.57	Best practice guidance	Paragraph 8.57 states that following best practice guidance during construction, operation, and decommissioning phases will enable any significant effects on ecology to be avoided or minimised. The ES should set out what best practice and other guidance will be followed, how this has been used to inform the design of the Proposed Development and any mitigation measures proposed and where and how these are secured.
3.2.5	8.59	Biodiversity Net Gain (BNG)	Paragraph 8.59 states that a full BNG calculation using Biodiversity Metric 3.0 will accompany a draft Landscape and Ecological Management Plan (LEMP) as part of the EIA. The ES should distinguish between measures intended to avoid or reduce the

ID	Ref	Description	Inspectorate's comments
			potential for likely significant effects, or those which have been identified for enhancement only.
3.2.6	8.70	Methodology	The Scoping Report notes that survey data has been collected over a period of time. Should the ecological impact assessment seek to rely on older datasets, the ES should explain whether this approach has been agreed with relevant consultation bodies and why these surveys remain representative of the current situation on site.
3.2.7	n/a	Veteran trees	Veteran trees are not referenced in the Scoping Report. The ES should identify any veteran trees which may be affected by the Proposed Development and assess any likely significant effects.
3.2.8	n/a	Panel spacing	The ES should explain the relationship between panel spacing and vegetation growth on site and how spacing will be designed to avoid shading of vegetation.
3.2.9	n/a	Confidential annexes	Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features. Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex. All other assessment information should be included in an ES chapter, as normal, with a placeholder explaining that a confidential annex has been submitted to the Inspectorate and may be made available subject to request.

3.3 Hydrology, Hydrogeology, Flood Risk and Drainage

(Scoping Report Section 9)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.3.1	n/a	n/a	No matters have been proposed to be scoped out of the assessment.

ID	Ref	Description	Inspectorate's comments
3.3.2	Paragraph 9.1	Energy Park and the Grid cable route	Paragraph 9.1 identifies that the potential impacts of the Proposed Development will be assessed for the Heckington Fen Energy Park and the Grid cable route. Phasing used in the aspect chapter means that it is not always clear whether the information presented is representative of the Energy Park or Cable Route. It is also noted that Figure 11 does not include any details with regards to the Grid cable route and the chapter does not mention the substation. Where relevant, the ES should provide information for the whole of the Proposed Development, being clear when information relates to certain components.
3.3.3	Paragraph 9.3 and Figure 11	Study area	Paragraph 9.3 refers to Figure 11 to demonstrate the study area, however this figure only shows the site boundary (redline boundary) and topography data; it is unclear whether the site boundary, figure extent or other area represents the study area. The ES should clearly explain and justify the study area used in the assessment.

ID	Ref	Description	Inspectorate's comments
3.3.4	9.40	Flood Risk Assessment (FRA)	The ES should include a FRA based on the requirements of the Environment Agency standing advice. This should include a description of how the Proposed Development satisfies the requirements of the sequential and exception test, where relevant. The FRA should demonstrate the Proposed Development including flood suitable mitigation measures and flood resilient construction that will allow the development to remain operational for its 40-year lifespan. This includes confirming that all the flood sensitive equipment associated with the Proposed Development remains operational during a 0.1% event. Furthermore, the FRA should consider the surface water drainage/flood risk impacts that may occur off site and the potential of increased flood risk beyond the site boundary. This should include consideration of the potential for the solar installation to increase the rate of runoff from the site.
3.3.5	Paragraphs 9.7, 9.27 to 9.30 and 9.43	Likely Significant Effects and cumulative effects	Paragraph 3.6 of the Project Description states that steel poles will be driven into the ground to support each row of modules. Although the Project Description does not indicate the number of modules, given the area of the 'solar development area' in Figure 3, there is likely to be a high number of steel poles required. The baseline identifies that there is a naturally high ground water level and that in most fields, the soils drain into marginal ditches. This aspect chapter should consider the cumulative effects of these poles across the entirety of the developable area on the drainage patterns within the site and the study area.

ID	Ref	Description	Inspectorate's comments
3.3.6	Paragraph 9.10 and Table 9.1	Peat	The baseline identifies that the site is underlain by tidal flat deposits which include layers of peat. Considering the potential need for piled steel poles, as stated in paragraph 3.6, there is potential to disturb peat deposits. The ES should demonstrate how effects on peat deposits have been avoided and where this is not possible, the ES should assess likely significant effects due to peat disturbance.

3.4 Cultural Heritage

(Scoping Report Section 10)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.4.1	n/a	n/a	No matters have been proposed to be scoped out of the assessment.

ID	Ref	Description	Inspectorate's comments
3.4.2	10.26 10.29	Assessment Methodology	The ES should clarify the methodology for determining potentially unknown buried archaeological remains within the Proposed Development site and study area. The ES should consider the need for intrusive and non-intrusive field evaluation to provide information required to assess the likely significant effects for the whole Proposed Development site. Methodologies should be agreed with relevant statutory consultees.

3.5 Socio-Economics

(Scoping Report Section 11)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.5.1	n/a	n/a	No matters have been proposed to be scoped out of the assessment.

ID	Ref	Description	Inspectorate's comments
3.5.2	n/a	Census data – baseline	New census data is due to be published in May 2022. This should be used to inform baseline data and the ES assessment.

3.6 Noise

(Scoping Report Section 12)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.6.1	12.22	Construction and decommissioning of the Energy Park infrastructure.	The Planning Inspectorate is not content that the Scoping Report has provided the information required to justify that the construction and decommissioning of the Energy Park Infrastructure in the solar array area is unlikely to give rise to significant effects. Whilst appropriate working methods and construction hours may reduce impacts, the Inspectorate would expect to see further information provided on construction techniques, locations, routes, machinery and duration to rule out the likelihood for significant effects to occur.
3.6.2	12.23	Noise and vibration from traffic movements during construction and decommissioning	In the absence of information to demonstrate that traffic movements will not exceed relevant thresholds for further assessment (e.g. 30% increase in traffic or HGV numbers or 10% increase in sensitive areas), the Inspectorate is not content to scope out traffic movements during construction and decommissioning. The ES should provide information on trip generation, traffic routing, noise emissions and distances from receptors including any measures that are to be secured to avoid or reduce likely significant effects.
3.6.3	12.24	Vibration from construction works at the Energy Park site	Paragraph 12.24 notes that construction activities such as piling which have the potential to generate vibration are unlikely to be used and should they be used, this use is to be very limited and therefore unlikely to result in a significant effect. The scoping report makes no reference to the separation distance of piling activities from receptors, the duration of such activities or the likely levels of vibration that would be experienced at nearby properties. In the absence of this information, the Inspectorate considers that an assessment of vibration should be included or more detailed

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			justification to explain why significant vibration effects will not arise or the measures that will be employed to avoid such effects
3.6.4	12.25	Site-specific predictions and assessments of construction or decommissioning noise and vibration	Paragraph 12.25 notes 'site-specific predictions and assessments of construction or decommissioning noise and vibration are not warranted in this instance for most activities (aside those set out above)-'. The Inspectorate does not deem this a clear statement to enable understanding of what is to be scoped in or out of the assessment and therefore does not agree that site-specific predictions and assessments are not required. The ES should include evidence to demonstrate that noise and vibration impacts will not be significant for relevant receptors, for all stages of the Proposed Development, covering the whole Proposed Development and every potential work and process.
3.6.5	12.26	Vehicle movements during the operational stage	The Scoping Report notes that vehicle trip generation during operation is unlikely to be significant. The Inspectorate agrees that this matter can be scoped out, however the ES description of development should confirm the anticipated trip generation during operation to justify this.
3.6.6	12.27	Vibration	The Scoping report notes that based on experience of other developments, that vibration from plant used at the 'site' is unlikely to result in significant effects. The Inspectorate agrees that this matter can be scoped out subject to the detailed description of development submitted with the ES demonstrating that operational plant and equipment is of a type and to be used in locations unlikely to generate significant vibration for sensitive receptors.

ID	Ref	Description	Inspectorate's comments
3.6.7	12.5	Baseline information	The Scoping Report proposes relying on baseline data collected in 2011 and relying on measurements taken at sites some distance from the Proposed Development boundary. The ES is required to demonstrate that baseline data is representative. The baseline information should be agreed with relevant statutory consultees.
3.6.8	12.25	Mitigation	Acoustic mitigation measures to be included in the CEMP and CTMP should be agreed with the local Environmental Health Officer (EHO), where possible.
3.6.9	n/a	Use of tracking panels	The ES should include an assessment of noise generated by tracking panels and its potential impact on residential and ecological receptors.

3.7 Climate Change

(Scoping Report Section 13)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.7.1	13.42	Climate change effects on air quality	The Inspectorate agrees that the Proposed Development is not likely to give rise to significant air quality emissions during operation resulting from climate change and therefore this can be scoped out.
3.7.2	13.43	Climatic change effects on noise	The Inspectorate does not agree that this matter should be scoped out as there is insufficient information provided in the Scoping Report as to the likely significant effects from increased noise from building services equipment for cooling. This should be considered as part of the overall assessment of noise effects and cross referenced to the relevant chapters within the ES.
3.7.3	13.44	Climate change effects on transport and access	The Inspectorate agrees that considering the nature of the Proposed Development, this matter can be scoped out.
3.7.4	13.46	Climate change effects on socio-economics and human health	The Inspectorate agrees that it is unlikely that significant climate change effects on socio-economics and human health would arise as a result of the Proposed Development and this matter can be scoped out of the assessment at this stage.

ID	Ref	Description	Inspectorate's comments
3.7.5	13.18	Legislation, guidance and policy	The assessment of climate change and greenhouse gas (GHG) emissions should be based on and refer to relevant guidance. This would include:

ID	Ref	Description	Inspectorate's comments
			The Sixth UK Carbon Budget (December 2020) guidance particularly with respect to energy and transport during construction; The British Standards Institution's Publicly Available Specification (PAS) on Carbon Management in Infrastructure (2016); and IEMA's EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017).
3.7.6	13.20 – 13.21	Emissions reduction assessment	The Scoping Report states that the emissions reduction assessment will be a quantified assessment where possible. The ES should explain how emissions have been calculated and where this has not been fully quantifiable the justification for this.

3.8 Transport and Access

(Scoping Report Section 14)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.8.1	14.4	B1395 and Six Hundreds Drove	The Inspectorate agrees that if traffic is not to be routed on these roads, they do not need to be included in the assessment.
3.8.2	14.11	Operational Traffic Movements	The Inspectorate agrees that operational traffic movements may be scoped out from further assessment, however the ES description of development should evidence the likely operational traffic movements to demonstrate that transport effects will not be significant.
3.8.3	14.17	Assessment of pedestrian severance, pedestrian delay, pedestrian amenity and fear and intimidation.	The Inspectorate notes that there is limited pedestrian infrastructure and use in and around the 'site', however the Scoping Report does not provide information on the interaction (if any) between the traffic routing and the Public Rights of Way. The ES should include this information to enable this matter to be scoped out of the assessment.

ID	Ref	Description	Inspectorate's comments
3.8.4	14.5	Methodology	The Scoping Report states that 'Subject to the highway authority's views, we will write separately in due course to agree an appropriate Trip End Model Presentation Program (TEMPro) growth rate.' The Inspectorate is unclear who this statement is referring to but agrees that any modelling and growth rates used in the assessment should be agreed with the local transport authority, where possible.

3.9 Air Quality

(Scoping Report Section 15)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.9.1	15.17	Impacts to air quality at sensitive human and ecological receptors during construction	The Scoping Report states that impacts on air quality would be mitigated through the outline Construction Environmental Management Plan (oCEMP). This mitigation should be agreed with the Local Environmental Health Officer, where possible. In the absence of detailed information regarding projected HGV movements, the Inspectorate does not consider that assessment of construction air quality effects can be scoped out. The ES must provide up to date information on the anticipated construction programme and the predicted number of HGV movements to confirm that relevant thresholds for air quality assessment are not exceeded (e.g. as set out by the Institute of Air Quality Management and EPUK) or provide a detailed air quality impact assessment.
3.9.2	15.17	Impacts to air quality at sensitive human and ecological receptors from non-road mobile machinery (NRMM) during construction	The Inspectorate does not agree that emissions from NRMM can be scoped out as no information has been provided on the type, number and location of such machinery within the Proposed Development site. An assessment of effects should be provided unless robust justification is provided to demonstrate that such machinery would not give rise to significant air quality effects.
3.9.3	15.17	Impacts to air quality at sensitive human and ecological receptors from the operational phase of the Proposed Development	The Inspectorate agrees that operational vehicle emissions may be scoped out from further assessment, subject to the description of development demonstrating that vehicle numbers are sufficiently low as to not trigger the thresholds for an air quality assessment.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.9.4	15.23	Dust and particulate matter emissions produced during construction phase	The Scoping Report states that this is to be mitigated through the outline Construction Environmental Management Plan (oCEMP). The Inspectorate agrees that this matter can be scoped out providing the ES can demonstrate the effectiveness of such measures.

ID	Ref	Description	Inspectorate's comments
3.9.5	15.13	Baseline surveys	The Scoping Report references that NO_2 monitoring is proposed but does not reference PM_{10} or $PM_{2.5}$, the Applicant should agree whether further monitoring of these pollutants is required with the Local Planning Authority.

3.10 Land Use and Agriculture

(Scoping Report Section 16)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.10.1	Paragraph 16.6	The EIA area where the cable route to Bicker Fen will be laid	Paragraph 16.6 of the Scoping Report explains that no auger measurements were taken to inform the Agricultural Land Classification survey in the EIA area where the cable route to Bicker Fen will be laid. The Scoping Report states that this is because the underground cable will not result in loss of agricultural land. However, the Scoping Report has not provided information on current land uses along the proposed cable route and whether these can be continued with an underground cable, noting the need for jointing and inspection pits which limit the use of the machinery on land. As such, the Inspectorate does not consider that the Scoping Report provides sufficient information to scope this matter out of the assessment.

ID	Ref	Description	Inspectorate's comments
3.10.2	Paragraph 16.8	Likely Significant Effects	The Scoping Report identifies the loss of agricultural land and Best and Most Versatile (BMV) land due to the installation of solar panels, however no mention is made as a loss of land due to potential changes in the hydrological regime. The ES should also consider the impacts of the hydrology and hydrogeology changes on agricultural land and potential implications in the wider area on whether likely significant effects are likely.
3.10.3	16.23	Cumulative effects	The Inspectorate notes the approach to cumulative impact on Best Most Versatile (BMV) land, specifically the exclusion of any Proposed Developments that include less that 20ha of BMV land. The Inspectorate would expect the ES to provide clear justification for

ID	Ref	Description	Inspectorate's comments
			how the use of this threshold enables cumulative impact to be assessed.

3.11 Glint and Glare

(Scoping Report Section 17)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.11.1	Paragraphs 17.6 and 17.7	Aviation receptors	Aviation receptors are proposed to be scoped out on the basis there is no evidence that glint and glare for solar farms interferes in any way with aviation navigation or pilot and aircraft visibility or safety. The Inspectorate considers that this matter may be scoped out from further consideration, however the description of development should explain how the panel design prevents the likelihood of glint and glare.

ID	Ref	Description	Inspectorate's comments
3.11.2	n/a	Glint and glare and LVIA	The Glint and Glare Assessment should ensure that it assesses a worst-case scenario, which at present includes the consideration of tracking and stationary panels. The conclusions of the assessment should inform the LVIA.

3.12 Miscellaneous Issues

(Scoping Report Section 18)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.12.1	18.17 - 18.20	Cumulative assessment - Significance of waste/recycling stream	Paragraph 8.20 states that cumulative waste stream options will be considered at the decommissioning phase and would be outlined in the decommissioning plan that would be required through a DCO Requirement. An assessment of decommissioning at this stage is assumed not to offer a realistic conclusion of the significance of the waste/recycling stream for the Proposed Development and is intended to be scoped out of this assessment. The Inspectorate does not agree that this matter can be scoped out of the assessment. The ES should address the likely significant effects from waste at decommissioning to the extent possible at this time, including consideration of any measures to ensure that component waste will avoid entering the waste chain. This should also include waste likely to be generated from replacing components.

ID	Ref	Description	Inspectorate's comments
3.12.2	18.4 18.9	Telecommunications, Television Reception and Utilities	Paragraph 18.4 states that existing utility infrastructure will be identified through consultation and a desk-based study. The ES should explain the findings of the desk-based study and any required mitigation measures but is otherwise content to scope this matter out.
3.12.3	18.8 18.14	Electric, Magnetic and Electromagnetic Fields	The voltage of underground export cables between the onsite substation and the existing National Grid Bicker Fen substation is likely be 400kV. In line with relevant guidance (DECC Power Lines:

ID	Ref	Description	Inspectorate's comments
			Demonstrating compliance with EMF public exposure guidelines, A Voluntary Code of Practice 2012), cables above 132kV have potential to cause electro-magnetic field (EMF) effects. The Inspectorate considers that the ES should demonstrate the design measures taken to avoid the potential for EMF effects on receptors.
3.12.4	18.4	Telecommunications, Television Reception and Utilities	The Scoping Report suggests that existing infrastructure will be identified through consultation and a desk-based study and will inform the design and protective provisions to avoid impacts on receptors. The Inspectorate is content that this aspect can be scoped out however the ES should explain the findings of the desk-based study and any required mitigation measures.
3.12.5	18.10-18.12	Waste	Solar developments are typically considered to be 30 to 40 year developments with panel degradation cited as a limiting factor on project lifespan. On that basis, the Inspectorate considers that some panels may need to be replaced during the operational life of the project. The Scoping Report states that waste during construction and decommissioning would be recycled in line with good practice and market conditions however does not address the potential for component replacement during operation. The ES should include an assessment of the likely impact of component replacement (e.g. batteries and panels) and outline what measures, if any, are in place to ensure that these components are able to be diverted from the waste chain. The ES should assess the likely significant effects from waste at decommissioning to the extent possible at this time. The Scoping Report states that a Decommissioning Plan will be agreed with the Local Planning Authority. The Inspectorate would expect to see this

ID	Ref	Description	Inspectorate's comments
			secured through the inclusion of an Outline Decommissioning Plan or similar with the Application. The ES should clearly set out how decommissioning is to be assessed and any components which may remain following decommissioning.
3.12.6	Table 1.1 Table 19.2	Major Accidents and Disasters	A standalone Chapter for major accidents and disasters is not proposed on the basis that the nature, scale, and location of the Proposed Development is not considered to be vulnerable to or give rise to significant impacts in relation to the risk of accidents and major disasters. Potential effects relating to soil conditions, surface water flooding and climate change will be assessed in other Chapters where relevant. The Inspectorate has considered the characteristics of the Proposed Development and agrees with this approach. The Applicant's attention is drawn to the Health and Safety Executive's comments relating to potential hazards and receptors to be addressed within the ES. Table 19.2 acknowledges that there is a potential fire risk associated with certain types of batteries such as lithium ion, which is reduced by cooling systems designed to regulate temperatures to within safe parameters. The Inspectorate considers that the risk of battery fire/explosion should be addressed in the ES, including where any measures designed to minimise impacts on the environment in the event of such an occurrence are secured.

APPENDIX 1: CONSULTATION BODIES FORMALLY CONSULTED

TABLE A1: PRESCRIBED CONSULTATION BODIES[1]

SCHEDULE 1 DESCRIPTION	ORGANISATION
The Health and Safety Executive	Health and Safety Executive
The National Health Service Commissioning Board	NHS England
The relevant Clinical Commissioning Group	NHS Lincolnshire Clinical Commissioning Group
Natural England	Natural England
The Historic Buildings and Monuments Commission for England	Historic England
The relevant fire and rescue authority	Lincolnshire Fire and Rescue Service
The relevant police and crime commissioner	Lincolnshire Police and Crime Commissioner
The relevant parish council(s)	Bicker Parish Council
The relevant parish council(s)	Swineshead Parish Council
The relevant parish council(s)	Amber Hill Parish Council
The relevant parish council(s)	Little Hale Parish Council
The relevant parish council(s)	Great Hale Parish Council
The relevant parish council(s)	Heckington Parish Council
The Environment Agency	The Environment Agency
The Civil Aviation Authority	Civil Aviation Authority
The Relevant Highways Authority	Lincolnshire County Council
The relevant strategic highways company	National Highways (formerly Highways England)

[1] Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (the 'APFP Regulations')

SCHEDULE 1 DESCRIPTION	ORGANISATION
The relevant internal drainage board	Black Sluice Internal Drainage Board
The relevant internal drainage board	Witham First Internal Drainage Board
The Relevant Highways Authority	Witham Fourth District Internal Drainage Board
The relevant internal drainage board	Witham Third Internal Drainage Board
The relevant internal drainage board	Welland and Deepings Internal Drainage Board
The Canal and River Trust	The Canal and River Trust
United Kingdom Health Security Agency	United Kingdom Health Security Agency
The Crown Estate Commissioners	The Crown Estate
The Forestry Commission	The Forestry Commission - East and East Midlands
The Secretary of State for Defence	Ministry of Defence

TABLE A2: RELEVANT STATUTORY UNDERTAKERS[2]

STATUTORY UNDERTAKER	ORGANISATION
The relevant Clinical Commissioning Group	NHS Lincolnshire Clinical Commissioning Group
The National Health Service Commissioning Board	NHS England
The relevant NHS Trust	East Midlands Ambulance Service NHS Trust
Railways	Network Rail Infrastructure Ltd
Railways	Highways England Historical Railways Estate
Canal Or Inland Navigation Authorities	The Canal and River Trust

[2] 'Statutory Undertaker' is defined in the APFP Regulations as having the same meaning as in Section 127 of the Planning Act 2008 (PA2008)

STATUTORY UNDERTAKER	ORGANISATION
Civil Aviation Authority	Civil Aviation Authority
Universal Service Provider	Royal Mail Group
Homes and Communities Agency	Homes England
The relevant Environment Agency	The Environment Agency
The relevant water and sewage undertaker	Anglian Water
The relevant public gas transporter	Cadent Gas Limited
The relevant public gas transporter	Last Mile Gas Ltd
The relevant public gas transporter	Energy Assets Pipelines Limited
The relevant public gas transporter	ES Pipelines Ltd
The relevant public gas transporter	ESP Networks Ltd
The relevant public gas transporter	ESP Pipelines Ltd
The relevant public gas transporter	ESP Connections Ltd
The relevant public gas transporter	Fulcrum Pipelines Limited
The relevant public gas transporter	Harlaxton Gas Networks Limited
The relevant public gas transporter	GTC Pipelines Limited
The relevant public gas transporter	Independent Pipelines Limited
The relevant public gas transporter	Indigo Pipelines Limited
The relevant public gas transporter	Leep Gas Networks Limited
The relevant public gas transporter	Murphy Gas Networks limited
The relevant public gas transporter	Quadrant Pipelines Limited
The relevant public gas transporter	Squire Energy Limited
The relevant public gas transporter	National Grid Gas Plc
The relevant public gas transporter	Scotland Gas Networks Plc
The relevant public gas transporter	Southern Gas Networks Plc

STATUTORY UNDERTAKER	ORGANISATION
The relevant electricity distributor with CPO Powers	Eclipse Power Network Limited
The relevant electricity distributor with CPO Powers	Energy Assets Networks Limited
The relevant electricity distributor with CPO Powers	ESP Electricity Limited
The relevant electricity distributor with CPO Powers	Forbury Assets Limited
The relevant electricity distributor with CPO Powers	Fulcrum Electricity Assets Limited
The relevant electricity distributor with CPO Powers	Harlaxton Energy Networks Limited
The relevant electricity distributor with CPO Powers	Independent Power Networks Limited
The relevant electricity distributor with CPO Powers	Indigo Power Limited
The relevant electricity distributor with CPO Powers	Last Mile Electricity Ltd
The relevant electricity distributor with CPO Powers	Leep Electricity Networks Limited
The relevant electricity distributor with CPO Powers	Murphy Power Distribution Limited
The relevant electricity distributor with CPO Powers	The Electricity Network Company Limited
The relevant electricity distributor with CPO Powers	UK Power Distribution Limited
The relevant electricity distributor with CPO Powers	Utility Assets Limited
The relevant electricity distributor with CPO Powers	Vattenfall Networks Limited
The relevant electricity distributor with CPO Powers	Eastern Power Networks Plc

STATUTORY UNDERTAKER	ORGANISATION
The relevant electricity distributor with CPO Powers	Western Power Distribution (East Midlands) plc
The relevant electricity transmitter with CPO Powers	National Grid Electricity Transmission Plc
The relevant electricity transmitter with CPO Powers	National Grid Electricity System Operator Limited
The relevant electricity interconnector with CPO Powers	National Grid Viking Link Limited

TABLE A3: SECTION 43 LOCAL AUTHORITIES (FOR THE PURPOSES OF SECTION 42(1)(B))[3]

LOCAL AUTHORITY[4]
Boston Borough Council
North Kesteven District Council
West Lindsey District Council
South Kesteven District Council
South Holland District Council
City of Lincoln Council
Newark and Sherwood District Council
East Lindsey District
Lincolnshire County Council
North-East Lincolnshire Council
North Lincolnshire Council
Rutland County Council
North Northamptonshire Council

[3] Sections 43 and 42(B) of the PA2008

[4] As defined in Section 43(3) of the PA2008

LOCAL AUTHORITY[4]
City of Peterborough Council
Cambridgeshire County Council
Nottinghamshire County Council
Norfolk County Council
Leicestershire County Council

APPENDIX 2: RESPONDENTS TO CONSULTATION AND COPIES OF REPLIES

CONSULTATION BODIES WHO REPLIED BY THE STATUTORY DEADLINE:
Amber Hill Parish Council
Anglian Water
Boston Borough Council
Canal and River Trust
City of Lincoln Council
East Lindsey District Council
Environment Agency
Health and Safety Executive
Historic England
Lincolnshire County Council
National Grid
Network Rail
Newark and Sherwood District Council
NHS Lincolnshire Clinical Commissioning Group
North Kesteven District Council
North Northamptonshire Council
Peterborough City Council
South Kesteven District Council
United Kingdom Health Security Agency
West Lindsey District Council
Witham Fourth District Internal Drainage Board

From: [redacted]@gmail.com
To: Heckington Fen Solar
Subject: Ecotricity - Amber Hill Parish Council
Date: 07 February 2022 15:22:42

Dear Sir/madam

Please find below feedback from Amber Hill Parish Council in relation to your consultation with them regarding the Ecotricity Heckington Fen Solar Park

Cllrs discussed the information received regarding the Solar farm, noting that they will be 4.5m high and have a lifetime of 40 years, although it is yet to be decided whether they would be tracking or fixed.

Cllrs resolved that they are in favour of a Solar farm as such, however they do have concerns about the fact that the land to be used is good quality land that will be removed from agricultural production.

The land currently proposed to be used is a mixture of grade 1 and 2 land, capable of producing good crops of roots and vegetables. Grade 3 and 4 land would be far more appropriate for a solar farm.

Regards

Nicky

Nicky Bush
Clerk to Amber Hill Parish Council
[redacted]
Swineshead
Lincolnshire
[redacted]
[redacted]

Anglian Water Services
Thorpe Wood House
Thorpe Wood
Peterborough
PE3 6WT

www.anglianwater.co.uk
Our ref ScpR.HFSP.NSIP.22.ds

Katie Norris
EIA Advisor
The Planning Inspectorate

HeckingtonFenSolar@planninginspectorate.gov.uk

3 February 2022

Dear Katie

Heckington Fen Solar Park - EIA Scoping Report consultation

Thank you for the opportunity to comment on the scoping report for the above project which is in North Kesteven District. A portion of the grid route corridor is in Boston District.

Anglian Water is the appointed water and sewerage undertaker for the site shown on Figure1 and Grid Route corridor shown on Figure2. The following response is submitted on behalf of Anglian Water in its statutory capacity and relates to potable water and water assets along with wastewater and water recycling assets. We would consider that Anglian Water should be included on the list of consultees to be drawn up by the applicant to follow their proposed approach to assessment and consultation on page 128, paragraph 18.4.

Engagement, the draft DCO Order and assisting the applicant
Anglian Water would welcome the instigation of discussions with Ecotricity (Heck Fen Solar) Limited prior to the project layout and initial design fix for the onshore infrastructure and to assist the applicant before the submission of the Draft DCO for examination (See paragraphs 18.9 and 18.14). We would recommend discussion on the following issues:

1. The Draft DCO Order including protective provisions specifically to ensure Anglian Water's services are maintained during construction
2. Requirement for potable and raw water supplies
3. Requirement for wastewater services
4. Impact of development on Anglian Water's assets and the need for mitigation
5. Pre-construction surveys

- Anglian Water

Anglian Water's works to support the construction and operation of national infrastructure

projects are conducted in accordance with the Water Industry Act 1991. We would expect that the Environmental Statement would include reference to existing water supply and water recycling infrastructure managed by Anglian Water and the provision of replacement infrastructure and the requirements for new infrastructure. Maps of Anglian Water's assets are available to view at the following address:

http://www.digdat.co.uk/

- The Scheme – Existing infrastructure

There are existing Anglian Water assets including water mains within the site and water and wastewater infrastructure near the site or within roads which serve the site and the surrounding community. Anglian Water works with developers including those constructing projects under the 2008 Planning Act to ensure requests for alteration of sewers, wastewater and water supply infrastructure is planned to be undertaken with the minimum of disruption to the project and customers.

At page 81, paragraph 9.23 the report refers to drinking water sourced from abstraction and advises that no impact groundwater catchments within Source Protection Zones will be affected by the development. At paragraph 9.26 the applicant advises that approaches have been made to the EA and district council for information on local groundwater sources.

A mains water pipe runs to the north of the A17 within the southern boundary of the site. The main pipe then runs along the route of the B1395 on the western boundary of the site. To minimise the carbon cost of the project the design and construction of the project should minimise and if possible, avoid the need to move the water supply network. If this is not possible then Protective Provisions will be required to protect the supply of water to local communities by Anglian Water. Similarly, with reference to paragraph 3.17 the same avoid existing utilities approach to defining the route of offsite cabling should be applied. Again, where water and waste water network assets are crossed or in proximity to the new cable route then Protective Provisions will be required to ensure customers services are not interrupted. A grid connection route running north to south adjacent to the North Kesteven and Boston District boundaries has the potential to minimise distribution to Anglian Water's network and customers.

The East Heckington Wastewater Recycling Centre (WRC) is located to the south of the southern boundary of the site. Access to the WRC would be required 24/7. Any construction works or vehicle movements including round closures should be designed and planned to enable continued access to the WRC.

We note that at Table 19.1 (page 132) it is proposed to work with the LLFA, IDB and EA to inform surface water drainage. No reference is made to the need for connection to the public sewer network. At paragraph 18.6 reference is made to waste water from dewatering and cleaning although no reference is made to waste water from construction and operational stage facilities. Anglian Water requests confirmation that no connection is required to the public sewer network.

Anglian Water recommends that the Environmental Statement should include reference to identified impacts on water supply, the sewerage network and sewage treatment both during construction and operation. Further advice on water and wastewater capacity and options can be obtained by contacting Anglian Water's Pre-Development Team planningliasion@anglianwater.co.uk).

- Surface drainage

Anglian Water welcomes that a Site Drainage Plan (paragraph 8.5.8) will be prepared, and that SuDS will be used to manage surface water (5.5.6). Notwithstanding the lead role of the IDB, Anglian Water would welcome clarification that the impacts on the local drainage/ sewerage network (paragraph 13.39) will be designed out of the scheme given that there will be no mains foul connection and only SuDS will be used for both construction and operational stages.

Please do not hesitate to contact me as Anglian Water's NSIP lead should you require clarification on the above response or during the pre- application to decision stages of the project.

Yours sincerely,

[redacted]

Darl Sweetland MRTPI
Spatial Planning Manager

Cc
heckingtonfensolar@ecotricity.co.uk

From:	planning
To:	Heckington Fen Solar
Subject:	Consultation by Ecotricity (Heck Fen Solar) Limited for the Heckington Fen Solar Park - Consultation request for Scoping Opinion (Regulation 10(1) of the EIA Regulations)
Date:	18 January 2022 15:27:55

Dear Sir/Madam,

Thank you for your consultation on the scoping report for the Heck Fen solar farm.

The Borough Council consider the scoping report provides suitable information to show the Environmental Statement will adequately consider the impact of visual intrusion, noise and traffic on the Borough.

It is acknowledged that the cable route to Bicker Fen is not yet decided and this will clearly change the level of impact this may have on the Borough. However, if it is decided to have the route within the Borough, it is considered the scoping report provides suitable information to show the Environmental Statement will adequately consider the impact on ecology.

However, the Borough Council are not convinced by the scoping report of the analysis of the impact of the cable route on archaeology. The archaeology section in the scoping report focuses on the site. The cable route is mentioned but seems less important. The scoping report in para 10.3 refers to obtaining HER data for a 2km radius of the main site boundary. The cable route is about 6km and so it is unclear what information has been derived for it. Para 10.3 refers to recent ongoing work to the east of the site revealing roman activity. This may be in relation to the Tritton Knoll cable route. The Tritton Knoll and Viking Link work needs to be viewed to add to the knowledge on impact of the cable route. This is intimated in para 10.26. Para 10.5 does say the main assessment work will be for a 5km area with professional judgement on assets beyond that distance. Overall, the assessment work to be undertaken on the cable route needs clarification.

Although the site is outside the Borough, the use of 587 hectares of land for a solar farm removes a significant local area from agricultural production. As such, it is considered important that benefits are clearly stated. The scoping report includes sections on climate change and agricultural land. It is considered that analysis of any research on impacts of solar schemes on soil structure, fertility and carbon content would usefully add to the discussion on carbon sequestration and the ability of soils to cope with their expected drying from climate change.

Yours faithfully,

Peter Udy | Boston Borough Council

www.mybostonuk.com

South East Lincolnshire Councils Partnership

You should be aware that the above is my opinion only and is made without prejudice to any future decision made by Boston Borough Council. It relates only to Planning and does not cover any other acts or legislation.

Canal & River Trust
Making life better by water

Secretary of State
The Planning Inspectorate
Environmental Services
Temple Quay House
2 The Square
Bristol
BS1 6PN

Your Ref EN010123

Our Ref IPP-147

Friday 14th January 2022

BY EMAIL ONLY heckingtonfensolar@planninginspectorate.gov.uk

Dear Sirs

EN010123 Heckington Fen Solar Park - EIA Scoping Report Notification and Consultation

Thank you for your consultation on the Environmental Impact Assessment Scoping for the above project.

We are the charity who look after and bring to life 2000 miles of canals & rivers. Our waterways contribute to the health and wellbeing of local communities and economies, creating attractive and connected places to live, work, volunteer and spend leisure time. These historic, natural and cultural assets form part of the strategic and local green-blue infrastructure network, linking urban and rural communities as well as habitats. By caring for our waterways and promoting their use we believe we can improve the wellbeing of our nation.

The location of the development, as indicated in the submitted red line boundary on figure 1 of the Scoping Document indicates that the project would not be located close to or include assets owned or managed by the Trust. As a result, we have **no comment** to make on the proposed Scoping Report.

Please note that, in the event that the scheme is amended in incorporate works that affect our assets, such as the provision of a new cable above the river Witham (our closest asset to the site), the Trust would wish to be re-consulted on the proposal.

Yours Sincerely

Simon Tucker MRTPI
Area Planner – Yorkshire and North East

[redacted]@canalrivertrust.org.uk
Fradley Junction, Alrewas, Burton-upon-Trent, Staffordshire, DE13 7DN

https://canalrivertrust.org.uk/specialist-teams/planning-and-design

Canal & River Trust
Making life better by water

Secretary of State
The Planning Inspectorate
Environmental Services
Temple Quay House
2 The Square
Bristol
BS1 6PN

Your Ref EN010123

Our Ref IPP-147

Friday 14th January 2022

BY EMAIL ONLY heckingtonfensolar@planninginspectorate.gov.uk

Dear Sirs

EN010123 Heckington Fen Solar Park - EIA Scoping Report Notification and Consultation

Thank you for your consultation on the Environmental Impact Assessment Scoping for the above project.

We are the charity who look after and bring to life 2000 miles of canals & rivers. Our waterways contribute to the health and wellbeing of local communities and economies, creating attractive and connected places to live, work, volunteer and spend leisure time. These historic, natural and cultural assets form part of the strategic and local green-blue infrastructure network, linking urban and rural communities as well as habitats. By caring for our waterways and promoting their use we believe we can improve the wellbeing of our nation.

The location of the development, as indicated in the submitted red line boundary on figure 1 of the Scoping Document indicates that the project would not be located close to or include assets owned or managed by the Trust. As a result, we have **no comment** to make on the proposed Scoping Report.

Please note that, in the event that the scheme is amended in incorporate works that affect our assets, such as the provision of a new cable above the river Witham (our closest asset to the site), the Trust would wish to be re-consulted on the proposal.

Yours Sincerely

Simon Tucker MRTPI
Area Planner – Yorkshire and North East

[redacted]@canalrivertrust.org.uk
Fradley Junction, Alrewas, Burton-upon-Trent, Staffordshire, DE13 7DN

https://canalrivertrust.org.uk/specialist-teams/planning-and-design

Directorate of Communities & Environment
Simon Walters MBA, ACG, MCMI
City Hall, Beaumont Fee
Lincoln, LN1 1DF

Telephone: [redacted]
Facsimile:
Website: www.lincoln.gov.uk

Emily Park
The Planning Inspectorate

Lana Meddings is dealing with this matter
Direct Dial: [redacted]
E-mail: [redacted]@lincoln.gov.uk
Our Ref: 2022/0016/PREAPP
Your Ref:
Date: 18th January 2022

Dear Sir/Madam,

Town and Country Planning Act 1990
Location: Heckington Fen Solar Park Land At Six Hundreds Farm Six Hundreds Drove East Heckington Sleaford Lincolnshire
Proposal: Scoping opinion consultation - application by Ecotricity (Heck Fen Solar) Limited for an Order granting Development Consent for the Heckington Fen Solar Park.

Thank you for your pre-application enquiry received on 10th January 2022.

The City of Lincoln Council have no further comments.

This pre application advice is given with every intention of being helpful, is based on the information currently available and cannot be considered binding on the Council or its Officers. Should you decide to submit an application then the advice will form part of the consideration of that application. Once your application is submitted then the Council will initiate a formal consultation exercise with interested parties and responses will be taken into account. The nominated Officer will also visit the site and take the opportunity to assess your proposals in the context of their surroundings.
Only then will a recommendation be made regarding your application and this may be different to the pre application advice given in this letter taking into account responses received and the outcome of the site visit.

Yours faithfully

[redacted]

Assistant Director - Planning

From:	Heckington Fen Solar
To:	Heckington Fen Solar
Subject:	FW: EN010123-000014 - Heckington Fen Solar
Date:	09 February 2022 11:33:23

From: Walker, Michelle [redacted]@e-lindsey.gov.uk>
Sent: 27 January 2022 19:47
To: Heckington Fen Solar <HeckingtonFenSolar@planninginspectorate.gov.uk>
Subject: EN010123-000014 - Heckington Fen Solar

FAO Emily Park

Hello Emily,

Thank you for consulting East Lindsey District Council on the EIA Scoping Opinion for the proposed solar farm at Heckington Fen. Having read the on-line documentation I can confirm that this authority has no comments to make.

Regards
Michelle

Miss M. Walker
Deputy Development Manager

Tel: [redacted]
Email: [redacted]@e-lindsey.gov.uk

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Emily Park
Senior Environmental Advisor
Environmental Services
The Planning Inspectorate
Temple Quay House
Temple Quay
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Our ref: AN/2022/132681/01-L01
Your ref: EN010123-000014

Date: 02 February 2022

Dear Emily

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11
Application by Ecotricity (Heck Fen Solar) Limited (the Applicant) for an Order granting Development Consent for the Heckington Fen Solar Park (the Proposed Development)

Thank you for consulting us on the Scoping Report for the above project, which we received on 10 January 2022.

Chapter 8 Ecology
In section 8.59 we are pleased to see recognition for NSIPs to deliver Biodiverstiy Net Gain (BNG) through the passing of the Environment Act. We understand that a BNG calculation using Biodiversity Metric 3 will accompany a draft Landscape and Ecological Management Plan (LEMP) as part of the EIA submission.

Page 14 shows the indicative site layout and most of the potential (95 hectare, 16.24%) BNG is in the south west of the site with two small sections in the north of the site which back onto the main river.

Our focus is the water related environmental enhancements linked to the Water Framework Directive so we are particularly interested in opportunities around the main river the Head Dike. We recognise the challenge here is that the bigger watercourses are high level carriers so significant habitat improvement on these would most likely need to consider the more complex setting back of embankments to create habit. This may or may not be feasible within the scheme and if this is an option that can be considered being considered a range of permissions would be required for this including

our own flood environmental permit. Our Partnership and Strategic Overview team would be happy to engage in conversations to find a way forward on any flood risk implications.

On a smaller scale and for general habitat within the smaller drainage network there are potential ways of improving habitat to be considered, for example to increase the wet marginal areas on the existing drains. This would require consultation with Black Sluice IDB as well as the usual checks and permissions including ecological, water voles especially. There are also some further guides out there for artificial drainage networks that have ideas at varying levels of ambition for example https://www.ada.org.uk/knowledge/environment/

If an ambition is to wet the landscape a bit more around the solar farm then the applicant may want to speak with the Lincolnshire Wild life Trust who have a big focus on the Fens through the Fens for the future project as they will have lots of ideas for environmental enhancement and ways to capture BNG

Wildlife sites and protected sites should be avoided wherever feasible, and we will provide specific comments when the proposals are finalised.

Chapter 9 - Hydrology, Hydrogeology, Flood Risk & Drainage
We await the submission of the flood risk assessment (FRA) to make further comments in relation to the development but have the following comments to assist in the development of the FRA.

The plans suggest several buildings are to be erected within the floodplain, we would require more information on each individual building to better assess whether they will be safe over the lifetime of the development.

With regards to any fencing of the site, we would request fences are not within 8m of the flood defence and to allow early engagement should this not be achievable.

The FRA should demonstrate that flood sensitive equipment will remain operational during a 0.1% event (2115 scenario) and that appropriate mitigation measures/flood resilient construction techniques have been incorporated into the development for its lifetime of 40 years.

The decommissioning plan [reference made in section 4.8 to 4.10] will have to consider the flood risk aspects and how the floodplain will be returned to its natural state thereafter – again early engagement would be advisable.

Environmental permitting
Under the Environmental Permitting (England and Wales) Regulations 2016, permission must be obtained from the Environment Agency for any proposed activities which will take place:

- in, over, under or within 8 metres of a main river (16 metres if tidal)
- on or within 8 metres of a flood defence structure or culvert (16 metres if tidal)
- on or within 16 metres of a sea defence
- within 16 metres of any main river, flood defence (including a remote defence) or culvert for quarrying or excavation
- in a flood plain more than 8 metres from the river bank, culvert or flood defence structure (16 metres if tidal) having the potential to divert flood flows to third parties, if planning permission has not already been granted for the works

Cont/d..

We request early engagement with ourselves should the underground cable to Bicker Fen Sub Station go under the South Forty Foot Drain. We do have certain exemptions where service crossings are completed by means of horizontal directional drilling not using an open cut technique – known as Exemption FRA 3.

Details of Exemption FRA 3 can be found here: Exempt flood risk activities: environmental permits - GOV.UK (www.gov.uk)

Should you require any additional information, or wish to discuss these matters further, please do not hesitate to contact me on the number below.

Yours sincerely

Sharon Nolan
Sustainable Places Planning Advisor

☎ [redacted]
☎ [redacted]
[redacted]@environment-agency.gov.uk

End

Health and Safety Executive

CEMHD Policy - Land Use Planning,
NSIP Consultations,
Building 1.2,
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L20 7HS.

HSE email: NSIP.applications@hse.gov.uk

Emily Park (Senior EIA Advisor)
The Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN
By email only

Dear Ms Park

Date: 7 February 2022

PROPOSED HECKINGTON FEN SOLAR PARK (the project)
PROPOSAL BY ECOTRICITY (HECK FEN SOLAR) LIMITED (the applicant)
INFRASTRUCTURE PLANNING (ENVIROMENTAL IMPACT ASSESSMENT) REGULATIONS 2017 (as amended) REGULATIONS 10 and 11

Thank you for your letter of 10 January 2022 regarding the information to be provided in an environmental statement relating to the above project. HSE does not comment on EIA Scoping Reports but the following information is likely to be useful to the applicant.

HSE's land use planning advice

Will the proposed development fall within any of HSE's consultation distances?

According to HSE's records the proposed DCO application boundary for this Nationally Significant Infrastructure Project is not within any consultation zones of major accident hazard sites but is within 1 zone of a major accident hazard pipelines.

This is based on the current configuration as illustrated in, for example, figure 1 'ENERGY PARK SITE LOCATION PLAN' within the document 'DEVELOPMENT CONSENT ORDER APPLICATION FOR GROUND MOUNTED SOLAR PANELS, ENERGY STORAGE FACILITY, BELOW GROUND GRID CONNECTION TO BICKER FEN SUBSTATION AND ALL ASSOCIATED INFRASTRUCTURE WORKS. ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REPORT LAND AT SIX HUNDREDS FARM, SIX HUNDREDS DROVE, EAST HECKINGTON, SLEAFORD, LINCOLNSHIRE ON BEHALF OF ECOTRICITY (HECK FEN SOLAR) LIMITED'

HSE's Land Use Planning advice would be dependent on the location of areas where people may be present. When we are consulted by the Applicant with further information under Section 42 of the Planning Act 2008, we can provide full advice.

Hazardous Substance Consent

The presence of hazardous substances on, over or under land at or above set threshold quantities (Controlled Quantities) will probably require Hazardous Substances Consent (HSC) under the Planning (Hazardous Substances) Act 1990 as amended. The substances, alone or when aggregated with others for which HSC is required, and the associated Controlled Quantities, are set out in The Planning (Hazardous Substances) Regulations 2015 as amended.

HSC would be required to store or use any of the Named Hazardous Substances or Categories of Substances at or above the controlled quantities set out in Schedule 1 of these Regulations.

Further information on HSC should be sought from the relevant Hazardous Substances Authority.

Consideration of risk assessments

Regulation 5(4) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires the assessment of significant effects to include, where relevant, the expected significant effects arising from the proposed development's vulnerability to major accidents. HSE's role on NSIPs is summarised in the following Advice Note 11 Annex on the Planning Inspectorate's website - Annex G – The Health and Safety Executive . This document includes consideration of risk assessments on page 3.

Explosives sites

HSE has no comment to make as there are no licensed explosives sites in the vicinity.

Electrical Safety

No comment from a planning perspective.

At this time, please send any further communication on this project directly to the HSE's designated e-mail account for NSIP applications at nsip.applications@hse.gov.uk . We are currently unable to accept hard copies, as our offices have limited access.

Yours sincerely

[redacted]

Allan Benson
CEMHD4 NSIP Consultation Team

Historic England

Direct Dial: [redacted]

Our Ref: PL00758702

Ms Katie Norris
EIA Advisor
Major Casework Directorate
The Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
BS1 6PN

12 January 2022

Dear Ms Norris

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) - Regulations 10 and 11

Application by Ecotricity (Heck Fen Solar) Ltd (the Applicant) for an Order granting Development Consent for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and all Associated Infrastructure Works (the Proposed Development)

Thank you for consulting us on the above Scoping Report, Historic England is the Government's advisor on Historic Environment and will engage positively with information requests received in connection with producing this Environmental Impact Assessment.

We note that Historic Environment matters are scoped into the proposed Environmental Statement and we agree with this approach. In addition to our comments below, we refer the applicant to the expertise of the relevant local authority advisors in Lincolnshire in respect of both built heritage and the archaeological assets and impacts there-on.

We caution against a fixed radius approach to the consideration of setting impacts in advance of more work to understand the specific setting sensitivity of assets in the area in relation to the height and massing of the proposed scheme in its cultural landscape context, the proposed scope may be unduly restrictive and should be reviewed in the context of initial results.

Historic Environment matters should be addressed in detail both in respect of direct

physical impacts upon buried remains and setting impacts upon the historic environment and this assessment should be made in-line with current standards and guidance. In particular we draw your attention to the following oversights within the Environmental Impact Assessment Scoping Report (page 89 paragraph 10.25 Guidance):

- Planning Practice Guidance (PPG) 'Conserving and Enhancing the Historic Environment' [MHCLG, updated February 2018]
  - the July 2019 update supersedes the February 2018 update

EAC Guidelines for the Use of Geophysics in Archaeology: questions to ask and points to consider [EAC 2015]
  - should read [EAC January 2016]

Yours sincerely

Alison MacDonald
Assistant Inspector of Ancient Monuments
E-mail: [redacted]@HistoricEngland.org.uk

Lincolnshire COUNTY COUNCIL
Working for a better future

FAO Emily Park – Snr Environmental Advisor
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Environmental Services
Central Operations
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1 February 2022

Marc Willis
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Tel: [redacted]
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Tel: [redacted]

Your Ref: EN010123-000014
Our ref: NSIP7

Dear Sir/Madam

SCOPING OPINION REQUEST BY ECOTRICITY (HECK FEN SOLAR) LIMITED IN RELATION FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR THE HECKINGTON FEN SOLAR PARK

Thank you for your letter dated 10 January 2022 seeking this Authority's views and comments on the Scoping Report produced by Pegasus Group in connection with the above proposal.

The Council has reviewed the information contained within the Scoping Report and offers the following comments which we request the Inspectorate considers in the preparation of its final Opinion.

Overarching/general comments

Grid connection	Para 2.9	The route for the proposed Grid Connection has not been finalised with two options being considered. Each route will have different impacts and effects and so once a route has been finalised this should be confirmed within the application and the ES justify the route identified and assess all potential impacts to receptors where significant effects are likely to occur across all applicable aspect Chapters. This should include consideration of impacts on utilities/gas pipeline, archaeology, waterways, roads, etc.
Onsite cabling	Para 3.15	The installation of cables either above or below ground will have different impacts and effects. The ES should therefore assess the potential impacts of both underground and above ground cables unless a final option is chosen before formal submission of the application.

Security measures	Para 3.21	The ES should assess the impact of any lighting proposed as part of the development including security lighting.
Access tracks	Para 3.22	Full details of any new or existing site access improvement works should be detailed within the ES and include full details of their design, specification etc to ensure safe and suitable visibility is provided.
	Para 3.23	Aggregate is to be used to construct internal access roadways and would be imported to the site. Details of all HGV movements associated with the delivery and import of these materials during the construction (and decommissioning phase) should therefore be included within the Transport Chapter and supporting Transport Assessment.
Energy storage	Para 3.24	The scheme will include an associated battery energy storage system, but the capacity of that system and its design, scale, appearance, and layout is yet to be determined. This should be defined in the ES and it must cover all design scenarios being proposed.
Development substation & transformer	Para 3.26	The maximum dimensions of the substation are defined as being 180m x 130m x 15m. This is an exceptionally large structure which would be clearly noticeable in the Fenland landscape. The LVIA suggests the Zone of Theoretical Visibility (ZTV) will be modelled on a height of 4.5m which is based on the solar panel arrays. Given the size of this structure (and other large infrastructure such as the Transformers – cited as being 7m x 10m x 10m) the ES and LVIA should assess the potential impacts of these structures based on different ZTV modelling height that more accurately reflects the scale of these features.
Compounds	Para 4.3	The ES should provide details regarding the location and proposed duration of construction compounds required and assess impacts from the construction, operation and decommissioning of these features where significant effects are likely to occur.
Decommissioning	Para 4.8	All internal trackways constructed as part of the development should also be removed at the decommissioning stage.
Local Development Plans	Section 5	In addition to existing adopted Local Plans consideration should also be given to any emerging policies contained within the draft Central Lincolnshire Local Plan (DCLLP). Consultation on the Regulation 18 version of this Plan has already been carried out and so reference should be given to this (or any later version) as the project advances to formal submission stage.
Cumulative and In combination effects	Paras 6.16 to 6.20	In addition to in combination cumulative effects from other proposed or permitted schemes in the vicinity of the development, the ES should consider the cumulative effect of other similar NSIP large scale solar schemes that are currently being promoted in the County. These include 3 proposals in

		West Lindsey (i.e. Cottam, West Burton and Gate Burton) and a further proposal which is in South Kesteven District/Rutland (i.e. Mallard Pass). Whilst it is accepted these schemes are not located within the immediate area of this site, they are similar large-scale projects that will occupy large swathes of agricultural land present within the County. The cumulative impact and potential effects of these schemes (assuming these are successful in securing a DCO) therefore needs to be assessed. Whilst these schemes are at the pre-application stage and full details are not yet available, indicative plans have been produced and therefore the ES should include commentary on the cumulative impacts on the topics included in the ES from the other solar schemes in the area.
		A Screened Zone of Theoretical Visibility (ZTV) has been applied to the EIA Assessment Area based on the maximum solar panel height of 4.5m. The Scoping Report acknowledges there are taller elements of the development but argues these would be set back from the boundaries of the Energy Park and so it is proposed to assess the expanse of the panels rather than the height of locally occurring structures. The Council disagrees with this position and would advise that separate and specific ZTV's be applied to assess the impacts of the larger elements of the development including Transformers (described in para 3.13 – maximum dimensions being cited as 7m x 10m x 10m) and the Substation (described in para 3.26 - maximum dimensions being cited as 180m x 130m x 15m) as well as the main solar arrays. The Transformers and Substations are exceptionally large structures which would be clearly noticeable in a Fenland landscape even if they are set back from the site boundaries. The ES and LVIA should therefore adopt a different ZTV modelling regime for these elements so that the true impact of these individual structures is more accurately assessed.
Alternatives	Paras 6.21 to 6.27	The Council agrees that the existing DCO for the Wind Farm development on the same site should be discounted. No consent has been granted to extend the life of that permission and therefore this should not form the basis of any baseline or alternative proposal for the site as there is no realistic prospect of this development being delivered.
		In this section consideration needs to also be given to looking at the benefits of keeping the land subject of this project in agricultural use and the potential impact the loss of this land could have on food production in the region.
	Para 6.25	The assessment of alternative sites is proposed to be limited to a rather simplistic 9km search area (reflecting the equivalent cable connection distance to Bicker Fen Substation) however this is likely to significantly narrow and

		skew the site selection process artificially in favour of the application site. As a minimum, the Council submits that a county-level alternative assessment area should be applied which should consider scope for connection into the National Grid at the locations proposed by the other registered NSIP solar projects currently being promoted within the County and/or other sites that lie within the same proximity to any other suitable National Grid connection points elsewhere. Specific consideration and comparison should be given to difference in the impacts on agricultural land.
		The ES should clearly set out the main reasons for selecting the chosen option and in this case this should not only include reference to other physical locations considered and discounted (as indicated above) but also include a consideration of alternative site layout/s and/or a reduced generating capacity as necessary to minimise the extent and loss of Best and Most Versatile (BMV) land within the site.

Specific Environmental Matters Comments

Section 7: Landscape and Visual Impact and Residential Amenity

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES.
- The Council is generally agreeable to the methodology and approach detailed within the Scoping Report but recommends that the following publications also be taken into consideration when carrying out the LVIA and added to those referenced in para 7.2:
  i. 'Technical Guidance Note (TGN) 06/19 Visual Representation of Development Proposals', 17th September 2019 by the Landscape Institute;
  ii. 'Technical Guidance Note (TGN) 1/20 Reviewing Landscape and Visual Impact Assessments (LVIAs) and Landscape and Visual Appraisals (LVAs)', 10th January 2020 by the Landscape Institute; and
  iii. Technical Guidance Note (TGN) 2/21 Assessing landscape value outside national designations, May 2021 by the Landscape Institute.
- As highlighted earlier, the Council considers that separate and specific ZTV's should be applied to assess the impacts of the larger elements of the development including Transformers and the Substation. These are exceptionally large structures which would be clearly noticeable in a Fenland landscape even if they are set back from the site boundaries. The ES and LVIA should therefore adopt a different ZTV modelling regime for these elements so that the true impact of these individual structures is more accurately assessed.

Section 8: Ecology and Ornithology

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES.

- The Council is generally agreeable to the methodology and approach detailed within the Scoping Report however notes that paras 8.4, 8.7 and 8.41 suggest that updated breeding and wintering bird surveys are not proposed to be carried out in relation to the main solar park and energy storage area. Whilst previous surveys undertaken in connection with the Wind Farm development provide useful background these are out of date and so should not be relied upon. The Council therefore requests that the Inspectorate seeks clarification on whether additional surveys are proposed and/or requires them to be carried out for the solar park and energy storage area - as is proposed for the Grid Cable Route.
- Para 8.59 - it is positive to see that the Biodiversity Metric 3 will be used to accompany the Landscape and Ecological Management Plan. Consultation is currently being carried out on the BNG process and therefore should the version of the metric change or the approach to BNG alter because of this consultation then this will need to be reflected in the ES.

Section 9: Hydrology, Hydrogeology, Flood Risk and Drainage

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES.
- Para 9.32 – states that the ES is 'likely' to include a Construction Environmental Management Plan (CEMP). The Council considers that this this should be included and accordingly requests that the Inspectorate reflects this request when issuing its Opinion.

Section 10: Cultural Heritage

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 states *"The EIA must identify, describe and assess in an appropriate manner…the direct and indirect significant impacts of the proposed development on…material assets, cultural heritage and the landscape."* (Regulation 5 (2d)). The Council is not satisfied with the proposed approach and methodology as proposed within the Scoping Report and offers the following comments which the Council requests be considered and reflected in the Inspectorates final Opinion.
- The full extent of the proposed development area, including the connector route corridors, should be included in the evaluation process. Archaeological impacts and subsequent mitigation have the potential for significant impacts so sufficient evaluation is essential in informing the selection process and in ensuring the subsequent design and work programme is devised with an understanding of the level of archaeological work which may be required before and during the construction phase.
- The Environmental Impact Assessment (EIA) will require desk-based research, non-intrusive surveys, and intrusive field evaluation for the full extent of proposed impact. The results should be used to minimise the impact on the historic environment through informing the project design and an appropriate programme of archaeological mitigation. The provision of sufficient baseline information to identify and assess the

impact on known and potential heritage assets is required by Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Regulation 5 (2d)), National Planning Statement Policy EN1 (Section 5.8), and the National Planning Policy Framework.

- Para 10.2 - the Council is pleased that further archaeological evaluation will be undertaken as part of the assessment process no further details or intended scheduling have been provided and more specific information will be required going forward.
- Para 10.3 - refers to having obtained HER data for a 2km radius from the main site boundary. This therefore discounts any data that may be relevant to the two proposed grid connection route options. Based on the information in the Scoping Report the Council is not therefore convinced the impact of either of the cable routes would be properly assessed as part of the development. As stated above the Council considers the cable routes should be assessed as part of the ES and so this needs clarification.
- Para 10.5 - states the main assessment area will be 5km and that designated assets (i.e. a Scheduled Monument and Listed Buildings) have been identified within a 2km radius of the site. Other designated heritage assets within and/or outlying the 2km radius are however recognised as potentially being affected but para 10.28 infers setting assessments will primarily focus on designated heritage assets located within a minimum 2km radius of the site and not the wider 5km area. For the avoidance of doubt, the Council requests that all designated assets within 5km radius of the development be taken into account and not principally those within 2km. In scoping which assets would be affected (Step 1) the ZTV modelling used should reflect that already recommended by the Council especially where any identified assets have the potential to be visible or have their setting affected by the taller elements of the development.
- Para 10.29 - states a geophysical survey of the main development site is to be carried out. It is not clear if this includes the proposed grid connection cable routes or is simply focused on the main site area. The Council considers that a geophysical survey is also required of the proposed cable routes as the results are required to identify site-specific archaeological potential and to inform a programme of archaeological trial trenching and subsequent mitigation. Pre-determination evaluation of the cable connection corridors can be very useful with informing a decision on the most cost effective and viable route. The Council therefore requests that the Inspectorate clarifies this point and/or requires such an assessment to be carried out on both cable routes (unless one is scoped out) as part of the ES.
- Trenching results are essential for effective risk management and to inform programme scheduling and budget management. Failing to do so could lead to unnecessary destruction of heritage assets, potential programme delays and excessive cost increases that could otherwise be avoided. A programme of trial trenching is required to inform a robust mitigation strategy which will need to be agreed by the time the Environmental Statement is produced and submitted with the Development Consent Order (DCO) application.

- Para 10.25 - the guidance documents listed should include the Lincolnshire Archaeology Handbook (2019). This lays out the requirements for undertaking archaeological work in the County.
- Para 10.26 - regarding desk-based sources full LiDAR coverage and assessment must be included, and Portable Antiquities Scheme (PAS) data must also be consulted for the study area.
- Para 10.29 - regarding the geophysical survey a single Written Scheme of Investigation should be prepared that all contractors adhere to. This must include appropriate quality and control measures to ensure consistency of data recovery across the site. The proposed cable route(s) must be included in the survey. Separate reports for each contractor should be supplied in full with an overarching report presenting the combined results as this will be the basis for the subsequent evaluation trenching.
- The impact assessment (paras 10.30, 10.40-10.41) must also consider impacts from decommissioning work.
- The Historic England Regional Science Advisor should be consulted on the project and particularly with regard to Palaeolithic potential and mitigation in areas of deep excavation (i.e. excavations for directional drilling platforms) as well as providing advice on geoarchaeological assessment.
- The EIA will need to contain sufficient information on the archaeological potential and must include evidential information on the depth, extent and significance of the archaeological deposits which will be impacted by the development. The results will inform a fit for purpose mitigation strategy which will identify what measures are to be taken to minimise or record the impact of the proposal on archaeological remains.

<u>Section 11: Socio Economics</u>

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES.
- The ES should also include an assessment of the economic impact the loss of arable farmland and crop production would have during the operation of the development and a comparison of this to the economic benefits/gains identified. Furthermore, although it is stated that the land would be farmed during its operational lifetime for sheep grazing it is not clear how this would be guaranteed or secured given there would not be a material change to the use of the land. Therefore, PINs must satisfy themselves that this can be secured as part of any proposal to ensure this proposed mitigation measure to off-set or compensate for the loss of arable land is realistic.
- As indicated previously, in addition to in combination cumulative effects from other proposed or permitted schemes in the vicinity of the development, the ES should consider the cumulative economic effect of this and other similar NSIP large scale solar schemes that are currently being promoted in the County. These include proposals at Cottam, West Burton, Gate Burton in West Lindsey and the proposal which is in South Kesteven District/Rutland (i.e. Mallard Pass). The cumulative economic impact and potential effects of these schemes in terms of the loss of agricultural land and crop

production (assuming these are successful in securing a DCO) therefore needs to be assessed.

- As indicated previously, in addition to in combination cumulative effects from other proposed or permitted schemes in the vicinity of the development, the ES should consider the cumulative economic effect of this and other similar NSIP large scale solar schemes that are currently being promoted in the County. These include proposals at Cottam, West Burton, Gate Burton in West Lindsey and the proposal which is in South Kesteven District/Rutland (i.e. Mallard Pass). The cumulative economic impact and potential effects of these schemes in terms of the loss of agricultural land and crop production (assuming these are successful in securing a DCO) therefore needs to be assessed.

Section 12: Noise

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES.
- The Council is in general agreement that construction and decommissioning noise is not expected to represent a significant effect provided that appropriate working methods and hours are adhered to. Some works along the Grid Connection Route(s) could however led to significant impacts as a result of directional drilling and noise could arise from the operation of onsite substation and energy storage area. These potential impacts therefore do need to be assessed and appropriate mitigation measures to prevent, reduce and mitigate any impacts identified and included within the ES.
- Paras 12.3 to 12.5 of the Scoping Report suggests that updated background noise surveys are not proposed to be carried out. Instead, the baseline data from surveys conducted in 2011 is to be used and would be applied in carrying out the desktop review to assess potential impacts on noise sensitive receptors closest to the park. The Council disagrees with this approach and considers updated surveys should be conducted. Ongoing works are being carried out in the locality including those associated with the Tritton Knoll and Viking Link projects and these have the potential to increase background noise and/or lead to in combination and cumulative effects.
- The Council therefore requests that the Inspectorate requires updated background noise surveys to be carried out as part of the ES and that the assessment considers all phases of the scheme the solar park and energy storage area - as is proposed for the Grid Cable Route.

Section 13: Climate Change

- The Council agrees this matter should be 'scoped in' as part of the ES and the methodology and approach detailed within the Scoping Report.

Section 14: Transport & Access

- The Council agrees this matter should be 'scoped in' as part of the ES and the methodology and approach detailed within the Scoping Report.

Section 15: Air Quality

- The Council agrees this matter should be 'scoped in' as part of the ES and the methodology and approach detailed within the Scoping Report.

Section 16: Land Use & Agriculture

- The Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES. However, the Council requests that the Inspectorate takes these into account the following comments and requests that these be adopted in the Opinion issued:

- Para 16.14 – a total of 211.68 hectares (or 49%) of the area identified for energy generation comprises of Best and Most Versatile (BMV) agricultural land. The National Planning Policy Framework sets out that planning policies and decisions should contribute to and enhance the natural and local environment by recognising the benefits from natural capital, including those from the best and most versatile agricultural land. The loss of such a significant area of BMV would appear to go against the objectives of the NPPF which seeks to protect this natural resource. The loss of such a large natural resource through sterilisation both from the energy park itself and/or any areas given over to create biodiversity net gain areas needs to be demonstrated and justified. Potential alternatives to the loss of this extent of BMV land therefore should be demonstrated through an assessment of alternatives which not only includes a consideration of sites elsewhere within the County potential alternative site layouts and/or reduction in generating capacity on this site so as to reduce, minimise or avoid the loss of such large areas of land.

- Para 16.20 – not only should the ES consider the economic effects of a proposed change from arable to low intensity farming but also a comparison of potential increased carbon footprint/impacts that would arise because of the need to transport/import food and crops from elsewhere which would have otherwise been grown on the land. The carbon footprint created by the displacement or removal of this land therefore needs to be properly calculated to ensure that the full carbon gains or benefits of this proposal are accurate.

- Paras 16.22 – the Council disagrees that all other forms of development removing 20ha or more of BMV agricultural land will not be considered in assessing cumulative effects. As indicated previously, in addition to in combination cumulative effects from other proposed or permitted schemes in the vicinity of the development, the Council considers it also necessary for the ES to consider the cumulative effect that this and other similar NSIP large scale solar schemes currently being promoted in the County could have. These include proposals at Cottam, West Burton, Gate Burton in West Lindsey and the proposal which is in South Kesteven District/Rutland (i.e. Mallard Pass) which collectively cover an area of over 4,000ha. The cumulative economic impact and potential effects of these schemes due to the loss of arable agricultural land for low intensity grazing (or other uses being promoted by those schemes) therefore needs to

be assessed. As indicated previously, it is also questionable how the proposed sheep grazing identified to be carried out during the operational life of the development could be secured and guaranteed. PINs must therefore satisfy themselves that this can be secured as part of any proposal in order to ensure this proposed mitigation measure to off-set or compensate for the loss of arable land is realistic.

- Similarly, as above, the cumulative impact of any increased carbon footprint/impact because of the need to transport/import food and/crops from elsewhere needs to be considered. As a minimum, the Council therefore requests that all and any other similar scale NSIP solar park proposals being promoted within the County be considered when considering cumulative effects.

- As highlighted previously the Council does not the 9km radius to be applied when considering alternative sites to be appropriate and should be expanded to a county-level. The alternatives exercise needs to not only consider alternative sites but also alternative site layouts and potentially a reduction in generating capacity on this site as a means to demonstrate avoidance or minimisation of agricultural land impacts.

Section 17: Glint & Glare

- The Council agrees this matter should be 'scoped in' as part of the ES and the methodology and approach detailed within the Scoping Report.

Section 18: Miscellaneous

No comments other than it is noted that no specific chapter is proposed within the ES that considers Human Health. Whilst human health will be covered in technical assessments on air quality and noise this is only to address potential negative impacts of the development from these two areas. Several other Equality Impact Assessment (EIA) topics could have either a positive or negative impact on health (e.g., water, climatic factors). It is important that any impacts or benefits to people's health and wellbeing (e.g., improvements to the public right of way network) are properly identified and/or secured as part of the development. The Council therefore considers that these aspects should be covered in the ES or a separate Health Impact Assessment (HIA).

I trust the information and comments set out above are useful and should you seek clarification on any of the issues highlighted above please feel free to contact Marc Willis (Applications Manager) at [redacted]@lincolnshire.gov.uk

Yours faithfully

[redacted]

for Neil McBride
Head of Planning

National Grid house
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

Land and Acquisitions
Anne Holdsworth
DCO Liaison Officer
Land and Property
[redacted]@nationalgrid.com
Direct tel: [redacted]

www.nationalgrid.com

SUBMITTED ELECTRONICALLY:
heckingtonfensolar@planninginspectorate.gov.uk

17 January 2022

Dear Sir/Madam

APPLICATION BY ECOTRICITY (HECK FEN SOLAR) LIMITED (THE APPLICANT) FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR THE HECKINGTON FEN SOLAR PARK (THE PROPOSED DEVELOPMENT)

SCOPING CONSULTATION

I refer to your letter dated 10th January 2022 in relation to the above proposed application. This is a response on behalf of National Grid Electricity Transmission PLC (NGET) and National Grid Gas PLC (NGG).

Having reviewed the scoping report, I would like to make the following comments regarding National Grid infrastructure within / in close proximity to the Site boundary and EIA assessment Area.

ELECTRICITY TRANSMISSION INFRASTRUCTURE

NGET has high voltage electricity overhead transmission lines, and electricity substation and underground cables within the EIA Assessment Area. The overhead lines, substation and cables form an essential part of the electricity transmission network in England and Wales.

Overhead Lines

- 4ZM 400kV Bicker Fen–Spalding North- Burton
  Bicker Fen-Walpole-West Burton

Substation

- Bicker Fen 400kV Substation with associated Underground Cables

National Grid house
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

GAS TRANSMISSION INFRASTRUCTURE:

NGG has a high pressure gas transmission pipeline located within or in close proximity to the proposed site boundary and the EIA Assessment Area, as follows:

- Feeder 7 East Heckington to Gosberton

The transmission pipeline forms an essential part of the gas transmission network in England, Wales and Scotland:

ASSET PLANS

I enclose four plans showing the location of National Grid's:

- overhead lines;
- substation with underground cables; and
- gas pipeline.

SPECIFIC COMMENTS

Electricity Infrastructure:

- National Grid's Overhead Line/s is protected by a Deed of Easement/Wayleave Agreement which provides full right of access to retain, maintain, repair and inspect our asset

- Statutory electrical safety clearances must be maintained at all times. Any proposed buildings must not be closer than 5.3m to the lowest conductor. National Grid recommends that no permanent structures are built directly beneath overhead lines. These distances are set out in EN 43 – 8 Technical Specification for "overhead line clearances Issue 3 (2004)

- If any changes in ground levels are proposed either beneath or in close proximity to our existing overhead lines then this would serve to reduce the safety clearances for such overhead lines. Safe clearances for existing overhead lines must be maintained in all circumstances.

- The relevant guidance in relation to working safely near to existing overhead lines is contained within the Health and Safety Executive's (www.hse.gov.uk) Guidance Note GS 6 "Avoidance of Danger from Overhead Electric Lines" and all relevant site staff should make sure that they are both aware of and understand this guidance.

- Plant, machinery, equipment, buildings or scaffolding should not encroach within 5.3 metres of any of our high voltage conductors when those conductors are under their worse conditions of maximum "sag" and "swing" and overhead line profile (maximum "sag" and "swing") drawings should be obtained using the contact details above.

- If a landscaping scheme is proposed as part of the proposal, we request that only slow and low growing species of trees and shrubs are planted beneath and adjacent to the existing overhead line to reduce the risk of growth to a height which compromises statutory safety clearances.

National Grid house
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

- Drilling or excavation works should not be undertaken if they have the potential to disturb or adversely affect the foundations or "pillars of support" of any existing tower. These foundations always extend beyond the base area of the existing tower and foundation ("pillar of support") drawings can be obtained using the contact details above.

- National Grid Electricity Transmission high voltage underground cables are protected by a Deed of Grant; Easement; Wayleave Agreement or the provisions of the New Roads and Street Works Act. These provisions provide National Grid full right of access to retain, maintain, repair and inspect our assets. Hence we require that no permanent / temporary structures are to be built over our cables or within the easement strip. Any such proposals should be discussed and agreed with National Grid prior to any works taking place.

- Ground levels above our cables must not be altered in any way. Any alterations to the depth of our cables will subsequently alter the rating of the circuit and can compromise the reliability, efficiency and safety of our electricity network and requires consultation with National Grid prior to any such changes in both level and construction being implemented.

Gas Infrastructure

The following points should be taken into consideration:

- National Grid has a Deed of Grant of Easement for each pipeline, which prevents the erection of permanent / temporary buildings, or structures, change to existing ground levels, storage of materials etc.

Pipeline Crossings:

- Where existing roads cannot be used, construction traffic should ONLY cross the pipeline at previously agreed locations.

- The pipeline shall be protected, at the crossing points, by temporary rafts constructed at ground level. The third party shall review ground conditions, vehicle types and crossing frequencies to determine the type and construction of the raft required.

- The type of raft shall be agreed with National Grid prior to installation.

- No protective measures including the installation of concrete slab protection shall be installed over or near to the National Grid pipeline without the prior permission of National Grid.

- National Grid will need to agree the material, the dimensions and method of installation of the proposed protective measure.

- The method of installation shall be confirmed through the submission of a formal written method statement from the contractor to National Grid.

- Please be aware that written permission is required before any works commence within the National Grid easement strip.

- A National Grid representative shall monitor any works within close proximity to the pipeline to comply with National Grid specification T/SP/SSW22.

National Grid house
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

- A Deed of Consent is required for any crossing of the easement.

Cable Crossings:

- Cables may cross the pipeline at perpendicular angle to the pipeline i.e. 90 degrees.
- A National Grid representative shall supervise any cable crossing of a pipeline.
- Clearance must be at least 600mm above or below the pipeline.
- Impact protection slab should be laid between the cable and pipeline if cable crossing is above the pipeline.
- A Deed of Consent is required for any cable crossing the easement.
- Where a new service is to cross over the pipeline a clearance distance of 0.6 metres between the crown of the pipeline and underside of the service should be maintained. If this cannot be achieved the service shall cross below the pipeline with a clearance distance of 0.6 metres.

General Notes on Pipeline Safety:

- You should be aware of the Health and Safety Executives guidance document HS(G) 47 "Avoiding Danger from Underground Services", and National Grid's specification for Safe Working in the Vicinity of National Grid High Pressure gas pipelines and associated installations - requirements for third parties T/SP/SSW22.
- National Grid will also need to ensure that our pipelines access is maintained during and after construction.
- Our pipelines are normally buried to a depth cover of 1.1 metres however; actual depth and position must be confirmed on site by trial hole investigation under the supervision of a National Grid representative. Ground cover above our pipelines should not be reduced or increased.
- If any excavations are planned within 3 metres of National Grid High Pressure Pipeline or, within 10 metres of an AGI (Above Ground Installation), or if any embankment or dredging works are proposed then the actual position and depth of the pipeline must be established on site in the presence of a National Grid representative. A safe working method agreed prior to any work taking place in order to minimise the risk of damage and ensure the final depth of cover does not affect the integrity of the pipeline.
- Excavation works may take place unsupervised no closer than 3 metres from the pipeline once the actual depth and position has been confirmed on site under the supervision of a National Grid representative. Similarly, excavation with hand held power tools is not permitted within 1.5 metres from our apparatus and the work is undertaken with NG supervision and guidance.

To view the SSW22 Document, please use the link below:

National Grid house
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

https://www.nationalgrid.com/uk/gas-transmission/land-and-assets/working-near-our-assets

To download a copy of the HSE Guidance HS(G)47, please use the following link:
http://www.hse.gov.uk/pubns/books/hsg47.htm

Further Advice

We would request that the potential impact of the proposed scheme on National Grid's existing assets as set out above and including any proposed diversions is considered in any subsequent reports, including in the Environmental Statement, and as part of any subsequent application.

Where any diversion of apparatus may be required to facilitate a scheme, National Grid is unable to give any certainty with the regard to diversions until such time as adequate conceptual design studies have been undertaken by National Grid. Further information relating to this can be obtained by contacting the email address below.

Where the promoter intends to acquire land, extinguish rights, or interfere with any of National Grid apparatus, protective provisions will be required in a form acceptable to it to be included within the DCO.

National Grid requests to be consulted at the earliest stages to ensure that the most appropriate protective provisions are included within the DCO application to safeguard the integrity of our apparatus and to remove the requirement for objection. All consultations should be sent to the following email address: **box.landandacquisitions@nationalgrid.com**

I hope the above is useful. If you require any further information please do not hesitate to contact me.

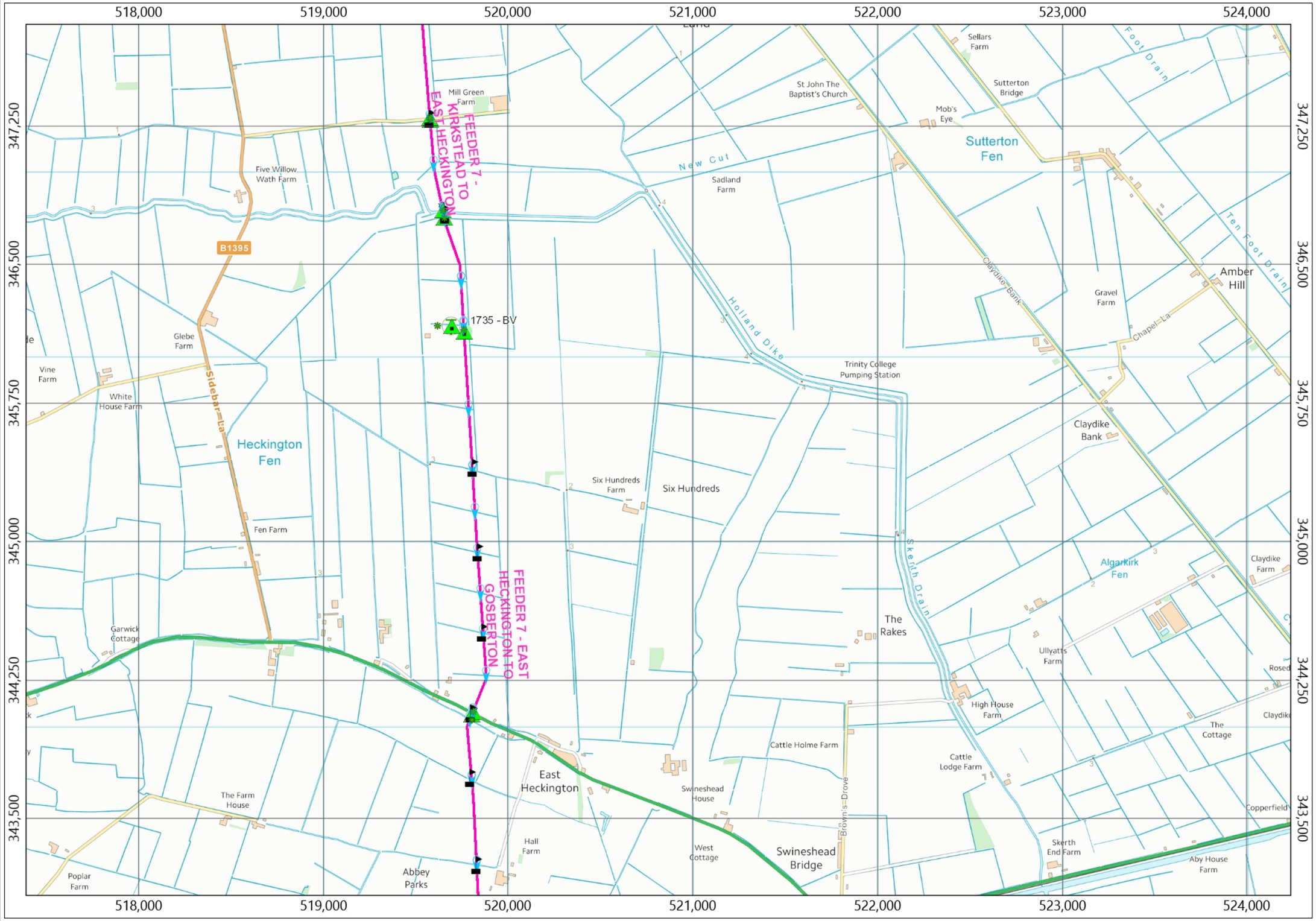
The information in this letter is provided not withstanding any discussions taking place in relation to connections with electricity or gas customer services.

Yours faithfully

[redacted]

Anne Holdsworth
DCO Liaison Officer, Land and Acquisitions

nationalgrid | Heckington Fen Solar Park NGG Plan 1



Legend:

- Substations Commissioned
- Circuits
  - Commissioned
  - Decommissioned Group
  - Planned and Spares
- OHL 400Kv Commissioned
- OHL 275Kv Commissioned
- OHL 132Kv & Below Commissioned
- Towers Commissioned
- Buried Cable Commissioned
- Fibre Cable Commissioned
- Pilot Cable
- Oil Pipe
- Cooling Pipe
- Cooling Station
- RAMM
- Cable Tunnel
- Gas Operational Boundary
- Gas Site Boundary
- Trial Hole
- Vantage Point
- Aerial Marker Post
- Pipe Crossing Point
- CP Test Post
- Transformer Rectifier
- Pipeline Crossing Sleeve
  - Nitrogen Sleeve
  - Other Sleeves
- Pipe Line Control Point
- Named Pipeline Section
- River Crossings

Notes:

Heckington Fen Solar Park NGG Plan 1

0 0.51 1.0 Kilometers

Date: 11/01/2022
Time: 09:40:09

Page size: A3 Landscape Scale: 1: 20,000
Print by: **Holdsworth, Anne**

nationalgrid

Heckington Fen Solar Park NG Plan 4 Substation

519,000 519,300 519,600 519,900 520,200 520,500

339,200 339,000 338,800 338,600 338,400 338,200

Bicker Fen
Turbine
Poplartree Farm
Wind Turbine
Drain
3m
4ZM449
4ZM ONS TAY
Wind Farm
Wind Turbine
Drain
Drain
Drain
Drain
Drain
Wind Farm
VICARAGE DROVE
BICKER DROVE
Mill Drain
2m
Cow Bridge
Mast
4ZM ONS TAY
BICF428K
4ZM448
4ZM448B
El Sub Sta
BICF426K
4ZM448A
BICF4
4ZM447B
4ZM447A
4ZM ONS TAY
4ZM447
Drain
Drain
Drain
Drain
Drain
Hammond Beck (Drain)
2m
2m
2m
2m
2m
VICARAGE DROVE
Track
4ZM ONS TAY
4ZM446
Path
Wind Turbine
Wind Turbine
Drain
Drain
Track

Legend:

- Substations Commissioned
- Circuits
  - Commissioned
  - Decommissioned Group
  - Planned and Spares
- OHL 400Kv Commissioned
- OHL 275Kv Commissioned
- OHL 132Kv & Below Commissioned
- Towers Commissioned
- Buried Cable Commissioned
- Fibre Cable Commissioned
- Pilot Cable
- Pillar
- Oil Tank
- Link Box
- Gauge
- Joint Bay
- Cable Joint
- Oil Pipe
- Cooling Pipe
- Cooling Station
- RAMM
- Electric Land Ownership - Freehold
- Electric Land Ownership - Leasehold
- Cable Tunnel
- Gas Operational Boundary
- Gas Site Boundary
- Trial Hole
- Vantage Point
- Aerial Marker Post
- Pipe Crossing Point
- CP Test Post
- Transformer Rectifier
- Pipeline Crossing
- Sleeve
  - Nitrogen Sleeve
  - Other Sleeves
- Pipe Line Control Point
- Named Pipeline Section
- River Crossings

Notes:

Heckington Fen Solar Park NG Plan 4 Substation

0 0.13 0.3 Kilometers

Date: 11/01/2022
Time: 11:01:49

Page size: A3 Landscape Scale: 1: 5,000
Print by: **Holdsworth, Anne**

N

nationalgrid | Heckington Fen Solar Park NG Plan 3

Legend:

- Substations Commissioned
- Circuits
  - Commissioned
  - Decommissioned Group
  - Planned and Spares
- OHL 400Kv Commissioned
- OHL 275Kv Commissioned
- OHL 132Kv & Below Commissioned
- Towers Commissioned
- Buried Cable Commissioned
- Fibre Cable Commissioned
- Pilot Cable
- Oil Pipe
- Cooling Pipe
- Cooling Station
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- Cable Tunnel
- Gas Operational Boundary
- Gas Site Boundary
- Trial Hole
- Vantage Point
- Aerial Marker Post
- Pipe Crossing Point
- CP Test Post
- Transformer Rectifier
- Pipeline Crossing Sleeve
  - Nitrogen Sleeve
  - Other Sleeves
- Pipe Line Control Point
- Named Pipeline Section
- River Crossings

Notes:

Heckington Fen Solar Park NG Plan 3

0 0.51 1.0 Kilometers

Date: 11/01/2022
Time: 10:10:50

Page size: A3 Landscape Scale: 1: 20,000
Print by: **Holdsworth, Anne**

nationalgrid | Heckington Fen Solar Park NG Plan 2

Legend:

- Substations Commissioned
- Circuits
  - Commissioned
  - Decommissioned Group
  - Planned and Spares
- OHL 400Kv Commissioned
- OHL 275Kv Commissioned
- OHL 132Kv & Below Commissioned
- Towers Commissioned
- Buried Cable Commissioned
- Fibre Cable Commissioned
- Pilot Cable
- Oil Pipe
- Cooling Pipe
- Cooling Station
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- Vantage Point
- Aerial Marker Post
- Pipe Crossing Point
- CP Test Post
- Transformer Rectifier
- Pipeline Crossing Sleeve
  - Nitrogen Sleeve
  - Other Sleeves
- Pipe Line Control Point
- Named Pipeline Section
- River Crossings

Notes:

Heckington Fen Solar Park NG Plan 2

0 0.51 1.0 Kilometers

Date: 11/01/2022
Time: 10:09:00

Page size: A3 Landscape Scale: 1: 20,000
Print by: **Holdsworth, Anne**

From: [redacted] on behalf of [redacted]
To: Heckington Fen Solar
Subject: Ref EN010123-000014 - scoping opinion for Heckington Fen Solar Park
Date: 07 February 2022 10:34:18
Attachments: image001.png

OFFICIAL

FAO – Planning Inspectorate
Ref – EN010123-000014
Proposal – Scoping Opinion for Heckington Fen Solar Park
Location – Heckington Fen Solar Park

Thank you for your letter of 10 January 2022 providing Network Rail with an opportunity to comment on the abovementioned Scoping Opinion.

With reference to the protection of the railway, the Environmental Statement should consider any impact of the scheme upon the railway infrastructure and upon operational railway safety. In particular, it should include a Glint and Glare study assessing the impact of the scheme upon train drivers (including distraction from glare and potential for conflict with railway signals). It should also include a Transport Assessment to identify any HGV traffic/haulage routes that may utilise railway assets such as bridges and level crossings during the construction and operation of the site.

Please note that if the intention is to install cabling for the grid connection through railway land, the developer will be need an easement from Network Rail and we would recommend that they engage with us early in the planning of their scheme in order to discuss and agree this element of the proposals.

Kind regards

Matt Leighton
Town Planning Technician
Diversity and Inclusion Champion
Network Rail Property - Eastern Region
George Stephenson House, Toft Green, York, YO1 6JT

Growth and Regeneration Business Unit
Castle House
Great North Road
Newark
Nottinghamshire
NG24 1BY

www.newark-sherwooddc.gov.uk

Telephone: [redacted]
Email: planning@nsdc.info

Emily Park
The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

Sent via e-mail to:
heckingtonfensolar@ecotricity.co.uk

Our ref: 22/00050/NPA
Your ref: EN010123-000014

17 January 2022

Dear Ms Park,

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017(the EIA Regulations) – Regulations 10 and 11

Application by Ecotricity (Heck Fen Solar) Limited (the Applicant) for an Order granting Development Consent for the Heckington Fen Solar Park (the Proposed Development)

Scoping consultation and notification of the Applicant's contact details and duty to make available information to the Applicant if requested

I refer to the above consultation received by this Authority on 11 January 2022 which relates to the proposed installation of a ground mounted solar photovoltaic (PV) electricity generation and storage facility on a site approximately 3.7km esat of Heckington and 8.9km west of Boston within Lincolnshire.

I can advise that Newark & Sherwood District Council have no comments to make on the Environmental Impact Assessment Scoping Report (by AECOM Dated January 2022).

Please note that this matter has not been formally reported to the District Council's Planning Committee. In these circumstances the comments are those of an Officer of the Council under delegated power arrangements.

If you require any further assistance please do not hesitate to contact my colleague, Helen Marriott, the case officer, who has dealt with this consultation, on 01636 655793.

Yours sincerely

[redacted]

Lisa Hughes - Business Manager – Planning Development

From: [redacted])
To: Heckington Fen Solar
Cc: OFFICE (NHS LINCOLNSHIRE CCG)
Subject: EN010123-000014 Heckington Fen Solar Park
Date: 10 January 2022 16 56:00
Attachments: image002.png
image003.png

Thank you for your letter dated 10th January regarding the Scoping consultation and notification of the Applicant's contact details and duty to make available information to the Applicant if requested.

As the local NHS we do not have any comments at this stage of the process.

With kind regards

Jacqui Bunce

Jacqui Bunce | Programme Director
Strategic Estates, Partnerships & Planning
Bridge House|The Point|Sleaford|NG34 8GG
Mobile: [redacted]
Email: [redacted] @nhs.net

Design Council Expert

Chat to me on MSTeams

Thank you for your continued hard work and commitment #WeAreLincsNHS

NHS Lincs_Email signature

Facebook: https //www.facebook.com/LincsNHS/ | **Instagram** https://www.instagram com/lincsnhs/ | **Twitter**: https://twitter.com/LincsNHS?lang=en-gb

Your Ref: EN010123-000014
Our Ref: 22/0039/ADVICE
Contact: Mark Williets
Email: [redacted]@n-kesteven.gov.uk

North Kesteven DISTRICT COUNCIL

The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

2 February 2022

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11

Application by Ecotricity (Heck Fen Solar) Limited for an Order granting Development Consent for the Heckington Fen Solar Park on land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Lincolnshire

Thank you for your consultation request under regulation 10(6) of the EIA Regulations. North Kesteven District Council, as a consultation body and host authority, wishes to make the following comments in regard to information to be provided with the Environmental Statement Scoping Report. The following comments are made, following the structure of the Environmental Impact Assessment Scoping Report by Ecotricity (December 2021):

Section 1 Introduction

The Council notes and agrees with Table 1.1 in that the ES could scope out specific chapters dealing with human health, major accidents and soil/contamination (although see separate comments below).

Section 2 Project Description

Paragraph 2.8 notes the additional educational needs school under construction. In the context of the noise chapter the applicant should check (directly with the operator if required) whether children who will use/be resident at the school are likely to have any specific sensory issues which need to be directly addressed.

Paragraph 2.16 confirms that the proposal might include improvement works/operational development at Bicker Fen Substation (BFSS). It should be confirmed whether these works will be included within the scope of the DCO application (preferred) and impacts assessed or will be subject to a freestanding DCO application.

Section 3 Technical Specifications

Paragraph 3.4 refers to the potential tracking of panels to follow the direction of the sun and that it has yet to be confirmed whether panels are fixed or will track. As necessary depending

on the technology and design selected the implications of such will need to be considered in particular in relation to LVIA, noise and glint and glare.

Paragraph 3.11 notes that 'multiple central inverters, approximately 80-100, will be distributed throughout the Energy Park site and therefore are not shown on Figure 3 at this time.' Depending on the layout and options pursued the LVIA and noise chapters will need to review the impacts of central inverter groupings vs the alternative string converter options.

Paragraph 3.15 notes a potential for some above ground cables. Depending on the layout and the option selected the LVIA should therefore review options and clearly identify any location/s where above ground cabling is proposed.

Paragraph 3.19 notes that 'there is no more detail that can be provided on this route at this time, not the depth of the required trench nor the number of cables'. This is a potentially significant concern in that the cable corridor occupies a wide area as illustrated and brings in land across the North Kesteven and Boston Borough boundaries. The Planning Inspectorate should therefore satisfy themselves under 10 (3) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 that there is sufficient information available at this time in the submitted Scoping Report for them to confirm the required scope of the ES as it relates to the cable corridor route.

Paragraph 3.21 notes that 21 'it is likely that lighting on sensors for security purposes will be deployed around the energy storage area and potentially at any other pieces of critical infrastructure.' The LVIA must therefore consider the type, location and lux levels of any selected light fittings, their spacings, whether permanently illuminated during certain hours or whether lighting will be PIR-triggered and the associated cowling/mitigation. Whilst the site is not within an identified 'dark skies' location nevertheless the scale of the site and the unknown extent and type of external lighting at this stage means that sky glare and glow needs to be scoped in to the terms of the LVIA.

Paragraphs 3.24 and 3.26 state that the battery storage capacity of this site would be approximately 200-400MW. A maximum of 6.04 ha is set aside for this element of the Energy Park Development and the report notes that 'the energy storage system includes batteries, inverters and system controllers but its final design has not yet been determined'. The report also notes that the maximum dimensions of the main substation are proposed to be 180m x 130m x 15m and that smaller sub-stations will be distributed throughout the site with dimensions around 7m x 3m x 3m. For the avoidance of doubt the ES must consider battery storage and substation final layout and emissions in relation to LVIA and noise impacts and we invite PINS to require that the 'worse case' scenario is tested based on the maximum dimensions suggested.

As above paragraph 3.29 notes that the development 'will require an extension of approximately 45m2 to the substation either to the southwest or northeast (to be determined by National Grid)' i.e. an extension to the BFSS. The applicant or PINS should confirm whether these works are anticipated through a single comprehensive DCO application or whether they will be decoupled. We invite PINS to require submission of a single DCO application.

Section 5 Legislative and Planning Framework

Paragraph 5.52 onwards lists the Central Lincolnshire Local Plan (CLLP) policies of relevance noting their collective weight. CLLP Policies LP5, LP15 (community orchard), LP20 and LP24 (green infrastructure and open space) are also likely to be relevant and should also be considered within the planning framework.

Paragraph 5.72 references the Regulation 18 draft CLLP but doesn't commit to the weight to be afforded to the policies nor identifies policies for specific consideration. Depending on the

timing of the DCO application submission the Central Lincolnshire authorities may have undertaken consultation under Reg. 19 which will carry a higher degree of weight and which should be considered in the legislative and planning context. At the present time draft CLLP policies S1, S2, S5, 11, 13-15, 20, 46, 49, 50, 52, 56, 58-60, 65, 66 are relevant to the scheme and should be discussed in the ES.

Section 6 Environmental Impact Assessment

Paragraph 6.16 gives some examples of cumulative effects but excludes cumulative BMV/agricultural land impacts. Please see below for further comments.

Paragraph 6.17 refers cumulative LVIA and notes that 'the SZTV has shown that there are few, even theoretical opportunities to see the Development from over 5km away from the site and it has therefore been determined reasonable to consider possible cumulative developments within this area'. As below the Council notes the applicant's offer to agree viewpoints prior to undertaking the LVIA and where the Council considers that additional or revised viewpoints will be required.

Paragraph 6.18 and Figure identify solar farm schemes within a 5km, radius which will be considered in the context of cumulative impact. As set out under the sub-heading below, the applicant's timescale for applying for a DCO may align with that being proposed for the Gate Burton, Cottam and West Burton Solar projects (West Lindsey/Bassetlaw District Councils) and the Mallard Pass Solar Farm (South Kesteven/Rutland), that are also nationally significant infrastructure.

These projects are all now registered on the National Infrastructure website, and all except Mallard Pass are the subject of Scoping Opinions or are pending such a decision from the Planning Inspectorate at the time of this reply. It is therefore imperative that the ES for Heckington Fen considers the cumulative effect of these four known solar project NSIP schemes; specifically in relation to impacts on agricultural land.

With reference to paragraph 6.23 the Council agrees with the applicant that the 66MW wind park (Ref:09/1067/S36) does not form part of the baseline owing to the inability to satisfy the MOD radar mitigation requirement.

Paragraph 6.25 states that 'the ES requires that 'Alternative Sites' are considered as part of the assessment process. As a result, these same environmental constraints will be applied to the land form within a similar distance (up to 9km) to the connection at National Grid Bicker Fen substation to determine if another area of land would be a viable alternative site for a solar park development of this scale and with this generation capacity'.

The 'alternative sites' distance of 9km has been selected on the basis of the proximity to BFSS however no information is available to confirm that a grid connection has been secured in principle with National Grid. The applicant has also confirmed that the 66MW wind energy scheme (Ref:09/1067/S36) is essentially non-implementable and in any case would transfer less than 15% of the quantity of electricity than is now proposed. Written evidence of the ability/agreement to make a grid connection into BFSS should therefore be provided.

Notwithstanding, the solar NSIP schemes referred to above (registered with PINS) confirm that alternative grid connections are available in principle to support large scale solar development elsewhere within the County.

Schedule 4 (2) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 states that an ES must include 'a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an

indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'.

In the context of agricultural land impacts (see below) 'location', 'size' and 'scale' are key factors which, in the Council's opinion, suggest that applying a relatively simplistic 9km search area (reflecting the equivalent cable connection distance to BFSS) for the assessment of alternative sites is likely to be significantly narrow, skewing the site selection process artificially in favour of the application site.

A county-level alternative assessment area should be applied which as a minimum should consider scope for connection into the National Grid at the locations proposed by the registered NSIP solar projects named above, and with specific consideration of agricultural land impacts. Without prejudice to that higher level alternative assessment, the regulations also require an indication of the main reasons for selecting the chosen option. In this case this this should include alternative site layout/s (and reduced MW generating capacity as necessary) to reflect the location of known Best and Most Versatile (BMV) land within the site.

With reference to paragraph 6.32 the Council agrees that human health can be scoped out as freestanding chapter and in terms of 6.37, as above the Regulation 18 CLLP (or Regulation 19 version; depending on timings) should be referenced.

Section 7 LVIA & Residential Amenity

A Screened Zone of Theoretical Visibility (ZTV) has been applied to the EIA Assessment Area based on the maximum solar panel height of 4.5m. The Scoping Report acknowledges there are taller elements of the development but argues these would be set back from the boundaries of the Energy Park and so it is proposed to assess the expanse of the panels rather than the height of locally occurring structures.

The Council disagrees with this position and would advise that separate and specific ZTV's be applied to assess the impacts of the larger elements of the development including Transformers (described in paragraph 3.13 – maximum dimensions being cited as 7m x 10m x 10m) and the Substation (described in paragraph 3.26 - maximum dimensions being cited as 180m x 130m x 15m) as well as the main solar arrays.

The Transformers and Substations, particularly the latter, are exceptionally large structures which would be clearly visible set in a Fenland landscape even if they are set back from the site boundaries as illustrated indicatively. The ES and LVIA should therefore adopt a different ZTV modelling regime for these elements so that the true impact of these individual structures is more accurately assessed. This should include a scenario where panel heights are reduced but Transformer/Substation dimensions are unchanged.

With reference to Figure 7 the Council will discuss and agree the ZTV viewpoints directly with the applicant however at this stage we consider that additional VPs are required from the edge of South Kyme and Heckington villages as greatest concentrations of local population. We also consider that a further VP is required to the north east and that either VP3 or VP4 as currently proposed could be deleted as these appear to cover the same direction view of the eastern part of the site.

Paragraph 7.14 identifies the correct NKDC Landscape Character Assessment (LCA) character area and as part of the LVIA assessment the applicant should cross reference the SofS decision in relation to the windfarm scheme 09/1067/S36 by way of the site's wider fenland context.

In the context of 'alternatives' highlighted above, paragraph 7.24 notes that 'the proposed substation compound and energy storage area are proposed to be located toward the southeast corner of the Energy Park Site.' Presumably this is to minimise the length of cable

connection to BFSS and should be discussed and justified in the context of alternative site layouts and LVIA/agricultural land impacts.

With reference to 7.27, the Council agrees in principle that the Study Area for the LVIA should be a 5km radius from the boundary of the proposed solar park. We note that the LVIA will be based on the installation of 4.5m high panel as a worse-case scenario pending resolution of flood risk issues and associated mitigation measures. The LVIA should consider whether and how impacts vary through the alternative options of using tracker panels (and any specific flood risk mitigation requirement) vs fixed panels.

We agree with paragraph 7.28 which confirms that the primary focus of the LVIA will be construction and operational impacts of the Energy Park itself and not of the operational stages of the underground cable route works. We agree that the construction effects of laying the new Grid cable and the construction, operation and decommissioning phase of any new above ground equipment at the BFSS should be included. It would help if the ES is accompanied by montages and drawings showing the indicative layout of construction compounds and typical spoil heap heights, plant and equipment requirements along a typical 'tranche' of cable trenching.

Paragraph 7.39 and Appendix B refer to the proposed Residential Visual Amenity Assessment, which we agree should be included. 7.39 notes that 'in order to cross this threshold, the visual effects arising from the proposed Energy Park would need to be of such a degree and significance that the residential property would be uninhabitable due to the effects on living conditions'. At this stage the Council consider that the assessment area for the RVAA is likely to be no more than 1km from the site boundary based on the stated dimensions of the plant and equipment proposed.

Section 8 Ecology and Ornithology

The Council has provided pre-application advice to the applicant in relation to the required scope of ecological survey work to support the DCO application, a copy of which (supplied by the Council's ecological consultant, AECOM, is appended). As a result of that advice, the Council is broadly content with the proposed scope set out in Section 8, however we would make the following additional comments.

Figure 3 shows the habitat enhancement areas outside the solar park and these all seem to be within the proposed order limits. The sufficiency of the allocated land will need testing through BNG assessment. The supporting BNG assessment should be prepared with reference to current good practice guidance on BNG reporting: https://cieem.net/resource/biodiversity-net-gain-report-and-audit-templates/

The Council notes that the habitats on site will be classified in accordance with the Phase 1 Habitat survey classification. Whilst this is acceptable the BNG assessment will require conversion of these habitat types into the UKHab classification. This translation should be done transparently so that it is clear how the baseline habitat data relates to the data entered into the BNG Metric 3.0.

The most recent survey data indicates the presence of two badger clans using the site (paragraph 8.37). Full assessment should be provided of how the development could impact these two clans e.g. potential impacts on established patterns of habitat usage and competition for access to foraging habitats. The installation of extensive new security fences is particularly relevant to this, even with allowance for badger gates. Consideration should be given to whether a bait marking study is required, and the survey approach should be explained e.g. with the PEIR.

Further explanation should be provided for why detailed aquatic ecology surveys and assessment are not needed (this encompassing more than the botanical, water vole and otter surveys covered in the scoping report).

The potential effects of the development identified from paragraph 8.46 onwards remain heavily biased towards fauna. As advised previously in AECOM's advice, the assessment should work through a hierarchy of receptors encompassing European Sites, other statutory and non-statutory nature conservation sites, irreplaceable and priority habitats (the latter would include arable field margins subject to extant Stewardship agreements), other habitats, and all relevant protected and notable species. Full explanation should be provided for the scoping of receptors into and out of the detailed ecological impact assessment.

Section 8 notes that the ecological impact assessment will be undertaken in accordance with current good practice guidelines published by the Chartered Institute for Ecology and Environmental Management. However, the approach to impact assessment described from paragraph 8.70 onwards does not fully align with this e.g. in terms of the geographic scale proposed in Table 8.1, and the use and definitions of magnitude. These divergences perhaps arise from an attempt to merge the CIEEM approach with the wider EIA approach as set out in Section 6 of the scoping report. Instead, the Council recommends that the applicant to provide an assessment fully compliant with CIEEM and then as a last step translate the conclusions reached into the terminology used in the wider ES.

With reference to paragraphs 8.43 and 8.59, it is stated that 'outside of the solar park there will be approximately 95ha of arable farmland enhanced to create new wildlife habitat plus a further 1.8ha in the form of a community orchard and a further 10.9km of new/enhanced hedgerow'.

The location of the 95ha arable farmland enhancement outside of the solar park needs to be confirmed by the applicant as this does not appear in the ES – we assume it means the peripheral land immediately abutting the proposed panelled areas where the BNG and landscaping measures are suggested. The applicant should also detail how proposed enhancements are to be secured in perpetuity or for the proposed 40-year lifetime of the project if that land is not owned by the applicant.

Paragraph 8.59 references the Environment Act and the requirement for Biodiversity Net Gain but doesn't commit to a % delivery. The proposed amendments to the Act will require confirmation of a biodiversity gain objective for all NSIP schemes and that where a qualifying DCO application is made, the development must meet that BNG objective. We assume that this will be a minimum 10%.

Finally, paragraph 16.8 of the Scoping Report notes that the Energy Park site will be farmed during the operational lifetime as sheep grazing. This is referenced in the context of agricultural land impacts which are discussed in detail below. The location and proposed extent of sheep grazing has not been declared in the Scoping Report. The ES should therefore describe and evaluate as necessary how the proposed delivery of BNG/arable farmland enhancement (i.e. the specific BNG interventions proposed across the respective parts of the site) is compatible with proposed pastoral farming.

Section 9 Hydrology etc.

Paragraph 9.27 notes that 'there may be the need to create access tracks to appropriate points along this new Grid route. The flood risk effect and surface water drainage effect of these new access roads will be determined'. Section 9 as a whole does not specifically refer to the off-site surface water drainage/flood risk impacts of the totality of the development mindful of the proposed increased in hard surfacing (i.e. substations, inverters, extensive solar panel coverage). The proposed flood risk assessment (FRA) should therefore consider the potential

for increased flood risk elsewhere, the content of which should be informed by the Environment Agency and the Internal Drainage Board.

Paragraph 9.40 notes that 'a test for the implications for the development for Flood Risk will be completed as required under Planning Policy. This will form part of the planning bundle but will sit outside of the EIA. This is required as the Energy Park site is mainly within Flood Zone 3 and part within Flood Zone 2. Planning Policy requires the need for any Flood Risk Assessment to demonstrate that it can pass such a test and show that despite the increased flood risk of the site it is still the 'best' location for the development'.

This is somewhat clumsily worded and fails to acknowledge the requirement of the flood risk sequential test and the interplay with the consideration of alternatives. Flood risk is one of the few environmental constraints directly applicable to the site and triggers the requirement for a detailed sequential test. The applicant should prepare this with reference to the guidance contained in the NPPG (Paragraph: 033 Reference ID: 7-033-20140306).

The 'Table 2: Flood risk vulnerability classification' contained at Paragraph: 066 Reference ID: 7-066-20140306 of the NPPG does not specifically refer to renewable energy infrastructure and associated generating stations other than under 'essential infrastructure', which is defined as 'essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations..'.

The proposals do not fall within this category nor are solar farms specifically named alongside wind turbines as 'essential infrastructure'. Unless otherwise specified or advised by the Environment Agency the flood risk sequential test search area should be the same as applied in relation to the 'alternatives' search area discussed above; namely county-wide.

Section 10 Cultural Heritage

Archaeology

By way of background the proposed development lies in an area of archaeological interest where evidence of prehistoric and Roman period remains are known. Recent archaeological investigations immediately adjacent to the proposed area have identified significant remains of Iron Age and Roman period occupation, including evidence of salt-making. Romano-British finds and evidence of salt-making has been recorded also within the proposed boundary of the solar park. The broad assessment area for the cable route contains remains of prehistoric and Roman occupation and recent archaeological excavation has revealed significant evidence of multi-phase occupation, including enclosures, structures and industrial activity.

The proposals for construction of a solar farm will necessarily have an impact on any buried archaeological remains. Piling, building foundations, cable trenching, access roads, building compounds and construction traffic are all known impacts and the cumulative effect will be significant.

It should be noted the geophysical survey, on land adjacent to the proposal (undertaken in connection with the Viking Link and Triton Knoll projects), identified a number of anomalies interpreted as of possible archaeological origin, together with palaeochannels. Subsequent excavation has revealed far more extensive archaeological remains, notably on the roddons (the dried raised bed of a watercourse), which had not been apparent from the geophysical survey. Paragraph 10.3 acknowledges the recent ongoing work to the east of the site revealing roman activity and on that basis reports and analysis published to date in relation to Tritton Knoll and Viking Link must be reviewed and referenced where necessary in the baseline discussion of archaeological impacts. This is intimated in paragraph 10.26.

The scoping report (paragraph 10.3) refers to obtaining HER data for a 2km radius of the main site boundary. The cable route corridor extends around 6km from the southern-most edge of

the main site. It is therefore unclear whether the applicant also intends to interrogate the HER and other sources of information for a radius extending 2km from both the site boundary and the cable corridor. We suggest that it should.

Paragraph 10.2 (and 10.29) note that 'the need for, and scope and timing of, intrusive investigations (e.g., trial trenching) and mitigation will be negotiated and agreed with Lincolnshire County Council Archaeology Officers once the heritage desk-based assessment and geophysical survey are complete'.

The archaeological scope must also be agreed with consultants acting for NKDC and Boston Borough Council, which in the case of NKDC is the Heritage Trust of Lincolnshire.

In terms of specific observations on the scope of the ES, it is noted that the Desk Based Assessment (DBA) will include assessment of HER data, reports, aerial photographs, historic maps, archives and a walk over survey. In addition, the Portable Antiquities Scheme database should also be consulted. Further, the DBA should also consider impacts on palaeoenvironmental deposits and geoarchaeological assessment. The reference to planning and specialist guidance should include the Lincolnshire County Council Archaeology Handbook (2019) which sets out requirements for work in the county, including archiving and deposition. This can be accessed at https://www.lincolnshire.gov.uk/historic-environment/archaeological-handbook.

We note in paragraph 10.29 that a geophysical survey will be carried out across the main development site (i.e. the solar farm as opposed to the cable corridor) as part of the EIA. We agree with this approach namely that owing to the size of the site and the project timetable, the area will be divided into four parcels and each awarded to a different contractor. However, in order to ensure that there is consistency between each of the survey areas a single Written Scheme of Investigation should be produced which sets out the methodologies to be used by all contractors and should provide for results to be presented in a site wide report. The geophysical survey, together with LiDAR (see below) and desk-based assessment will inform the required programme of trial trenching.

We therefore disagree that geophysics should be used in isolation. As advised by the Heritage Trust of Lincolnshire the applicant must adopt both geophysical survey along with light detection and ranging (LiDAR) analysis across the main body of the site. Once the geophysics and LiDAR data is available and has been analysed by the applicant, they must then agree a scope of on-site trial trenching with all relevant heritage consultees (including Historic England if necessary) informed by those results. The trial trenching must then be undertaken, and the results presented and analysed prior to the ES being finalised and the DCO application being submitted. Carrying out of trial trenching/watching brief should not be left to the Requirements stage. The results of the trial trenching will need to inform the archaeological mitigation strategy.

At present, the Scoping Report suggests that trial trenching will be carried out post-consent, however without sufficient information on the presence, character, date and significance of deposits, there cannot be a robust assessment of impact or development of a mitigation strategy and the Council therefore resists this proposal.

The archaeology section in the scoping report focuses primarily on the main body of the site itself. The cable route is mentioned briefly but the inference is that it is less important/less significant than the main site. Table 19.1 proposes to deal with the cable trench works through watching brief, noting like the effects are likely to be 'minimal'. The Council disagrees both with the approach to assessment and also considers it premature to states that the effect will be 'minimal' without further supporting evidence.

North Kesteven District Council are not satisfied that the applicant has adopted an appropriate approach to assessing the impact of the cable route on archaeology. The cable corridor has not been determined. At paragraph 2.18 it is stated that cable installation 'will involve digging a trench approximately 5-10m deep across a 25m wide easement within which the grid cable will be installed.' This will represent a significant impact on any archaeological deposits.

Therefore (consistent with the main solar farm site) the cable route, once selected, will need to be evaluated, initially by means of geophysical survey and LiDAR and followed by a programme of trial trenching. The approach to scope out archaeological investigation of the cable route (Table 19.1) and mitigate 'through a watching brief' is not considered acceptable and not supported by the Council.

On this basis we also disagree with the suggestion in 10.29 that 'in line with the approaches taken elsewhere the geophysical survey of the underground cable route will be undertaken if the scheme is consented and prior to construction commencing'. Whilst reference is made to an approach adopted at Cleeve Hill and Little Crow Solar Farms, there is no further context given which justifies why this should be carried across to the Heckington Fen site. Each must be considered on its merits mindful of the scale, nature and location of the proposals.

As a general comment the ES must describe, in relation to the historic environment, how the scheme has adopted measures to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and how 'alternatives' have been addressed; including potentially alternative site layout/s and cable connection options (as required by Schedule 4 (7) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. We feel that this can only be robustly demonstrated through the approach we advocate.

The Council would draw PINS' attention to paragraph 2.53.3 of the Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) (September 2021) which states that:

'Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should submit an appropriate desk-based assessment and, where necessary, a field evaluation. These are expected to be carried out, using expertise where necessary and in consultation with the local planning authority, and should identify archaeological study areas and propose appropriate schemes of investigation, and design measures, to ensure the protection of relevant heritage assets.

<u>Above-ground historic environment</u>

Paragraph 10.5 does state that the main assessment work will be for a 5km area with professional judgement on assets beyond that distance, however based on the above we feel that the proposed scope of archaeological assessment work to be undertaken within and surrounding the high-level cable route needs clarification.

With refence to paragraph 10.3 and references elsewhere in section 10 (10.28) there is mention of considering impacts on Heritage Assets within both a 2km and 5km radius of the site. For the avoidance of doubt the Council considers that all designated and non-designated heritage assets within 5km from the site boundary should be considered.

The 5km search area takes in parts of Heckington and South Kyme. Conservation Area appraisals are available for Heckington which should be referred to for the purpose of the assessment. Brief reference to the village appraisal for South Kyme might also be helpful although this document is dated.

10.8 notes that 'the Proposed Development may alter the setting of designated heritage assets such that could result in a degree of harm to their heritage significance'. The ES needs to consider impacts on non-designated heritage assets too within the search area (i.e., 5km). The Council can supply records where necessary.

For reference in the planning policy/legislative framework section, paragraph 10.23 notes that 'overall, the NPPF confirms that the primary objective of development management is to foster the delivery of sustainable development, not to hinder or prevent it'. However, the applicant is referred to footnote 7 of the NPPF which disapplies the presumption in favour of sustainable development in relation to impacts on heritage assets.

Table 10.1 treats conservation areas differently, namely 'Conservation Areas of especial historic interest' and 'the majority of Conservation Areas' in different categories. It is unclear why a differentiation has been applied as there is no reference to where such guidance exists. Unless further information is supplied in the ES all conservation areas within the 5km search area should be considered equally and without reference to relative 'status'.

Finally, we recommend that the baseline assessment should have regard to the Lincolnshire Heritage Explorer (https://heritage-explorer.lincolnshire.gov.uk/map) and 'The Historic Landscape Characterisation Project for Lincolnshire' (September 2011) and associated mapping; copies of which can be provided by NKDC.

A copy of the detailed advice from the Council's consultant archaeologist is appended to this response and which provides more background and justification in relations to the procedural concerns we identify above and we understand that these are also shared by Lincolnshire County Council.

Section 11 Socio Economics

Paragraph 11.7 and 11.8 set out that the socio-economic impacts of the operational phase will be identified and will likely be relatively modest; some employment-generating impact (i.e. maintenance/upkeep) is inferred through the reference to the proposed orchard which would be accessed via agreement with the Parish Council for certain community groups. However, there is no reference in the proposed scope to any socio-economic benefit enduring from continued agricultural use of part or all of the site.

Paragraphs 13.15 and 16.8 state that sheep will be grazed within the site thus enabling some continuance of agricultural activity. The applicant should therefore attempt to quantify whether and how there are socio-economic benefits stemming from a change from predominantly arable agricultural use of the site pre-development to pastoral use post-development.

We suggest under section 16 below that the applicant should also identify a mechanism by which a change in agricultural activity (and ergo any associated socio-economic effect) can be secured through the DCO process.

Finally, paragraph 11.5 notes in connection with construction activities that 'the scale and spatial distribution of these direct impacts will depend on the locations of the companies carrying out the activities and where they source their labour from'. An established way of calculating the extra value generated by local spend on contractors and services would be by using LM3 multipliers which the applicant might wish to consider depending on the certainty of construction contracts etc at this stage. The multiplier can be found at https://www.lm3online.com/

Section 12 Noise

With reference to paragraph 12.5 we note the suggestion that the background noise environment in the area would have changed significantly, outside of the periods of restrictions associated with the Covid-19 pandemic, since 2011. The Council would suggest though that the applicant contacts Lincolnshire County Council as Highway Authority to check whether they hold any data on baseline road traffic growth on the A17 to inform the update of the noise assessment. The background noise environment is also now potentially impacted by ongoing

works in connection with the Triton Knoll and Viking Link schemes and which may therefore require cumulative assessment.

Whilst the Council's Environmental Health team agree with the buffer zone for the consideration of noise sensitive receptors as set out in paragraph 12.13, the Planning Inspectorate should satisfy themselves that an alternative assessment distance is justified in this instance relative to the 500m area that was promoted through the Gate Burton NSIP EIA Scoping Report. A plan must be provided showing the receptor locations modelled.

Paragraph 12.22 states that 'in this instance, the nature of the works to construct or decommission the Energy Park infrastructure is such that activities will be limited to a relatively low intensity and/or duration. Construction and decommissioning noise is therefore not expected to represent a significant effect provided that appropriate working methods and hours are adhered to'. Nevertheless, construction noise impacts should consider works such as piling associated with the installation of panel supports.

Section 12 does not refer to any noise associated with possible use of tracking panels. This option has not yet been ruled out and therefore the noise chapter of the ES needs to consider operational noise associated with motors, plant and equipment associated with the pivoting and rotation of panels. Cumulative noise impacts may then need to be assessed stemming from the creation of variable 'corridors' down which noise could pass depending on the alignment of panels at different times of the day. This should also account for the operational noise generated by substations, inverters and other noise-emitting plant and equipment relative to those corridors and the off-site sensitive receptor locations.

Section 13 Climate Change

Paragraph 13.15 notes that 'during the operational lifetime, it is intended that a low-density flock of sheep will graze the site. There is also a considerable area of the site that is to be used for ecological enhancements and habitat creation. It is expected that these measures will also have a positive effect in terms of carbon sequestration and storage'.

As set out above the interplay and effects associated with the proposed change in agricultural activity from arable to pastoral, including implications for BNG, should be discussed in relevant sections of the ES.

We agree that the 2020 NKDC Climate Emergency Strategy and Action Plan should be referred to under 'legislation, guidance and policy', and in terms of the Central Lincolnshire Local Plan Review the applicant should refer to the 'climate change' section of the Local Plan Consultation Library https://www.n-kesteven.gov.uk/central-lincolnshire/local-plan-consultation-library/

We agree with the suggestion in paragraph 13.34 that project resilience should be scoped in for further assessment as projected climate change has the potential to impact on the project's ability to supply electricity. 13.39 references flood risk and drainage noting that a consideration of climate change will form an integral part of the assessment of flood risk and will be cross-referenced in this assessment.

Whilst not implicit, it is inferred that this means the degree to which project resilience might be impacted by changes to flood levels relative to the site as modelled by the Environment Agency and the degree to which this is mitigated through reduced by measures inbuilt into the scheme.

Finally, with reference to our comments under section 16, the applicant might also wish to address 'alternatives' in the context of GHG offset to reflect revised layouts or overall energy generation capacity in relation to BMV land considerations.

Section 14 Transport and Access

Paragraph 14.12 notes that 'sites that are considered to be sensitive receptors with reference to IEMA are Conservation Areas, schools, health facilities, community facilities and congested junctions. Any sensitive receptors will be agreed with the highway authority at LCC in due course'. The applicant should also agree sensitive receptor locations with NKDC if there are overlaps between vehicle movements and noise generation/noise impacts.

In addition, Section 14 does not directly address trip generation estimates associated with the proposed community allotment, and permissive footpaths i.e. the public accessibility to and within the site as proposed by the applicant. This must be considered in the scope of the chapter.

Section 15 Air Quality

We agree with paragraph 15.17 that impacts to air quality at sensitive human and ecological receptors from the operational phase of the proposed development can be scoped out.

Paragraph 15.22 notes that 'the sensitive receptors that will be considered in the Air Quality Assessment include the existing sensitive receptors in the vicinity of the EIA Assessment Area and potential construction routes, including residential properties and schools'. Paragraph 15.20 references IAQM guidance on construction dust assessment for sensitive receptors within 50m of the site. The applicant/ES should clarify whether the construction phase air quality assessment will therefore be limited to any sensitive receptor within 50m of the site as this is not specifically stated.

Section 16 Land Use and Agriculture

Paragraph 16.6 note that 'in order to inform the assessment, we have carried out an Agricultural Land Classification survey. Given the size of the Development site the survey has been carried out at a semi-detailed scale. This has involved 138 auger locations on a regular 200 metre grid across the site'.

Published guidance at https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land#alc states that 'for a detailed ALC assessment, a soil specialist should normally make boreholes every hectare on a regular grid on agricultural land in the proposed development area up to 1.2m deep using a hand-held auger'

This is confirmed within the Natural England Technical Advice Note 49 which states that for a detailed ALC assessment there should be a 'frequency of one boring per hectare'. Applying the site area this would equate to 490 auger samples not 138. The Council therefore considers that the information presented in the ALC assessment would not be representative if presented on the basis of the assessment carried out to date and requests that additional augering is carried out in accordance with the Natural England Technical Advice note 49.

With reference to the consideration of alternatives, paragraph 16.15 states that '…the ES will include a site search exercise that will consider other areas of land within a similar connection distance to the National Grid Bicker Fen substation, which are of a similar size to the Energy Park (490ha) and are not BMV land'.

As highlighted above the Council does not consider that the alternative site assessment radius of 9km is representative and should be expanded to a county-level in the context of NSIP-scaled solar farms registered with PINS in the West Lindsey/Bassetlaw and South Kesteven/Rutland districts and in consideration of the grid connection options associated with those schemes. Evidence from the National Grid should be provided.

Without prejudice to the PINS decision on this matter and as set out above the 'alternatives' exercise also needs to consider alternative site layouts and potentially a reduction in MW generating capacity aligned with location of the respective ALC Grades described in paragraph 16.14 to demonstrate avoidance or minimisation of agricultural land impacts. Regardless of the 'alternatives' search area to be agreed by PINS and pending the alternative site layout analysis which the applicant should undertake, the 'off-site' alternatives assessment should not focus solely on land that is 'not BMV', but rather also areas that comprise lesser proportions of BMV. Presumably the applicant will use high-level Natural England mapping for this exercise.

Paragraph 16.17 notes that 'there is no set methodology for such a site search exercise to determine acceptability against the PPG or draft NPS. However, many solar farm applications have completed such a site search, which have been considered by Local Planning Authorities and PINS and deemed compliant when determining ground mounted solar farm application'. The applicant should identify and discuss these case studies/examples and their relevance in the context of the proposed scheme.

Paragraphs 16.18 and 6.25 provide different alternative sites search areas of 8km/9km from the site respectively.

Paragraph 16.22 states that consideration will be given to the cumulative sites that are identified in Section 6 of the Scoping Report 'and any additional ground mounted solar sites, with a 5km area that have entered the planning system by the time this application is submitted'. It further notes that consideration will not be given to other forms of development that may be removing 20ha or more of BMV agricultural land for their development.

The Council disagrees with this proposal. Whilst it is noted that the EIA Regulations seeks "the cumulation of effects with other existing and/or approved projects", paragraph 4.2.5 of NPS EN-1 states that "when considering cumulative effects, the ES should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence)".

Furthermore, PINS Advice Note 17 states at paragraph 1.4 that it relates to projects that are 'reasonably foreseeable', and that the recent High Court judgment Pearce v Secretary of State for Business, Energy, and Industrial Strategy [2021] EWHC 326 (Admin) considers the matter of cumulative environmental effects in detail.

The applicant's timescale for applying for a DCO could potentially align with the NSIP solar projects proposed elsewhere within the county and adjoining parts of Rutland and Bassetlaw and for which, in the case of the Gate Burton, West Burton and Cottam solar farms, have already been subject to a Scoping Opinion request to which North Kesteven District Council has provided (or is in the process of providing) comments. These are attached for completeness.

The West Lindsey District Council (WLDC) scoping response to the Gate Burton proposal, referenced 144006, notes that the Cottam and West Burton Solar projects should be considered alongside the Gate Burton scheme in the context of cumulative impact. All of these projects are registered on the National Infrastructure website and all three have sought or are in the process of seeking a Scoping Opinion. WLDCs understanding is that consent 'will be sought' for the Cottam and West Burton Solar projects at the time the Gate Burton project is under consideration. Furthermore, the Mallard Pass solar farm (Rutland/South Kesteven) is also a registered NSIP project on the National infrastructure website.

As set out in their Scoping response, WLDC's view is that the cumulative effects upon the environment from the Gate Burton project in combination with the Cottam and West Burton projects will be significant. Whilst no further detail is set out in terms of the specific areas of

concern that the Gate Burton ES should consider (nor is the Mallard Pass scheme mentioned), North Kesteven District Council's view is that the (Heckington Fen) applicant should consider cumulative agricultural land effects alongside the proposed Cottam, West Burton, Gate Burton and Mallard Pass NSIP projects. No other cumulative effects are anticipated at this stage from the information available.

Finally, paragraph 16.8 states that 'the Energy Park site will be farmed during the operational lifetime as sheep grazing. This could be mitigated by careful construction methodologies, including during the decommissioning stage. This will be considered within the assessment'.

Paragraph 16.10 then notes that (the ES) 'will consider the potential for removal of the panels and therefore the reversibility of the impact, and it will consider the extent to which agricultural use can continue during the life of the proposed development'. Paragraph 8.25 does however confirm that areas adjoining watercourses are currently used for grazing sheep and cattle.

Mindful of the estimated proportions of BMV land on site as identified in the applicant's ALC report (which has not yet provided) and the associated agricultural land guidance in Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) (as well as in the NPPF and CLLP), the applicant's ES should explore in more detail how agricultural land use continuance is to be delivered alongside the operation of the solar farm. This should include;

1. acknowledging the proposed change from arable to pastoral farming within the main body of the site (i.e. areas away from the watercourse margins referred to in paragraph 8.25)

2. identifying the areas of the site within which pastoral farming is proposed (and for other areas, whether or how those will remain in agricultural activity with the presence of solar panels and BNG habitat/landscaping implementation)

3. identifying whether contracts are in place for pastoral farming in the locations proposed, and whether those contracts span the operational duration of the scheme (40 years minimum)

4. whether and how the applicant considers that such contractual obligations, and more broadly, a change from one type of agricultural activity (pre-development) to another (post-development) could be legally secured, monitored and enforced through the DCO regime – for example through the use of Requirements/legal agreement

As highlighted above we infer from the Scoping Report that the applicant intends to demonstrate that BMV/agricultural land impacts can be/will be mitigated to an acceptable degree at least in part through the arable > pastoral change proposed within the body of the site and ergo that there will be at least some continuance of use.

However, in order to satisfy Schedule 4 (7) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 the applicant must be able to identify and arguably secure the measures relied upon to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects and which is at least partly relied upon by the proposed change in agricultural activity.

Section 17 Glint and Glare

Paragraph 17.7 states that 'the nearest active airfield is Boston Aerodrome which is 14km to the east. At this distance significant glint and glare impacts are extremely unlikely which is supported by the sentiment of the draft EN-3'.

The Scoping Report does not refer to RAF Cranwell or RAF Coningsby which operate as training and Quick Reaction Alert (QRA) stations respectively and which use airspace above the site. Defence Estates should therefore be consulted regarding the proposal to scope out glint and glare on aviation interests.

Paragraph 17.7 notes that a geometric assessment will be undertaken to identify the potential for solar reflections to impact on sensitive receptors such as properties and vehicles moving along the road network.

Unless applicant confirms that the panels are to be fixed (as opposed to the use of tracker panels), the assessment must also consider glint and glare potential in relation to the degree/orientation and pivot of panels relative to A17 and properties within and surrounding the site (as well as RAF airspace if needed) to rule out impacts to aviation interests, motorists and sensitive receptors (specifically residential and the school).

Table 19.1 Summary of Proposed Scope

As set out above under section 10, we disagree with the reference on p133 in relation to cultural heritage that 'any effects due to the trenching work and cable laying to below ground assets would be minimal and can effectively be mitigated through a watching brief. Such an approach has been deemed acceptable for other DCO Energy Schemes such as Cleve Hill Solar Farm and Little Crow Solar Farm'.

The suggestion that effects due to trenching and cable laying will be 'minimal' is not yet proven and we disagree that effects can be mitigated through a watching brief. Whilst the applicant refers to Cleve Hill and Little Crow Solar Farms, no further information has been submitted within the Scoping Report for Heckington Fen to compare and contrast the cultural heritage baseline against the predicated effects for those two schemes and therefore it is too simplistic to assume that the same process can/should be applied here.

Further general comments

A review of the Central Lincolnshire Local Plan is underway. Consultation on the first draft of the CLLP (Reg 18) concluded on 24th August 2021, and consultation responses have been published. The representations and likely degree of change to the emerging plan were report to the Central Lincolnshire Joint Strategic Planning Committee on 10th January for information. A live timetable is maintained on the website. It currently envisages consultation on the pre-submission Local Plan document to take place in Spring 2022, with submission to the Secretary of State in Summer 2022. Indeed, the Central Lincolnshire Joint Strategic Planning Committee is scheduled to meet on 28th February when Members will be invited to endorse the Reg 19 'Pre-submission Draft' version of the plan for consultation; the pre-submission version will be in the public domain from 17th February. If endorsed, the consultation could begin within a matter 2/3 weeks and run for at least 6 weeks.

Consequently, it is expected that the draft CLLP is likely to be at an advanced stage by the time an application for the DCO is made and may even be adopted during consideration of the NSIP application. It therefore should be taken into consideration in accordance with the provisions of paragraph 48 of the NPPF (2021). We invite PINS to require that the ES make reference to the 'Pre-submission Draft' local plan accordingly.

It is noted at this stage, the grid construction infrastructure could comprise of either underground or overground cables/lines, and that works to extend the BFSS could constitute an NSIP in its own right. The Council is concerned that such infrastructure that will arise as a direct consequence of this proposed development may have significant environmental effects and must therefore be in scope for the purposes of this EIA (and Consent Order) and should not be considered separately.

The Council also highlights that whilst section 105 ('decisions in cases where no national policy statement has effect') of the Planning Act 2008 will be engaged, it is recognised that under the Energy White Paper, draft National Statements have been published and have been subject to consultation. The draft NPS EN-3 does expressly now consider Solar Photovoltaic Generation (page 79 onwards).

Consequently, at the time a DCO is applied for, and during consideration of the application, it is likely that it will be S104 ('decisions in cases where NPS has effect') that should be applied, not S105. In any event, it is considered that the draft NPS (particularly draft EN-1 and EN-3) should be a material consideration.

In terms of the proposal to scope out 'Major Accidents or Disasters', the applicant confirms that the risk of an accident would relate primarily to the risk of fire or explosion associated with the battery storage element. Whilst the extent and positioning of the battery storage is to be determined, it is unclear as to the magnitude or effect of such an event.

Whilst it is recognised that the battery energy storage system would have mitigation through cooling systems, this does not eliminate the risk. Therefore, whilst we agree that 'Major Accidents or Disasters' does not warrant formally 'scoping in', nevertheless further information should be presented with the DCO application which sets out how these risks will be mitigated and managed through scheme design and maintenance.

Conclusion/Summary

Subject to the above comments under the relevant sub-headings the Council largely agrees with the proposed scope of the ES. However, key issues or proposed approaches to the ES preparation which we do not support from the information presented (or where additional clarity is required) are:

1. Alternatives/BMV land impacts – in relation to site selection (i.e. off-site alternatives) and alternative (on-site) layouts and configurations to reflect the applicant's identification of a high proportion of BMV agricultural land within the site. The Council disagrees that the 'alternatives' site area should be limited to 8/9km from the BFSS and consider that this should be County-wide having regard to options for connection to the National Grid in alternative locations; including as proposed through the Cottam, West Burton, Gate Burton and Mallard Pass NSIP projects. Additional soil augering and assessment should be undertaken. At present the augering undertaken is only around 33% of the coverage recommended by Natural England guidance.

2. Cultural Heritage (archaeology) – LiDAR should be used in addition to geophysical survey to inform a trial trenching strategy. The trail trenching should be carried out and the results presented in the ES to guide the assessment of impacts and the application of avoidance and mitigations measures along with informing future phases of archaeological investigation. The Council disagrees that trenching should be first undertaken post-consent via Requirement/s. This applies to both the cable route and the main site.

3. Flood risk – linked to the above the flood risk sequential test search area should be expanded to align with the alternative site/s assessment.

4. Cumulative effects – cumulative agricultural land/BMV impacts should be considered alongside the Cottam, West Burton, Gate Burton and Mallard Pass NSIP projects. The proposed 5km cumulative effects search area is insufficient as proposed in relation to agricultural land/BMV although the Council agree that there are unlikely to be any other cumulative effects associated with these projects.

5. LVIA – A Screened Zone of Theoretical Visibility (ZTV) has been applied based on a panel height of 4.5m. A different approach must be applied in relation to the Transformer/Substation/s and a scenario involving a reduction in panel heights.

6. Cable connection corridor to BFSS - the Scoping Report appears premature in relation to the cable connection options given that preferred options have yet to be significantly narrowed down. We advise that archaeological impacts are potentially underplayed. The Council reserves the right to provide further comments on the proposed ES scope as and when preferred options are known and the cable connection corridor has been rationalised accordingly.

Yours sincerely

Mark Williets
Development Manager
Development Management

Encs

Response from Rutland County Council
Response from the Heritage Trust of Lincolnshire

Nick Feltham

From: Justin Johnson <[redacted]@rutland.gov.uk>
Sent: 02 February 2022 09:10
To: NK - Planning; Nick Feltham
Subject: RE: 22/0039/ADVICE - Land At Six Hundreds Farm, Six Hundreds Drove, East Heckington, Lincolnshire

Dear Nick

Having considered the above scoping opinion Rutland County Council would recommend that the section on Land Use and Agriculture should be amended to include a wider assessment of the cumulative impacts of the development to include other known NSIP developments for solar farms which are proposed in Lincolnshire and Rutland. There are a significant number of projects now proposed and the cumulative impacts of these projects on the best and most versatile agricultural land should be assessed as part of any Environmental Statement.

We would request that any assessment includes the impacts of the Mallards Pass Solar Farm which is proposed on the Lincolnshire Rutland boarder.

Kind regards,

Justin Johnson | Development Manager
Rutland County Council
Catmose, Oakham, Rutland LE15 6HP
t: [redacted] | e: [redacted]@rutland.gov.uk
www.rutland.gov.uk

Live, work or run a business in Rutland? Have you say about the County's future:
www.rutland.gov.uk/futurerutland

Please note: During the Coronavirus outbreak, Planning Officers are now working at home but can still be contacted on their normal phone numbers, which are diverted to mobiles, or by e-mail. All meetings are suspended and any site visits must be unaccompanied.

Details regarding your data protection rights and how the Council processes your data can be found at:
www.rutland.gov.uk/my-council/data-protection

From: NK - Planning <Planning@n-kesteven.gov.uk>
Sent: 11 January 2022 14:31
Subject: 22/0039/ADVICE - Land At Six Hundreds Farm, Six Hundreds Drove, East Heckington, Lincolnshire

Good Afternoon

Please find attached the documents for the following consultation:

Request for Pre Application Planning Advice:

Planning Application Reference: 22/0039/ADVICE

Proposal: Application by Ecotricity (Heck Fen Solar) Limited for an Order granting Development Consent for the Heckington Fen Solar Park - Consultation request for Scoping Opinion (Regulation 10(1) of the EIA Regulations)

Location: Land At Six Hundreds Farm, Six Hundreds Drove, East Heckington, Lincolnshire

Kind regards

Cheryl

North Kesteven

Planning Administration Team

Tel: [redacted]

www.n-kesteven.gov.uk

Kesteven Street, Sleaford, NG34 7EF

Rutland County Council
Customer Service Centre: [redacted]

Visitor Parking Information & Map: https://www.rutland.gov.uk/my-community/parking/council-car-parks/
Email Enquiries: enquiries@rutland.gov.uk
Council Website: http://www.rutland.gov.uk
Visiting Rutland? http://www.discover-rutland.co.uk

Archaeological advice

Planning Application Reference: 22/0039/ADVICE
Proposal: Application by Ecotricity (Heck Fen Solar) Limited for an Order granting Development Consent for the Heckington Fen Solar Park - Consultation request for Scoping Opinion (Regulation 10(1) of the EIA Regulations)
Location: Land At Six Hundreds Farm Six Hundreds Drove East Heckington

Archaeological background:
The proposal is located at Heckington Fen and lies in an area of archaeological interest where evidence of prehistoric and Roman period remains are known. Recent archaeological investigations immediately adjacent to the proposed area have identified significant remains of Iron Age and Roman period occupation, including evidence of salt-making. Romano-British finds and evidence of salt-making has been recorded also within the proposed solar park. The broad assessment area for the cable route contains remains of prehistoric and Roman occupation and recent archaeological excavation has revealed significant evidence of multi-phase occupation, including enclosures, structures and industrial activity.

It should be noted the geophysical survey, on land adjacent to the proposal, identified a number of anomalies interpreted as of possible archaeological origin, together with palaeochannels. Subsequent excavation has revealed far more extensive archaeological remains, notably on the roddons, which had not been apparent from the geophysical survey.

The Scoping Report in respect of the above proposal sets out the basic methodologies for assessment to include a desk-based assessment and geophysical survey.

Comment on the Scoping Report

- Desk-based assessment:

It is noted that the DBA will include assessment of HER data, reports, aerial photographs, historic maps, archives and a walk over survey. In addition, the Portable Antiquities Scheme database should also be consulted. Further, the DBA should also consider impacts on palaeoenvironmental deposits and geoarchaeological assessment. The reference to planning and specialist guidance should include the Lincolnshire County Council Archaeology Handbook (2019) which sets out requirements for work in the county, including archiving and deposition.

- LiDAR:

The DBA should include an assessment of LiDAR evidence to help understand the fenland landscape (for example location of roddons) and potential for archaeological deposits.

- Geophysical survey:

It is proposed that the geophysical survey of the energy park will be split into 4 areas with the geophysical survey of each undertaken by a separate contactor producing a separate written scheme of investigation (WSI). In order to ensure that there is consistency between each of the survey areas a single WSI should be produced which sets out the methodologies to be used by all contractors and should provide for results to be presented in a site wide report. The geophysical survey, together with LiDAR and desk-based assessment will inform the required programme of trial trenching.

- Cable route:

The cable corridor has not been determined. At 2.18 it is stated that cable installation 'will involve digging a trench approximately 5-10m deep across a 25m wide easement within which the grid cable will be installed.' This will represent a significant impact on any archaeological deposits. Therefore

the cable route, once selected, will need to be evaluated, initially by means of geophysical survey and LiDAR and followed by a programme of trial trenching. The approach to scope out archaeological investigation of the cable route (Table 19.1) and mitigate 'through a watching brief' is not considered acceptable.

- Trial trench evaluation

The proposals for construction of a solar farm will necessarily have an impact on any buried archaeological remains. Piling, building foundations, cable trenching, access roads, building compounds and construction traffic are all known impacts and the cumulative effect will be significant. In order to understand the nature and extent of those impacts a programme of trial trenching will be required. The results of the trenching will inform the archaeological mitigation strategy.

It is proposed that trial trenching will be carried out post-consent, however without sufficient information on the presence, character, date and significance of deposits, there cannot be a robust assessment of impact or development of a mitigation strategy.

- Archaeological consultees

In addition to the Lincolnshire County Council Archaeology Officers (noted in the Report), the archaeological advisor for each of the relevant local authorities should be included.

Recommendations:
The information in the desk-based assessment should consider the potential for impacts on archaeological remains together with impacts on the built heritage and historic landscape. It should provide sufficient evidence to understand the impact of the proposal on the significance of any heritage assets and their settings, sufficient to meet the requirements of the National Planning Policy Framework.

It is considered that the site offers a potential for archaeological remains to be present based on the extent and type of remains recorded at the site and in the vicinity. Therefore sufficient site-specific evaluation needs to be undertaken, in order to determine the presence, significance, depth and character of any archaeological remains. Trial trench evaluation will be required in order to provide an assessment of potential and likely impact of the proposals on any archaeological deposits. The results of the evaluation will inform the archaeological mitigation strategy.

'In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.' National Planning Policy Framework (2021) Section 16, para 194.

Denise Drury
Senior Historic Environment Officer
26th January 2022

From: [redacted]
To: Heckington Fen Solar
Subject: EN010123-000014 Heckington Fen Solar
Date: 04 February 2022 10:54:19
Attachments: image692906.png
image604584.png
image333116.png
image121070.png

Dear Sir, Madam

Further to the Council's formal response to the Scoping Report in relation to Heckington Fen, I have received a further request from our Environmental Health Officer which I would be grateful if you could also consider.

Paragraph 15.23 of the Scoping Report states that:

'The works being undertaken during the construction phase include earthworks, construction and trackout. It is anticipated that dust and particulate matter emissions produced during construction phase activities would be inherently controlled through the implementation of an outline Construction Environmental Management Plan (oCEMP). Therefore, the effects of dust and particulate matter emissions released during the construction phase of the Proposed Development from on-site activities are unlikely to be considered significant and have been scoped out of the ES'.

Paragraph 15.25 then notes that 'if required, dispersion modelling will be used to predict concentrations of NO2 , PM10 and PM2.5 at sensitive receptors adjacent to roads affected by the Proposed Development'.

For the avoidance of doubt the Council wishes to request that the effects of dust generation from HGV movements are considered during the construction phase of the development through the monitoring of PM2.5 at appropriate sensitive receptor locations.

Regards
Nick Feltham

Nick Feltham
Principal Planning Officer
Tel: [redacted]
Email: [redacted]@N-KESTEVEN.GOV.UK
www.n-kesteven.gov.uk
Kesteven Street, Sleaford, NG34 7EF

From:	[redacted]
To:	Heckington Fen Solar
Cc:	ENC PLANNING
Subject:	EN010123-000014 - Application by Ecotricity (Heck Fen Solar) Limited (the Applicant) for an Order granting Development Consent for the Heckington Fen Solar Park (the Proposed Development)
Date:	31 January 2022 13:19:48

Dear Emily Park,

Thank you for your consultation letter on the above Scoping Opinion request.

North Northamptonshire Council has no comments to make on this consultation.

Regards

Gavin Sylvester | Principal Development Management Officer
North Northamptonshire Council
Thrapston Office
Cedar Drive, Thrapston, Northants NN14 4LZ
T: [redacted] | DD: [redacted]

Twitter: @NNorthantsC
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Web: www.northnorthants.gov.uk

Disclaimer

Telephone: [redacted] (open 9am - 1pm)
Email: planningcontrol@peterborough.gov.uk
Case Officer: Mrs Louise Simmonds
Our Ref: 22/00818/CONSUL
Your Ref: EN010123-000014

PETERBOROUGH CITY COUNCIL

Planning Services

Sand Martin House
Bittern Way
Fletton Quays
Peterborough
PE2 8TY

Peterborough Direct: [redacted]

Ms Emily Park
The Planning Inspectorate
Senior Environmental Advisor
Temple Quay House,
Temple Quay,
Bristol,
BS1 6PN

27 January 2022

Dear Ms Park

Planning enquiry

Proposal: Consultation on proposed Heckington Fen Solar Park Project EN010123-000014

Site address: Heckington Fen Solar Park

Further to your enquiry received on 10 January 2022, in respect of the above, the Local Planning Authority makes the following comments:

Due to the distance of the proposal from Peterborough City Council's authority boundary, the Council does not wish to offer any comments upon the Scoping Opinion request.

I trust that the above advice is of use however should you have any further queries, please do not hesitate to contact me on the details shown at the top of this letter.

Yours sincerely

Mrs Louise Simmonds
Team Manager - Development Management

South Kesteven District Council
Development Management
Council Offices, St Peter's Hill,
Grantham, Lincolnshire, NG31 6PZ
Tel: [redacted]
E-mail: planning@southkesteven.gov.uk
Web: www.southkesteven.gov.uk

SOUTH KESTEVEN DISTRICT COUNCIL

Emily Park The Planning Inspectorate Environmental Services Central Operations Temple Quay House 2 The Square Bristol, BS1 6PN	Case Officer Phil Jordan E-Mail [redacted]@southkesteven.gov.uk Tel Ext: 6074 Date: 2nd February 2022

Dear Sir/Madam

Application No.	S22/0048
Proposal:	Solar Park
Location:	Heckington Solar Park, , , ,
Application Type:	Adjoining Authority Consultation
Decision:	**Comments to Make**:

The above proposal has been considered by this Authority and on the 2nd February 2022 it was resolved that this Council wishes to make the following comments:-:

1 The site is sufficiently separated and screened from South Kesteven such that there would be no landscape and visual impacts of concern from the Energy Park apsect of the proposal. Further, the large area identified to the south of the site for poetntial underground cabling is unlikely to result in any significant landscape and visual impacts.

However, there are currently several large scale solar park proposals being considered across the South Kesteven District Council, Lincolnshire and adjoining authorities. SKDC would request that the cumulative impacts of a loss of agricultural land, and in particular that considered to be best and most versatile is considred across a wider area than that currently proposed by the submitted Scoping Report.

Mallard Pass Solar Farm is likely to be within the planning system (Scoping Opinion due early Feb 2022) and it is requested that the cumulative impacts of any loss of best and most versatile agricultural land associated with that proposal are considered alongside the same for the current proposal. Likewise, the cumulative impacts from a loss of best and most versatile agricultural land associated with any further large scale solar farms in South Kesteven should be considered.

Cont/….

https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/mallard-pass-solar-project/

Yours faithfully

Emma Whittaker
Assistant Director Of Planning

UK Health Security Agency

Environmental Hazards and Emergencies Department
Seaton House, City Link
London Road
Nottingham, NG2 4LA

nsipconsultations@phe.gov.uk
www.gov.uk/ukhsa

Your Ref: EN010123-000014
Our Ref: 58737 CIRIS

Ms Emily Park
Senior Environmental Advisor
The Planning Inspectorate
Temple Quay House
2 The Square
Bristol BS1 6PN

7th February 2022

Dear Ms Park

Nationally Significant Infrastructure Project
Heckington Fen Solar Park [PINS Reference: EN010123]
Scoping Consultation Stage

Thank you for your consultation regarding the above development. The UK Health Security Agency (UKHSA) and the Office for Health Improvement and Disparities (OHID) (formerly Public Health England) welcome the opportunity to comment on your proposals and Environmental Impact Assessment (EIA) Scoping Report at this stage of the Nationally Significant Infrastructure Project (NSIP). Advice offered by UKHSA and OHID is impartial and independent.

The health of an individual or a population is the result of a complex interaction of a wide range of different determinants of health, from an individual's genetic make-up, to lifestyles and behaviours, and the communities, local economy, built and natural environments to global ecosystem trends. All developments will have some effect on the determinants of health, which in turn will influence the health and wellbeing of the general population, vulnerable groups and individual people. Although assessing impacts on health beyond direct effects from for example emissions to air or road traffic incidents is complex, there is a need to ensure a proportionate assessment focused on an application's significant effects.

Having considered the submitted scoping report we wish to make the following specific comments and recommendations:

Environmental Public Health

In terms of the level of detail to be included in an Environmental Statement (ES), we recognise that the differing nature of projects is such that their impacts will vary. UKHSA and OHID's predecessor organisation Public Health England produced an advice document *Advice on the content of Environmental Statements accompanying an application under the NSIP Regime*', setting out aspects to be addressed within the Environmental Statement[1]. This advice document and its recommendations are still valid and should be considered when preparing an ES. Please note that where impacts relating to health and/or further assessments are scoped out, promoters should fully explain and justify this within the submitted documentation. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlighted.

It is noted that the applicant does not propose to conduct any monitoring for PM, although they propose installing diffusion tubes to monitor for NO_2, in consultation with the local authority. It is also noted that the applicant states that model predicted concentrations would be compared to the current statutory standards and objectives; it is not clear whether this means "current" at the time of the Scoping Stage or at the time that the modelling exercise is to be undertaken.

We note that the applicant has scoped out Major Incidents and Disasters. Given that the applicant has not finalised the route for the underground cable to be connected to the National Grid, but has identified that the route may pass close to residential dwellings and that "*The route will require crossing …. major roads, rail, high pressure gas main and potentially third-party grid connections*", we consider that it is too early to scope out a more detailed consideration of the risk of Major Accidents.

Recommendation

Our position is that pollutants associated with road traffic or combustion, particularly particulate matter and oxides of nitrogen are non-threshold; i.e, an exposed population is likely to be subject to potential harm at any level and that reducing public exposure to non-threshold pollutants (such as particulate matter and nitrogen dioxide) below air quality standards will have potential public health benefits. We support approaches which minimise or mitigate public exposure to non-threshold air pollutants, address inequalities (in exposure) and maximise co-benefits (such as physical exercise). We encourage their consideration during development design, environmental and health impact assessment, and development consent.

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1 https://khub.net/documents/135939561/390856715/Advice+on+the+content+of+environmental+statements+accompanying+an+application+under+the+Nationally+Significant+Infrastructure+Planning+Regime.pdf/a86b5521-46cc-98e4-4cad-f81a6c58f2e2?t=1615998516658

Given the population reduction targets discussed within the Environment Act, the recent reduction in World Health Organization Air Quality Guideline for $PM_{2.5}$, and the fact that the applicant states that the route for construction traffic will pass within 50 metres of sensitive receptors, we recommend that the applicant considers monitoring for $PM_{2.5}$ to inform their assessment, if the change in traffic flows exceed the relevant EPUK/IAQM criteria.

Although new Defra targets are not yet in place, we recommend that the applicant should consider comparing the modelled concentrations with forthcoming targets should they become available before the modelling exercise is undertaken.

We recommend that the applicant should consider scoping in Major Accidents and Disasters, until the route for the underground cable route has been finalised and the potential for accidents that might affect public health is better understood. This is not withstanding the fact that safe methods of working would be used.

For advice on the EMF assessment methodology, please refer to the EMF section of the advice document referred to above.

Human Health and Wellbeing - OHID

This section of OHIDs response, identifies the wider determinants of health and wellbeing we expect the ES to address, to demonstrate whether they are likely to give rise to significant effects. OHID has focused its approach on scoping determinants of health and wellbeing under four themes, which have been derived from an analysis of the wider determinants of health mentioned in the National Policy Statements. The four themes are:

- Access
- Traffic and Transport
- Socioeconomic
- Land Use

Having considered the submitted scoping report OHID wish to make the following specific comments and recommendations:

Population and Human health assessment
It is noted that population and human health will be considered within existing chapters and not form a separate chapter within the ES. Given the current knowledge of the scheme and potential impacts this appears to be a proportionate approach. This should be kept under review as more information becomes available and a separate population and human health chapter may be justified as the assessments develop.

Vulnerable populations
An approach to the identification of vulnerable populations has not been provided. The impacts on health and wellbeing and health inequalities of the scheme may have particular

effects on vulnerable or disadvantaged populations, including those that fall within the list of protected characteristics.

The identification of vulnerable populations and sensitive populations should be considered. The proposed educational facility has been noted in the scoping report and further details are required to assess any temporal overlap during the construction of the solar farm, particularly if the school will be operational at the time of construction.

Recommendation

Baseline health data should be provided, which is adequate to identify any local sensitivity or specific vulnerable populations. The identification of vulnerable populations should be based on the list provided by the Welsh Health Impact Assessment Support Unit and the International Association of Impact Assessment (IAIA).

Further details regarding the potential impact on the special educational needs school should be identified for the construction phase of the solar farm.

Housing affordability and availability / Socio-economic assessment

The scoping report does not identify the projected numbers of construction workers required for the scheme. The presence of significant numbers of workers could foreseeably have an impact on the local availability of affordable housing, particularly that of short-term tenancies and affordable homes for certain communities. The cumulative impact assessment will need to consider this across the wider study area but also identify the potential for any local (ward-level) effects, where there could be knock-on effects on access to accommodation for residents with the least capacity to respond to change (for example, where there may be an overlap between construction workers seeking accommodation in the private rented sector, and people in receipt of housing benefit / low paid employment seeking the same lower-cost accommodation).

It should be noted the Housing Needs Assessment for Central Lincolnshire (2020) identifies the private rented sector plays a particularly key role (between 26%-29%) in accommodating those in lower paid roles, such as customer services, caring and leisure service occupations. There are a number of renewable energy schemes proposed for the wider region increasing the potential for non-home-based construction workers to be seeking accommodation.

Recommendation

The peak numbers of construction workers and non-home-based workers should be established and a proportionate assessment undertaken on the impacts for housing availability and affordability and impacts on any local services.

Any cumulative impact assessment should consider the impact on demand for housing by construction workers and the likely numbers of non-home based workers required across all schemes.

Traffic and Transport
It is noted that the IEMA GEART guidelines are to be used and as such the operational phase and pedestrian issues during construction are to be scoped out. Although pedestrians are unlikely to be present the remainder of the traffic and transport assessment for construction should consider impacts on pedestrians and any horse-riding activities.

Recommendation
The construction phase traffic and transport assessment should include an assessment of impacts on cyclists and horse riders.

Yours sincerely

On behalf of UK Health Security Agency
nsipconsultations@phe.gov.uk

Please mark any correspondence for the attention of National Infrastructure Planning Administration.

Guildhall
Marshall's Yard
Gainsborough
Lincolnshire DN21 2NA
Telephone [redacted]
Web www.west-lindsey.gov.uk

Your contact for this matter is:
Ian Elliott
[redacted]@west-lindsey.gov.uk
[redacted]

The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

7th February 2022

Dear Sir/Madam

APPLICATION REFERENCE NO: 144258

PROPOSAL: PINS consultation on behalf of the Secretary of State as to the information to be provided in an Environmental Statement - ref EN010123.

LOCATION: Heckington Fen Solar Park

Thank you for identifying West Lindsey District Council as a consultation body and advising that the Secretary of State will be preparing a Scoping Opinion on the information to be provided in an environmental statement (ES). As the case officer I have read through the Environmental Impact Assessment Scoping Report (SR) by Pegasus Group dated January 2022 with Section 2 of the SR describing the proposed development including the infrastructure required in paragraph 2.16. Overall I consider the SR to be well written and comprehensive.

Planning Policy Context:
The site is a good distance (approximately 11.8 miles) outside the closest West Lindsey District boundary near Southrey. The statutory development plan for the purposes of S38(6) of the Planning and Compulsory Purchase Act 2004 is the Central Lincolnshire Local Plan 2012-2036. As the district of West Lindsey is part of Central Lincolnshire its statutory development is also the Central Lincolnshire Local Plan 2012-2036.

The Environmental Statement should consider National Planning Policy and Guidance as follows:

- National Planning Policy Framework (NPPF);
- National Planning Practice Guidance (to include):

  - Climate Change
  - Historic Environment
  - Environmental Impact Assessment
  - Air Quality
  - Light Pollution
  - Healthy and Safe Communities
  - Natural Environment

- Noise
- Renewable and Low Carbon Energy
- Travel Plans, Transport Assessments and Statements in Decision-taking
- Water Supply, Wastewater and Water Quality

- National Design Guide 2019
- Overarching National Policy Statement for Energy (EN-1)*
- Overarching National Policy Statement on Renewable Energy Infrastructure (EN-3)*

* Currently under review by Central Government[1]

Landscape and Visual Impact:
As set out in the SR the Landscape and Visual Impact Assessment (LVIA) should follow the guidance of the Landscape Institute "Guidelines for Landscape and Visual Impact Assessment 3rd Edition (2013), as proposed. An iterative approach, which guides the layout and scheme design should be followed.

The location of the proposed Solar Park would be approximately 11.8 miles (19 kilometres) from the shared North Kesteven and West Lindsey district boundary. The height of the development (including infrastructure) would primarily be no more than 4.5 metres high, however paragraph 3.29 of the Electricity Export Connection to National Grid section states that *"The new equipment will look similar to the units already installed at the National Grid Bicker Fen site. It is expected that the maximum height of this new unit will be 15m, which is similar to the units already installed at Bicker Fen".* This infers that the 15 metre unit would be installed at the existing National Grid Bicker Fen site which has structures of similar appearance. It is presumed that this refers to the Bicker Fen site at Boston which is even further away from West Lindsey (25 miles). It is requested that more clarity and certainty is provided in the ES statement in terms of the location and appearance of the 15 metre high unit.

Given the height of the development subject to the location of the 15 metre high unit it would not be expected to be in view from any parts of the West Lindsey District . Therefore it is not considered that any viewpoints from West Lindsey would be necessary and no residential properties in West Lindsey are expected to be affected.

Cumulative Effect:
West Lindsey which is part of Central Lincolnshire, with North Kesteven District Council and Lincoln City Council, and is expecting three large scale solar projects (nationally significant infrastructure) to be applied for through a Development Consent Order in addition to Heckington Fen. The projects of Cottam, West Burton and Gate Burton are registered on the National infrastructure website, with Gate Burton having received a Scoping Opinion, and Cottam & West Burton projects currently subject to a request for EIA Scoping.

Whilst the structure of the ES appears to be generally acceptable it is imperative that any Environmental Impact Assessment clearly considers within its structure the cumulative effect of Heckington Fen with these three solar farm projects and any other solar Farms in Central Lincolnshire such as the Fiskerton Solar project, which is an extant development, with consent to expand. There are questions as to how all these developments taken

[1] https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements

together will affect Central Lincolnshire's character, as traditional rural Lincolnshire Countryside.

Yours faithfully

Ian Elliott
Senior Development Management Officer
On behalf of West Lindsey District Council

If you want to know more about how we use your data, what your rights are and how to contact us if you have any concerns, please read our privacy notice:
www.west-lindsey.gov.uk/planning-privacy

If you require this letter in another format e.g. large print, please contact Customer Services on [redacted], by email customer.services@west-lindsey.gov.uk or by asking any of the Customer Services staff.

From: [redacted]
To: Heckington Fen Solar
Cc: drainage
Subject: RE: EN010123 Heckington Fen Solar Park - EIA Scoping Report Notification and Consultation
Date: 10 January 2022 11:27:00

Dear Katie.

Thank you for your email regarding the Heckington Solar Farm project.

I can confirm that this project is *not* within the area that the Witham Fourth IDB are responsible for, so we are unable to make any comments about this development.

Kind regards

Neil

Neil Foster
Engineering Officer
Witham Fourth District Internal Drainage Board
47 Norfolk Street
Boston
PE21 6PP

www.w4idb.co.uk

Our office is closed to visitors but our staff are still working. Please email/telephone with any enquiries.

[redacted]

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report
Appendix 1.3- Natural England Response

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

From:	[redacted]
To:	Heckington Fen Solar
Subject:	380254 - EN010123 - Scpoing Opinion - Heckington Fen Solar Park Project - Six Hundred Farm, Six Hundred Drove, East Heckington, Sleaford, Lincolnshire
Date:	24 February 2022 22:10:39
Attachments:	image001.png 380254.pdf

Dear Emily Park

Apologies for not sending this to you within the deadline specified, it was an error on my part. The main concern Natural England would have with this development is related to the impacts on BMV land which I have noted you have included in your scoping report on the 17th of Feb. We are engaging with the applicant via our discretionary advice service on how to minimise any possible impacts.

Once again I do apologise for this.

Kind Regards

Caolan Gaffney
[redacted]
Planning Lead Adviser
East Midlands Area Delivery Team
Apex Court, City Link,
Nottingham, NG2 4LA
Tel: 02080 266680
[redacted]
www.gov.uk/natural-england

During the current coronavirus situation, Natural England staff are working remotely to provide our services and support our customers and stakeholders. All offices and our Mail Hub are closed, so please send any documents by email or contact us by phone or email to let us know how we can help you. See the latest news on the coronavirus at http://www.gov.uk/coronavirus and Natural England's regularly updated operational update at https://www.gov.uk/government/news/operational-update-covid-19

Stay alert, control the virus, save lives.

our systems. Communications on Natural England systems may be monitored and/or recorded to secure the effective operation of the system and for other lawful purposes.

Date: 24 February 2022
Our ref: 380254
Your ref: EN010123

Consultations
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 900

Emily Park
The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

BY EMAIL ONLY

Dear Emily Park

Environmental Impact Assessment Scoping Consultation (Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11): Heckington Fen Solar Park

Thank you for seeking our advice on the scope of the Environmental Statement (ES) in the consultation dated 10 January 2022

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

A robust assessment of environmental impacts and opportunities based on relevant and up to date environmental information should be undertaken prior to a decision on whether to grant a DCO. Annex A to this letter provides Natural England's advice on the scope of the Environmental Impact Assessment (EIA) for the proposed development. For this specific proposed development the Environmental Statement should particularly consider the following:

The proposed development is not within any Impact Risk Zones for European Designated sites; thus we would not anticipate any adverse impacts to European designated sites, or the need for HRA.

Natural England are engaging with the applicant via our discretionary advice service with regard to avoiding adverse impacts to best and most versatile agricultural land, as well as potential environmental enhancements.

In-combination/cumulative impacts

The Environmental Statement should include in-combination/cumulative assessment. We are aware of a number of other large Solar Infrastructure Projects in the Lincolnshire/North Nottinghamshire area, including Mallard Pass Solar Project and Cottam Solar Project. Due to the size of each of these individual projects, we would like to see these projects also included within the cumulative assessment, where appropriate.

Best and most versatile agricultural land

It is recognised that due to the nature of the solar panels a good proportion of the agricultural land affected by the development will not be *permanently* lost. However, the large development area and development lifetime give rise to additional concern with regard to agricultural productivity. In order

to both retain the long term potential of this land and to safeguard all soil resources as part of the overall sustainability of the whole development, it is important that the soil is able to retain as many of its many important functions and services (ecosystem services) as possible.

The following issues should be considered and included as part of the Environmental Statement (ES):

- The degree to which soils would be disturbed or damaged as part of the development
- The extent to which agricultural land would be disturbed or lost as part of this development, including whether any best and most versatile (BMV) agricultural land would be impacted.
- The ES should set out details of how any adverse impacts on BMV agricultural land can be minimised through site design/masterplan.
- The ES should also set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain. The aim will be to minimise soil handling and maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts.

Where a detailed ALC and soil survey of the land is required, this should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres.

Further information is available in the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites and The British Society of Soil Science Guidance Note Benefitting from Soil Management in Development and Construction. Further guidance is also set out in the Natural England Guide to assessing development proposals on agricultural land.

Biodiversity Net Gain

The Environmental Statement should include a Biodiversity Net Gain Assessment and Habitat Management Plan. The Habitat Management Plan should explain how the site will continue to be managed and secured for the lifetime of the development. The habitat management plan should also provide details on retention and enhancement of existing habitat features such as hedgerows, woodland and ponds. We would also particularly need details on proposed habitat connectivity to surrounding habitats which would contribute to the wider Nature Recovery Network.

After use

The Environmental Statement should include details of the decommissioning and after use of the site, which should include details on how this will avoid impacts to soils and ensure the agricultural land can be restored to its former condition.

Impact on local landscapes

The Environmental Statement should include an assessment of local landscape character through the consideration of the relevant National Character Areas (NCAs) and any local landscape character assessments. This should also include any likely in-combination/cumulative effects from other known Solar Projects in the area.

Further guidance is set out in Planning Practice Guidance on environmental assessment, natural environment and climate change.

Should the proposal be amended in a way which significantly affects its impact on the natural environment then, in accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England should be consulted again.

We would be happy to comment further should the need arise but if in the meantime you have any queries, please do not hesitate to contact us. For any queries relating to the specific advice in this letter please contact Caolan Gaffney at [redacted]@naturalengland.org.uk. Please send any new consultations or further information on this consultation to consultations@naturalengland.org.uk.

Yours sincerely

Caolan Gaffney
Lead Adviser – East Midlands Area Delivery Team
Natural England

Annex A – Natural England's General Advice on EIA Scoping

General Principles

Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, sets out the information that should be included in an Environmental Statement (ES) to assess impacts on the natural environment. This includes:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases
- Expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation etc.) resulting from the operation of the proposed development
- An assessment of alternatives and clear reasoning as to why the preferred option has been chosen
- A description of the aspects of the environment likely to be significantly affected by the development including biodiversity (for example fauna and flora), land, including land take, soil, water, air, climate (for example greenhouse gas emissions, impacts relevant to adaptation, cultural heritage and landscape and the interrelationship between the above factors
- A description of the likely significant effects of the development on the environment – this should cover direct effects but also any indirect, secondary, cumulative, short, medium, and long term, permanent and temporary, positive, and negative effects. Effects should relate to the existence of the development, the use of natural resources (in particular land, soil, water and biodiversity) and the emissions from pollutants. This should also include a description of the forecasting methods to predict the likely effects on the environment
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment
- A non-technical summary of the information
- An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information

Further guidance is set out in Planning Practice Guidance on environmental assessment and natural environment.

Cumulative and in-combination effects

The ES should fully consider the implications of the whole development proposal. This should include an assessment of all supporting infrastructure.

An impact assessment should identify, describe, and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information):

a. existing completed projects;
b. approved but uncompleted projects;
c. ongoing activities;
d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Environmental data

Natural England is required to make available information it holds where requested to do so. National datasets held by Natural England are available at http://www.naturalengland.org.uk/publications/data/default.aspx.

Detailed information on the natural environment is available at www.magic.gov.uk.

Natural England's SSSI Impact Risk Zones are a GIS dataset which can be used to help identify the potential for the development to impact on a SSSI. The dataset and user guidance can be accessed from the Natural England Open Data Geoportal.

Natural England does not hold local information on local sites, local landscape character, priority habitats and species or protected species. Local environmental data should be obtained from the appropriate local bodies. This may include the local environmental records centre, the local wildlife trust, local geo-conservation group or other recording society.

Biodiversity and Geodiversity

General principles

The National Planning Policy Framework (paragraphs174-175 and 179-182) sets out how to take account of biodiversity and geodiversity interests in planning decisions. Further guidance is set out in Planning Practice Guidance on the natural environment.

The potential impact of the proposal upon sites and features of nature conservation interest and opportunities for nature recovery and biodiversity net gain should be included in the assessment.

Ecological Impact Assessment (EcIA) is the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems or their components. EcIA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal. Guidelines have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM).

Designated nature conservation sites

Nationally designated sites

Sites of Special Scientific Interest are protected under the Wildlife and Countryside Act 1981 and paragraph 180 of the NPPF. Further information on the SSSI and its special interest features can be found at www.magic.gov .

Natural England's SSSI Impact Risk Zones can be used to help identify the potential for the development to impact on a SSSI. The dataset and user guidance can be accessed from the Natural England Open Data Geoportal.

The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSIs and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are interest features of the SSSI, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a site, for example by being linked hydrologically or geomorphologically.

Regionally and Locally Important Sites

The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geoconservation group or other local group and protected under the NPPF (paragraph 174 and 175). The ES should set out proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks. Contact the relevant local body for further information.

Protected Species

The conservation of species protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017
is explained in Part IV and Annex A of Government Circular 06/2005 *Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System*.

The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area.

The area likely to be affected by the development should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and, where necessary, licensed, consultants.

Natural England are currently in discussions with the applicant, via our Discretionary Advice Service, regarding impacts to protected species. We aim to work with the applicant to ensure the development proposals will not harm protected species.

District Level Licensing for Great Crested Newts

District level licensing (DLL) is a type of strategic mitigation licence for great crested newts (GCN) granted in certain areas at a local authority or wider scale. A DLL scheme for GCN may be in place at the location of the development site. If a DLL scheme is in place, developers can make a financial contribution to strategic, off-site habitat compensation instead of applying for a separate licence or carrying out individual detailed surveys. By demonstrating that DLL will be used, impacts on GCN can be scoped out of detailed assessment in the Environmental Statement.

Priority Habitats and Species

Priority Habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest, on the Magic website or as Local Wildlife Sites. Lists of priority habitats and species can be found here. Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely.

Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land. Sites can be checked against the (draft) national Open Mosaic Habitat (OMH) inventory published by Natural England and freely available to download. Further information is also available here.

An appropriate level habitat survey should be carried out on the site, to identify any important habitats present. In addition, ornithological, botanical, and invertebrate surveys should be carried

out at appropriate times in the year, to establish whether any scarce or priority species are present.

The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (e.g. from previous surveys)
- Additional surveys carried out as part of this proposal
- The habitats and species present
- The status of these habitats and species (e.g. whether priority species or habitat)
- The direct and indirect effects of the development upon those habitats and species
- Full details of any mitigation or compensation measures
- Opportunities for biodiversity net gain or other environmental enhancement

Ancient Woodland, ancient and veteran trees

The ES should assess the impacts of the proposal on any ancient woodland, ancient and veteran trees, and the scope to avoid and mitigate for adverse impacts. It should also consider opportunities for enhancement.
Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland. The wood pasture and parkland inventory sets out information on wood pasture and parkland.
The ancient tree inventory provides information on the location of ancient and veteran trees.

Biodiversity net gain

Paragraph 174 of the NPPF states that decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

Biodiversity Net Gain is additional to statutory requirements relating to designated nature conservation sites and protected species.

The ES should use an appropriate biodiversity metric such as Biodiversity Metric 3.0 together with ecological advice to calculate the change in biodiversity resulting from proposed development and demonstrate how proposals can achieve a net gain.
The metric should be used to:
• assess or audit the biodiversity unit value of land within the application area
• calculate the losses and gains in biodiversity unit value resulting from proposed development
• demonstrate that the required percentage biodiversity net gain will be achieved

Biodiversity Net Gain outcomes can be achieved on site, off-site or through a combination of both. On-site provision should be considered first. Delivery should create or enhance habitats of equal or higher value. When delivering net gain, opportunities should be sought to link delivery to relevant plans or strategies e.g. Green Infrastructure Strategies or Local Nature Recovery Strategies.

Opportunities for wider environmental gains should also be considered.

Landscape

Landscape and visual impacts

The environmental assessment should refer to the relevant National Character Areas. Character area profiles set out descriptions of each landscape area and statements of environmental opportunity.

The ES should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by

the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing, and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character.

A landscape and visual impact assessment should also be carried out for the proposed development and surrounding area. Natural England recommends use of the methodology set out in *Guidelines for Landscape and Visual Impact Assessment 2013 (*(3rd edition) produced by the Landscape Institute and the Institute of Environmental Assessment and Management. For National Parks and AONBs, we advise that the assessment also includes effects on the 'special qualities' of the designated landscape, as set out in the statutory management plan for the area. These identify the particular landscape and related characteristics which underpin the natural beauty of the area and its designation status.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. This should include an assessment of the impacts of other proposals currently at scoping stage.

To ensure high quality development that responds to and enhances local landscape character and distinctiveness, the siting and design of the proposed development should reflect local characteristics and, wherever possible, use local materials. Account should be taken of local design policies, design codes and guides as well as guidance in the National Design Guide and National Model Design Code. The ES should set out the measures to be taken to ensure the development will deliver high standards of design and green infrastructure. It should also set out detail of layout alternatives, where appropriate, with a justification of the selected option in terms of landscape impact and benefit.

Heritage Landscapes

The ES should include an assessment of the impacts on any land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific, or historic interest. An up-to-date list is available at www.hmrc.gov.uk/heritage/lbsearch.htm.

Connecting People with nature

The ES should consider potential impacts on access land, common land, public rights of way and, where appropriate, the England Coast Path and coastal access routes and coastal margin in the vicinity of the development, in line with NPPF paragraph 100. It should assess the scope to mitigate for any adverse impacts. Rights of Way Improvement Plans (ROWIP) can be used to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

Measures to help people to better access the countryside for quiet enjoyment and opportunities to connect with nature should be considered. Such measures could include reinstating existing footpaths or the creation of new footpaths, cycleways, and bridleways. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Access to nature within the development site should also be considered, including the role that natural links have in connecting habitats and providing potential pathways for movements of species.

Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.

Soils and Agricultural Land Quality

Soils are a valuable, finite natural resource and should also be considered for the ecosystem services they provide, including for food production, water storage and flood mitigation, as a carbon

store, reservoir of biodiversity and buffer against pollution. It is therefore important that the soil resources are protected and sustainably managed. Impacts from the development on soils and best and most versatile (BMV) agricultural land should be considered in line with paragraphs 174 and 175 of the NPPF. Further guidance is set out in the Natural England Guide to assessing development proposals on agricultural land.

As set out in paragraph 211 of the NPPF, new sites or extensions to sites for peat extraction should not be granted planning permission.

The following issues should be considered and, where appropriate, included as part of the Environmental Statement (ES):

- The degree to which soils would be disturbed or damaged as part of the development
- The extent to which agricultural land would be disturbed or lost as part of this development, including whether any best and most versatile (BMV) agricultural land would be impacted.

This may require a detailed Agricultural Land Classification (ALC) survey if one is not already available. For information on the availability of existing ALC information see www.magic.gov.uk.

- Where an ALC and soil survey of the land is required, this should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres. The survey data can inform suitable soil handling methods and appropriate reuse of the soil resource where required (e.g. agricultural reinstatement, habitat creation, landscaping, allotments and public open space).
- The ES should set out details of how any adverse impacts on BMV agricultural land can be minimised through site design/masterplan.
- The ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain. The aim will be to minimise soil handling and maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts.

Further information is available in the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites and
The British Society of Soil Science Guidance Note Benefitting from Soil Management in Development and Construction.

Air Quality

Air quality in the UK has improved over recent decades but air pollution remains a significant issue. For example, approximately 85% of protected nature conservation sites are currently in exceedance of nitrogen levels where harm is expected (critical load) and approximately 87% of sites exceed the level of ammonia where harm is expected for lower plants (critical level of 1µg) [1].A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The Government's Clean Air Strategy also has a number of targets to reduce emissions including to reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030, to reduce emissions of ammonia against the 2005 baseline by 16% by 2030 and to reduce emissions of NOx and SO_2 against a 2005 baseline of 73% and 88% respectively by 2030. Shared Nitrogen Action Plans (SNAPs) have also been identified as a tool to reduce environmental damage from air pollution.

[1] Report: Trends Report 2020: Trends in critical load and critical level exceedances in the UK - Defra, UK

The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly, or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The ES should take account of the risks of air pollution and how these can be managed or reduced. This should include taking account of any strategic solutions or SNAPs, which may be being developed or implemented to mitigate the impacts on air quality. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk).

Information on air pollution modelling, screening and assessment can be found on the following websites:

- SCAIL Combustion and SCAIL Agriculture - http://www.scail.ceh.ac.uk/
- Ammonia assessment for agricultural development https://www.gov.uk/guidance/intensive-farming-risk-assessment-for-your-environmental-permit
- Environment Agency Screening Tool for industrial emissions https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit
- Defra Local Air Quality Management Area Tool (Industrial Emission Screening Tool) – England http://www.airqualityengland.co.uk/laqm

Water Quality

The planning system plays a key role in determining the location of developments which may give rise to water pollution, and hence planning decisions can have a significant impact on water quality, and land. The assessment should take account of the risks of water pollution and how these can be managed or reduced.

Climate Change

The ES should identify how the development affects the ability of the natural environment (including habitats, species, and natural processes) to adapt to climate change, including its ability to provide adaptation for people. This should include impacts on the vulnerability or resilience of a natural feature (i.e. what's already there and affected) as well as impacts on how the environment can accommodate change for both nature and people, for example whether the development affects species ability to move and adapt. Nature-based solutions, such as providing green infrastructure on-site and in the surrounding area (e.g. to adapt to flooding, drought and heatwave events), habitat creation and peatland restoration, should be considered. The ES should set out the measures that will be adopted to address impacts.

Further information is available from the Committee on Climate Change's (CCC) Independent Assessment of UK Climate Risk, the National Adaptation Programme (NAP), the Climate Change Impacts Report Cards (biodiversity, infrastructure, water etc.) and the UKCP18 climate projections.

The Natural England and RSPB Climate Change Adaptation Manual (2020) provides extensive information on climate change impacts and adaptation for the natural environment and adaptation focussed nature-based solutions for people. It includes the Landscape Scale Climate Change Assessment Method that can help assess impacts and vulnerabilities on natural environment features and identify adaptation actions. Natural England's Nature Networks Evidence Handbook (2020) also provides extensive information on planning and delivering nature networks for people and biodiversity.

The ES should also identify how the development impacts the natural environment's ability to store and sequester greenhouse gases, in relation to climate change mitigation and the natural environment's contribution to achieving net zero by 2050. Natural England's Carbon Storage and Sequestration by Habitat report (2021) and the British Ecological Society's nature-based solutions report (2021) provide further information.

Contribution to local environmental initiatives and priorities

The ES should consider the contribution the development could make to relevant local environmental initiatives and priorities to enhance the environmental quality of the development and deliver wider environmental gains. This should include considering proposals set out in relevant local strategies or supplementary planning documents including landscape strategies, green infrastructure strategies, tree and woodland strategies, biodiversity strategies or biodiversity opportunity areas.

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 2.1- Schedule 4 Requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended.

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

APPENDIX 2.1- SCHEDULE 4 REQUIREMENTS OF THE INFRASTRUCTURE PLANNING REGULATIONS: LOCATION WITHIN THE PEIR

1.1 INTRODUCTION

1.1.1 This document forms Appendix 2.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Ecotricity (Heck Fen Solar) Limited. The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to of a ground mounted solar photovoltaic (PV) electricity and generation and energy storage facility (referred to within this report as "the Energy Park").

1.1.2 The Proposed Development proposes also to assess the cable route for the grid connection and the above ground works needed for connection to the National Grid Bicker Fen substation, with the Energy Park. Further details regarding the components of the Proposed Development can be found in the **Chapter 4: Proposed Development.**

1.1.3 This document provides the Schedule 4 of the Infrastructure Planning (EIA) Regulations 2017, as amended: Information for Inclusion in Environmental Statements.

Table 1.1: Schedule 4 of the EIA Regulations 2017: Information for Inclusion in Environmental Statements

Required Information		**Location within PEIR**
1. A description of the development, including in particular -	a) a description of the location of the development;	**Chapter 3 Site Description, Site Selection and Iterative Design Process** and **Chapter 4 Proposed Development**
	b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	**Chapter 3 Site Description, Site Selection and Iterative Design Process** and **Chapter 4 Proposed Development**
	c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity if the materials and natural resources (including water, land, soil and biodiversity) used;	**Chapter 4 Proposed Development**
	d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases	**Chapter 9 Hydrology, Hydrogeology, Flood Risk and Drainage** , **Chapter 12 Noise and Vibration**, **Chapter 15 Air Quality**, **Chapter 16 Land Use and Agriculture**, **Chapter 18 Miscellaneous Issues**
2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a		**Chapter 3 Site Description, Site Selection and Iterative Design Process**

comparison of the environmental effects		
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.		**Chapters 3-18**
4. A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.		**Chapters 6-18**
5. A description of the likely significant effects of the development on the environment resulting from, inter alia—	a) the construction and existence of the development, including, where relevant, demolition works;	**Chapter 4 Proposed Development**
	b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	**Chapter 6-18**
	c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	**Chapter 12 Noise and Vibration**, **Chapter 15 Air Quality**, **Chapter 18 Miscellaneous Issues**
	d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	**Chapter 10 Cultural Heritage**, **Chapter 18 Misceallaneous Issues**
	e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be	**Chapter 6-18**

	affected or the use of natural resources;	
	f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	**Chapter 13 Climate Change**, **Chapter 6-18**
	g) the technologies and the substances used.	**Chapter 4 Proposed Development**, **Chapter 6-18**
	The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(a) and Directive 2009/147/EC(b).	**Chapters 6-18**
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.		**Chapter 6-18**
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.		**Chapters 6-18**
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are		**Chapter 18 Miscellaneous Issues**

relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council(c) or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	
9. A non-technical summary of the information provided under paragraphs 1 to 8.	**Non- Technical Summary**
10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	**Chapters 1-20**

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 2.2- Heckington Fen Solar Park Transboundary Screening

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

The Planning Inspectorate
Yr Arolygiaeth Gynllunio

Transboundary screening undertaken by the Planning Inspectorate (the Inspectorate) on behalf of the Secretary of State (SoS) for the purposes of Regulation 32 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations)	
Project name:	Heckington Fen Solar Park
Address/Location:	Land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, 3.5km south-east of South Kyme, approximately 3.7km east of Heckington, and 8.9km west of Boston, within Lincolnshire.
Planning Inspectorate Ref:	EN010123

TRANSBOUNDARY SCREENING	
Document(s) used for transboundary screening:	Environmental Impact Assessment Scoping Report for land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire on behalf of Ecotricity (Heck Fen Solar) Limited ('the Scoping Report')

The Inspectorate on behalf of the SoS has considered the Proposed Development which will comprise the construction, operation and decommissioning of a solar photovoltaic (PV) electricity generating facility (the Energy Park) exceeding 50-megawatt (MW) output capacity, together with associated energy storage. The installed capacity of the solar generation is expected to be in the order of 500MW. The Proposed Development will also comprise the cable route for the grid connection from the proposed Energy Park to the National Grid Bicker Fen substation and related ground works.

The Inspectorate concludes that the Proposed Development **is unlikely to have a significant effect either alone or cumulatively on the environment in a European Economic Area State.** In reaching this conclusion the Inspectorate has identified and considered the Proposed Development's likely impacts including consideration of potential pathways and the extent, magnitude, probability, duration, frequency and reversibility of the impacts.

The Inspectorate considers that the likelihood of transboundary effects resulting from the Proposed Development is so low that it does not warrant the issue of a detailed transboundary screening. However, this position will remain under review and will have regard to any new or materially different information coming to light which may alter that decision.

Action: No further action required at this stage.

Date: 25/03/2022

Note: The SoS' duty under Regulation 32 of the 2017 EIA Regulations continues throughout the application process.

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report
Appendix 2.3- Cumulative Sites Long List

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

APPENDIX 2.3- CUMULATIVE SITES LONG LIST

1.1.1 The table below presents the identified long list of existing and/or approved developments within the search area and sets out the threshold criteria applied to identify the preliminary short list of existing and/or approved developments for each environmental topic.

1.1.2 The long list is a working document and will be kept under continual review up until the point of determination of the DCO Application to ensure that the information within the ES is up to date at the point of decision.

Table 1.1- Cumulative Sites Long List

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
	PINS											
1	EN010133	Cottam Solar Project - three electricity generating stations, each with anticipated capacity in excess of 50MW	43.6km north west	Scoping Report submitted	2	No – but considered for impacts on ALC	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario to assess any cumulative impact on ALC.	Yes
2	EN010131	Gate Burton Energy Park - generation, storage and export of up to 500 (MW) electrical generation capacity	48.6km north west	Scoping Report submitted	2	No – but considered for impacts on ALC	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario to assess any cumulative impact on ALC.	Yes
3	EN010132	West Burton Solar Project - four electricity generating stations, each with	41.3km north west	Scoping Report submitted	2	No – but considered for impacts on ALC	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to	Yes

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		anticipated capacity in excess of 50MW									include as part of the cumulative scenario to assess any cumulative impact on ALC.	
4	EN010127	Mallard Pass Solar Farm - generation capacity of greater than 50 MW.	33.2km south west	Scoping Report submitted	2	No – but considered for impacts on ALC	Yes	Potential for overlap	Potential for overlap	Potential for overlap	Due to the size and nature of this scheme it is proposed to include as part of the cumulative scenario to assess any cumulative impact on ALC.	Yes
5	EN010095	Boston Alternative Energy Facility (BAEF) - 102MWe gross (80MWe exportable) energy from waste facility with light weight aggregates facility, wharf, waste reception and storage	11.7km west	Application submitted and not yet determined	1	No	No	N/A	N/A	N/A	Due to the nature of this scheme being outside of ALC policy area and it being outside of the cumulative ZOI for all disciplines, the likelihood of cumulative impacts is considered low and does not warrant	No

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											further consideration.	
	Boston District Council											
6	B/22/0198	Construction and installation of a 132kV underground electrical cable to connect Bicker Solar Farm to Bicker Fen Substation	Within in site boundary	Pending decision	3	Yes – all disciplines	Yes	Timeline unclear – potential for overlap.	N/A	N/A	Due to the scale and nature of the scheme cumulative impacts with the Proposed Development are considered unlikely.	No
7	B/21/0443	Vicarage Drove Solar Farm - Proposed construction and operation of a solar photovoltaic farm, battery storage and associated infrastructure,	Adjacent to south west corner of the Site	Planning permission grated 17/02/2022	1	Yes – all disciplines	Yes	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Formal application for this scheme has yet to be made. Timeline for this is unclear, and this scheme is considered within the cumulative scenario.	Yes
8	B/20/0161	Land off St Swithins Close - Approval of reserved matters (appearance, access, landscaping, layout & scale) following outline approval B/16/0463 for residential development of up	2km south east	Approved with conditions 17/02/2021	1	Yes – all disciplines bar noise and RVAA	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the	No

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		to 40 dwellings									Proposed Development.	
9	B/21/0277	Swan Lake Lodges, Boston Road - Erection of 57no. holiday lodges and retention of 1no. existing holiday lodge (58no. total), erection of storage building and creation of internal access roads and excavation of a pond	3.25km east	Approved with conditions 01/04/2022	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
10	B/20/0115	Approval of reserved matters (appearance, landscaping, layout and scale) following outline approval B/17/0244 (Residential development of up to 41 market and affordable dwellings)	2km east	Approved with conditions 03/07/2020	1	Yes – all disciplines bar noise and RVAA	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
11	B/21/0413	Land at Middlegate Road West - Re-plan and re-design of the housing layout within phases 2 & 3 (154 dwellings) on parts of the site previously approved under B/18/0039 (for the erection of up to 195	9.5km south east	Not yet determined	3	Yes – International designated sites (ecology)	Yes	Construction timeline unclear as application pending – potential for overlap.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed	No

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		dwellings); including provision of 13 additional units (to create a combined total of 208 dwellings) and revisions to proposed house types									Development.	
12	B/19/0383	Land at Station Road/Spalding Road - Residential development of 256 dwellings	8.5km south east	Approved with conditions 10/09/2021	1	Yes – International designated sites (ecology)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
13	B/20/0293	Land at 31-33, London Road - Residential development consisting of 41 dwellings,	9.1km south east	Approved with conditions 18/12/2020	1	Yes – International designated sites (ecology)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
14	B/19/0317	Land off Station Road -Erection of 31 dwellings	9.7km south east	Approved with conditions 20/01/202	1	Yes – International designated	Yes	Anticipated scheme will be built before construction of	N/A	N/A	Development is not of a nature or scale which is	No

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
				0		sites (ecology)		the Proposed Development.			considered to have significant effects in combination with the Proposed Development.	
	South Holland District Council											
15	H08-1335-21	Land off Spalding Road – Residential development 28 dwellings.	8.2km south east	Pending approval	3	Yes – International designated sites (ecology)	Yes	Construction timeline unclear as application pending – potential for overlap.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
16	H08-1256-21	Land off York Gardens Gosberton Proposed residential development of 96 and pedestrian link	7.3km south east	Pending approval	3	Yes – International designated sites (ecology)	Yes	Construction timeline unclear as application pending – potential for overlap.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
17	H08-0744-21	Land off High Street Gosberton – Residential	8km south east	Approved 31/01/2022	1	Yes – International	Yes	Anticipated scheme will be built before	N/A	N/A	Development is not of a nature or	No

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
		development of 46 units.				designated sites (ecology)		construction of the Proposed Development.			scale which is considered to have significant effects in combination with the Proposed Development.	
18	H04-1029-20	Land west of Malting Lane, Donington – erection of 32 dwellings.	3km south	Approved 02/11/2021	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
19	H04-0268-20	Land west of Malting Lane, Donington – residential development of 40 dwellings	3km south	Approved 02/11/2021	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
	North Kesteven District											

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
	Council											
20	20/0741/FUL	Land East Of Welchman Way - Erection of 33 affordable houses along with associated infrastructure	3.9km east	Approved 27/10/2020	1	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Anticipated scheme will be built before construction of the Proposed Development.	N/A	N/A	Development is not of a nature or scale which is considered to have significant effects in combination with the Proposed Development.	No
21	21/1337/EIASCR	Land at Little Hale Fen- Screening Proposed solar farm (up to 49.995MW generating capacity)	4.6km north east	Not EIA Development	3	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Formal application for this scheme has yet to be made. Timeline for this is unclear, and this scheme is considered within the cumulative scenario.	Yes
22	14/1034/EIASCR	Land At Ewerby Thorpe - Erection of solar array with generating capacity of up to 28 MW	4.1km noth west	Not EIA Development	3	Yes – air quality, hydrology, heritage, glint and gale, transport, ecology (international sites)	Yes	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Timeline unclear – potential for overlap.	Formal application for this scheme has yet to be made. Timeline for this is unclear, and this scheme is considered within the	Yes

No	Project / Planning Reference	Shortened Name and Brief Description	Approximate Distance to Proposed Development	Status	Tier	Within Zone of Influence	Progress to Stage 2	Temporal Overlap			Scale and Nature of Development Likely to have a Significant Impact	Progress to Stage 3/4
								Construction (2026-2028)	Operation (2027-2068)	Decommissioning (2067-2068)		
											cumulative scenario.	
23	19/0863/FUL	Land to the North of White Cross Lane - solar farm (32MW)	8.4km west	Approved 07/10/2019 – construction timeline unclear.	1	Yes – International designated sites (ecology)	Yes	Anticipated the scheme will be built before construction of this scheme.	N/A	N/A	Due to the nature of the scheme and the distance from the Proposed Development it is included within the cumulative scenario.	Yes
24	19/0060/FUL	Land South Of Gorse Lane - Solar PV park (circa 20MW electricity generating capacity)	11km west	Approved 11/04/2019 – Unclear if construction has started – discharge conditions approved March 2022. Construction likely to take 16 weeks.	1	No	Yes	Anticipated the scheme will be built before construction of this scheme.	N/A	N/A	Due to the nature of the scheme and the distance from the Proposed Development it is included within the cumulative scenario.	Yes

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Preliminary Environmental Information Report
Appendix 6.1- LVIA Methodology

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

1. LANDSCAPE AND VISUAL IMPACT ASSESSMENT METHODOLOGY

1.1 This Landscape and Visual Impact Assessment (LVIA) has been undertaken with regards to best practice as outlined within the following publications:

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition, 2013) - Landscape Institute / Institute of Environmental Management and Assessment (hereafter referred to as GLVIA3).
- An Approach to Landscape Character Assessment (2014) - Natural England.
- An Approach to Landscape Sensitivity Assessment - To Inform Spatial Planning and Land Management (2019) - Natural England.
- Technical Guidance Note (TGN) 06/19 Visual Representation of Development Proposals, 17 September 2019 by the Landscape Institute.
- Technical Guidance Note (TGN) 1/20 Reviewing Landscape and Visual Impact Assessments (LVIAs) and Landscape and Visual Appraisals (LVAs), 10th January 2020 by the Landscape Institute.
- Technical Guidance Note (TGN) 2/21 Assessing landscape value outside national designations, May 2021 by the Landscape Institute.

1.2 GLVIA3 states within paragraph 1.1 that *"Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity."*[1]

1.3 GLVIA3 also states within paragraph 1.17 that when identifying landscape and visual effects there is a *"need for an approach that is in proportion to the scale of the project that is being assessed and the nature of the likely effects. Judgement needs to be exercised at all stages in terms of the scale of investigation that is appropriate and proportional."*[2]

1.4 GLVIA3 recognises within paragraph 2.23 that *"professional judgement is a very important part of LVIA. While there is some scope for quantitative measurement of some relatively objective matters much of the assessment must rely on qualitative judgements"*[3] undertaken by a landscape consultant or a Chartered Member of the Landscape Institute (CMLI).

1.5 GLVIA3 notes in paragraph 1.3 *that "LVIA may be carried out either formally, as part of an Environmental Impact Assessment (EIA), or informally, as a contribution to the 'appraisal' of development proposals and planning applications."*[4]

1.6 The effects on cultural heritage and ecology are not considered within this LVIA.

Study Area

[1] Para 1.1, Page 4, GLVIA, 3rd Edition
[2] Para 1.17, Page 9, GLVIA, 3rd Edition
[3] Para 2.23, Page 21, GLVIA, 3rd Edition
[4] Para 1.3, Page 4, GLVIA, 3rd Edition

1.7 The study area for this LVIA covers a 5km radius from the site. However, the main focus of the assessment was taken as a radius of 1km from the site as it is considered that even with clear visibility the proposals would not be readily perceptible in the landscape beyond this distance.

Effects Assessed

1.8 Landscape and visual effects are assessed through professional judgements on the sensitivity of landscape elements, character and visual receptors combined with the predicted magnitude of change arising from the proposals. The landscape and visual effects have been assessed in the following sections:

- Effects on landscape elements;
- Effects on landscape character; and
- Effects on visual amenity.

1.9 Sensitivity is defined in GLVIA3 as *"a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change or development proposed and the value related to that receptor."*[5] Various factors in relation to the value and susceptibility of landscape elements, character, visual receptors or representative viewpoints are considered below and cross referenced to determine the overall sensitivity as shown in Table 1:

Table 1, Overall sensitivity of landscape and visual receptors

		VALUE		
SUSCEPTIBILITY		**HIGH**	**MEDIUM**	**LOW**
	HIGH	High	High	Medium
	MEDIUM	High	Medium	Medium
	LOW	Medium	Medium	Low

1.10 Magnitude of change is defined in GLVIA3 *as "a term that combines judgements about the size and scale of the effect, the extent over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration."*[6] Various factors contribute to the magnitude of change on landscape elements, character, visual receptors and representative viewpoints.

1.11 The sensitivity of the landscape and visual receptor and the magnitude of change arising from the proposals are cross referenced in Table 11 to determine the overall degree of landscape and visual effects.

2. EFFECTS ON LANDSCAPE ELEMENTS

[5] Glossary, Page 158, GLVIA, 3rd Edition
[6] Glossary, Page 158, GLVIA, 3rd Edition

2.1 The effects on landscape elements are limited to within the site and includes the direct physical change to the fabric of the land, such as the removal of woodland, hedgerows or grassland to allow for the proposals.

Sensitivity of Landscape Elements

2.2 Sensitivity is determined by a combination of the value that is attached to a landscape element and the susceptibility of the landscape element to changes that would arise as a result of the proposals – see pages 88-90 of GLVIA3. Both value and susceptibility are assessed on a scale of high, medium or low.

2.3 The criteria for assessing the value of landscape elements and landscape character is shown in Table 2:

Table 2, Criteria for assessing the value of landscape elements and landscape character

HIGH	Designated landscape including but not limited to World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty considered to be an important component of the country's character experienced by a high number of people. Landscape condition is good and components are generally maintained to a high standard. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has an elevated level of tranquillity. Rare or distinctive landscape elements and features are key components that contribute to the landscape character of the area.
MEDIUM	Undesignated landscape including urban fringe and rural countryside considered to be a distinctive component of the national or local landscape character. Landscape condition is fair and components are generally well maintained. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has a moderate level of tranquillity. Rare or distinctive landscape elements and features are notable components that contribute to the character of the area.
LOW	Undesignated landscape including urban fringe and rural countryside considered to be of unremarkable character. Landscape condition may be poor and components poorly maintained or damaged. In terms of seclusion, enclosure by land use, traffic and movement, light pollution and presence/absence of major infrastructure, the landscape has limited levels of tranquillity. Rare or distinctive elements and features are not notable components that contribute to the landscape character of the area.

2.4 The criteria for assessing the susceptibility of landscape elements and landscape character is shown in Table 3:

Table 3, Criteria for assessing landscape susceptibility	
HIGH	Scale of enclosure – landscapes with a low capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with no or little existing reference or context to the type of development being proposed. Nature of existing elements – landscapes with components that are not easily replaced or substituted (e.g. ancient woodland, mature trees, historic parkland, etc). Nature of existing features – landscapes where detracting features, major infrastructure or industry is not present or where present has a limited influence on landscape character.
MEDIUM	Scale of enclosure – landscapes with a medium capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with some existing reference or context to the type of development being proposed. Nature of existing elements – landscapes with components that are easily replaced or substituted. Nature of existing features – landscapes where detracting features, major infrastructure or industry is present and has a noticeable influence on landscape character.
LOW	Scale of enclosure – landscapes with a high capacity to accommodate the type of development being proposed owing to the interactions of topography, vegetation cover, built form, etc. Nature of land use – landscapes with extensive existing reference or context to the type of development being proposed. Nature of existing features – landscapes where detracting features or major infrastructure is present and has a dominating influence on the landscape.

2.5 Various factors in relation to the value and susceptibility of landscape elements are assessed and cross referenced to determine the overall sensitivity as shown in Table 1.

2.6 Sensitivity is defined in GLVIA3 as *"a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change or development proposed and the value related to that receptor."*[7] The definitions for high, medium, low landscape sensitivity are shown in Table 4:

Table 4, Criteria for assessing landscape sensitivity

[7] Glossary, Page 158, GLVIA, 3rd Edition

HIGH	Landscape element or character area defined as being of high value combined with a high or medium susceptibility to change. Landscape element or character area defined as being of medium value combined with a high susceptibility to change.
MEDIUM	Landscape element or character area defined as being of high value combined with a low susceptibility to change. Landscape element or character area defined as being of medium value combined with a medium or low susceptibility to change. Landscape element or character area defined as being of low value combined with a high or medium susceptibility to change.
LOW	Landscape element or character area defined as being of low value combined with a low susceptibility to change.

Magnitude of Change on Landscape Elements

2.7 Professional judgement has been used to determine the magnitude of change on individual landscape elements within the site as shown in Table 5:

Table 5, Criteria for assessing magnitude of change for landscape elements	
HIGH	Total loss/gain of a landscape element.
MEDIUM	Partial loss/gain or alteration to part of a landscape element.
LOW	Minor loss/gain or alteration to part of a landscape element.
NEGLIGIBLE	No loss/gain or very limited alteration to part of a landscape element.

3. EFFECTS ON LANDSCAPE CHARACTER

3.1 Landscape character is defined as *the "distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse."*[8]

3.2 The assessment of effects on landscape character considers how the introduction of new landscape elements physically alters the landform, landcover, landscape

[8] Glossary, Page 157, GLVIA, 3rd Edition

pattern and perceptual attributes of the site or how visibility of the proposals changes the way in which the landscape character is perceived.

Sensitivity of Landscape Character

3.3 Sensitivity is determined by a combination of the value that is attached to a landscape and the susceptibility of the landscape to changes that would arise as a result of the proposals – see pages 88-90 of GLVIA3. Both value and susceptibility are assessed on a scale of high, medium or low.

3.4 The criteria for assessing the value of landscape character is shown in Table 2.

3.5 The criteria for assessing the susceptibility of landscape character is shown in Table 3.

3.6 The overall sensitivity is determined through cross referencing the value and susceptibility of landscape character as shown in Table 1.

Magnitude of Change on Landscape Character

3.7 Professional judgement has been used to determine the magnitude of change on landscape character as shown in Table 6:

Table 6, Criteria for assessing magnitude of change on landscape character

HIGH	Introduction of major new elements into the landscape or some major change to the scale, landform, landcover or pattern of the landscape.
MEDIUM	Introduction of some notable new elements into the landscape or some notable change to the scale, landform, landcover or pattern of the landscape.
LOW	Introduction of minor new elements into the landscape or some minor change to the scale, landform, landcover or pattern of the landscape.
NEGLIGIBLE	No notable or appreciable introduction of new elements into the landscape or change to the scale, landform, landcover or pattern of the landscape.

4. EFFECTS ON VISUAL AMENITY

4.1 Visual amenity is defined within GLVIA3 as the *"overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area."*[9]

[9] Page 158, Glossary, GLVIA3

4.2 The effects on visual amenity considers the changes in views arising from the proposals in relation to visual receptors including settlements, residential properties, transport routes, recreational facilities and attractions; and representative viewpoints or specific locations within the study area as agreed with the Local Planning Authority.

Sensitivity of Visual Receptors

4.3 Sensitivity is determined by a combination of the value that is attached to a view and the susceptibility of the visual receptor to changes in that view that would arise as a result of the proposals – see pages 113-114 of GLVIA3. Both value and susceptibility are assessed on a scale of high, medium or low.

4.4 The criteria for assessing the value of views are shown in Table 7:

Table 7, Criteria for assessing the value of views	
HIGH	Views with high scenic value within designated landscapes including but not limited to World Heritage Sites, National Parks, Areas of Outstanding Natural Beauty, etc. Likely to include key viewpoints on OS maps or reference within guidebooks, provision of facilities, presence of interpretation boards, etc.
MEDIUM	Views with moderate scenic value within undesignated landscape including urban fringe and rural countryside.
LOW	Views with unremarkable scenic value within undesignated landscape with partly degraded visual quality and detractors.

4.5 The criteria for assessing the susceptibility of views are shown in Table 8:

Table 8, Criteria for assessing visual susceptibility	
HIGH	Includes occupiers of residential properties and people engaged in recreational activities in the countryside using public rights of way (PROW).
MEDIUM	Includes people engaged in outdoor sporting activities and people travelling through the landscape on minor roads and trains.
LOW	Includes people at places of work e.g. industrial and commercial premises and people travelling through the landscape on major roads and motorways.

4.6 Sensitivity is defined in GLVIA3 as *"a term applied to specific receptors, combining judgments of susceptibility of the receptor to a specific type of change*

or development proposed and the value related to that receptor."[10] The definitions for high, medium, low visual sensitivity are shown in Table 9:

Table 9, Criteria for assessing visual sensitivity	
HIGH	Visual receptor defined as being of high value combined with a high or medium susceptibility to change. Visual receptor defined as being of medium value combined with a high susceptibility to change.
MEDIUM	Visual receptor defined as being of high value combined with a low susceptibility to change. Visual receptor defined as being of medium value combined with a medium or low susceptibility to change. Visual receptor defined as being of low value combined with a high or medium susceptibility to change.
LOW	Visual receptor defined as being of low value combined with a low susceptibility to change.

Magnitude of Change on Visual Receptors

4.7 Professional judgement has been used to determine the magnitude of change on visual receptors as shown in Table 10:

Table 10, Criteria for assessing magnitude of change for visual receptors	
HIGH	Major change in the view that has a defining influence on the overall view with many visual receptors affected.
MEDIUM	Some change in the view that is clearly visible and forms an important but not defining element in the view.
LOW	Some change in the view that is appreciable with few visual receptors affected.
NEGLIGIBLE	No notable change in the view.

[10] Glossary, Page 158, GLVIA, 3rd Edition

5. SIGNIFICANCE OF LANDSCAPE AND VISUAL EFFECTS

5.1 The likely significance of effects is dependent on all of the factors considered in the sensitivity and the magnitude of change upon the relevant landscape and visual receptors. These factors are assimilated to assess whether or not the proposed development will have a likely significant or not significant effect. The variables considered in the evaluation of the sensitivity and the magnitude of change is reviewed holistically to inform the professional judgement of significance.

5.2 A likely **significant** effect will occur where the combination of the variables results in the proposed development having a definitive effect on the view. A **not significant** effect will occur where the appearance of the proposed development is not definitive, and the effect continues to be defined principally by its baseline condition.

5.3 Within Table 11 below, the major effects highlighted in grey are considered to be significant in terms of the EIA Regulations. It should be noted that whilst an individual effect may be significant, it does not necessarily follow that the proposed development would be unacceptable in the planning balance. The cross referencing of the sensitivity and magnitude of change on the landscape and visual receptor determines the significance of effect as shown in Table 11:

Table 11, Significance of landscape and visual effects

		Sensitivity		
		HIGH	**MEDIUM**	**LOW**
Magnitude of Change	**HIGH**	Major	Major	Moderate
	MEDIUM	Major	Moderate	Minor
	LOW	Moderate	Minor	Minor
	NEGLIGIBLE	Negligible	Negligible	Negligible

6. TYPICAL DESCRIPTORS OF LANDSCAPE EFFECTS

6.1 The typical descriptors of the landscape effects are detailed within Table 12:

Table 12, Typical Descriptors of Landscape Effects

MAJOR BENEFICIAL	The landscape resource has a high sensitivity with the proposals representing a high beneficial magnitude of change and/or the proposed changes would: - enhance the character (including value) of the landscape; - enhance the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development; - enable a sense of place to be enhanced.
MODERATE BENEFICIAL	The landscape resource has a medium sensitivity with the proposals representing a medium beneficial magnitude of change and/or the proposed changes would: - enhance the character (including value) of the landscape; - enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development; - enable a sense of place to be restored.
MINOR BENEFICIAL	The landscape resource has a low sensitivity with the proposals representing a low beneficial magnitude of change and/or the proposed changes would: - complement the character (including value) of the landscape; - maintain or enhance characteristic features or elements; - enable some sense of place to be restored.
NEGLIGIBLE	The proposed changes would (on balance) maintain the character (including value) of the landscape and would: - be in keeping with landscape character and blend in with characteristic features and elements; - Enable a sense of place to be maintained.
NO CHANGE / NEUTRAL	The proposed changes would not be visible and there would be no discernible change to landscape character.
MINOR ADVERSE	The landscape resource has a low sensitivity with the proposal representing a low adverse magnitude of change and/or the proposed changes would: - not quite fit the character (including value) of the landscape; - be a variance with characteristic features and elements; - detract from sense of place.
MODERATE ADVERSE	The landscape resource has a medium sensitivity with the proposals representing a medium adverse magnitude of change and/or the proposed changes would: - conflict with the character (including value) of the landscape; - have an adverse effect on characteristic features or elements; - diminish a sense of place.

MAJOR ADVERSE	The landscape resource has a high sensitivity with the proposals representing a high adverse magnitude of change and/or the proposed changes would: - be at variance with the character (including value) of the landscape; - degrade or diminish the integrity of a range of characteristic features and elements or cause them to be lost; - change a sense of place.

7. TYPICAL DESCRIPTORS OF VISUAL EFFECTS

7.1 The typical descriptors of the visual effects are detailed within Table 13:

Table 13, Typical Descriptors of Visual Effects	
MAJOR BENEFICIAL	The visual receptor is of high sensitivity with the proposals representing a high magnitude of change and/or the proposals would result in a major improvement in the view.
MODERATE BENEFICIAL	The visual receptor is of medium sensitivity with the proposals representing a medium magnitude of change and/or the proposals would result in a clear improvement in the view.
MINOR BENEFICIAL	The visual receptor is of low sensitivity with the proposals representing a low magnitude of change and/or the proposals would result in a slight improvement in the view.
NEGLIGIBLE	The proposed changes would be in keeping with, and would maintain, the existing view or where (on balance) the proposed changes would maintain the quality of the view (which may include adverse effects which are offset by beneficial effects for the same receptor) or due to distance from the receptor, the proposed change would be barely perceptible to the naked eye.
NO CHANGE/ NEUTRAL	The proposed changes would not be visible and there would be no change to the view.
MINOR ADVERSE	The visual receptor is of low sensitivity with the proposals representing a low magnitude of change and/or the proposals would result in a slight deterioration in the view.
MODERATE ADVERSE	The visual receptor is of medium sensitivity with the proposals representing a medium magnitude of change and/or the proposals would result in a clear deterioration in the view.
MAJOR ADVERSE	The visual receptor is of high sensitivity with the proposals representing a high magnitude of change and/or the proposals would

	result in a major deterioration in the view.

8. NATURE OF EFFECTS

8.1 GLVIA3 includes an entry that states *"effects can be described as positive or negative (or in some cases neutral) in their consequences for views and visual amenity."*[11] GLVIA3 does not, however, state how negative or positive effects should be assessed, and this therefore becomes a matter of professional judgement supported by site specific justification within the LVIA.

[11] Para 6.29, Page 113, GLVIA 3rd Edition

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Preliminary Environmental Information Report
Appendix 7.1- RVAA Methodology

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

1. RESIDENTIAL VISUAL AMENITY ASSESSMENT METHODOLOGY

1.1 The Residential Visual Amenity Assessment (RVAA) would draw upon the overarching best practice within the Landscape Institute's 'Guidelines for Landscape and Visual Impact Assessment' 3rd Edition (GLVIA3) and 'Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19' (LI TGN 2/19).

1.2 The Technical Guidance Note advises in paragraph 1.6 that:

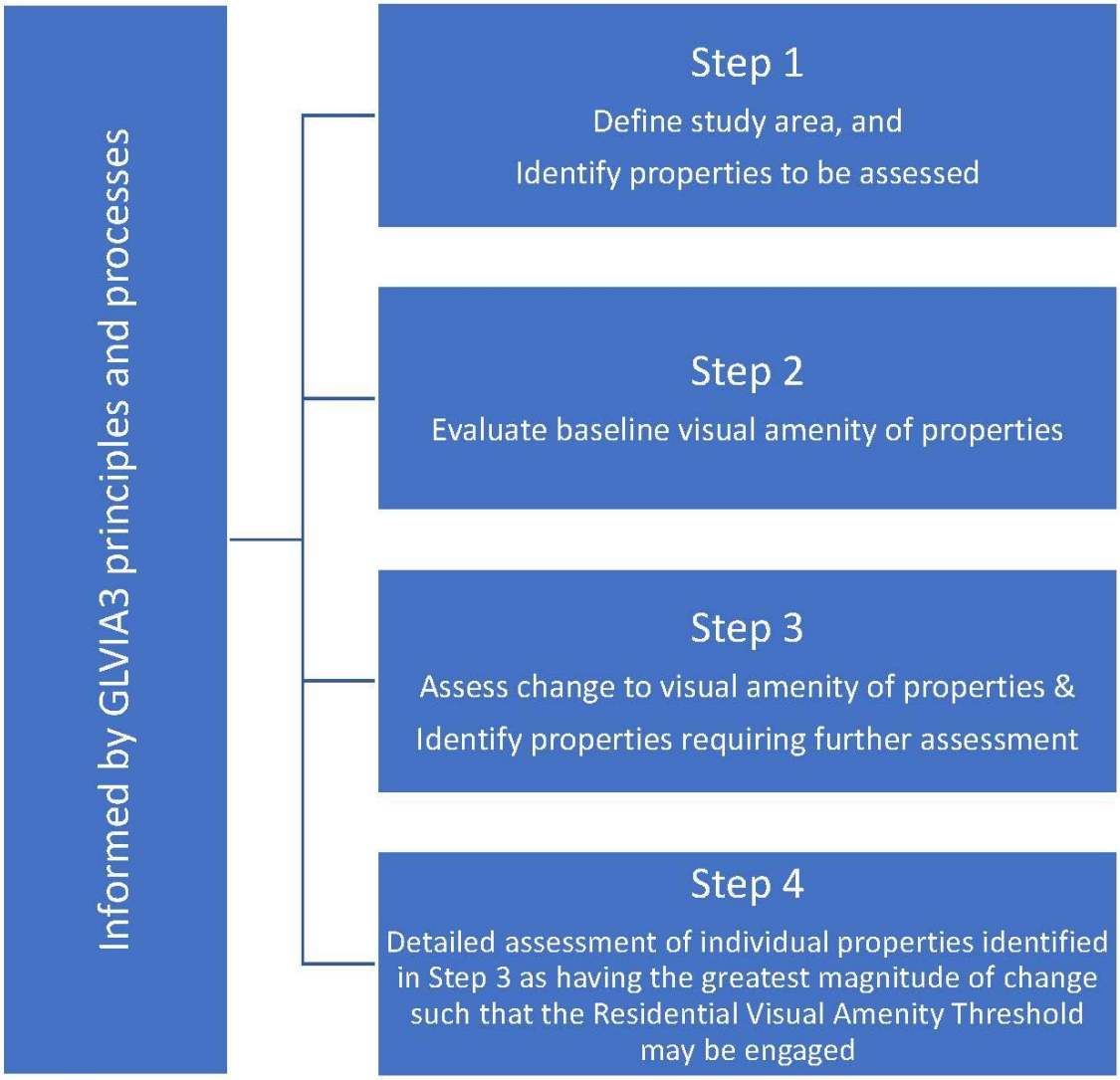
> **"It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing new development in the landscape. In itself this does not necessarily cause a planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions where they did not exist before."**[1]

1.3 In accordance with the LI TGN 2/19, the RVAA would comprise a four stage process including:

1. Definition of the scope and study area for the assessment – informed by the description of the proposed development, defining the study area extent and scope of the assessment with respect to the properties to be included;
2. Evaluation of the baseline visual amenity for the surrounding residential properties – having regard to the landscape and visual context and the development proposed;
3. Assessment of the likely change to the visual amenity of the residential properties in accordance with GLVIA3 principles and processes; and
4. Further assessment in respect of the acceptable threshold for residential visual amenity and living conditions in the public interest.

1.4 The process is summarised within the diagram below as an extract on page 7 of the Technical Guidance Note 2/19 as shown below:

[1] Paragraph 1.6, Technical Guidance Note 2/19, Residential Visual Amenity Assessment



Definition of the Scope and Study Area

1.5 The scope and study area of residential properties included within the RVAA would be informed by the findings of the LVIA, post code data and consultations with North Kesteven District Council and Boston Borough Council, together with subsequent requests from the residents themselves following a public consultation event.

1.6 The LI TGN 2/19 advises in Paragraph 4.4:

> **"There are no standard criteria for defining the RVAA study area nor for the scope of the RVAA, which should be determined on a case-by-case basis taking both the type and scale of proposed development, as well as the landscape and visual context, into account."**

1.7 LI TGN 2/19 continues at paragraph 4.5 that:

> **"…Simply being able to see a proposed development from a property is no reason to include it in the RVAA."**

1.8 Paragraph 4.7 of LI TGN 2/19 further advises that:

> **"…However, other development types including potentially very large but lower profile structures and developments such as road schemes and housing are unlikely to require RVAA, except potentially of properties in very close proximity (50-250m) to the development…."**

1.9 Residential properties to be included within the scope of the RVAA would be confirmed based on the findings of the Landscape and Visual Impact Assessment. However, given the type and scale of the proposed solar PV development and the dispersed nature of the surrounding residential properties, the *likelihood* of any significant visual effects is anticipated to be restricted to those within the immediate surroundings of the site, due mainly to the predominantly flat local topography and the limited vertical elevation of the proposed solar arrays (to a maximum height of +4.5 metres above ground level (AGL)).

1.10 Furthermore, with regard to the **Indicative Site Layout Plan at Appendix 3**, it is noted that areas of Habitat/Amenity Area are proposed which would provide separation between the proposed solar panels and the residential properties adjacent to the Site's proposed redline boundary.

1.11 A large area of land to the south of the redline boundary for the solar farm has been identified for a potential underground cable route to connect it to the sub-station at Becker Fen. Whilst the exact cable route has yet to be designed, it is anticipated that the extent of the land area available would enable the developer to avoid the removal of any significant landscape features (such as isolated /small areas of trees or short sections of hedgerow). Therefore, the RVAA will focus on the potential visual amenity effects of the solar arrays and not of the underground cable route.

1.12 At this stage it is anticipated that the scope of the RVAA would encompass residential properties located in close proximity to the redline boundary of the solar farm:

1. To the south of the redline boundary - along of the A17 (eg to the north of Maize Farm; Rectory Farm; Elm Grange and any residential property associated with the Piggery identified on the OS mapping);
2. To the west of the redline boundary - along Sidebar Lane (the B1395) as far north as the junction with Littleworth Drove;
3. To the east of the redline boundary – Rakes Farm; and,
4. Within the redline boundary itself – Six Hundreds Farm.

1.13 It is noted that (based on OS mapping), there do not appear to be any residential properties adjacent to the north of the redline boundary.

1.14 Distant views of the solar PV development may be perceptible beyond the extent of these residential properties within the study area. However, even with clear visibility, the effects on residential visual amenity and living conditions are not anticipated to be significant or unacceptable beyond this identified scope.

1.15 Where appropriate and in line with the guidance set out at paragraph 4.8 within LI TGN 2/19, the effects on clusters of similar properties may be considered through the assessment of representative visual amenity, rather than from each individual property:

> **"Properties are normally assessed individually, but if their outlook and / or views are in all aspects the same (for example if a development is visible from the rear gardens only of a small row of houses) they could be assessed as one (group)…."**

1.16 Letters would be sent to each of the identified residential properties (based upon post code data) to request access to the individual properties, curtilages and private gardens for the assessment. If no response is received, 'proxy viewpoints' would be undertaken from publicly accessible locations as close as possible to the residential property in question. If this is not possible, proxy viewpoints would be undertaken from within the site itself facing back towards the residential property.

Evaluation of the Baseline Visual Amenity

1.17 The evaluation of baseline visual amenity would consider the type, nature, extent and quality of the existing views from the residential properties including building curtilages, private gardens and driveways. LI TGN 2/19 advises in paragraph 4.11 that:

> **"When evaluating the baseline, it is recommended that the following aspects are considered:**
>
> - **the nature and extent of all potentially available existing views from the property and its garden / domestic curtilage, including the proximity and relationship of the property to surrounding landform, landcover and visual foci. This may include primary / main views from the property or domestic curtilage, as well as secondary / peripheral views; and**
> - **views as experienced when arriving at or leaving the property, for example from private driveways / access tracks."**[2]

[2] Paragraph 4.11, Technical Guidance Note 2/19, Residential Visual Amenity Assessment

1.18 In accordance with the principles and processes of GLVIA3, the visual effects would be determined by cross-referencing the sensitivity of the visual receptor with the magnitude of change arising from the proposed solar PV development. Residential properties are generally considered to be of high sensitivity within GLVIA3. However, TGN 2/19 advocates a further detailed review and refined survey of the residential properties in question with regards to the potential sensitivities in relation to the proposed solar PV development.

1.19 Higher sensitivity areas of the residential properties might include:

- Views from ground floor windows on principal elevations of the building and are likely to correspond to primary living rooms such as lounge, dining rooms, kitchens or conservatories; and
- Views from rear gardens or heavily frequented parts of a garden where an appreciation of the surrounding landscape is likely to be fundamental to the enjoyment of the space.

1.20 Lower sensitivity areas of the residential properties might include:

- Views from upper floor windows on principal elevations of the building likely to correspond to bedrooms and study / office rooms;
- Views from front gardens or parts of the curtilage to the building where it is likely that the focus of attention is on an activity such as gardening rather than on the surrounding landscape;
- Views from windows on side elevations and from windows likely to correspond to utility rooms, bathrooms, etc; and
- Views from parts of the garden or building curtilage with a purely functional purpose such as a driveway or storage area, etc or land worked as part of a business.

<u>Assessment of the Magnitude of Change on the Residential Properties</u>

1.21 Visual amenity is defined within GLVIA3 as:

> **"The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area."**[3]

[3] Page 158, Glossary, GLVIA3

1.22 Visual effects on the surrounding residential properties could potentially arise through the introduction of the solar arrays, energy storage structures, security fencing, CCTV poles, transformer boxes, access tracks etc located within the proposed solar PV development. The solar arrays are typically of lower profile and elevation with the panels fixed at a maximum height of +4.5 metres above ground level (AGL).

1.23 Visual effects can also arise through the removal of landscape features such as woodlands, hedgerows or trees to expose views of the solar arrays. However, there are few such features within the redline boundary of the solar farm.

1.24 In general terms, the magnitude of change on the residential properties will decrease with increasing distance from the site and due to the proportion of intervening landform, buildings, woodlands, hedgerows and trees within the view. The magnitude of change arising from the solar PV development also considers any proposed landscape and visual mitigation measures (such as the proposed Habitat/Amenity areas) as a residual effect. Other influencing factors affecting the magnitude of change might include:

- Whether the view of the solar arrays is in a direct or oblique angle from the primary orientation or active frontage of the property;
- The extent to which the view is obstructed by vegetation, landform or other built structures; and
- The extent to which the current view is influenced by existing built structures (e.g. buildings, roads, pylons and transmission lines, etc).

1.25 The magnitude of change on the surrounding residential properties would be assessed on the following scale:

- High – a change in the view that on balance has a defining influence on the overall visual amenity of the residential receptor;
- Medium – some change in the view that on balance is clearly visible and forms an important but not a defining influence on the overall visual amenity of the residential receptor;
- Low – some change in the view that on balance is visible although has a subservient influence on the overall visual amenity of the residential receptor; and
- Negligible – no change or small to imperceptible visual influence on the overall visual amenity of the residential receptor.

1.26 The likely significance of effects is dependent on all of the factors considered in the sensitivity and the magnitude of change upon the residential receptors. These factors are assimilated to assess whether or not the proposed solar PV development will have a likely significant or not significant effect. The variables considered in the evaluation of the sensitivity and the magnitude of change is reviewed holistically to inform the professional judgement of significance.

1.27 A likely significant effect will occur where the combination of the variables results in the proposed development having a definitive effect on the view. A not significant effect will occur where the appearance of the proposed development is not definitive, and the effect continues to be defined principally by its baseline condition.

1.28 The matrix below demonstrates the relationship between sensitivity and magnitude of change based on the specific criteria given. At all times, professional judgement is used to determine the overall significance of visual effects. The major effects highlighted in dark grey are considered to be significant in terms of the EIA Regulations, and overarching Regulations concerning the national significant infrastructure project. It should be noted that whilst an individual effect may be significant, it does not necessarily follow that the proposed solar PV development would be unacceptable, either in terms of the public interest test or when considering the planning balance in relation to the other benefits arising from the solar PV development.

1.29 The relationship between sensitivity and magnitude of change is indicated within the schedule below:

		Sensitivity		
		HIGH	**MEDIUM**	**LOW**
Magnitude of Change	**HIGH**	Major	Major	Moderate
	MEDIUM	Major	Moderate	Minor
	LOW	Moderate	Minor	Minor
	NEGLIGIBLE	Negligible	Negligible	Negligible

Judgement concerning the acceptable threshold for living conditions and residential visual amenity in the public interest

1.30 In this final stage, and only for those residential properties identified as experiencing a major significant effect in the previous stage, a further judgement is required to determine whether the visual effect in question has exceeded the Residential Amenity Threshold. LI TGN 2/19 advises that this is a matter for professional judgment explained in narrative with clear, unambiguous and rational conclusions. The visual effects arising from the proposed solar PV development would need to be of such a degree and significance that the residential property would be uninhabitable due to the effects on living conditions.

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Preliminary Environmental Information Report

Appendix 8.1- Extended Phase 1 Survey Report (Energy Park)

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

APPENDIX 8.1- EXTENDED PHASE 1 SURVEY SITE REPORT

Applicant

Ecotricity (Heck Fen Solar) Ltd.
Lion House,
Rowcroft,
Stroud
GL5 3BY

REPORT ON A PHASE 1 HABITAT SURVEY CONDUCTED IN CONNECTION WITH THE SITE OF THE PROPOSED ENERGY PARK AT HECKINGTON FEN, WEST OF BOSTON, LINCOLNSHIRE.

31st August, 2021

This copy includes two annexes in the form of a figure and a table.

I the undersigned, hereby declare that the work was performed according to the procedures herein described and that this Report is an accurate and faithful record of the results obtained.

SIGNATURE REMOVED

NEIL BOSTOCK BSc Hons

This document is an account of work carried out by **NEIL BOSTOCK** on behalf of Ecotricity (Heck Fen Solar) Ltd.

NEIL BOSTOCK cannot accept responsibility for decisions made or actions taken on the basis of this Report.

8.1 SUMMARY

8.1.1 Ecotricity (Heck Fen Solar) Limited commissioned a Phase 1 habitat survey be undertaken in order to assess the ecological value of land at Heckington Fen for a proposed ground mounted solar photovoltaic (PV) electricity generation, energy storage and associated infrastructure (Energy Park Site). The assessment was also to identify areas where ecological mitigation may be required during the construction stage. The survey was conducted adopting the methods outlined in the Handbook for Phase 1 habitat survey published by the Nature Conservancy Council (1990). The area which was examined was that which was nominated on a map which encompassed the land ownership and the development footprint. Aspects which were considered on the Phase 1 Survey map were wooded shelter belts, deciduous plantations, significant standard trees, hedgerows, drains and ditches together with a categorisation of the land use. **Figure 1 at Annex 1** shows the Survey Area.

8.1.2 In addition, specific aspects of ecological importance such as trees with holes or cracks which had bat roost potential, main drainages or ditches which may hold a Great Crested Newt population, Badger setts, or evidence of populations of Otter, Water Vole or reptiles were target noted. Each target note was identified with a specific number. Generally, these target-noted features were also photographed.

8.1.3 The survey was carried out on behalf of Ecotricity by Ecologist Neil Bostock MIEEM. The survey was conducted on four dates between 18th and 23rd August, 2021. The survey also incorporated ecological assessment of the site for Great Crested Newt (*Triturus cristatus*), Otter (*Lutra lutra*), Badger (*Meles meles*), Water Vole (*Arvicola terrestris*) and reptiles. In addition, an evaluation of the buildings on the site for Bat Roosting Potential was carried out; however, this assessment did not examine the buildings internally, or examine any fissures or cracks within the buildings with an endoscope for the presence of roosting bats. The details of the Badger Survey are provided in a separate confidential report **Appendix 8.5**.

8.1.4 The Phase 1 habitat survey showed the Energy Park Site to consist of intensively farmed arable fields, a few of which were bordered on headlands by rough grassland. The arable fields were generally cultivated right up to the field margins resulting in very few areas of botanical or ecological importance. The most valuable aspects of the site were the main drainages and ditches which bordered most of the fields and which formed a network of drainage channels which lowered the water table across the site. There were a few small plantation woodlands comprising young trees; however just south of Six Hundreds Farm a mature plantation woodland held some standard Oak and Ash trees which contained holes and cracks which may provide potential roosting sites for bats. However, in general, these plantations were of low ecological significance. To the south of Six Hundreds Farm is a small section of defunct, species-poor hedgerow comprising mainly of Hawthorn with sporadic Blackthorn, Ash and Dog Rose which provides shelter for foraging bats in windy conditions. The potential of causing botanical damage to the site due to the construction and operation of the Energy Park is likely to be minimal.

8.1.5 The survey results show that the Energy Park Site has suitable habitat for Water Voles, although no evidence of Water Voles was found during the survey.

8.1.6 No evidence of Otter was observed at the site; however, some of the main drainages and ditches on the site appeared potentially suitable for Otters.

8.1.7 Although no evidence of Great Crested Newt was found during the survey as the time of year was unsuitable to conduct bottle-trapping or torch surveys; the Phase 1 survey results show that the Energy Park Site has some main drainages and ditches which may provide suitable habitat for breeding Great Crested Newts (*Triturus cristatus*).

Any ditches with suitable habitat are only likely to be impacted during the construction phase if a 'crossing point' has to be constructed in order to enable construction. Prior to the construction of any 'crossing points' a 50m length of ditch either side of each 'crossing point' should be bottle-trapped and torch-surveyed during late February to June to confirm the absence or presence of Great Crested Newt. As the only effect of the Energy Park on the site would be the minimal affect of any alterations to the ditch structure at the 'crossing points' and minimal habitat loss (of an area of intensive arable farmland) caused by the 'footprint' of the solar panels; it was considered that any affect on any Great Crested Newt population potentially occurring within or beyond the land boundary (where no search was conducted) would be negligible.

8.1.8 Although no specific survey for Hazel Dormouse (*Muscicardus avellanarius*) was conducted there appears to be no suitable habitat within the site and no historic evidence of the presence of Hazel Dormouse in the area.

8.1.9 Whilst the presence or absence of viable reptile populations is not confirmed, the development area appeared generally unsuitable to sustain reptile populations and the construction of the Energy Park is likely to have a minimal affect on any relict populations of reptiles which may occur at the Heckington Fen site. Any reptile populations could be protected by minimising the removal of hedgerows or woodland during the construction phase.

8.1.10 The construction of the Energy Park at the Heckington Fen site would be very unlikely to affect any populations of protected species such as Otter, Water Vole, Great Crested Newts or Badger. Similarly, Hazel Dormouse or any populations of reptiles are unlikely to be affected by the development proposal.

8.1.11 The season at which the Phase 1 Habitat Survey was conducted limits the results obtained from the survey work. The effectiveness of the survey to confirm the presence of Great Crested Newt or to determine the diversity of flowering plants at the site was reduced because the survey work was conducted during mid-August. However, Water Vole, Otter and Badger activity is perhaps easier to monitor at this season.

Proposed Mitigation

8.1.12 Wherever possible any hedgerows currently found on the development site should be retained; any sections of hedgerow which have to be removed during the construction process should be replaced by a section of at least an equivalent length and quality.

8.1.13 Planting of areas of native tree species on areas away from the Energy Park development and incorporating 'Beetle Banks' in suitable areas would benefit wildlife across the farm, particularly insects and birds.

8.1.14 Wherever possible the standard trees which are present on the site should be retained as they may provide a wide range of nesting habitat for hole-nesting birds, for roosting bats and other wildlife such as beetles and moths.

8.1.15 Although no evidence of Otter was observed at the site, the main drainages and ditches on the site appeared potentially suitable for Otters; it is suggested that wherever possible the construction or access roadways should avoid crossing main drainages or ditches. Similarly, care should be taken to avoid pollution of any watercourses during the construction phase as this would impact strongly on any Otter population present.

8.1.16 As the construction phase of the Energy Park may occur perhaps a few years into the future when the water table level is different, prior to the construction of any

new 'crossing points', surveys should be conducted for 50m either side of the proposed 'crossing points' in order to re-affirm the absence of Water Vole. If Water Voles are found to be present then appropriate mitigation should be put in place to protect the Water Vole population during the construction and post construction phases of the development. This may include restoration of the ditch habitat and prevention of pollution by preventing water run off from the development into the watercourses on the site.

8.1.17 Although no evidence of Great Crested Newt was found during the survey as the time of year was unsuitable to conduct bottle-trapping or torch surveys; the Phase 1 survey results show that the development site has some main drainages and ditches with suitable habitat for breeding Great Crested Newts (*Triturus cristatus*). Prior to the construction of any new 'crossing points' a 50m length of ditch either side each 'crossing point' should be bottle-trapped and torch-surveyed during late February to June to confirm the absence or presence of Great Crested Newt. If GCN are found to be present then appropriate mitigation should be put in place to protect the population during the construction and post construction phases of the development. This may include restoration of the ditch habitat and prevention of pollution by preventing water run off from the development into the watercourses on the site.

8.2 INTRODUCTION

8.2.1 Ecotricity (Heck Fen Solar) Limited commissioned a Phase 1 habitat survey be undertaken in order to assess the ecological value of land at Heckington Fen for a proposed ground mounted solar photovoltaic (PV) electricity generation and energy storage facility. The assessment was also to identify areas where ecological mitigation may be required during the construction stage. As part of the ecological assessment of the site Natural England has requested that a pre-construction Phase 1 habitat survey be undertaken in order to assess the ecological value of the area and to identify areas where ecological mitigation may be required during the construction stage.

8.2.2 The survey was carried out on behalf of Ecotricity by Ecologist Neil Bostock MIEEM. The survey was conducted on four dates between 18th and 23rd August, 2021. The survey also incorporated ecological assessment of the site for Great Crested Newt (*Triturus cristatus*), Otter (*Lutra lutra*), Badger (*Meles meles*), Water Vole (*Arvicola terrestris*) and reptiles. In addition, an evaluation of the buildings on the site for Bat Roosting Potential was carried out; however, this assessment did not examine the buildings internally, or examine any fissures or cracks within the buildings with an endoscope for the presence of roosting bats.

8.2.3 This report describes the area surveyed, the survey methods, the results and the conclusions drawn. The habitat types were marked onto survey maps using standard methodology outlined in the Handbook for Phase 1 habitat survey published by the Nature Conservancy Council (1990); in addition, target notes were used to identify areas of ecological significance.

8.3 SITE DESCRIPTION

8.3.1 The site is located some 11km west of Boston at Heckington Fen, in Lincolnshire. The survey area is diamond shaped being approximately 3.8km by 2.8km centred on grid reference TF 208 457. The area comprises arable farmland with large open fields which were growing winter wheat during the survey period, known as Six Hundreds Farm in the east of the site, and Rectory Farm in the west. The majority of the fields are separated by drainage ditches; many of these are less than 1m in depth and 1.5m in width and were dry during the survey period. These dry ditches were often choked with vegetation including *Typha*, sedges, rank grasses and some bramble and offer no habitat for Water Voles and very limited foraging for bats; the large windswept

open arable fields are also poor foraging habitat for bats. However, some major drains were also present being more than 2m in depth and up to 3.5m in width which permanently held water and contained plants such as Frogbit *Hydrocharis morsus-ranae* and Broad-leaved Pondweed *Potamogeton natans* as well as *Phragmites* and other riparian vegetation. These may provide habitat for Water Voles (*Arvicola terrestris*), potential habitat for Otter (*Lutra lutra*), potential sites for Great Crested Newt (*Triturus cristatus*) and foraging opportunities for bats and reptiles such as Grass Snake (*Natrix natrix*).

8.3.2 A major drain called the Skerth Drain runs along the northern edge of Six Hundreds Farm before passing in a north-west to south-eastern direction. On the Skerth Drain are two Pumping Stations which allow the water level of the drains across the site to be regulated by moving water into the Skerth Drain. This major drain is canalised and runs between two built-up earth banks which are grassed and used for grazing sheep and cattle. At the outer base of the earth banks is a further deep drain formed from the removal of earth to build up the banks. As with the larger drainage ditches on the site the Skerth Drain provides potential habitat for Water Vole, Otter and Grass Snake as well as sheltered foraging opportunities for bats and offer potential corridors for bats to commute onto the site. The grassed banks which canalise the Skerth Drain could also potentially provide habitat for reptiles such as Slow-worm (*Anguis fragilis*) or Common Lizard (*Lacerta vivipara*). However, the Skerth drain will not be affected by the Energy Park development. There are a few young plantations of mainly small deciduous trees scattered around Six Hundreds Farm largely to provide Pheasant cover, these do not provide roosting opportunities for bats but may provide sheltered foraging in windy conditions. The plantation south of Six Hundreds Farm is more mature and contains some standard Ash and Oak trees which could offer roosting sites for bats. In particular an Ash tree (T6) has splits, cracks and holes offering low to moderate bat roosting potential (BRP 2-3); whilst an Oak tree (T7) has some splits and flaking bark and may offer low bat roosting potential (BRP 3). Within the open field landscape just east of the Gas Valve Compound there was also an isolated Ash (T10) with holes at its base offering low bat roost potential (BRP 3); whilst (T36) comprised 2 heavily ivy-covered Ash trees with cracks offering low to moderate bat roost potential (BRP 2- 3).

8.3.3 To the south of Six Hundreds Farm is a small section of defunct species-poor hedgerow comprising mainly of Hawthorn with sporadic Blackthorn, Ash and Dog Rose which provides shelter for foraging bats in windy conditions.

8.3.4 Throughout the site were several buildings (particularly at Six Hundreds Farm, Rectory Farm and near Elm Grange) which could provide suitable roost sites for bats; these buildings were assessed using features of age, method of construction and location to identify which had the greatest potential for bats. At Six Hundreds Farm buildings with bat roost potential included: (T8) a single storey cowshed with low to medium bat roosting potential (BRP 3-2); being linked to the cowshed (T8) a two storey barn with medium to high bat roosting potential (BRP 2-1); (T9) two semi-detached disused two storey houses with medium to high bat roosting potential (BRP 2-1). Other buildings identified as (T27 and T28) which were modern barns were considered to have limited or no bat roosting potential. The pumping station (T1) and the Trinity College Pumping Station (T5) were largely sealed single storey buildings but may offer low to medium bat roosting potential (BRP 3-2) if gaps exist under the pump-house buildings.

8.3.5 The houses (T9) had an overgrown mature garden with fruit trees, surrounded by tall hedges offering good potential for insects and foraging bats.

8.3.6 At Rectory Farm there are two buildings. One a modern asbestos and steel barn (T13) with 2 brick buildings attached on the north and south sides. These attached buildings attachments with fissures in the bricks or gaps below the roof giving low (BRP

2-3). Adjacent to the barn is a brick/tile building (T14) with an extensive ivy-covering and fissures offering moderate to high (BRP 1-2).

8.3.7 North of Elm Grange there are five buildings. (T31) consists of a modern double barn constructed from steel/wood/breeze block/asbestos barn with an attached brick/asbestos outbuilding offering low Bat Roost Potential (BRP 3). The attached outbuilding has cracks in the bricks and gaps near the roof offering moderate to low bat roost Potential (BRP 2-3). (T32) wood/breeze block/asbestos barn offering low Bat Roost Potential (BRP 3). (T33) a long open barn breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3); (T34) a long open barn with windows breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3). (T34) long open barn with windows breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3) and finally (T35) a long open barn brick /breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3).

8.3.8 In several of the buildings raptor nest boxes for Barn Owl (*Tyto alba*) and Common Kestrel (*Falco tinnunculus*) had been erected; together with other Barn Owl and Common Kestrel nest boxes positioned on posts or on trees within the site. Several of these were being used successfully by these species to rear their young. The areas of grassland on the headlands of some fields together with the often grassy field edges adjacent to the ditches provide ideal hunting areas for these birds which feed on mice and voles.

8.4 METHODS

Survey Conduct

Phase 1 Habitat Survey

8.4.1 An examination of the site was carried out in order to identify habitat areas with the greatest ecological importance adopting the methods outlined in the Handbook for Phase 1 habitat survey published by the Nature Conservancy Council (1990). The area which was examined was that which was nominated on a map which encompassed the land ownership and the development footprint. Aspects which were considered on the Phase 1 Survey map were wooded shelter belts, deciduous plantations, significant standard trees, hedgerows, drains and ditches together with a categorisation of the land use.

8.4.2 The survey was conducted on four dates between 18th and 23rd August, 2021. The survey also incorporated ecological assessment of the site for Great Crested Newt (*Triturus cristatus*), Otter (*Lutra lutra*), Badger (*Meles meles*), Water Vole (*Arvicola terrestris*) and reptiles. In addition, an evaluation of the buildings on the site for Bat Roosting Potential was carried out; however, this assessment did not examine the buildings internally, or examine any fissures or cracks within the buildings with an endoscope for the presence of roosting bats.

Otter Survey

8.4.3 All the watercourses on the site were searched for evidence of Otter (*Lutra lutra*). Signs used to establish the presence of Otters included actual observations of animals, 'spraint' latrines deposited on prominent rocks, stones or logs or branches within watercourses (these spraints often contain fish bones and scales and have a sweet odour similar to jasmine tea) and Otter tracks in soft mud adjacent to the watercourses. No evidence of Otter was observed at the site; however, the Skerth Drain as well as some of the deeper ditches which permanently hold water present on the Energy Park Site appeared suitable for Otters.

Badger Survey

8.4.4 See Confidential Badger survey report – **Appendix 8.5**.

Water Vole

8.4.5 The ditches and watercourses which permanently held water found on the site were searched for evidence of Water Voles. Signs used to establish the presence of Water Voles included actual observations of animals, sounds of voles entering the water, latrines showing discrete piles of droppings, tunnel entrances (above and below the water), cropped 'lawn' around tunnel entrances and feeding stations of chopped vegetation. No evidence of Water Vole was observed at the site; however, several main drainages and ditches found on site appeared suitable for Water Voles.

Great Crested Newt

8.4.6 No bottle-trapping surveys or torch-surveys were conducted at the site as the time of year was unsuitable to determine if a breeding population of Great Crested Newt (*Triturus cristatus*) was present. However, the Phase 1 survey results show that several of the main drainages and ditches on the site, which permanently hold water, may provide suitable habitat for breeding Great Crested Newts.

Hazel Dormouse

8.4.7 Although no specific survey for Hazel Dormouse (Muscicardus avellanarius) was conducted there appears to be no suitable habitat within the site for this species. The site is in an area of England where Hazel Dormouse has been extinct (or never present) since at least 1885.

Reptile Survey

8.4.8 The Phase 1 survey was conducted at a suitable time of year to produce casual observations of basking Common Lizard (*Lacerta vivipara*), Slow-worm (*Anguis fragilis*), Adder (*Vipera berus*) or Grass snake (*Natrix natrix*); and no specific surveys were undertaken at the site to determine reptile populations. The site appeared largely unsuitable to sustain reptile populations apart from perhaps Grass Snake due to the paucity of suitable areas for foraging or breeding. This is to be expected as the area consists largely of intensively farmed arable fields (albeit some edged or with headlands planted with rough grassland) which are generally cultivated right up to the field margins resulting in very few areas suitable for reptiles to forage. However, the grassy banks which contain the canalised Skerth Drain may possibly support a relict population of Slow Worm or Common Lizard. However, this area is beyond the development footprint and will not be affected by the Energy Park construction. The potential for significant reptile populations at the Energy Park Site is minimal.

Area Encompassed by the Survey

8.4.9 The area surveyed for Phase 1 Habitat Survey was an area encompassing the land ownership boundary which encompassed the development footprint of the Energy Park Site situated at Heckington Fen, west of Boston, Lincolnshire. Suitable ditches for Great Crested Newts were noted within the land ownership boundary. Areas of ditches with permanent water which provide suitable habitat for Otters and Water Voles were also examined within the land ownership boundary; whilst the whole area within the land ownership boundary was examined for Badger setts and other signs of Badger activity. Any buildings and suitable trees within the land ownership boundary were detailed with respect for Bat Roosting Potential.

Survey Visit Timings and Weather Conditions

8.4.10 Details of survey visit dates; start and finish times and weather conditions during the survey are presented in **Table 1**.

Table 1 - Visit Schedule and Weather Conditions during Survey.

Visit	Visit date	Start Time	Weather conditions (at start)	Finish Time	Weather conditions (at finish)
A	18 Aug 21	08:30 am	100% cloud cover Wind SW 1-2. Dry, overcast, dull. Air Temp 15.5º C	19:15 pm	60% cloud cover Wind SW 1-2. Dry, sunny, warm. Air Temp 17.5º C
B	19 Aug 21	08:30 am	100% cloud cover Wind NE 2-3 drizzle, high humidity, Air Temp 19.0º C	18:30 pm	70% cloud cover Wind NE 2-3 Dry, high humidity, Air Temp 21.0º C
C	20 Aug 21	08:30 am	90% cloud cover Wind NE2. Dry, sunny warm, Air Temp 17.0º C	15:30 pm	50% cloud cover Wind NE 2. Dry, warm, sunny Air Temp 21.0º C
D	23 Aug 21	08:30 am	90% cloud cover Wind NE 4. Dry, dull, overcast Air Temp 17.0º C	18:30 pm	70% cloud cover NE 3. Dry, warm, sunny periods Air Temp 21.0º C

8.5 RESULTS

Phase 1 Habitat Survey

8.5.1 The results of the Phase 1 Habitat Survey were expressed pictorially on a map (see **Annex 1**).

8.5.2 From the survey the key habitat features present at the site were a network of ditches which bounded the majority of the large arable fields on the site. Many of these ditches were less than 1m in depth and 1.5m in width and were dry during the survey period. These dry ditches were often choked with vegetation including Typha, sedges, rank grasses and some bramble and offer no habitat for Water Voles and very limited foraging for bats; the large windswept open arable fields are also poor foraging habitat for bats. However, some major drains were also present being 2m in depth and up to 3.5m in width which permanently held water and contained plants such as Frogbit Hydrocharis morsus-ranae and Broad-leaved Pondweed Potamogeton natans as well as Phragmites and other riparian vegetation. These ditches may provide habitat for Water Voles (*Arvicola terrestris*), potential habitat for Otter (*Lutra lutra*), potential breeding sites for Great Crested Newt (*Triturus cristatus*) and foraging opportunities for bats and reptiles such as Grass Snake (*Natrix natrix*). A major drain called the Skerth Drain runs along the northern edge of Six Hundreds Farm before passing in a north-west to south-eastern direction to the eastern edge of the site. On the Skerth Drain are two Pumping Stations which allow the water level of the drains across the site to be regulated by moving water into the Skerth Drain. This major drainage is canalised and runs between two built-up earth banks which are grassed and used for grazing sheep and cattle. At the outer base of the earth banks is a further deep drain formed from the removal of earth to build up the banks. As with the larger drainage ditches on the site the Skerth Drain provides potential habitat for Water Vole, Otter and Grass Snake as well as sheltered foraging opportunities for bats and offer potential corridors for bats to commute onto the

site. The grassed banks which canalise the Skerth Drain could also potentially provide habitat for reptiles such as Slow-worm (*Anguis fragilis*) or Common Lizard (*Lacerta vivipara*); however, these banks are unlikely to be affected during the construction of the Energy Park. A few of the arable fields had planted rough grassland headlands or edges; otherwise, they were cultivated right up to the field margins, leaving little room for wildlife.

8.5.3 There are a few young plantations of mainly small deciduous trees scattered around Six Hundreds Farm largely to provide Pheasant cover, these do not provide roosting opportunities for bats but may provide sheltered foraging in windy conditions. The plantation south of Six Hundreds Farm is more mature and contains some standard Ash and Oak trees which could offer roosting sites for bats. In particular an Ash tree (T6) has splits, cracks and holes offering low to moderate bat roosting potential (BRP 2-3); whilst an Oak tree (T7) has some splits and flaking bark and may offer low bat roosting potential (BRP 3). Within the open field landscape just east of the Gas Valve Compound there was also an isolated Ash (T10) with holes at its base offering low bat roost potential (BRP 3). To the south of Six hundreds Farm is a small section of defunct, species-poor hedgerow, comprising mainly of Hawthorn with sporadic Blackthorn, Ash and Dog Rose which provides shelter for foraging bats in windy conditions. The potential of causing botanical damage to the site due to the construction and operation of the Energy Park Site is likely to be minimal.

8.5.4 Throughout the site were several buildings (particularly at Six Hundreds Farm, Rectory Farm and near Elm Grange) which could provide suitable roost sites for bats; these buildings were assessed using features of age, method of construction and location to identify which had the greatest potential for bats. At Six Hundreds Farm buildings with bat roost potential included: (T8) a single storey cowshed with low to medium bat roosting potential (BRP 3-2); being linked to the cowshed (T8) a two storey barn with medium to high bat roosting potential (BRP 2-1); (T9) two semi-detached disused two storey houses with medium to high bat roosting potential (BRP 2-1). Other buildings identified as (T27 and T28) which were modern barns were considered to have limited or no bat roosting potential. The pumping station (T1) and the Trinity College Pumping Station (T5) were largely sealed single storey buildings but may offer low to medium bat roosting potential (BRP 3-2) if gaps exist under the pump-house buildings.

8.5.5 At Rectory Farm there are two buildings. One a modern asbestos and steel barn (T13) with 2 brick buildings attached on the north and south sides. These attached buildings attachments with fissures in the bricks or gaps below the roof giving low (BRP 2-3). Adjacent to the barn is a brick/tile building (T14) with an extensive ivy-covering and fissures offering moderate to high (BRP 1-2).

8.5.6 North of Elm Grange there are five buildings. (T31) consists of a modern double barn constructed from steel/wood/breeze block/asbestos barn with an attached brick/asbestos outbuilding offering low Bat Roost Potential (BRP 3). The attached outbuilding has cracks in the bricks and gaps near the roof offering moderate to low bat roost Potential (BRP 2-3). (T32) wood/breeze block/asbestos barn offering low Bat Roost Potential (BRP 3). (T33) a long open barn breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3); (T34) a long open barn with windows breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3). (T34) long open barn with windows breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3) and finally (T35) a long open barn brick/breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3).

8.5.7 The houses (T18) had an overgrown mature garden with fruit trees, surrounded by tall hedges offering good potential for insects and foraging bats.

8.5.8 In several of the buildings raptor nest boxes for Barn Owl (*Tyto alba*) and Common Kestrel (*Falco tinnunculus*) had been erected; together with other Barn Owl and Common Kestrel nest boxes positioned on posts or on trees within the site. Several of these were being used successfully by these species to rear their young. The areas of grassland on the headlands of some fields together with the often grassy field edges adjacent to the ditches provide ideal hunting areas for these birds which feed on mice and voles.

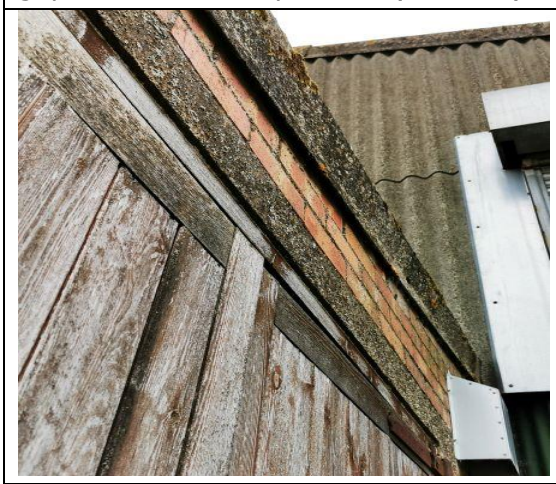
Target Notes

8.5.9 The following target notes of ecological interest were specified during the Phase 1 Habitat Survey (Target Notes relating to badgers are removed).

Target Notes	
T1 – Pumping Station; a sealed building offering little Bat Roost Potential apart from any potential holes or crevices beneath the building. Barn Owl nest-box occupied by Jackdaw.	**T2** – Skerth Drain looking west from pumping station **T1**
	
T3 – Barn Owl nest box on post and brick built bridge over drain at southern edge of Skerth Drain bank.	**T4** – Holland Dyke looking south from Skerth Drain. A seasonally dry ditch, with Phragmites and riparian plants
	

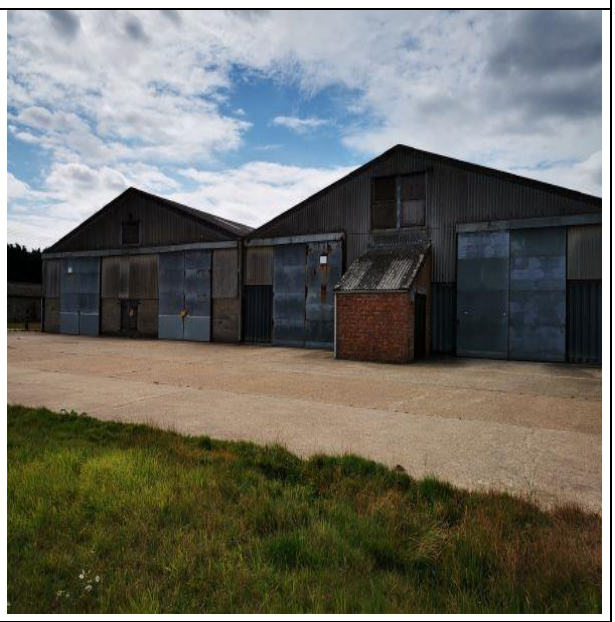
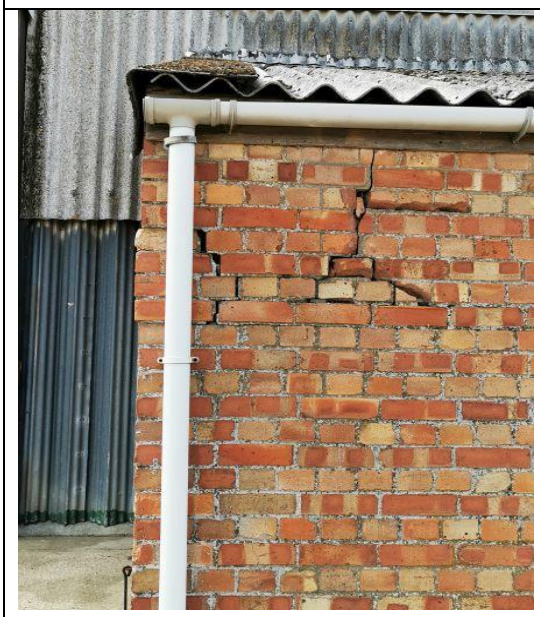
T5 – Trinity College Pumping Station; a sealed building offering little Bat Roost Potential apart from any potential holes or crevices beneath the building.	**T6** – Ash tree with splits, cracks and holes offering, low to moderate bat roost potential. (BRP 2-3)
	
T6b – Close up of section of the trunk	**T7** – Oak tree with splits, flaking bark offering, low bat roost potential. (BRP 3)
	
T8 – double storey barn offering medium to high bat roosting potential (BRP 2-1) and single storey cowshed offering low to medium bat roosting potential (BRP 3-2)	**T9** – double storey disused houses offering medium to high bat roosting potential (BRP 2-1) STILL PRESENT but Boarded Up.
	

T8a – showing cracks in double storey barn offering medium to high bat roosting potential (BRP 2-1)	**T8b** – showing cracks in single storey cowshed from south offering low to medium bat roosting potential (BRP 3-2)
	
T10 – Isolated Ash tree with splits at its base offering low bat roost potential (BRP 3)	**T10b** – Isolated Ash tree showing close up of base
	

T13 – Asbestos Barn with 2 Brick attachments with fissures giving low (BRP 2-3) South side.	**T13a** – Asbestos/Steel Barn with 2 Brick attachments with fissures giving low (BRP 2-3) North side.
	
T13b – Northern Brick attachments with gap near roof with possible (BRP 2-3)	**T13c** – Southern Brick attachment with crack near base offering low (BRP 3)
	

T14 – Brick/tile building with ivy-covering and fissures offering moderate to high (BRP 1-2)	**T14b** – Southern corner of Brick/tile building with ivy-covering showing fissures beneath tiles offering moderate to high (BRP 1-2)
	
T18 – Pond, unshaded without fish, waterfowl but with an HSI score of 0.00378 = POOR	**T19** – Habitat around pond showing tall ruderal vegetation and plantation woodland
	

T20 and **T21** – isolated plantations of small trees planted for pheasant cover; shelter for foraging bats.	**T22** – Typical seasonally dry ditch unsuitable for Water Vole
	
T24 – Main deep ditch with permanent water, many water plants suitable for Water Vole and Otter	**T25** – Asbestos/Steel Barn offering no or very low (BRP 3 or less)
	
T25a – Barn Owl nest-box inside Asbestos/Steel Barn occupied by Stock Dove	**T27** – Open Asbestos Barn offering no bat roost Potential but with Barn Owl nest-box occupied by Stock Dove
	

T28 – 3 Asbestos/Steel Barns offering limited Bat Roost Potential (BRP 0-3)	**T31** – double wood/breeze block/asbestos barn with brick outbuilding offering low Bat Roost Potential (BRP 3)
	
T31a – double brick/asbestos out-building with brick outbuilding with cracks offering low Bat Roost Potential (BRP 3)	**T31a** – double brick/asbestos out-building with brick outbuilding with gaps near roof offering low-moderate Bat Roost Potential (BRP2-3)
	

T32–wood/breeze block/asbestos barn offering low Bat Roost Potential (BRP 3)	**T33**– long open barn breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3)
	
T34– long open barn with windows breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3)	**T35**– long open barn brick /breeze block/asbestos construction offering none or very low Bat Roost Potential (BRP 0-3)
	
T36 – 2 ivy-covered Ash trees with cracks offering low to moderate bat roost potential (BRP 2- 3)	
	

8.5.10 In addition to these photographed Target Notes there was T42 which was an active wasp nest which had been dug up and broken apart by a feeding Badger.

Unfortunately, the surveyor did not secure a photograph as they were stung by several of the wasps and forced to retreat.

8.5.11 Since the original Phase 1 was conducted in 2009 there have been two buildings at Six Hundred Farm demolished.

8.5.12 These were termed B8 – a small single storey open-fronted brick barn with a chimney which offered limited Bat Roosting Potential (See 2009 Phase 1 Buildings Survey).

8.5.13 The other building termed B9 – comprised a single storey electrical shed also offering low potential for roosting bats (See 2009 Phase 1 Buildings Survey).

8.5.14 During dawn/dusk surveys for roosting bats neither of these buildings recorded any roosting bats

8.5.15 Photographs of these now demolished buildings are found below from the 2009 Phase 1 Buildings Survey.

A small single storey open-fronted brick barn with a chimney **B8** offering limited bat roosting potential.	A single storey electrical shed **B9** offering low Bat Roost Potential (BRP 3)
	

Otter Survey

8.5.16 The course of the main drainages and ditches across the site were searched for evidence of Otter (*Lutra lutra*). Signs used to establish the presence of Otters included actual observations of animals, Otter spraint on rocks or other prominent places close to water courses, droppings which contained fish bones and scales and had a pleasant odour similar to jasmine tea.

8.5.17 No evidence of Otter was observed at the site; however, some of the main drains and ditches on the site appeared potentially suitable for Otters. The introduced alien species American Mink (*Neovison vison*) have previously been observed on three occasions in daylight during wintering and breeding bird surveys in the main Skerth Drain, the Holland Dyke and the main drain which leads north from Rectory Farm. There was also a scat of Mink found (containing fish bones within it) during the Phase 1 survey, indicating that Mink are likely to be still present. Otter are known to be highly antagonistic towards American Mink and this is further evidence that Otter use or visit the site only very rarely. However, it is suggested that *wherever possible* the construction or access roadways should avoid crossing or being constructed within 10m of suitable main drains or ditches. Similarly, care should be taken to avoid pollution of any watercourses during the construction phase as this would impact strongly on any Otter population present.

Badger Survey

8.5.18 See Confidential Badger survey report - **Appendix 8.5**.

Water Vole Survey

8.5.19 The course of the main drains (apart from the Skerth Drain which will not be affected by the Energy Park construction) and all other ditches which permanently contain water on site were searched for evidence of Water Voles (*Arvicola terrestris*). Signs used to establish the presence of water voles included actual observations of animals, sounds of voles entering the water, latrines showing discrete piles of droppings, tunnel entrances (above only looked for above water during this survey), cropped 'lawn' around tunnel entrances and feeding stations of chopped vegetation.

8.5.20 No evidence of Water Vole was observed at the site; however, some of the ditches on the site which permanently hold water appeared to provide potentially suitable habitat for Water Voles. As the Energy Park construction may occur at a period further in the future, when the water table may be higher, it is suggested that in areas where the construction or access roadways cross potentially suitable habitat that the absence of Water Voles is re-affirmed prior to the construction of the 'crossing points'. This can be achieved by physical examination of the habitat or by placing floating platforms bated with apple within the watercourse; the droppings of any animals visiting the apple bait can then be examined to determine whether Water Voles are present.

8.5.21 The introduced alien species American Mink (*Neovison vison*) were observed on three occasions in daylight during wintering and breeding bird surveys in the main Skerth Drain, the Holland Dyke and the main drain which leads north from Rectory Farm. Mink are known to be highly predatory and antagonistic towards Water Voles and this is further evidence that there are no Water Vole populations on the site or that the populations are likely to be very small.

8.5.22 If the presence of Water Voles is confirmed then appropriate mitigation should be put in place to protect the Water Vole population during the construction and post construction phases of the development. This may include restoration of the streamside habitat and prevention of pollution by preventing water run-off from the development into the watercourses on the site.

Great Crested Newt Survey

8.5.23 Some of the ditches on site appeared suitable for breeding Great Crested Newts (*Triturus cristatus*); however, these are unlikely to be impacted during the construction phase or operational phase of the Energy Park except by the construction of 'crossing points' in which the water level and flow of the ditch is maintained by a piped conduit. No evidence of Great Crested Newt was found during the extended Phase 1 survey as the time of year was unsuitable to conduct bottle-trapping or torch surveys. Although areas beyond the land ownership boundary of the site were not searched, the Great Crested Newt populations which occurred within any suitable ditches or ponds beyond the 500m radius of the development footprint would not be affected by the construction phase or operational phase of the Energy Park development.

8.5.24 As the only effect of the Energy Park would be the minimal effect of any small alterations to the ditch structure at new 'crossing points' established to enable construction and minimal habitat loss (of an area of intensively farmed arable farmland) caused by the development, it was considered that any effect on any Great Crested Newt population potentially occurring within or beyond the land boundary (where no search was conducted) would be negligible.

Hazel Dormouse Survey

8.5.25 Although no specific survey for Hazel Dormouse (*Muscicardus avellanarius*) was conducted there appears to be no suitable habitat within the site, and no historic evidence of the presence of Hazel Dormouse in the area.

Reptile Survey

8.5.26 No specific surveys were undertaken at the site to determine reptile populations; however, the site appeared largely unsuitable to sustain reptile populations due to the lack of suitable unimproved grassy areas for foraging or breeding. This may indicate that the site has very low or is lacking reptile populations. During the period that the Phase 1 survey was conducted no casual observations of basking Common Lizard (*Lacerta vivipara*), Slow-worm (*Anguis fragilis*), Adder (*Vipera berus*) or Grass snake (*Natrix natrix*) were made at the site during the visits.

8.5.27 The development area appeared generally unsuitable to sustain reptile populations as it consists of intensively farmed arable land with only small areas of rough grassland. The arable land is generally cultivated right up to the field edges leaving few areas for reptiles to forage or breed. The potential for significant reptile populations at the Energy Park Site is minimal and the presence of viable reptile populations is unlikely.

8.5.28 However, the 'Skerth Drain banks' which act as a watercourse for the major drainage on the site were grass covered and could possibly support relict reptile populations by providing reptiles with foraging and breeding sites. However, the Skerth Drain is unlikely to be impacted by the construction or operational phase of the Energy Park with subsequently no detrimental effects to any reptile populations.

8.6 ANALYSIS AND CONCLUSIONS

Conclusions

8.6.1 The Phase 1 habitat survey showed the development area to consist of intensively farmed arable fields, a few of which were bordered on headlands by rough grassland. The arable fields were generally cultivated right up to the field margins resulting in very few areas of botanical or ecological importance. The most valuable aspects of the site were the main drainages and ditches which bordered most of the fields and which formed a network of drainage channels which lowered the water table across the site. There were a few small plantation woodlands comprising young trees; however just south of Six Hundreds Farm a mature plantation woodland held some standard Oak and Ash trees which contained holes and cracks which may provide potential roosting sites for bats; however, in general these plantations were of low ecological significance. To the south of Six Hundreds Farm is a small section of defunct, species-poor hedgerow comprising mainly of Hawthorn with sporadic Blackthorn, Ash and Dog Rose which provides shelter for foraging bats in windy conditions. The potential of causing botanical damage to the site due to the construction and operation of the Energy Park is likely to be minimal.

8.6.2 The construction of the Energy Park at the Heckington Fen site would be very unlikely to affect any populations of protected species such as Otter, Water Vole or Great Crested Newt which are dependent on riparian habitats. During a thorough investigation of the ditches and main drains on the site no evidence of Otter or Water Vole was found. Whilst the period of the year precluded an accurate assessment for Great Crested Newts, several of the drains appeared to *possibly* provide suitable potential habitat for this species as well as Otter and Water Voles. For the construction of the Energy Park on the site it may be necessary to construct culverts across some of the ditches in order

assemble the solar panels. If crossings are required, proposed crossing points should be examined for a distance of 50m either side the 'crossing point' for the presence of Water Vole and Otter during future surveys. This should be conducted at a period when the water table is at capacity. This can be achieved by physical examination of the habitat or by placing floating platforms bated with apple within the watercourse; the droppings of any animals visiting the apple bait can then be examined to determine whether Water Voles are present. If the presence of Water Voles is confirmed then appropriate mitigation should be put in place to protect the Water Vole population during the construction and post construction phases of the development. This may include restoration of the streamside habitat and prevention of pollution by preventing water run-off from the development into the watercourses on the site. The prevention of pollution of any watercourses on site is imperative to protect populations of Water Vole or Otter or Great Crested Newt.

8.6.3 Although no evidence of Great Crested Newt (*Triturus cristatus*) was found during the survey as the time of year was unsuitable to conduct bottle-trapping or torch surveys; the Phase 1 survey results show that the development site has some main drainages and ditches with suitable habitat for breeding Great Crested Newts. Prior to the construction of any new 'crossing points' a 50 metre length of ditch either side each 'crossing point' should be bottle-trapped and torch-surveyed during late February to June to confirm the absence or presence of Great Crested Newt. If GCN are found to be present then appropriate mitigation should be put in place to protect the population during the construction and post construction phases of the development. This may include restoration of the ditch habitat and prevention of pollution by preventing water run-off from the development into the watercourses on the site. As the only effect of the Energy Park would be the minimal effect of any alterations to the ditch structure at the 'crossing points' and minimal habitat loss (of an area of intensive arable farmland) caused by the 'footprint' of the Energy Park; it was considered that any effect on any Great Crested Newt population potentially occurring within or beyond the land boundary (where no search was conducted) would be negligible.

8.6.4 Evidence of Badger (*Meles meles*) see confidential badger report – **Appendix 8.5**.

8.6.5 Although no specific survey for Hazel Dormouse (*Muscicardus avellanarius*) was conducted there appears to be no suitable habitat within the site, and no historic evidence of the presence of Hazel Dormouse in the area

8.6.6 Whilst the presence or absence of viable reptile populations is not confirmed, the development area appeared generally unsuitable to sustain reptile populations and the construction of the Energy Park is likely to have a minimal effect on any relict populations of reptiles which may occur at the Heckington Fen site. Any reptile populations could be protected by minimising the removal of hedgerows, woodland during the construction phase.

8.6.7 The season at which the Phase 1 Habitat Survey was conducted limits the results obtained from the survey work. The effectiveness of the survey to confirm the presence of Great Crested Newt or to determine the diversity of flowering plants at the site was reduced because the survey work was conducted from mid-August. However, Water Vole, Otter and Badger activity is perhaps easier to monitor at this season.

8.7 PROPOSED MITIGATION

8.7.1 Wherever possible any hedgerows currently found on the development site should be retained; any sections of hedgerow which have to be removed during the construction process should be replaced by a section of at least an equivalent length and quality.

8.7.2 Planting of areas of native tree species on areas away from the Energy Park development would benefit wildlife across the farm, particularly insects and birds.

8.7.3 Wherever possible the standard trees which are present on the site should be retained as they provide a wide range of nesting habitat for hole-nesting birds, for roosting bats and other wildlife such as beetles and moths.

8.7.4 Although no evidence of Otter was observed at the site, the main drainages and ditches on the site appeared potentially suitable for Otters; it is suggested that *wherever possible* the construction or access roadways should avoid crossing main drainages or ditches. Similarly, care should be taken to avoid pollution of any watercourses during the construction phase as this would impact strongly on any Otter population present.

8.7.5 As the construction phase of the Energy Park may occur perhaps a few years into the future when the water table level is different, prior to the construction of any new 'crossing points', surveys should be conducted for 50m either side of the proposed 'crossing points' in order to re-affirm the absence of Water Vole. If Water Voles are found to be present then appropriate mitigation should be put in place to protect the Water Vole population during the construction and post construction phases of the development. This may include restoration of the streamside habitat and prevention of pollution by preventing water run-off from the development into the watercourses on the site.

8.7.6 Although no evidence of Great Crested Newt was found during the survey as the time of year was unsuitable to conduct bottle-trapping or torch surveys; the Phase 1 survey results show that the development site has some main drainages and ditches which *could* provide suitable habitat for breeding Great Crested Newts (*Triturus cristatus*). Prior to the construction of any 'crossing points' a 50m length of ditch either side each 'crossing point' should be bottle-trapped and torch-surveyed during late February to June to confirm the absence or presence of Great Crested Newt. If GCN are found to be present then appropriate mitigation should be put in place to protect the population during the construction and post construction phases of the development. This may include restoration of the ditch habitat and prevention of pollution by preventing water run-off from the development into the watercourses on the site.

8.8 REFERENCES

Handbook for Phase 1 habitat survey published by the Nature Conservancy Council (1990).

ecotricity

Legend

- Target Note
- Standard Trees
- Seasonally Wet Ditch
- Permanent Water
- Scattered Scrub
- Defunct Species Poor Hedge
- Unimproved Semi Neutral Grassland
- Deciduous Plantation

Figure: 1 ANNEX 1
Title: Phase 1 Habitat Survey
BADGER RECORDS REMOVED

N

0 0.5 km
Scale: 1:12,500 @ A3

Drawn by:	Checked by:	Approved by:
MW	SP	NB

Ref: 6945_T0034_01 **Date:** June 2022

Heckington Fen Solar Park

ANNEX 2 - TABLE SHOWING POTENTIAL OF BUILDINGS IDENTIFIED ON SITE FOR ROOSTING BATS

Target Note	Building age and height	Roof structure and construction						Wall material			Structural Features						Building activity				Potential bat access / roost features	Adjacent habitat	Evidence of bats and bat roost potential of building
		Tile	Metal / Asbestos	Concrete / Other	Flat	Pitched	Hipped	Brick	Metal	Concrete	Gables	Barge Board	Fascia/soffit	Flashing	Roof Void	Underfelting sarking/other	Agricultural	Residential	Occupied	Unoccupied			
28	Modern Post 1950 2 storey		✓			✓			✓	✓	✓	✓					✓		✓		Gaps under ridge tiles; overhanging lip at gable ends; gaps under roof material; within small house on roof. Small concrete building to rear – limited potential	Large intensively managed arable fields	Low potential No evidence of bats. Potential for bats during active period only. Not suitable for maternity or hibernation.
28	Modern Post 1950 2 storey		✓			✓			✓		✓	✓					✓		✓		Gaps under overhanging lip at gable ends; gaps on east and west aspects where corrugated metal sheeting joins at 7ft. Small concrete building to rear – limited potential	Large intensively managed arable fields	Ltd - low potential. No evidence of bats. Potential for bats during active period only. Not suitable for maternity or hibernation.
28	Modern Post 1950 2 storey		✓			✓			✓	✓	✓	✓					✓		✓		Gaps under overhanging lip at gable ends; gaps at each corner behind metal support beam. Exposed from open fronted nature of building.	Large intensively managed arable fields	Ltd potential. No evidence of bats. Potential for bats during active period only. Not suitable for maternity or hibernation.
27	Modern Post 1950 2 storey		✓			✓			✓		✓	✓					✓		✓		Gaps under overhanging lip at gable ends. Exposed but likely offers some shelter from elements.	Large intensively managed arable fields.	Ltd potential. No evidence of bats. Not suitable for maternity or hibernation roosts.
8	Pre 1914 single storey	✓				✓	✓	✓						✓		✓	✓			✓	Numerous gaps under roof and ridge tiles; raised flashing; gaps in brickwork on external west aspect associated with purlins; gaps in internal walls. Open doors.	Large intensively managed arable fields. Small stand of trees to immediate north.	Low -medium potential. No evidence of bats. Potential for bats during active season; sub-optimal for hibernating bats.
8	Pre 1914 2 storey	✓	✓			✓		✓			✓		✓	✓	✓	✓	✓			✓	Numerous gaps on north and south aspects where mortar missing on wall plate under metal roof; gap under fascia on west aspect.	Large intensively managed arable fields. Small stand of trees to immediate north.	Medium -high potential. No evidence of bats. Potential for bats throughout the year although sub-optimal for hibernating bats.
9	Pre 1914 2 storey x 2 houses	✓				✓		✓			✓			✓	✓	✓		✓		✓	Mortar missing on chimneys and assoc. raised flashing on south aspect; broken windows; Intact underfelting but very cobwebby in roof voids.	Small stand of trees and shrubs surrounding the buildings. Large intensively managed arable fields beyond.	Medium -high potential. No evidence of bats. Potential for bats all year as no heating in houses; isolated but provides cover on emergence.
25	Post 1951 Single storey		✓			✓					✓						✓			✓	Gaps under overhanging lip at gable ends. Exposed but likely offers some shelter from elements.	Large intensively managed arable fields.	Limited potential. No evidence of bats. Potential for bats during active season; sub-optimal for hibernating bats.
1	Poss 1950's? Single storey.	✓				✓		✓			✓	✓	✓			**?**	✓		✓		Pump house. Potential bat access beneath the pumping station if gaps exist as over water and adjacent ditch vegetation.	Large intensively managed arable fields. Limited connective habitat. Very exposed landscape.	Low – medium potential if gaps exist underneath as one of very few features in landscape suitable for roosting bats. Could be suitable for both maternity and hibernation.

Target Note	Building age and height	Roof structure and construction						Wall material			Structural Features						Building activity				Potential bat access / roost features	Adjacent habitat	Evidence of bats and bat roost potential of building
		Tile	Metal / Asbestos	Concrete / Other	Flat	Pitched	Hipped	Brick	Metal	Concrete	Gables	Barge Board	Fascia/soffit	Flashing	Roof Void	Underfelting sarking/other	Agricultural	Residential	Occupied	Unoccupied			
5	Poss 1950's? Single storey		✓			✓		✓			✓	✓	✓			?	✓		✓		Pump house. Potential bat access beneath the pumping station if gaps exist as over water and adjacent ditch vegetation.	Large intensively managed arable fields. Limited connective habitat. Very exposed landscape.	Low – medium potential if gaps exist underneath as one of very few features in landscape suitable for roosting bats. Could be suitable for both maternity and hibernation.
13	Modern Post 1950 2 storey		✓		✓	✓		✓	✓		✓	✓					✓		✓		Gaps under ridge tiles; overhanging lip at gable ends; gaps under roof material; cracks/gaps within small brick buildings attached on north and south sides perhaps offering low-moderate bat roosting potential	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south	Low -medium potential. No evidence of bats. Potential for bats during active season; sub-optimal for hibernating bats.
14	Poss 1950's? Single storey.	✓				✓	✓	✓			✓		✓		✓	?	✓		✓		Extensive ivy covering on roof. Small gaps at eaves at sides of building above guttering . fissures offering moderate to high (BRP 1-2)	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south.	High – medium potential.. Could be suitable for both maternity and hibernation.
31	Poss 1950's? Double storey.		✓	✓		✓		✓			✓	✓		✓		✓	?	✓		✓		Cracks in walls of attached brick building and gaps where roof asbestos overhangs may offer low potential for roosting bats,	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south	Low potential. No evidence of bats and few features that might accommodate roosting bats.
32	Poss 1950's? Double storey.		✓	✓		✓			✓	✓	✓		✓		✓		✓		✓		Gaps under overhanging lip at gable ends. Exposed but likely offers some shelter from elements.	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south	Ltd potential. No evidence of bats. Not suitable for maternity or hibernation roosts.
33	Poss 1950's? Single storey.		✓	✓		✓				✓	✓						✓		✓		Gaps under overhanging lip at gable ends. Exposed but likely offers some shelter from elements.	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south	Low potential. No evidence of bats and few features that might accommodate roosting bats.
34	Poss 1950's? Single storey.		✓	✓		✓				✓	✓						✓		✓		Gaps under overhanging lip at gable ends. Exposed but likely offers some shelter from elements.	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south	Low potential. No evidence of bats and few features that might accommodate roosting bats.

Target Note	Building age and height	Roof structure and construction						Wall material			Structural Features						Building activity				Potential bat access / roost features	Adjacent habitat	Evidence of bats and bat roost potential of building
		Tile	Metal / Asbestos	Concrete / Other	Flat	Pitched	Hipped	Brick	Metal	Concrete	Gables	Barge Board	Fascia/soffit	Flashing	Roof Void	Underfelting sarking/other	Agricultural	Residential	Occupied	Unoccupied			
35	Poss 1950's? Single storey.		✓	✓		✓		✓		✓							✓		✓		Gaps under overhanging lip at gable ends. Exposed but likely offers some shelter from elements.	Large intensively managed arable fields. Connectivity to gardens with trees immediately to the south	Low potential. No evidence of bats and few features that might accommodate roosting bats.

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 8.2- Ornithological Survey Methods & Results

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

APPENDIX 8.2- ORNITHOLOGICAL SURVEY METHODS AND RESULTS

8.1 WORK UNDERTAKEN

8.1.1 Baseline surveys of the proposed Heckington Fen Solar Park are currently being undertaken by Kevin Shepherd - Consultant Ornithologist Limited with the following objectives:

- To determine the distribution and abundance of birds breeding on/around the proposed Energy Park (surveys completed during April-June 2021), on an extended buffer zone around the proposed Energy Park and on/around all potential grid connection routes (surveys currently being undertaken; during April-June 2022);
- To determine the distribution and abundance of birds wintering on/around the proposed Energy Park (surveys completed during September 2021 – March 2022);
- To determine the distribution and abundance of birds of highest recognised conservation importance[1] wintering on/around all potential grid connection routes (surveys completed during October 2021 – March 2022).

8.1.2 The location of the survey areas referred to above are shown in **Figure 1**.

8.1.3 This interim report documents the completed surveys.

8.2 FIELD SURVEY METHODS

8.2.1 Field surveys were undertaken by Kevin Shepherd and Andy McKee. The surveyors were both first class, highly experienced field ornithologists. Nevertheless, extensive training was provided both prior to and during survey, irrespective of previous experience. Aspects covered included navigation, application of the survey methods, techniques to minimise fieldworker effects on bird detection, and recognition of birds, bird signs and bird behaviour. Emphasis was placed on the importance of carrying out the surveys in a systematic, standardised way to enable collection of rigorous survey data and direct comparison of data from different areas and survey periods.

Breeding birds

8.2.2 The breeding bird survey method was based upon the British Trust for Ornithology's Common Birds Census method (Marchant 1983).

8.2.3 Four visits were made to the proposed Energy Park between 22 April – 10 June 2021 (**Table 1**). Work was undertaken between dawn and noon BST in optimum weather conditions for survey i.e. light winds, good visibility and lack of precipitation. During each visit, emphasis was placed on thoroughly surveying all parts of the survey area; achieved by slowly walking around, frequently pausing at appropriate vantage and listening points. All woodland, copse, scrub and field boundaries, hedgerows, ditches, rivers and streams were walked. Water bodies, isolated trees and buildings were carefully approached and examined. Occupied private dwellings and their adjacent enclosed gardens were not surveyed. All parts of the survey area were approached to within 100m.

[1] *i.e. qualifying wintering species of Special Protection Areas (SPAs) and Sites of Special Scientific Interest (SSSIs) within 20km of the proposed development.*

Table 1 - Energy park breeding bird survey schedule 2021. ***All changes in weather conditions are given; wind direction and force in accordance with the Beaufort Scale, cloud cover in eighths.***

Site	Visit	Date	Time	Weather			
				Wind	Cloud cover	Visibility	Precipitation
Energy park	1	22 April	0545-1153	Calm-N1	1-2	Excellent	None
		23 April	0542-1147	Calm-ESE1-SE2	1	Excellent	None
		24 April	0540-1003	Calm-ENE1	3-6	Excellent	None
	2	7 May	0511-1157	Calm-WSW2	0-7	Excellent	None
		11 May	0456-1157	SSE2-SW1-S2	1-8	Excellent	None
		12 May	0512-0916	SSW2-SSW3	6-1	Excellent	None
	3	24 May	0441-1149	SSW1-S3	1-7	Excellent	None
		26 May	0442-1103	NW1-W3	7-2-8	Excellent	None
		27 May	0504-0948	Calm-N2	8	Excellent	None
	4	9 June	0432-1046	Calm-SW3	2-1	Excellent	None
		10 June	0421-1027	SW2	1-8	Excellent	None

8.2.4 The objective of the fieldwork was to carry out a full breeding bird survey of the sites; to map the locations of breeding territories and hence to derive population estimates for all species. Emphasis was therefore placed on accurately mapping the locations of all birds exhibiting breeding behaviour. Birds were considered to be present within breeding territories if any of the following were observed:

- song/courtship/display
- bird engaged in territorial behaviour/territorial dispute
- nest-building (including excavating nest-hole)
- adult visiting probable nest-site
- location of nest or newly fledged young
- agitated behaviour of adult bird (e.g. repetitive alarm-calling, distraction display) indicating nearby presence of nest or young
- bird carrying food to nearby nest or young
- bird removing faecal sac from nearby nest.

8.2.5 During each visit, special care was taken:

- to record each individual bird exhibiting breeding behaviour once only
- to link observations likely to relate to single breeding pairs (e.g. singing male / nearby nest-site, two birds repetitively alarm-calling)
- to emphasise observations clearly relating to separate breeding pairs (e.g. males singing simultaneously, males involved in territorial disputes).

8.2.6 At the end of each visit, a 'visit-map' was compiled showing all registrations made.

8.2.7 At the end of the survey, for each species, registrations on the visit-maps were transferred on to 'species maps' from which the locations of breeding territories (registrations in suitable breeding habitat, usually in 'clusters', relating to the activity of breeding pairs), hence minimum population estimates were derived.

Wintering birds

The proposed energy park

8.2.8 Wintering birds on the proposed energy park were surveyed once per calendar month during September 2021 - March 2022 (**Table 2**). Work was undertaken in optimum weather conditions for survey i.e. light winds, good visibility and lack of precipitation. During each survey visit, emphasis was placed on thoroughly surveying all parts of the survey area; achieved by slowly walking around, frequently pausing at appropriate vantage and listening points. All woodland, copse and scrub boundaries, hedgerows, ditches, rivers and streams were walked. Water bodies, isolated trees/bushes and farm buildings were carefully approached and examined. All parts of the survey area were approached to within 100m. All birds using the survey area were counted. Localised movements of birds were carefully noted to avoid double recording. Locations of grey partridge, swans, geese, duck (except mallard), waders, egrets, tree sparrow, linnet, corn bunting, yellowhammer and unexpected species were mapped.

8.2.9 The proposed energy park lies within 20km of parts of The Wash SPA/SSSI, a site of exceptional importance for wintering waterbirds. Some of these waterbirds are highly mobile, particularly around high tide when estuarine habitats on The Wash are covered with water. At least one of the survey visits per calendar month was therefore timed to coincide with local high tides (i.e. the time of high tide at Boston, Lincolnshire). Especially during the period 90 minutes before and 90 minutes after these high tides, the site as a whole was carefully searched/scanned for evidence of any waterbirds arriving to use the site from The Wash SPA/SSSI. During this element of the survey, northernmost parts of potential grid connection routes visible from the proposed energy park were also searched/scanned.

Table 2 – Energy park wintering bird survey schedule 2021/22. ***All changes in weather conditions are given; wind direction and force in accordance with the Beaufort Scale, cloud cover in eighths.***

Month	Date	Time	High tide	Weather			
				Wind	Cloud cover	Visibility	Precipitation
Sep	11	0654-1330	0943	W1-W3	8-7	Excellent	None
	12	0630-1300	1029	W1-NW2	6-7	Excellent	None
	14	0635-1010	1221	NE1-ENE2	7-8	Excellent	Light showers from 0850hrs
Oct	9	0710-1630	0841	Calm-SSE2	6-2-3	Excellent	None
	10	0710-1605	0924	NW1-NW3	8-1-4	Excellent	None
	11	0715-1235	1010	NW1	3	Excellent	None

Month	Date	Time	High tide	Weather			
				Wind	Cloud cover	Visibility	Precipitation
Nov	9	1040-1320	0854	SSW4	4-7	Excellent	None
	10	0718-1505	0944	Calm-NW2	8-7	Excellent	None
	11	1245-1355	1043	S2	8	Excellent	None
	12	0724-1000	1202	SSW4	8-7	Excellent	None
Dec	11	0800-0935	1139	SW1	7	Excellent	None
	13	0810-1600	1421	SSW3	8-7-8	Excellent	None
	!6	0810-1425	1650	WNW1-W2	1	Excellent	None
Jan	9	0804-0910	1107	WSW2	1	Excellent	None
	10	0805-1425	1217	SSW1-SSE3	7-8	Excellent	None
	12	0810-1205	1435	WSW1	2	Excellent	None
Feb	5	1051-1300	0900	SW4	5-7	Excellent	None
	9	0740-1330	1233	WSW2	8-6-8	Excellent	None
	11	0755-1210	1451	S1	1	Excellent	None
Mar	10	0630-0910	1120	SSE3	1	Excellent	None
	12	0625-1155	1408	S3-SSW4	7-4-7	Excellent	None
	14	0620-1125	1600	SW2	1	Excellent	None
	15	1530-1740	1640	SSE2	7	Excellent	None

The proposed grid connection

8.2.10 The proposed grid connection lies within 20km of parts of The Wash SPA/SSSI, a site of exceptional importance for wintering waterbirds. Some of these waterbirds are highly mobile, particularly around high tide when estuarine habitats on The Wash are covered with water. Land surrounding all potential grid connections was therefore carefully checked for evidence of any use by wintering waterbirds from The Wash SPA/SSSI.

8.2.11 The lengths of all potential routes of the proposed grid connection were divided into three search areas (**Figure 2**). These search areas were surveyed for three-hour periods, 1.5 hours either side of high tide, once per calendar month during October 2021 - March 2022 (**Table 3**). Work was undertaken in optimum weather conditions for survey i.e. relatively light winds, good visibility and lack of precipitation. All ground within each search area was carefully scanned from raised vantage points (Figure 2), the observer carefully moving position locally around vantage points to maximise visibility of

all ground. In addition, all airspace above and surrounding each search area was constantly scanned for flying birds, in particular any waterbirds already present in the area or potentially commuting to/from The Wash SPA/SSSI. Although qualifying species of The Wash SPA/SSSI[2] were primarily being searched for, in order to focus and maintain concentration throughout the three-hour recording period, all species of geese, swans, duck, waders, egrets and raptors were recorded both using ground within each search area and also overflying each search area.

Table 3 - Grid connection wintering bird survey schedule 2021/22. ***All changes in weather conditions are given; wind direction and force in accordance with the Beaufort Scale, cloud cover in eighths.***

Month	Search area	Date	High tide	Time of watch	Weather			
					Wind	Cloud cover	Visibility	Precipitation
Oct	1	13	1200	1030-1330	W3	7-8	Excellent	None
Oct	2	16	1630	1500-1800	SSW3-SSW2	7	Excellent	None
Oct	3	14	1320	1150-1450	SW4	8	Excellent	None
Nov	1	12	1202	1032-1332	SSW4	7	Excellent	None
Nov	2	9	0854	0724-1024	SSW3-SSW4	3-4	Excellent	None
Nov	3	11	1043	0913-1213	Calm-S1	8	Excellent	None
Dec	1	11	1139	1009-1309	SW2	7-8	Excellent	None
Dec	2	9	0931	0801-1101	WSW4	7	Excellent	None
Dec	3	10	1028	0858-1158	WNW4-WNW5	6-3	Excellent	None
Jan	1	9	1107	0937-1237	SW3	1-2	Excellent	None
Jan	2	7	0918	0748-1048	SW3	1	Excellent	None
Jan	3	12	1435	1305-1605	WSW2-SW2	1-6	Excellent	None
Feb	1	11	1451	1321-1621	S3	4-7	Excellent	None
Feb	2	5	0900	0730-1030	SW3-SW5	5	Excellent	None
Feb	3	7	1028	0858-1158	WSW2-WSW3	6-5	Excellent	None
Mar	1	12	1408	1238-1538	SSE5	7-6-7	Excellent	None
Mar	2	10	1120	0950-1250	SE4	1-2	Excellent	None
Mar	3	14	1600	1430-1730	WSW3	5-6	Excellent	None

[2] *i.e. Brent Goose, Pink-footed Goose, Bewick`s Swan, Shelduck, Gadwall, Wigeon, Pintail, Common Scoter, Goldeneye, Oystercatcher, Grey Plover, Curlew, Bar-tailed Godwit, Black-tailed Godwit, Turnstone, Knot, Sanderling, Dunlin, Redshank.*

8.3 FIELD SURVEY RESULTS

Breeding birds

8.3.1 A total of 48 species were recorded on/around the proposed energy park during the breeding bird survey of which 39 species bred (**Table 4**).

Table 4 - Numbers of breeding territories recorded on/around the proposed energy park. *F = species foraging, but no evidence of breeding.*

Species	No. territories	Species	No. territories
Red-legged partridge	5	Skylark	128
Grey partridge	3	Swallow	1
Pheasant	16	House martin	F
Mute swan	1	Sedge warbler	86
Mallard	2	Reed warbler	42
Swift	F	Blackcap	4
Stock dove	6	Whitethroat	68
Woodpigeon	47	Wren	23
Collared dove	3	Starling	3
Moorhen	5	Blackbird	11
Grey heron	F	Song thrush	1
Sparrowhawk	F	Mistle thrush	F
Marsh harrier	F	Robin	7
Buzzard	3	House sparrow	F
Barn owl	1	Tree sparrow	4
Little owl	1	Dunnock	4
Kestrel	2	Yellow wagtail	5
Hobby	F	Pied wagtail	1
Magpie	2	Meadow pipit	9
Jackdaw	5	Chaffinch	14
Rook	F	Linnet	7
Carrion crow	12	Goldfinch	5
Blue tit	4	Yellowhammer	10
Great tit	5	Reed bunting	90

Wintering birds

8.3.2 A total of 71 species was recorded on/around the proposed energy park during September 2021 – March 2022 (**Table 5**).

8.3.3 A total of 19 species of waterbird and raptor was recorded using ground on/around all potential grid connection routes during October 2021 – March 2022 (**Table 6**), 11 of these species also recorded overflying the routes (**Table 7**).

Table 5 - Numbers of birds recorded on/around the proposed energy park during the 2021/22 wintering bird survey.

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Red-legged partridge	7	8	5	6	5	6	9
Grey partridge	2	16	29	0	12	10	2
Pheasant	68	39	49	51	60	58	43

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Mute swan	1	3	5	2	6	8	6
Gadwall	2	0	0	0	4	0	0
Mallard	87	69	10	32	64	62	37
Teal	0	7	0	0	3	10	4
Stock dove	30	35	71	158	121	65	20
Woodpigeon	145	562	577	84	161	218	249
Collared dove	6	0	14	2	4	5	4
Moorhen	5	0	3	6	5	8	3
Lapwing	0	120	318	0	223	7	5
Golden plover	0	128	4	5	16	31	19
Snipe	1	0	0	0	0	1	3
Black-headed gull	0	1974	629	56	111	49	12
Common gull	0	174	74	21	37	15	4
Herring gull	2	1	1	0	2	0	0
Lesser black-backed gull	3	1	0	0	0	1	2
Grey heron	3	0	0	2	1	1	1
Great white egret	0	0	1	0	1	1	1
Sparrowhawk	0	2	2	0	1	2	0
Marsh harrier	0	1	0	0	0	0	0
Montagu's harrier	1	0	0	0	0	0	0
Red kite	1	0	0	0	0	0	0
Buzzard	12	7	9	10	6	6	7
Barn owl	1	1	0	1	0	0	1
Little owl	1	1	0	0	0	2	0
Short-eared owl	1	3	0	2	3	5	1
Kingfisher	0	0	0	0	0	0	1
Great spotted woodpecker	1	1	0	0	2	0	0
Green woodpecker	0	0	0	1	0	1	1
Kestrel	7	5	7	8	5	5	5
Merlin	1	1	0	0	0	0	0
Hobby	1	0	0	0	0	0	0
Peregrine	0	1	1	1	1	1	1
Magpie	10	12	14	16	8	9	9
Jackdaw	58	54	59	14	39	20	28
Rook	177	154	133	66	236	62	76
Carrion crow	57	59	118	69	38	27	44
Blue tit	14	8	8	13	10	8	5
Great tit	7	10	4	4	7	6	7
Skylark	51	130	134	141	61	87	152
Swallow	20	0	0	0	0	0	0
House martin	17	0	0	0	0	0	0
Long-tailed tit	0	0	0	0	2	0	0
Chiffchaff	0	2	0	0	0	0	1
Reed warbler	7	0	0	0	0	0	0
Whitethroat	4	0	0	0	0	0	0

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Wren	11	12	13	16	20	17	23
Starling	186	1105	2110	654	144	52	252
Blackbird	0	7	20	13	16	15	18
Fieldfare	0	0	26	240	31	22	1
Song thrush	0	0	0	12	3	5	5
Mistle thrush	1	0	0	4	0	0	1
Redwing	0	0	14	19	11	28	10
Robin	10	13	6	9	9	13	10
Stonechat	0	0	6	4	4	1	0
Wheatear	2	0	0	0	0	0	0
Tree sparrow	11	6	6	0	0	2	8
House sparrow	0	0	0	1	0	0	0
Dunnock	2	3	1	1	1	5	4
Pied wagtail	0	3	3	1	1	0	1
Meadow pipit	7	40	12	4	4	9	2
Chaffinch	6	7	4	20	2	11	18
Greenfinch	0	0	3	2	0	1	2
Linnet	12	14	136	184	47	73	6
Goldfinch	22	63	105	28	26	9	7
Lapland bunting	0	0	2	0	0	0	0
Corn bunting	1	0	0	0	0	0	0
Yellowhammer	23	15	7	6	0	0	18
Reed bunting	164	86	44	62	25	29	166

Table 6 - Numbers of waterbirds and raptors recorded on/around all potential grid connection routes during the 2021/22 wintering bird survey.

Species	Search Area 1						Search Area 2						Search Area 3					
	O	N	D	J	F	M	O	N	D	J	F	M	O	N	D	J	F	M
Pink-footed goose	0	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mute swan	0	6	7	0	21	9	0	0	0	1	0	3	5	13	4	0	0	0
Bewick's swan	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Whooper swan	0	13	28	0	0	0	0	0	0	35	36	6	0	0	2	22	0	0
Mallard	0	4	8	2	0	4	0	39	18	0	0	3	0	0	2	0	0	6
Teal	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Goosander	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0
Lapwing	0	0	6	0	0	0	475	352	95	967	983	0	0	180	181	0	0	2
Golden plover	0	0	0	0	0	0	128	172	0	873	177	2	0	0	0	0	0	0
Green sandpiper	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great white egret	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little egret	0	0	1	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0
Sparrowhawk	1	1	2	1	0	0	0	0	2	0	1	0	1	0	2	1	0	0
Marsh harrier	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Red kite	0	0	0	0	1	0	1	0	1	1	0	0	0	0	0	0	0	0

Species	Search Area 1						Search Area 2						Search Area 3					
	O	N	D	J	F	M	O	N	D	J	F	M	O	N	D	J	F	M
Buzzard	3	3	3	4	4	3	4	3	2	2	3	5	6	4	5	4	4	6
Kestrel	3	4	4	5	6	2	4	3	4	3	4	3	3	2	4	3	3	4
Merlin	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0
Peregrine	0	0	0	0	0	0	0	2	1	0	1	0	0	1	0	0	0	0

Table 7 - Numbers of waterbirds and raptors recorded overflying all potential grid connection routes during the 2021/22 wintering bird survey.

Species	Search Area 1						Search Area 2						Search Area 3					
	O	N	D	J	F	M	O	N	D	J	F	M	O	N	D	J	F	M
Greylag goose	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Pink-footed goose	86	146	0	842	0	0	0	0	0	0	0	0	0	16	0	0	0	0
Mute swan	2	0	0	0	0	0	8	10	0	0	0	0	5	0	0	2	0	0
Whooper swan	0	0	0	0	0	0	0	3	0	6	0	0	0	0	3	0	0	0
Mallard	0	2	1	0	5	2	21	13	2	29	0	2	0	0	5	7	0	2
Teal	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Goosander	0	0	4	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
Lapwing	0	4	16	72	35	0	0	87	52	0	0	0	0	0	56	294	135	0
Golden plover	0	0	69	78	18	92	0	56	1	0	0	0	0	0	0	19	0	0
Snipe	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Great white egret	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

8.4 DISCUSSION

Overview of results

8.4.1 A total of 646 pairs of 39 bird species were found breeding on and immediately adjacent to the proposed energy park. However, the majority of these were located in woodland, copses and farm buildings or along hedgerows and drainage ditches traversing the site. Only 118 pairs of two species (115 Skylark and three Yellow Wagtail) were found breeding on the open fields in which the solar panels may be placed. In terms of recognised conservation importance, no Annex I species[3] was found breeding, one Schedule 1 species[4] was found (one pair of Barn Owl bred in a farm building) and 160 pairs of seven BOCC Red List species (Stanbury *et al* 2021; Grey Partridge, Skylark, Starling, Tree Sparrow, Yellow Wagtail, Linnet and Yellowhammer) were found breeding.

8.4.2 A total of 71 bird species was recorded on/around the proposed energy park during the winter months, including nine Annex I species[3] (Golden Plover, Great White Egret, Marsh Harrier, Montagu's Harrier, Red Kite, Short-eared Owl, Kingfisher, Merlin and Peregrine), two additional Schedule 1 species[4] (Barn Owl and Hobby) and 13 BOCC Red List species (Stanbury et al 2021; Grey Partridge, Lapwing, Herring Gull, Skylark, House Martin, Starling, Mistle Thrush, Tree Sparrow, House Sparrow, Greenfinch, Linnet, Corn Bunting and Yellowhammer). However, numbers of birds involved were small and generally representative of insignificant proportions of highly mobile, much larger wintering populations present in the wider countryside.

[3] *i.e. species listed on Annex I of EC Directive 79/409/EEC on the Conservation of Wild Birds 1979.*

[4] *i.e. species listed on Schedule 1 of the Wildlife and Countryside Act 1981.*

8.4.3 Fourteen species of waterbird were recorded along/around and overflying potential grid routes to the proposed energy park during the winter months. However, only one of these (Pink-footed Goose) is a qualifying species of The Wash SPA/SSSI, a party of 56 birds found to be using ground in the vicinity of the potential grid routes during one visit to the area in November 2021. Pink-footed Geese are therefore not using land in the vicinity of potential grid routes regularly. Instead, the species is highly mobile over vast areas of surrounding countryside and present in the vicinity of the potential grid routes only occasionally.

8.5 REFERENCES

Marchant, J.H. (1983). BTO Common Birds Census Instructions. British Trust for Ornithology, Thetford.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

ecotricity

Legend

- Solar farm breeding and wintering bird survey area
- Grid connection wintering bird survey area
- Grid connection and extended solar farm buffer zone breeding bird survey area

Figure 1

Title: Location of bird survey areas

N

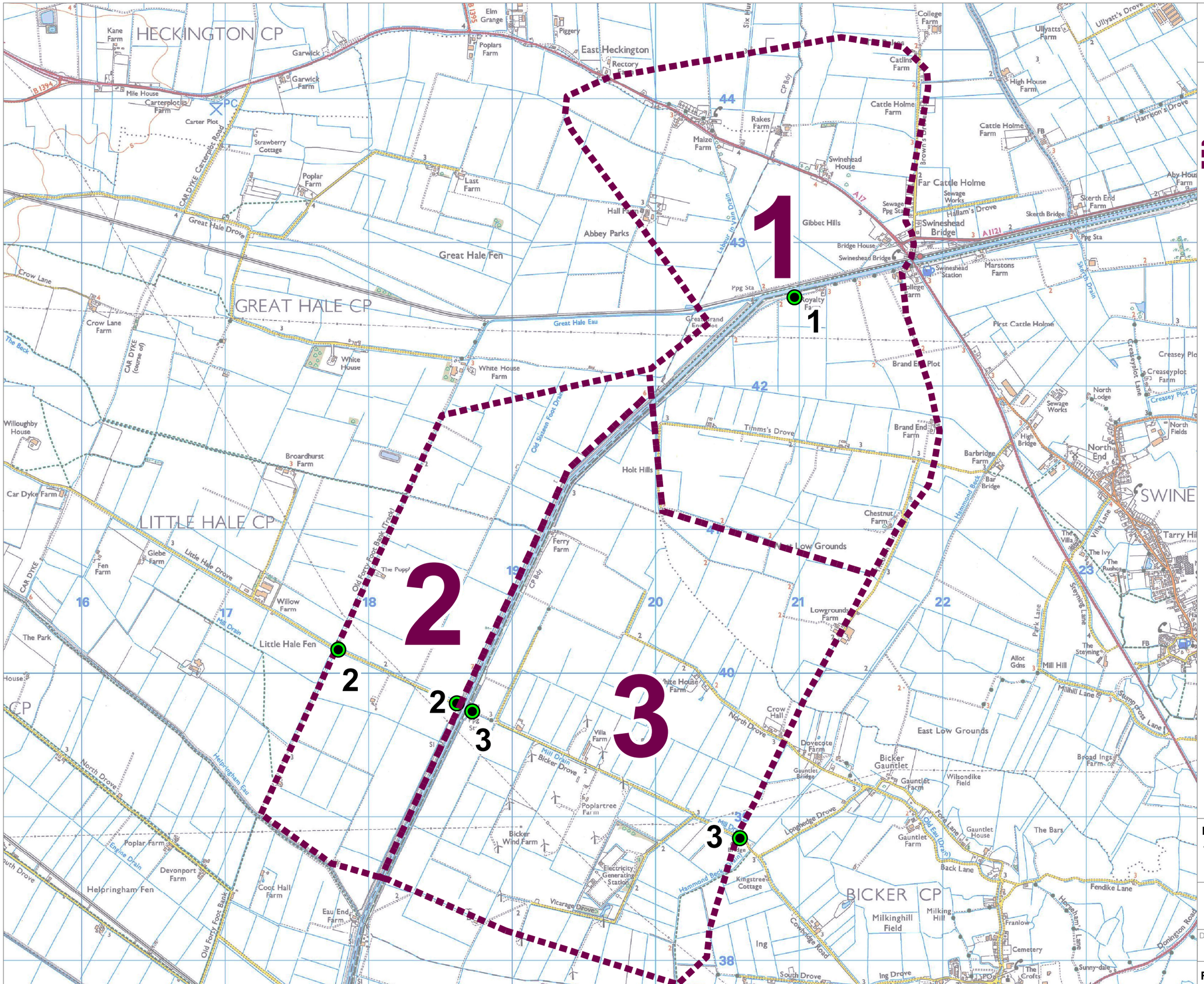
0 1 km

Scale: 1:35,000 @ A3

Drawn by:	Checked by:	Approved by:

Ref: 6945_T0032_03 **Date:** May 2022

Heckington Fen Solar Park



ecotricity

Legend

- Vantage Point
- Search area boundary

Figure 2

Title: Grid connection wintering bird survey search areas

N

0 0.5 km

Scale: 1:25,000 @ A3

Drawn by:	Checked by:	Approved by:

Ref: 6945_T0033_02 **Date:** May 2022

Heckington Fen Solar Park

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 8.3- Lincolnshire Environmental Records Centre

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

APPENDIX 8.3- LINCONLSHIRE ENVIRONMENTAL RECORDS CENTRE

LERC Search Summary Report

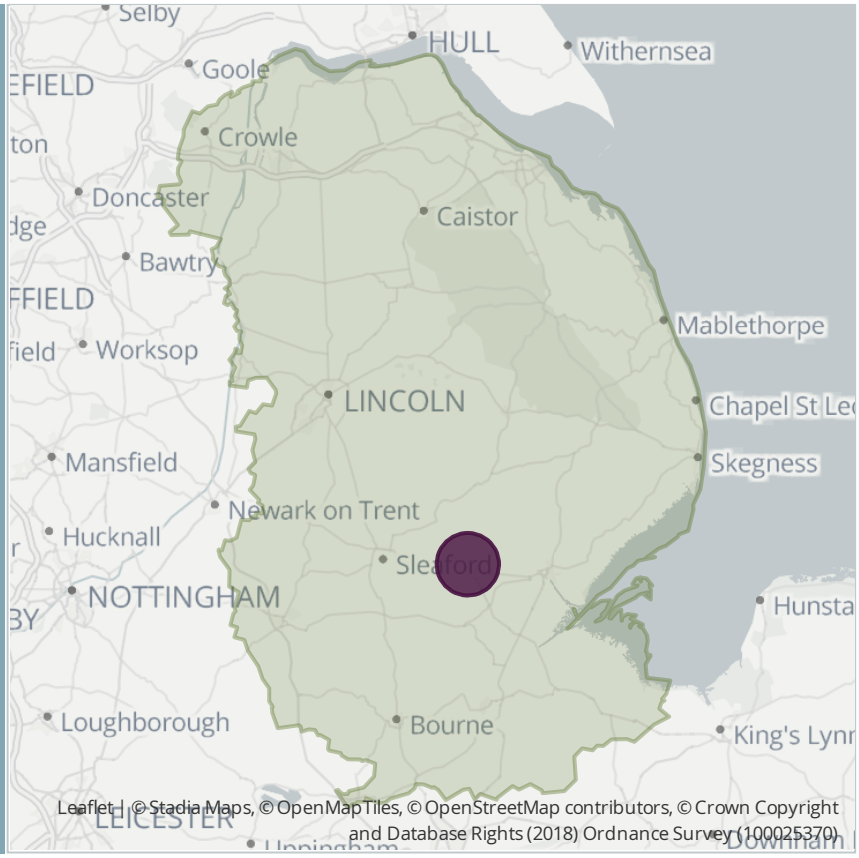
Grid Reference: TF 2027 4527
Buffer: 5km

Date of publication: 17/05/2022
Expires: 17/05/2023

Achieving more for nature

GLNP
GREATER LINCOLNSHIRE NATURE PARTNERSHIP

Report Details

Produced for	Simon Pickering, Ecotricity
Search area	

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This report summarises a search of statutory sites, non-statutory sites, other sites, habitats and species within the specified area; where no information is returned for a section, it is excluded from this summary report.

About the Lincolnshire Environmental Records Centre

The Lincolnshire Environmental Records Centre (LERC) collates wildlife and geological information for Greater Lincolnshire from various sources and makes it available for various uses. This data is crucial to aid conservation management of sites, to help organisations prioritise action, and to understand the distribution of species and trends over time. For more information on LERC or to request a data search, visit the website at https://glnp.org.uk/partnership/lerc/

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For more information on acceditation, see the ALERC website at http://www.alerc.org.uk/alerc-accreditation.html

Non-statutory sites

The GLNP works directly with local authorities to coordinate the Local Sites system in Greater Lincolnshire. Sites are selected by the Nature Partnership, based on recommendations made by its expert working groups known as the LWS Panel and LGS Panel. The Register of Local Sites is then submitted for inclusion within local authority planning policy.

These sites are recognition of wildlife or geological value and are a testament to the land management that is already being undertaken on them. Identifying these sites helps local authorities meet their obligations under legislation and government guidance, including reporting on the number of sites in positive management for Single Data List Indicator 160-00.

Code	Designation	Status	Name
1	LWS	Selected	Broadhurst Drain East
2	LWS	Selected	Great Hale Eau
3	LWS	Selected	Old Forty Foot Drain
4	LWS	Selected	South Forty Foot Drain

Non-statutory sites within the search area

Space restrictions on the map may result in some sites not being labelled. Please refer to the site citations for details.

Local Wildlife Site

Search area

Species

Lincolnshire Environmental Records Centre holds records on the following species within or overlapping the search area. Data shown is as held by LERC; past records of presence of a species does not guarantee continued occurrence and absence of records does not imply absence of a species, merely that no records are held. Confidential data, zero abundance records, data at poorly defined geographic resolutions and data pending validation and/or verification are also excluded from this report. A number of different datasets have been consulted to produce this report - a summary of attribution statements is available at https://glnp.org.uk/images/uploads/services/lincolnshire-environmental-records-centre/species%20attribution.pdf

Amphibian (4 taxa)

Common Frog, *Rana temporaria*	9	1977 - 2014	Protected
Common Toad, *Bufo bufo*	7	1976 - 2019	Protected, Priority
Great Crested Newt, *Triturus cristatus*	2	1976 - 2017	Protected, Priority, Local Priority
Smooth Newt, *Lissotriton vulgaris*	2	1976 - 1976	Protected, Local Priority

Bird (68 taxa)

Barn Owl, *Tyto alba*	33	1998 - 2020	Protected, Local Priority
Barnacle Goose, *Branta leucopsis*	1	2012 - 2012	Non-native
Brambling, *Fringilla montifringilla*	3	1998 - 2011	Protected
Bullfinch, *Pyrrhula pyrrhula*	38	1999 - 2018	Local Priority
Canada Goose, *Branta canadensis*	15	1996 - 2020	Non-native
Collared Dove, *Streptopelia decaocto*	118	2000 - 2020	Non-native
Columba livia 'feral', *Columba livia 'feral'*	95	2000 - 2020	Non-native
Corn Bunting, *Emberiza calandra*	3	1998 - 2017	Local Priority
Cuckoo, *Cuculus canorus*	10	1998 - 2019	Priority
Curlew, *Numenius arquata*	2	1998 - 2016	Priority, Local Priority
Dark-bellied Brent Goose, *Branta bernicla bernicla*	1	2017 - 2017	Priority, Non-native
Dotterel, *Charadrius morinellus*	1	2000 - 2000	Protected
Egyptian Goose, *Alopochen aegyptiaca*	7	2000 - 2020	Non-native
Eurasian Eagle-Owl, *Bubo bubo*	1	2015 - 2015	Non-native
Fieldfare, *Turdus pilaris*	70	1999 - 2019	Protected
Gadwall, *Mareca strepera*	7	2009 - 2019	Non-native
Goldeneye, *Bucephala clangula*	4	1997 - 2001	Protected
Grasshopper Warbler, *Locustella naevia*	18	2002 - 2009	Priority
Green Sandpiper, *Tringa ochropus*	12	1996 - 2011	Protected
Greenshank, *Tringa nebularia*	2	2002 - 2013	Protected
Grey Partridge, *Perdix perdix*	31	2000 - 2019	Priority, Local Priority, Non-native
Greylag Goose, *Anser anser*	74	1996 - 2020	Protected
Hen Harrier, *Circus cyaneus*	4	2011 - 2014	Protected

Bird (68 taxa)			
Hobby, *Falco subbuteo*	6	2000 - 2018	Protected
Hoopoe, *Upupa epops*	2	2005 - 2019	Protected
House Sparrow, *Passer domesticus*	109	2001 - 2020	Priority, Local Priority
Kingfisher, *Alcedo atthis*	251	1998 - 2020	Protected
Lapwing, *Vanellus vanellus*	67	1984 - 2020	Priority, Local Priority
Lesser Redpoll, *Acanthis cabaret*	10	2002 - 2018	Priority
Linnet, *Linaria cannabina*	54	1976 - 2020	Local Priority
Little Egret, *Egretta garzetta*	73	2009 - 2020	Protected
Little Owl, *Athene noctua*	16	1999 - 2019	Non-native
Mandarin Duck, *Aix galericulata*	24	2018 - 2018	Non-native
Marsh Harrier, *Circus aeruginosus*	9	1998 - 2010	Protected
Merlin, *Falco columbarius*	9	1998 - 2019	Protected
Mute Swan, *Cygnus olor*	102	1996 - 2019	Non-native
Osprey, *Pandion haliaetus*	2	2012 - 2016	Protected
Peregrine, *Falco peregrinus*	3	2001 - 2011	Protected
Pheasant, *Phasianus colchicus*	77	2000 - 2019	Non-native
Pink-footed Goose, *Anser brachyrhynchus*	39	1998 - 2020	Non-native
Pintail, *Anas acuta*	2	1998 - 1998	Protected, Non-native
Pochard, *Aythya ferina*	32	1996 - 2002	Non-native
Quail, *Coturnix coturnix*	1	1998 - 1998	Protected
Red Kite, *Milvus milvus*	5	2011 - 2018	Protected
Red-crested Pochard, *Netta rufina*	17	2006 - 2007	Non-native
Red-legged Partridge, *Alectoris rufa*	38	2000 - 2019	Non-native
Redshank, *Tringa totanus*	9	1999 - 2019	Local Priority
Redwing, *Turdus iliacus*	54	2000 - 2020	Protected
Reed Bunting, *Emberiza schoeniclus*	54	2000 - 2020	Priority, Local Priority
Ring Ouzel, *Turdus torquatus*	1	2011 - 2011	Priority
Rock Dove, *Columba livia*	3	2007 - 2016	Non-native
Rose-coloured Starling, *Pastor roseus*	1	1984 - 1984	Non-native
Skylark, *Alauda arvensis*	65	1998 - 2020	Local Priority
Snipe, *Gallinago gallinago*	9	1996 - 2017	Local Priority
Snow Bunting, *Plectrophenax nivalis*	1	2008 - 2008	Protected
Song Thrush, *Turdus philomelos*	93	2000 - 2020	Local Priority
Spotted Flycatcher, *Muscicapa striata*	17	1998 - 2011	Priority
Starling, *Sturnus vulgaris*	158	1998 - 2020	Local Priority
Swift, *Apus apus*	78	1976 - 2020	Local Priority
Tree Sparrow, *Passer montanus*	43	1998 - 2017	Priority, Local Priority
Turtle Dove, *Streptopelia turtur*	33	1998 - 2018	Priority, Local Priority

Bird (68 taxa)			
Whooper Swan, *Cygnus cygnus*	11	2005 - 2020	Protected, Non-native
Wigeon, *Mareca penelope*	8	1996 - 2017	Non-native
Wood Duck, *Aix sponsa*	1	2003 - 2003	Non-native
Wryneck, *Jynx torquilla*	1	2015 - 2015	Protected, Priority
Yellow Wagtail, *Motacilla flava*	46	1998 - 2017	Local Priority
Yellow-billed Teal, *Anas flavirostris*	1	2006 - 2006	Non-native
Yellowhammer, *Emberiza citrinella*	79	1976 - 2020	Priority, Local Priority

Bony Fish (Actinopterygii) (3 taxa)			
Brown/Sea Trout, *Salmo trutta*	2	1988 - 1988	Priority
European Eel, *Anguilla anguilla*	74	1980 - 2016	Priority
Spined Loach, *Cobitis taenia*	22	1980 - 2016	Priority

Conifer (2 taxa)			
Leyland Cypress, *Cupressus macrocarpa x Xanthocyparis nootkatensis = X Cuprocyparis leylandi*	18	2009 - 2016	Non-native
Norway Spruce, *Picea abies*	3	2011 - 2012	Non-native

Crustacean (3 taxa)			
Chelicorophium curvispinum, *Chelicorophium curvispinum*	3	1995 - 1995	Non-native
Crangonyx pseudogracilis/floridanus, *Crangonyx pseudogracilis/floridanus sens. lat.*	124	1987 - 2013	Non-native
Gammarus tigrinus, *Gammarus tigrinus*	131	1990 - 2019	Non-native

Fern (1 taxa)			
Water Fern, *Azolla filiculoides*	7	1997 - 2016	Non-native

Flatworm (Turbellaria) (1 taxa)			
Planaria torva, *Planaria torva*	3	2007 - 2007	Non-native

Flowering Plant (124 taxa)			
Alsike Clover, *Trifolium hybridum*	4	2011 - 2011	Non-native
American Willowherb, *Epilobium ciliatum*	6	2011 - 2016	Non-native
Apple, *Malus pumila*	9	2009 - 2016	Non-native
Barren Brome, *Bromus sterilis*	22	2001 - 2016	Non-native
Beaked Hawk's-beard, *Crepis vesicaria*	1	2015 - 2015	Non-native
Black Bent, *Agrostis gigantea*	2	2011 - 2016	Non-native
Black Horehound, *Ballota nigra*	1	2001 - 2001	Non-native

Flowering Plant (124 taxa)			
Black-bindweed, *Fallopia convolvulus*	12	2001 - 2016	Non-native
Black-grass, *Alopecurus myosuroides*	10	2009 - 2016	Non-native
Black-poplar, *Populus nigra subsp. betulifolia*	1	1999 - 1999	Non-native
Bluebell, *Hyacinthoides non-scripta x hispanica = H. x massartiana*	2	2008 - 2012	Non-native
Borage, *Borago officinalis*	1	2011 - 2011	Non-native
Bread Wheat, *Triticum aestivum*	9	2011 - 2016	Non-native
Bristly Oxtongue, *Picris echioides*	23	2001 - 2016	Non-native
Broad-leaved Osier, *Salix viminalis x caprea = S. x smithiana*	2	2011 - 2012	Non-native
Bulbous Canary-grass, *Phalaris aquatica*	1	2011 - 2011	Non-native
Butterfly-bush, *Buddleja davidii*	2	2009 - 2009	Non-native
Canadian Fleabane, *Conyza canadensis*	4	2011 - 2016	Non-native
Charlock, *Sinapis arvensis*	24	2008 - 2016	Non-native
Cherry Laurel, *Prunus laurocerasus*	4	2011 - 2016	Non-native
Cherry Plum, *Prunus cerasifera*	1	2011 - 2011	Non-native
Common Field-speedwell, *Veronica persica*	24	2001 - 2016	Non-native
Common Fumitory, *Fumaria officinalis*	1	2009 - 2009	Non-native
Common Mallow, *Malva sylvestris*	23	2001 - 2016	Non-native
Common Poppy, *Papaver rhoeas*	18	2009 - 2016	Non-native
Cornus sanguinea subsp. australis, *Cornus sanguinea subsp. australis*	4	2011 - 2012	Non-native
Cut-leaved Crane's-bill, *Geranium dissectum*	18	2009 - 2016	Non-native
Cut-leaved Dead-nettle, *Lamium hybridum*	3	2001 - 2012	Non-native
Darwin's Barberry, *Berberis darwinii*	1	2014 - 2014	Non-native
Duke of Argyll's Teaplant, *Lycium barbarum*	1	2011 - 2011	Non-native
Dwarf Mallow, *Malva neglecta*	7	2009 - 2014	Non-native
Dwarf Spurge, *Euphorbia exigua*	1	2011 - 2011	Non-native
Early Goldenrod, *Solidago gigantea*	1	2009 - 2009	Non-native
Equal-leaved Knotgrass, *Polygonum arenastrum*	9	2009 - 2016	Non-native
Fern-leaf Yarrow, *Achillea filipendulina*	1	2013 - 2013	Non-native
Feverfew, *Tanacetum parthenium*	4	2008 - 2012	Non-native
Field Forget-me-not, *Myosotis arvensis*	3	2008 - 2016	Non-native
Field Pansy, *Viola arvensis*	3	2001 - 2013	Non-native
Field Penny-cress, *Thlaspi arvense*	5	2001 - 2016	Non-native
Fig-leaved Goosefoot, *Chenopodium ficifolium*	6	2001 - 2016	Non-native
Flax, *Linum usitatissimum*	1	2014 - 2014	Non-native
Fox and Cubs, *Pilosella aurantiaca subsp. carpathicola*	1	2009 - 2009	Non-native
Fumaria officinalis subsp. officinalis, *Fumaria officinalis subsp. officinalis*	1	2011 - 2011	Non-native

Flowering Plant (124 taxa)			
Garden Cat-mint, *Nepeta nepetella x racemosa = N. x faassenii*	1	2014 - 2014	Non-native
Garden Privet, *Ligustrum ovalifolium*	6	2009 - 2012	Non-native
Garden Radish, *Raphanus sativus*	1	2014 - 2014	Non-native
Generous Poplar, *Populus trichocarpa x deltoides = P. x generosa*	1	2013 - 2013	Non-native
Gold-of-pleasure, *Camelina sativa*	1	2014 - 2014	Non-native
Great Brome, *Bromus diandrus*	1	2013 - 2013	Non-native
Greater Burdock, *Arctium lappa*	5	2011 - 2016	Non-native
Greater Periwinkle, *Vinca major*	2	2009 - 2011	Non-native
Green Field-speedwell, *Veronica agrestis*	2	2009 - 2009	Non-native
Ground-elder, *Aegopodium podagraria*	4	2011 - 2016	Non-native
Hedge Mustard, *Sisymbrium officinale*	22	2001 - 2016	Non-native
Hedgerow Crane's-bill, *Geranium pyrenaicum*	1	2016 - 2016	Non-native
Hemlock, *Conium maculatum*	14	2011 - 2016	Non-native
Hoary Cress, *Lepidium draba*	4	2011 - 2016	Non-native
Holme Willow, *Salix viminalis x caprea x cinerea = S. x calodendron*	1	2011 - 2011	Non-native
Horse-chestnut, *Aesculus hippocastanum*	17	2009 - 2016	Non-native
Horse-radish, *Armoracia rusticana*	15	2009 - 2016	Non-native
Hybrid Balsam-poplar, *Populus trichocarpa x balsamifera = P. 'Balsam Spire'*	2	2009 - 2016	Non-native
Hybrid Black-poplar, *Populus nigra x deltoides = P. x canadensis*	4	2011 - 2016	Non-native
Italian Alder, *Alnus cordata*	2	2009 - 2011	Non-native
Italian Rye-grass, *Lolium multiflorum*	1	2016 - 2016	Non-native
Ivy-Leaved Speedwell, *Veronica hederifolia subsp. hederifolia*	3	2012 - 2014	Non-native
Ivy-leaved Speedwell, *Veronica hederifolia*	1	2008 - 2008	Non-native
Japanese Rose, *Rosa rugosa*	1	2016 - 2016	Non-native
Lamiastrum galeobdolon subsp. argentatum, *Lamiastrum galeobdolon subsp. argentatum*	2	2009 - 2016	Non-native
Large Bindweed, *Calystegia silvatica*	2	2011 - 2011	Non-native
Large-flowered Evening-primrose, *Oenothera glazioviana*	2	2013 - 2019	Non-native
Large-leaved Spindle, *Euonymus latifolius*	1	2011 - 2011	Non-native
Lesser Swine-cress, *Lepidium didymum*	1	2011 - 2011	Non-native
Lilac, *Syringa vulgaris*	2	2009 - 2013	Non-native
Montbretia, *Crocosmia pottsii x aurea = C. x crocosmiiflora*	1	2009 - 2009	Non-native
Mugwort, *Artemisia vulgaris*	11	2001 - 2016	Non-native
Narrow-leaved Pepperwort, *Lepidium ruderale*	2	2001 - 2016	Non-native
Nonesuch Daffodil, *Narcissus poeticus x pseudonarcissus = N. x incomparabilis*	3	2012 - 2012	Non-native

Flowering Plant (124 taxa)			
Norway Maple, *Acer platanoides*	4	2011 - 2016	Non-native
Nuttall's Waterweed, *Elodea nuttallii*	17	1993 - 2016	Non-native
Oil-seed Rape, *Brassica napus subsp. oleifera*	20	2008 - 2016	Non-native
Opium Poppy, *Papaver somniferum*	1	2011 - 2011	Non-native
Orange Whitebeam, *Sorbus croceocarpa*	1	2011 - 2011	Non-native
Osier, *Salix viminalis*	5	2009 - 2016	Non-native
Oxford Ragwort, *Senecio squalidus*	3	2011 - 2016	Non-native
Pear, *Pyrus communis*	2	2008 - 2012	Non-native
Petty Spurge, *Euphorbia peplus*	3	2009 - 2016	Non-native
Pineappleweed, *Matricaria discoidea*	22	2001 - 2016	Non-native
Potato, *Solanum tuberosum*	1	2011 - 2011	Non-native
Prickly Lettuce, *Lactuca serriola*	13	2009 - 2016	Non-native
Primrose-peerless, *Narcissus tazetta x poeticus = N. x medioluteus*	2	2012 - 2012	Non-native
Red Dead-nettle, *Lamium purpureum*	17	2001 - 2014	Non-native
Red Horse-chestnut, *Aesculus carnea*	1	2012 - 2012	Non-native
Rhubarb, *Rheum palmatum x rhaponticum = R. x hybridum*	2	2016 - 2016	Non-native
Ribbed Melilot, *Melilotus officinalis*	1	2009 - 2009	Non-native
Root Beet, *Beta vulgaris subsp. vulgaris*	4	2011 - 2016	Non-native
Russian Comfrey, *Symphytum officinale x asperum = S. x uplandicum*	3	2011 - 2013	Non-native
Russian-vine, *Fallopia baldschuanica*	1	2009 - 2009	Non-native
Scented Mayweed, *Matricaria chamomilla*	9	2009 - 2016	Non-native
Scentless Mayweed, *Tripleurospermum inodorum*	25	2001 - 2016	Non-native
Scorpion Weed, *Phacelia tanacetifolia*	2	2012 - 2012	Non-native
Sharp-toothed Whitebeam, *Sorbus decipiens*	1	2013 - 2013	Non-native
Shepherd's-purse, *Capsella bursa-pastoris*	24	2001 - 2016	Non-native
Silver Maple, *Acer saccharinum*	1	2011 - 2011	Non-native
Small Nettle, *Urtica urens*	11	2008 - 2016	Non-native
Snowberry, *Symphoricarpos albus*	2	2009 - 2009	Non-native
Snowdrop, *Galanthus nivalis*	3	2008 - 2014	Non-native
Sun Spurge, *Euphorbia helioscopia*	11	2001 - 2016	Non-native
Swedish Whitebeam, *Sorbus intermedia*	1	2011 - 2011	Non-native
Swine-cress, *Lepidium coronopus*	15	2001 - 2016	Non-native
Sycamore, *Acer pseudoplatanus*	22	2001 - 2016	Non-native
Tomato, *Lycopersicon esculentum*	1	2013 - 2013	Non-native
Virginia-creeper, *Parthenocissus quinquefolia*	1	2016 - 2016	Non-native
Wall Barley, *Hordeum murinum*	17	2009 - 2016	Non-native
Walnut, *Juglans regia*	3	2011 - 2016	Non-native

Flowering Plant (124 taxa)			
Weeping Crack-willow, *Salix euxina x alba x babylonica = S. x pendulina*	3	2011 - 2013	Non-native
Weeping Willow, *Salix alba x babylonica = S. x sepulcralis*	1	2016 - 2016	Non-native
Weld, *Reseda luteola*	5	2011 - 2016	Non-native
White Campion, *Silene latifolia*	2	2001 - 2011	Non-native
White Dead-nettle, *Lamium album*	27	2001 - 2016	Non-native
White Poplar, *Populus alba*	3	2009 - 2011	Non-native
White Stonecrop, *Sedum album*	3	2011 - 2013	Non-native
White Willow, *Salix alba*	7	2009 - 2016	Non-native
Wild Plum, *Prunus domestica*	14	2009 - 2016	Non-native
Wild-oat, *Avena fatua*	18	2001 - 2016	Non-native

Insect - Beetle (Coleoptera) (1 taxa)			
Harlequin Ladybird, *Harmonia axyridis*	11	2011 - 2019	Non-native

Insect - Butterfly (4 taxa)			
Small Heath, *Coenonympha pamphilus*	58	1997 - 2021	Priority
Wall, *Lasiommata megera*	184	1997 - 2014	Priority
White Admiral, *Limenitis camilla*	2	2009 - 2014	Priority
White-letter Hairstreak, *Satyrium w-album*	11	2021 - 2021	Protected, Priority

Insect - Hymenopteran (1 taxa)			
Large Garden Bumblebee, *Bombus ruderatus*	2	2019 - 2019	Priority

Insect - Moth (4 taxa)			
Blood-vein, *Timandra comae*	2	2018 - 2018	Priority
Cinnabar, *Tyria jacobaeae*	97	1998 - 2021	Priority
Latticed Heath, *Chiasmia clathrata*	15	2004 - 2020	Priority
Shaded Broad-bar, *Scotopteryx chenopodiata*	7	2020 - 2021	Priority

Mollusc (7 taxa)			
Bladder snails, *Physa*	4	2006 - 2007	Non-native
Common Bladder Snail, *Physa fontinalis*	3	1990 - 1998	Non-native
False Dark Mussel, *Mytilopsis leucophaeata*	19	2006 - 2015	Non-native
Gulf Wedge Clam, *Rangia cuneata*	2	2015 - 2016	Non-native
Jenkins' Spire Snail, *Potamopyrgus antipodarum*	285	1972 - 2019	Non-native
Physella acuta, *Physella acuta*	2	2013 - 2013	Non-native
Zebra Mussel, *Dreissena polymorpha*	16	1996 - 2013	Non-native

Terrestrial Mammal (10 taxa)			
Brown Hare, *Lepus europaeus*	66	1976 - 2019	Priority
Brown Rat, *Rattus norvegicus*	8	1977 - 1977	Non-native
Chinese Muntjac, *Muntiacus reevesi*	1	2019 - 2019	Non-native
Eastern Grey Squirrel, *Sciurus carolinensis*	2	1977 - 2018	Non-native
Eurasian Badger, *Meles meles*	38	1996 - 2016	Protected
Eurasian Otter, *Lutra lutra*	7	2010 - 2015	Protected, Priority
European Rabbit, *Oryctolagus cuniculus*	34	1977 - 2017	Non-native
European Water Vole, *Arvicola amphibius*	224	1976 - 2018	Protected, Priority, Local Priority
House Mouse, *Mus musculus*	6	1977 - 1977	Non-native
West European Hedgehog, *Erinaceus europaeus*	46	1976 - 2020	Priority

Terrestrial Mammal (bat) (8 taxa)			
Bat, *Chiroptera*	46	1993 - 2020	Protected, Priority, Local Priority
Brown Long-eared Bat, *Plecotus auritus*	2	2008 - 2017	Protected, Priority, Local Priority
Common Pipistrelle, *Pipistrellus pipistrellus sensu stricto*	11	2014 - 2016	Protected, Local Priority
Daubenton's Bat, *Myotis daubentonii*	7	2014 - 2016	Protected, Local Priority
Myotis Bat species, *Myotis*	3	2014 - 2015	Protected, Priority, Local Priority
Noctule Bat, *Nyctalus noctula*	3	2015 - 2017	Protected, Priority, Local Priority
Pipistrelle Bat species, *Pipistrellus*	8	2006 - 2017	Protected, Priority, Local Priority
Western Barbastelle, *Barbastella barbastellus*	1	2017 - 2017	Protected, Priority, Local Priority

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Achieving more for nature

GLNP
GREATER LINCOLNSHIRE
NATURE PARTNERSHIP

LERC Search Summary Report

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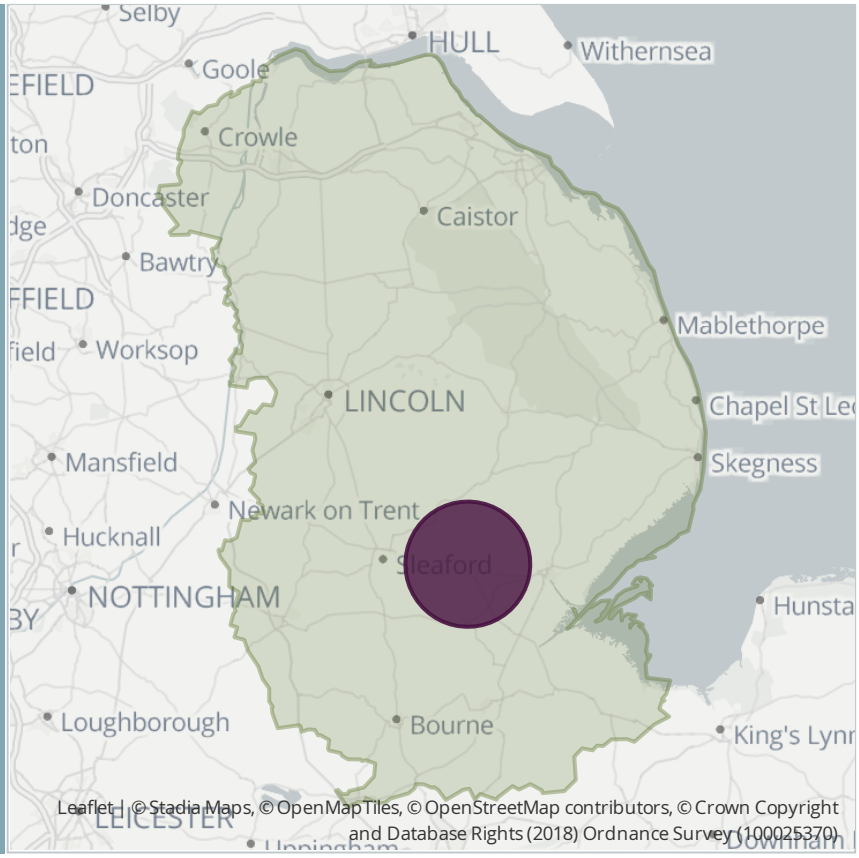
GREATER LINCOLNSHIRE NATURE PARTNERSHIP

Report Details

Produced for	Simon Pickering, Ecotricity
Search area	

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This report summarises a search of statutory sites, non-statutory sites, other sites, habitats and species within the specified area; where no information is returned for a section, it is excluded from this summary report.

About the Lincolnshire Environmental Records Centre

The Lincolnshire Environmental Records Centre (LERC) collates wildlife and geological information for Greater Lincolnshire from various sources and makes it available for various uses. This data is crucial to aid conservation management of sites, to help organisations prioritise action, and to understand the distribution of species and trends over time. For more information on LERC or to request a data search, visit the website at https://glnp.org.uk/partnership/lerc/

an ALERC accredited LERC
Association of Local Environmental Records Centres

Lincolnshire Environmental Records Centre is an ALERC accredited LRC, meeting the standard level criteria.
For more information on acceditation, see the ALERC website at http://www.alerc.org.uk/alerc-accreditation.html

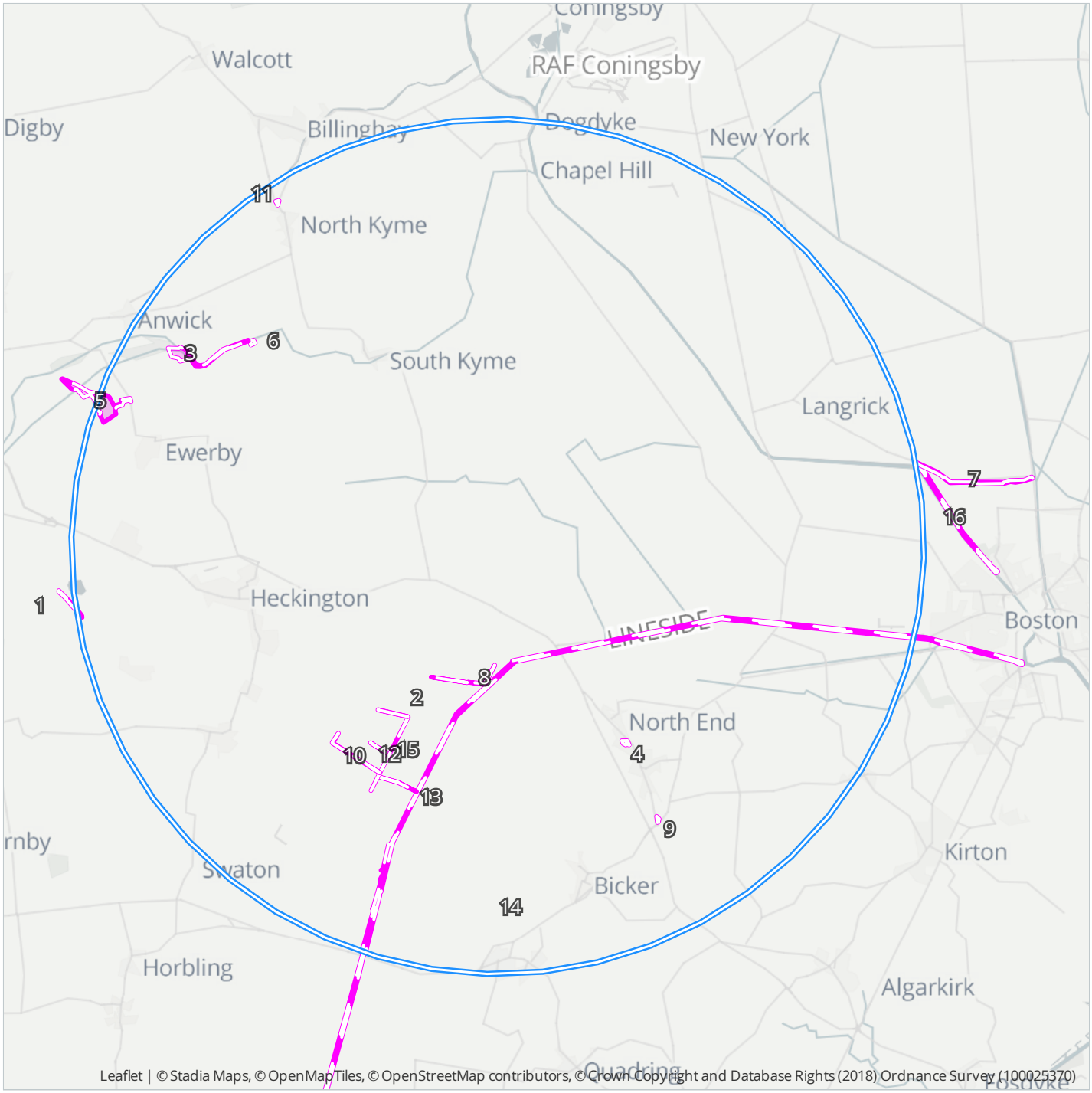
Non-statutory sites

The GLNP works directly with local authorities to coordinate the Local Sites system in Greater Lincolnshire. Sites are selected by the Nature Partnership, based on recommendations made by its expert working groups known as the LWS Panel and LGS Panel. The Register of Local Sites is then submitted for inclusion within local authority planning policy.

These sites are recognition of wildlife or geological value and are a testament to the land management that is already being undertaken on them. Identifying these sites helps local authorities meet their obligations under legislation and government guidance, including reporting on the number of sites in positive management for Single Data List Indicator 160-00.

Code	Designation	Status	Name
1	LWS	Selected	Beacon Hill Railway Cutting
2	LWS	Selected	Broadhurst Drain East
3	LWS	Selected	Cobbler's Lock Sedge and Reed Beds
4	LWS	Selected	Cole's Lane Ponds
5	LWS	Selected	Evedon Wood
6	LWS	Selected	Ewerby Pond
7	LWS	Selected	Frith Bank Drain
8	LWS	Selected	Great Hale Eau
9	LWS	Selected	Mackay's Pit
10	LWS	Selected	Mill Drain
11	LWS	Selected	North Kyme Common Pond
12	LWS	Selected	Old Forty Foot Drain
13	LWS	Selected	Old Forty Foot Drain to South Forty Foot Drain
14	LWS	Selected	South Forty Foot Drain
15	LWS	Selected	Willow Farm Drain
16	LWS	Selected	Witham Way, Anton's Gowt to Boston

Non-statutory sites within the search area



Space restrictions on the map may result in some sites not being labelled. Please refer to the site citations for details.

Local Wildlife Site

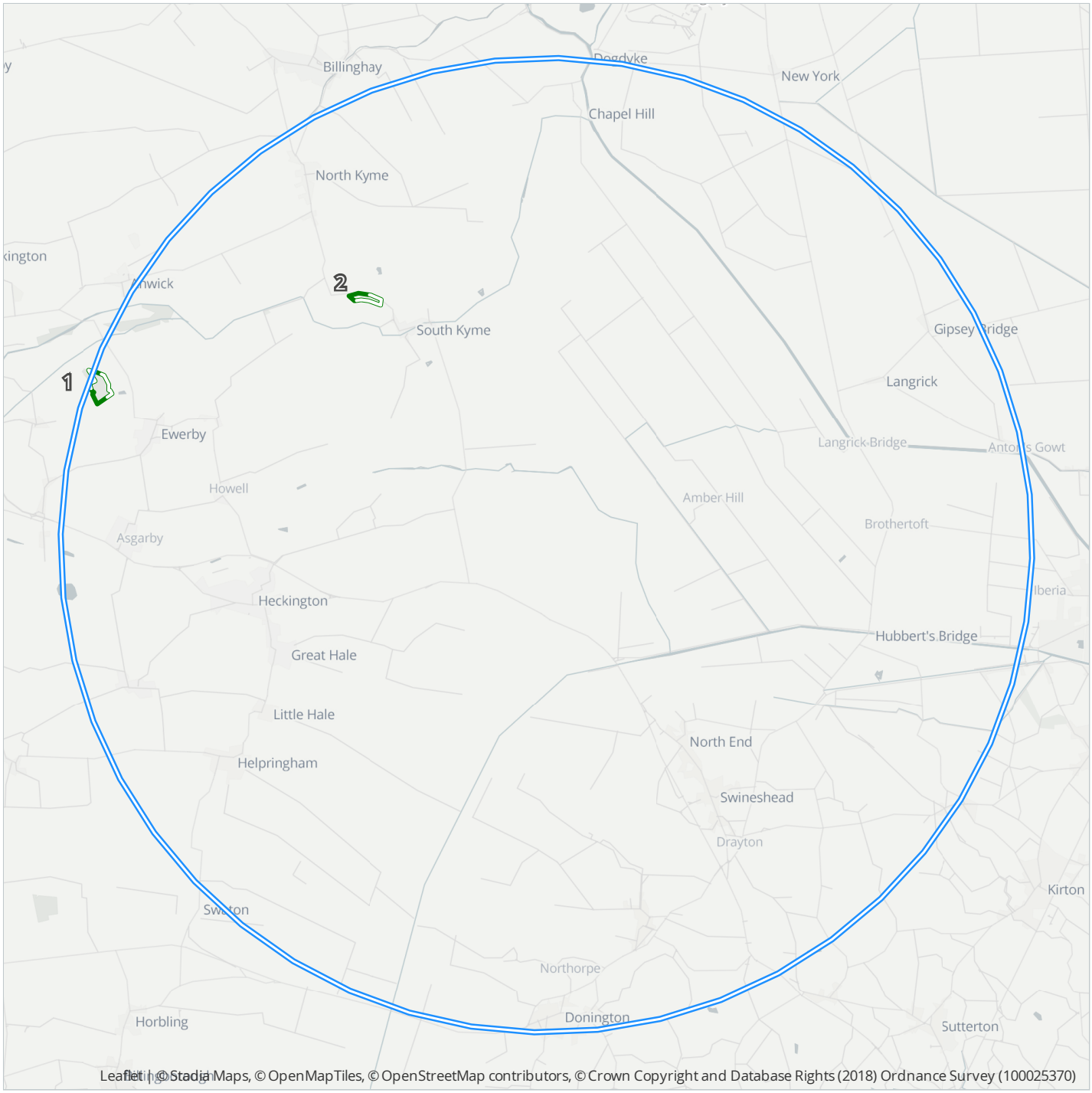
Search area

Other Sites

There are a number of other sites which can be important for the biodiversity they support and as part of the natural environments wider ecological network. For more information on these, please contact the relevant organisation.

Code	Designation	Status	Name
1	Ancient Woodland	Ancient & Semi-Natural Woodland	EVEDON WOOD
2	Ancient Woodland	Ancient & Semi-Natural Woodland	OLD WOOD

Other Sites within the search area



Space restrictions on the map may result in some sites not being labelled.

Ancient & Semi-Natural Woodland

Search area

Habitats

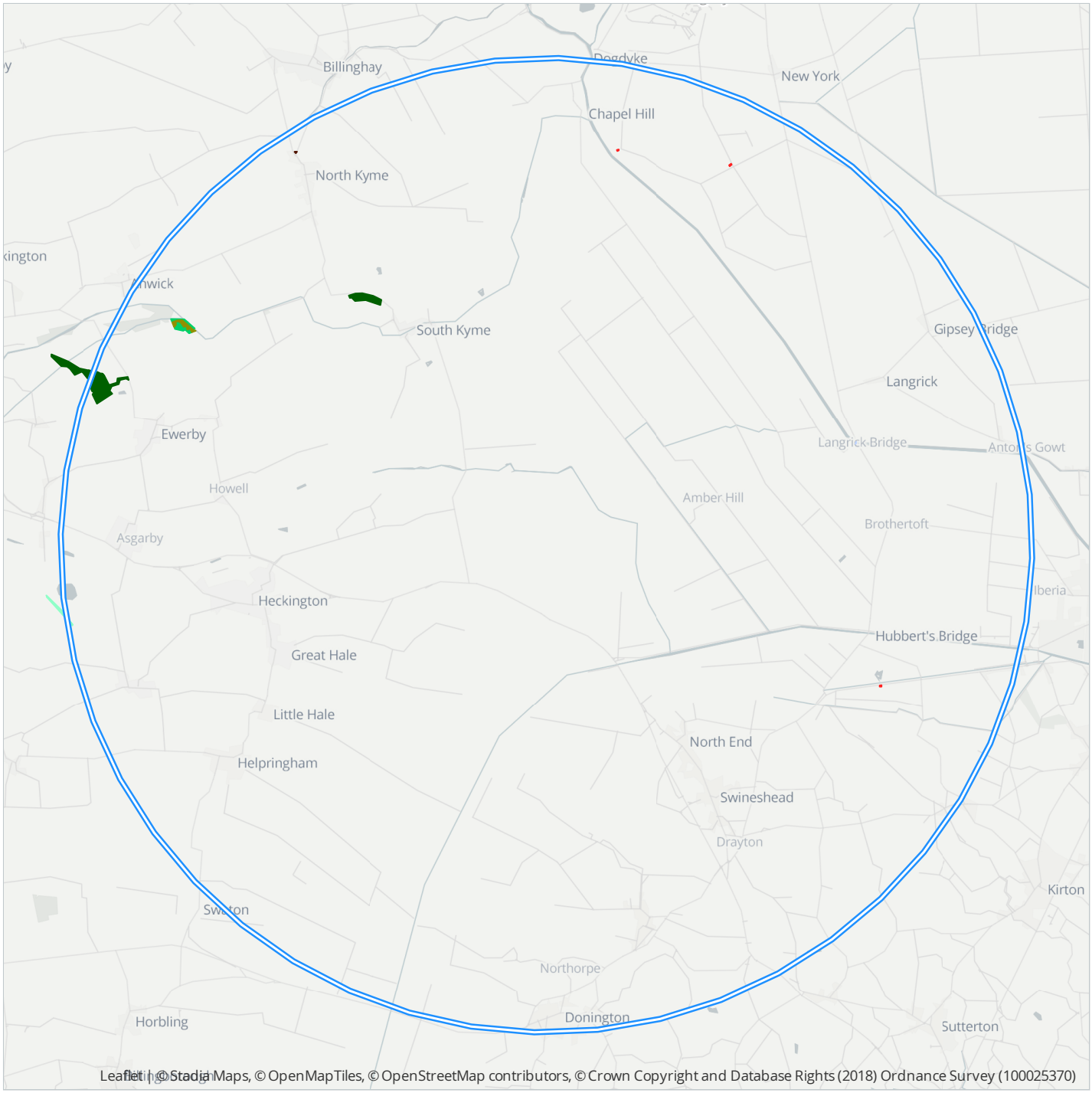
Priority habitats are those identified as being the most threatened and requiring conservation action in the UK. The most-recent list of UK priority species and habitats was published in August 2007 following a 2-year review of the process and priorities, representing the most comprehensive analysis of such information ever undertaken in the UK.

The data presented is the most up-to-date of the data collated by the GLNP and mostly comes from surveys of Local Sites; further historic data and non-Priority habitat data may also be available. Absence of information doesn't mean that the Priority habitat isn't present merely that no information is held.

A number of different datasets have been consulted to produce this report - a summary of attribution statements is available at https://glnp.org.uk/images/uploads/services/lincolnshire-environmental-records-centre/habitat%20attribution.pdf.

Type	Habitat	Survey Date	Area (ha)
Priority Habitat	Lowland calcareous grassland	2009	2.11
Priority Habitat	Lowland fens	2009	2.84
Priority Habitat	Lowland mixed deciduous woodland	2009 - 2020	40.41
Priority Habitat	Reedbeds	2009	0.12
Priority Habitat	Rivers	2007	0.03
Priority Habitat	Traditional orchards	2010 - 2012	0.36
Priority Habitat	Wet woodland	2009	5.71

Habitats within the search area



Space restrictions on the map may result in some sites not being labelled.

- Lowland calcareous grassland
- Lowland fens
- Lowland mixed deciduous woodland
- Reedbeds
- Rivers
- Traditional orchards
- Wet woodland
- Search area

Species

Lincolnshire Environmental Records Centre holds records on the following species within or overlapping the search area. Data shown is as held by LERC; past records of presence of a species does not guarantee continued occurrence and absence of records does not imply absence of a species, merely that no records are held. Confidential data, zero abundance records, data at poorly defined geographic resolutions and data pending validation and/or verification are also excluded from this report. A number of different datasets have been consulted to produce this report - a summary of attribution statements is available at https://glnp.org.uk/images/uploads/services/lincolnshire-environmental-records-centre/species%20attribution.pdf

Amphibian (4 taxa)

Common Frog, *Rana temporaria*	74	1977 - 2016	Protected
Common Toad, *Bufo bufo*	34	1976 - 2019	Protected, Priority
Great Crested Newt, *Triturus cristatus*	12	1976 - 2021	Protected, Priority, Local Priority
Smooth Newt, *Lissotriton vulgaris*	18	1976 - 2019	Protected, Local Priority

Bird (118 taxa)

Alexandrine Parakeet, *Psittacula eupatria*	2	2012 - 2013	Non-native
Avocet, *Recurvirostra avosetta*	3	2013 - 2018	Protected
Bar-headed Goose, *Anser indicus*	1	2007 - 2007	Non-native
Barn Owl, *Tyto alba*	305	1984 - 2021	Protected, Local Priority
Barnacle Goose, *Branta leucopsis*	4	2012 - 2019	Non-native
Bee-eater, *Merops apiaster*	1	2002 - 2002	Protected
Bittern, *Botaurus stellaris*	1	2013 - 2013	Protected, Priority, Local Priority
Black Kite, *Milvus migrans*	1	1994 - 1994	Non-native
Black Redstart, *Phoenicurus ochruros*	2	2009 - 2009	Protected
Black Stork, *Ciconia nigra*	1	2015 - 2015	Non-native
Black Swan, *Cygnus atratus*	10	2002 - 2015	Non-native
Black Tern, *Chlidonias niger*	3	2005 - 2018	Protected
Black-tailed Godwit, *Limosa limosa*	8	2012 - 2019	Protected
Brambling, *Fringilla montifringilla*	79	1998 - 2020	Protected
Bullfinch, *Pyrrhula pyrrhula*	194	1999 - 2020	Local Priority
Canada Goose, *Branta canadensis*	85	1996 - 2020	Non-native
Cockatiel, *Nymphicus hollandicus*	2	2006 - 2011	Non-native
Collared Dove, *Streptopelia decaocto*	1977	1964 - 2020	Non-native
Columba livia 'feral', *Columba livia 'feral'*	470	1998 - 2020	Non-native
Common Scoter, *Melanitta nigra*	1	2013 - 2013	Protected, Priority
Corn Bunting, *Emberiza calandra*	66	1975 - 2017	Local Priority
Corncrake, *Crex crex*	1	1960 - 1960	Protected, Priority
Crossbill, *Loxia curvirostra*	6	2000 - 2020	Protected

Bird (118 taxa)			
Cuckoo, *Cuculus canorus*	94	1984 - 2020	Priority
Curlew, *Numenius arquata*	42	1998 - 2020	Priority, Local Priority
Dark-bellied Brent Goose, *Branta bernicla bernicla*	15	2000 - 2019	Priority, Non-native
Dotterel, *Charadrius morinellus*	1	2000 - 2000	Protected
Egyptian Goose, *Alopochen aegyptiaca*	20	2000 - 2020	Non-native
Emperor Goose, *Anser canagicus*	1	2009 - 2009	Non-native
Eurasian Eagle-Owl, *Bubo bubo*	2	2015 - 2018	Non-native
Ferruginous Duck, *Aythya nyroca*	1	1974 - 1974	Non-native
Fieldfare, *Turdus pilaris*	403	1977 - 2020	Protected
Firecrest, *Regulus ignicapilla*	2	2003 - 2011	Protected
Gadwall, *Mareca strepera*	212	1998 - 2020	Non-native
Glossy Ibis, *Plegadis falcinellus*	1	2016 - 2016	Non-native
Goldeneye, *Bucephala clangula*	41	1996 - 2015	Protected
Goshawk, *Accipiter gentilis*	3	1998 - 2005	Protected, Non-native
Grasshopper Warbler, *Locustella naevia*	52	2000 - 2020	Priority
Great Northern Diver, *Gavia immer*	4	2014 - 2014	Protected
Green Sandpiper, *Tringa ochropus*	83	1996 - 2020	Protected
Greenshank, *Tringa nebularia*	7	2002 - 2018	Protected
Grey Partridge, *Perdix perdix*	240	1998 - 2020	Priority, Local Priority, Non-native
Greylag Goose, *Anser anser*	457	1987 - 2020	Protected
Hawfinch, *Coccothraustes coccothraustes*	3	2001 - 2008	Priority
Hen Harrier, *Circus cyaneus*	38	2005 - 2020	Protected
Hobby, *Falco subbuteo*	65	1999 - 2020	Protected
Honey-buzzard, *Pernis apivorus*	4	2000 - 2011	Protected
Hoopoe, *Upupa epops*	9	2004 - 2019	Protected
House Sparrow, *Passer domesticus*	1939	1977 - 2020	Priority, Local Priority
Indet. Harrier, *Circus*	1	2009 - 2009	Protected
Kingfisher, *Alcedo atthis*	429	1998 - 2020	Protected
Lapland Bunting, *Calcarius lapponicus*	3	2005 - 2012	Protected
Lapwing, *Vanellus vanellus*	580	1983 - 2020	Priority, Local Priority
Lesser Redpoll, *Acanthis cabaret*	68	2000 - 2018	Priority
Light-bellied Brent Goose, *Branta bernicla hrota*	2	2005 - 2014	Non-native
Linnet, *Linaria cannabina*	476	1976 - 2020	Local Priority
Little Egret, *Egretta garzetta*	173	2000 - 2020	Protected
Little Gull, *Hydrocoloeus minutus*	1	2013 - 2013	Protected
Little Owl, *Athene noctua*	203	1998 - 2020	Non-native
Little Ringed Plover, *Charadrius dubius*	1	2018 - 2018	Protected
Little Tern, *Sternula albifrons*	4	2007 - 2020	Protected

Bird (118 taxa)			
Long-tailed Duck, *Clangula hyemalis*	1	2017 - 2017	Protected
Mandarin Duck, *Aix galericulata*	26	2011 - 2018	Non-native
Marsh Harrier, *Circus aeruginosus*	99	1998 - 2019	Protected
Mediterranean Gull, *Ichthyaetus melanocephalus*	4	2005 - 2012	Protected
Merlin, *Falco columbarius*	73	1998 - 2019	Protected
Montagu's Harrier, *Circus pygargus*	3	2007 - 2009	Protected
Mute Swan, *Cygnus olor*	660	1977 - 2020	Non-native
Night-heron, *Nycticorax nycticorax*	1	1973 - 1973	Non-native
Osprey, *Pandion haliaetus*	7	2002 - 2016	Protected
Peregrine, *Falco peregrinus*	85	1998 - 2020	Protected
Pheasant, *Phasianus colchicus*	1439	1983 - 2020	Non-native
Pink-footed Goose, *Anser brachyrhynchus*	167	1998 - 2020	Non-native
Pintail, *Anas acuta*	7	1998 - 2019	Protected, Non-native
Pochard, *Aythya ferina*	58	1996 - 2017	Non-native
Purple Heron, *Ardea purpurea*	1	2011 - 2011	Protected
Purple Sandpiper, *Calidris maritima*	1	2013 - 2013	Protected
Quail, *Coturnix coturnix*	4	1998 - 2019	Protected
Red Kite, *Milvus milvus*	11	2009 - 2020	Protected
Red-backed Shrike, *Lanius collurio*	1	1974 - 1974	Protected, Priority
Red-breasted Goose, *Branta ruficollis*	1	2020 - 2020	Non-native
Red-crested Pochard, *Netta rufina*	17	2006 - 2007	Non-native
Red-legged Partridge, *Alectoris rufa*	443	1984 - 2020	Non-native
Red-throated Diver, *Gavia stellata*	5	1998 - 2013	Protected
Redshank, *Tringa totanus*	128	1973 - 2020	Local Priority
Redwing, *Turdus iliacus*	186	1977 - 2020	Protected
Reed Bunting, *Emberiza schoeniclus*	498	1984 - 2020	Priority, Local Priority
Ring Ouzel, *Turdus torquatus*	7	2008 - 2017	Priority
Ring-necked Parakeet, *Psittacula krameri*	4	2002 - 2006	Non-native
Rock Dove, *Columba livia*	18	2004 - 2020	Non-native
Rose-coloured Starling, *Pastor roseus*	2	1984 - 2003	Non-native
Ruddy Duck, *Oxyura jamaicensis*	1	2000 - 2000	Non-native
Ruff, *Calidris pugnax*	10	1998 - 2019	Protected
Scaup, *Aythya marila*	2	2018 - 2018	Protected, Priority
Skylark, *Alauda arvensis*	554	1983 - 2020	Local Priority
Slavonian Grebe, *Podiceps auritus*	3	2002 - 2017	Protected
Snipe, *Gallinago gallinago*	138	1983 - 2020	Local Priority
Snow Bunting, *Plectrophenax nivalis*	4	1999 - 2017	Protected
Snow Goose, *Anser caerulescens*	2	2000 - 2000	Non-native

Bird (118 taxa)			
Song Thrush, *Turdus philomelos*	928	1977 - 2020	Local Priority
Spoonbill, *Platalea leucorodia*	4	2009 - 2016	Protected
Spotted Flycatcher, *Muscicapa striata*	78	1998 - 2020	Priority
Starling, *Sturnus vulgaris*	1931	1977 - 2020	Local Priority
Swift, *Apus apus*	725	1976 - 2020	Local Priority
Tree Pipit, *Anthus trivialis*	6	2000 - 2006	Priority
Tree Sparrow, *Passer montanus*	441	1984 - 2020	Priority, Local Priority
Tundra Swan, *Cygnus columbianus*	3	2004 - 2008	Protected
Turtle Dove, *Streptopelia turtur*	184	1983 - 2018	Priority, Local Priority
Whimbrel, *Numenius phaeopus*	12	1998 - 2019	Protected
White Stork, *Ciconia ciconia*	1	1996 - 1996	Non-native
White-fronted Goose, *Anser albifrons*	3	2002 - 2005	Non-native
Whooper Swan, *Cygnus cygnus*	49	1999 - 2020	Protected, Non-native
Wigeon, *Mareca penelope*	97	1996 - 2020	Non-native
Wood Duck, *Aix sponsa*	1	2003 - 2003	Non-native
Wryneck, *Jynx torquilla*	1	2015 - 2015	Protected, Priority
Yellow Wagtail, *Motacilla flava*	346	1998 - 2020	Local Priority
Yellow-billed Teal, *Anas flavirostris*	1	2006 - 2006	Non-native
Yellowhammer, *Emberiza citrinella*	568	1976 - 2020	Priority, Local Priority

Bony Fish (Actinopterygii) (8 taxa)			
Barbel, *Barbus barbus*	1	2009 - 2009	Protected
Brown/Sea Trout, *Salmo trutta*	14	1985 - 2008	Priority
Common Carp, *Cyprinus carpio*	14	1998 - 2016	Non-native
Crucian Carp, *Carassius carassius*	5	1998 - 2009	Non-native
European Eel, *Anguilla anguilla*	342	1977 - 2018	Priority
Goldfish, *Carassius auratus*	3	1998 - 1998	Non-native
Smelt, *Osmerus eperlanus*	1	1985 - 1985	Priority
Spined Loach, *Cobitis taenia*	123	1980 - 2019	Priority

Conifer (11 taxa)			
Atlas Cedar, *Cedrus atlantica*	2	2011 - 2016	Non-native
Austrian Pine, *Pinus nigra*	14	2001 - 2017	Non-native
Bhutan Pine, *Pinus wallichiana*	1	2011 - 2011	Non-native
European Larch, *Larix decidua*	1	2012 - 2012	Non-native
Japanese Larch, *Larix kaempferi*	2	2014 - 2014	Non-native
Lawson's Cypress, *Chamaecyparis lawsoniana*	3	1993 - 2016	Non-native

Conifer (11 taxa)			
Leyland Cypress, *Cupressus macrocarpa x Xanthocyparis nootkatensis = X Cuprocyparis leylandi*	53	2009 - 2017	Non-native
Monkey-puzzle, *Araucaria araucana*	2	2008 - 2008	Non-native
Norway Spruce, *Picea abies*	18	1993 - 2017	Non-native
Sawara Cypress, *Chamaecyparis pisifera*	1	2017 - 2017	Non-native
Wellingtonia, *Sequoiadendron giganteum*	1	2017 - 2017	Non-native

Crustacean (5 taxa)			
Chelicorophium curvispinum, *Chelicorophium curvispinum*	10	1993 - 2012	Non-native
Crangonyx pseudogracilis/floridanus, *Crangonyx pseudogracilis/floridanus sens. lat.*	448	1986 - 2015	Non-native
Demon Shrimp, *Dikerogammarus haemobaphes*	2	2015 - 2015	Non-native
Gammarus tigrinus, *Gammarus tigrinus*	169	1987 - 2019	Non-native
Hemimysis anomala, *Hemimysis anomala*	4	2011 - 2012	Non-native

Fern (1 taxa)			
Water Fern, *Azolla filiculoides*	28	1972 - 2018	Non-native

Flatworm (Turbellaria) (1 taxa)			
Planaria torva, *Planaria torva*	12	2007 - 2013	Non-native

Flowering Plant (294 taxa)			
Adria Bellflower, *Campanula portenschlagiana*	1	2016 - 2016	Non-native
African Lily, *Agapanthus praecox*	1	1993 - 1993	Non-native
Almond, *Prunus dulcis*	1	2010 - 2010	Non-native
Alpine Squill, *Scilla bifolia*	1	2012 - 2012	Non-native
Alsike Clover, *Trifolium hybridum*	15	2010 - 2016	Non-native
American Willowherb, *Epilobium ciliatum*	29	2008 - 2016	Non-native
Annual Mercury, *Mercurialis annua*	1	2016 - 2016	Non-native
Apple, *Malus pumila*	53	1980 - 2018	Non-native
Argentinian Vervain, *Verbena bonariensis*	1	2016 - 2016	Non-native
Arrow Bamboo, *Pseudosasa japonica*	2	2012 - 2017	Non-native
Arum italicum subsp. italicum, *Arum italicum subsp. italicum*	2	2011 - 2012	Non-native
Atlas Poppy, *Papaver atlanticum*	1	2016 - 2016	Non-native
Balkan Spurge, *Euphorbia oblongata*	1	2009 - 2009	Non-native
Balm, *Melissa officinalis*	2	2010 - 2016	Non-native
Barren Brome, *Bromus sterilis*	112	1988 - 2018	Non-native
Beaked Hawk's-beard, *Crepis vesicaria*	7	2008 - 2015	Non-native

Flowering Plant (294 taxa)			
Black Bent, *Agrostis gigantea*	4	2009 - 2016	Non-native
Black Horehound, *Ballota nigra*	10	1997 - 2016	Non-native
Black Mulberry, *Morus nigra*	1	2016 - 2016	Non-native
Black-bindweed, *Fallopia convolvulus*	36	1977 - 2016	Non-native
Black-grass, *Alopecurus myosuroides*	55	1988 - 2018	Non-native
Black-poplar, *Populus nigra subsp. betulifolia*	1	1999 - 1999	Non-native
Black-poplar, *Populus nigra*	1	2000 - 2000	Non-native
Bluebell, *Hyacinthoides non-scripta x hispanica = H. x massartiana*	19	2008 - 2018	Non-native
Borage, *Borago officinalis*	4	2011 - 2017	Non-native
Bread Wheat, *Triticum aestivum*	25	2008 - 2016	Non-native
Bristly Oxtongue, *Picris echioides*	107	1988 - 2018	Non-native
Broad Bean, *Vicia faba*	5	2014 - 2016	Non-native
Broad-leaved Everlasting-pea, *Lathyrus latifolius*	1	2011 - 2011	Non-native
Broad-leaved Osier, *Salix viminalis x caprea = S. x smithiana*	4	2011 - 2016	Non-native
Bugloss, *Anchusa arvensis*	7	2008 - 2017	Non-native
Bulbous Canary-grass, *Phalaris aquatica*	1	2011 - 2011	Non-native
Bunch-flowered Daffodil, *Narcissus tazetta*	1	2014 - 2014	Non-native
Butterfly Stonecrop, *Sedum spectabile*	1	2018 - 2018	Non-native
Butterfly-bush, *Buddleja davidii*	26	1997 - 2018	Non-native
Californian Poppy, *Eschscholzia californica*	2	2009 - 2016	Non-native
Campernelle Jonquil, *Narcissus pseudonarcissus x jonquilla = N. x odorus*	1	2010 - 2010	Non-native
Canadian Fleabane, *Conyza canadensis*	23	1997 - 2016	Non-native
Canadian Goldenrod, *Solidago canadensis*	2	2008 - 2014	Non-native
Canadian Waterweed, *Elodea canadensis*	8	1993 - 2011	Non-native
Caper Spurge, *Euphorbia lathyris*	5	2010 - 2018	Non-native
Cat-mint, *Nepeta cataria*	1	2009 - 2009	Non-native
Caucasian-stonecrop, *Sedum spurium*	2	2014 - 2016	Non-native
Charlock, *Sinapis arvensis*	91	1993 - 2018	Non-native
Cherry Laurel, *Prunus laurocerasus*	19	2009 - 2018	Non-native
Cherry Plum, *Prunus cerasifera*	5	2009 - 2016	Non-native
Cherryred Cotoneaster, *Cotoneaster zabelii*	1	2011 - 2011	Non-native
Chicory, *Cichorium intybus*	2	2014 - 2014	Non-native
Cockspur, *Echinochloa crus-galli*	2	2016 - 2016	Non-native
Common Fiddleneck, *Amsinckia micrantha*	3	1976 - 2009	Non-native
Common Field-speedwell, *Veronica persica*	107	1988 - 2018	Non-native
Common Fumitory, *Fumaria officinalis*	4	2009 - 2011	Non-native
Common Mallow, *Malva sylvestris*	114	1988 - 2018	Non-native

Flowering Plant (294 taxa)			
Common Poppy, *Papaver rhoeas*	110	1977 - 2018	Non-native
Common Vetch, *Vicia sativa subsp. segetalis*	11	2009 - 2017	Non-native
Confused Bridewort, *Spiraea salicifolia x douglasii = S. x pseudosalicifolia*	1	2016 - 2016	Non-native
Corn Marigold, *Glebionis segetum*	5	1999 - 2017	Non-native
Corncockle, *Agrostemma githago*	2	2014 - 2016	Non-native
Cornflower, *Centaurea cyanus*	3	2010 - 2017	Priority, Non-native
Cornus sanguinea subsp. australis, *Cornus sanguinea subsp. australis*	12	2011 - 2016	Non-native
Cotton Thistle, *Onopordum acanthium*	6	1997 - 2018	Non-native
Crack-willow, *Salix euxina x alba = S. x fragilis*	12	2008 - 2011	Non-native
Crocus vernus subsp. albiflorus, *Crocus vernus subsp. albiflorus*	1	2015 - 2015	Non-native
Cut-leaved Crane's-bill, *Geranium dissectum*	101	1988 - 2017	Non-native
Cut-leaved Dead-nettle, *Lamium hybridum*	10	1998 - 2016	Non-native
Cut-leaved Teasel, *Dipsacus laciniatus*	1	2011 - 2011	Non-native
Cypress Spurge, *Euphorbia cyparissias*	1	2016 - 2016	Non-native
Dame's-violet, *Hesperis matronalis*	1	2009 - 2009	Non-native
Darwin's Barberry, *Berberis darwinii*	1	2014 - 2014	Non-native
Dotted Loosestrife, *Lysimachia punctata*	2	2010 - 2016	Non-native
Druce's Crane's-bill, *Geranium endressii x versicolor = G. x oxonianum*	1	2016 - 2016	Non-native
Duke of Argyll's Teaplant, *Lycium barbarum*	2	2011 - 2013	Non-native
Dwarf Mallow, *Malva neglecta*	24	1998 - 2018	Non-native
Dwarf Spurge, *Euphorbia exigua*	2	1988 - 2011	Non-native
Early Goldenrod, *Solidago gigantea*	1	2009 - 2009	Non-native
Equal-leaved Knotgrass, *Polygonum arenastrum*	25	1997 - 2018	Non-native
Evening Primrose, *Oenothera*	1	2008 - 2008	Non-native
Evergreen Oak, *Quercus ilex*	1	2016 - 2016	Non-native
False-acacia, *Robinia pseudoacacia*	2	2016 - 2016	Non-native
Fennel, *Foeniculum vulgare*	6	2010 - 2016	Non-native
Fern-leaf Yarrow, *Achillea filipendulina*	1	2013 - 2013	Non-native
Feverfew, *Tanacetum parthenium*	27	1988 - 2018	Non-native
Field Forget-me-not, *Myosotis arvensis*	44	1988 - 2017	Non-native
Field Pansy, *Viola arvensis*	14	2001 - 2017	Non-native
Field Penny-cress, *Thlaspi arvense*	24	1997 - 2017	Non-native
Field Pepperwort, *Lepidium campestre*	1	1977 - 1977	Non-native
Fig-leaved Goosefoot, *Chenopodium ficifolium*	22	2001 - 2018	Non-native
Flax, *Linum usitatissimum*	4	2009 - 2016	Non-native

Flowering Plant (294 taxa)			
Flowering Currant, *Ribes sanguineum*	3	2014 - 2016	Non-native
Forsythia suspensa x viridissima = F. x intermedia, *Forsythia suspensa x viridissima = F. x intermedia*	2	2014 - 2016	Non-native
Fox and Cubs, *Pilosella aurantiaca subsp. carpathicola*	7	2009 - 2016	Non-native
Fox-and-cubs, *Pilosella aurantiaca*	7	2010 - 2018	Non-native
Fumaria officinalis subsp. officinalis, *Fumaria officinalis subsp. officinalis*	2	2011 - 2014	Non-native
Garden Asparagus, *Asparagus officinalis*	2	2009 - 2012	Non-native
Garden Cat-mint, *Nepeta nepetella x racemosa = N. x faassenii*	1	2014 - 2014	Non-native
Garden Grape-hyacinth, *Muscari armeniacum*	5	2012 - 2017	Non-native
Garden Honeysuckle, *Lonicera caprifolium x etrusca = L. x italica*	1	2016 - 2016	Non-native
Garden Lobelia, *Lobelia erinus*	1	2016 - 2016	Non-native
Garden Orache, *Atriplex hortensis*	1	2014 - 2014	Non-native
Garden Pansy, *Viola lutea x tricolor x altaica = V. x wittrockiana*	1	2015 - 2015	Non-native
Garden Pea, *Pisum sativum*	1	2014 - 2014	Non-native
Garden Privet, *Ligustrum ovalifolium*	29	2001 - 2018	Non-native
Garden Radish, *Raphanus sativus*	1	2014 - 2014	Non-native
Garden Tulip, *Tulipa gesneriana*	3	2010 - 2017	Non-native
Generous Poplar, *Populus trichocarpa x deltoides = P. x generosa*	1	2013 - 2013	Non-native
Giant Hogweed, *Heracleum mantegazzianum*	7	1993 - 2014	Non-native
Glory-of-the-snow, *Scilla forbesii*	2	2016 - 2016	Non-native
Gold-of-pleasure, *Camelina sativa*	1	2014 - 2014	Non-native
Golden Rain, *Laburnum anagyroides*	8	1993 - 2017	Non-native
Good-King-Henry, *Chenopodium bonus-henricus*	1	2014 - 2014	Non-native
Gooseberry, *Ribes uva-crispa*	3	2012 - 2016	Non-native
Great Brome, *Bromus diandrus*	1	2013 - 2013	Non-native
Greater Burdock, *Arctium lappa*	16	1988 - 2016	Non-native
Greater Celandine, *Chelidonium majus*	6	2001 - 2016	Non-native
Greater Periwinkle, *Vinca major*	16	1997 - 2017	Non-native
Green Alkanet, *Pentaglottis sempervirens*	12	2001 - 2016	Non-native
Green Amaranth, *Amaranthus hybridus*	1	2011 - 2011	Non-native
Green Field-speedwell, *Veronica agrestis*	5	1997 - 2016	Non-native
Green Nightshade, *Solanum physalifolium*	1	2009 - 2009	Non-native
Grey Alder, *Alnus incana*	2	2011 - 2012	Non-native
Ground-elder, *Aegopodium podagraria*	40	1993 - 2018	Non-native
Hairy Bindweed, *Calystegia pulchra*	1	2009 - 2009	Non-native
Hedge Mustard, *Sisymbrium officinale*	93	1988 - 2018	Non-native

Flowering Plant (294 taxa)			
Hedgerow Crane's-bill, *Geranium pyrenaicum*	21	1977 - 2017	Non-native
Hemlock, *Conium maculatum*	79	1988 - 2018	Non-native
Henbit Dead-nettle, *Lamium amplexicaule*	2	2009 - 2011	Non-native
Himalayan Cotoneaster, *Cotoneaster simonsii*	1	2016 - 2016	Non-native
Hoary Cress, *Lepidium draba*	16	2010 - 2018	Non-native
Hollyhock, *Alcea rosea*	1	2016 - 2016	Non-native
Holme Willow, *Salix viminalis x caprea x cinerea = S. x calodendron*	5	2010 - 2016	Non-native
Honesty, *Lunaria annua*	7	2001 - 2016	Non-native
Horse-chestnut, *Aesculus hippocastanum*	65	1997 - 2018	Non-native
Horse-radish, *Armoracia rusticana*	90	1988 - 2018	Non-native
Hybrid Balsam-poplar, *Populus trichocarpa x balsamifera = P. 'Balsam Spire'*	3	2009 - 2016	Non-native
Hybrid Black-poplar, *Populus nigra x deltoides = P. x canadensis*	21	1993 - 2017	Non-native
Italian Alder, *Alnus cordata*	2	2009 - 2011	Non-native
Italian Rye-grass, *Lolium multiflorum*	10	1998 - 2016	Non-native
Ivy-Leaved Speedwell, *Veronica hederifolia subsp. hederifolia*	17	2001 - 2018	Non-native
Ivy-leaved Speedwell, *Veronica hederifolia*	17	2000 - 2014	Non-native
Ivy-leaved Toadflax, *Cymbalaria muralis*	7	2001 - 2016	Non-native
Japanese Honeysuckle, *Lonicera japonica*	1	2016 - 2016	Non-native
Japanese Knotweed, *Fallopia japonica*	2	2012 - 2017	Non-native
Japanese Quince, *Chaenomeles japonica*	1	2016 - 2016	Non-native
Japanese Rose, *Rosa rugosa*	1	2016 - 2016	Non-native
Jerusalem Artichoke, *Helianthus tuberosus*	2	2011 - 2015	Non-native
Lamb's-ear, *Stachys byzantina*	1	2016 - 2016	Non-native
Lamiastrum galeobdolon subsp. argentatum, *Lamiastrum galeobdolon subsp. argentatum*	8	2009 - 2016	Non-native
Large Bindweed, *Calystegia silvatica*	10	2009 - 2016	Non-native
Large-flowered Evening-primrose, *Oenothera glazioviana*	5	2009 - 2019	Non-native
Large-flowered Pink-sorrel, *Oxalis debilis*	1	2011 - 2011	Non-native
Large-leaved Spindle, *Euonymus latifolius*	1	2011 - 2011	Non-native
Larkspur, *Consolida ajacis*	1	2016 - 2016	Non-native
Least Duckweed, *Lemna minuta*	1	2008 - 2008	Non-native
Least Yellow-sorrel, *Oxalis exilis*	5	2012 - 2017	Non-native
Lepidium draba subsp. draba, *Lepidium draba subsp. draba*	1	2008 - 2008	Non-native
Lesser Daffodil, *Narcissus minor*	1	2015 - 2015	Non-native
Lesser Swine-cress, *Lepidium didymum*	7	2008 - 2016	Non-native
Lilac, *Syringa vulgaris*	13	2009 - 2017	Non-native

Flowering Plant (294 taxa)			
Lleyn Cotoneaster, *Cotoneaster villosulus*	1	2016 - 2016	Non-native
London Plane, *Platanus occidentalis x orientalis = P. x hispanica*	3	2011 - 2016	Non-native
Long Smooth-headed Poppy, *Papaver dubium*	10	1998 - 2015	Non-native
Long-headed Poppy, *Papaver dubium subsp. dubium*	2	2011 - 2011	Non-native
Lovage, *Levisticum officinale*	1	2016 - 2016	Non-native
Lungwort, *Pulmonaria officinalis*	1	2018 - 2018	Non-native
Many-seeded Goosefoot, *Chenopodium polyspermum*	4	1985 - 2016	Non-native
Medium-flowered Winter-cress, *Barbarea intermedia*	3	2017 - 2017	Non-native
Mexican Fleabane, *Erigeron karvinskianus*	1	2016 - 2016	Non-native
Milk Thistle, *Silybum marianum*	2	2010 - 2015	Non-native
Mind-your-own-business, *Soleirolia soleirolii*	1	2016 - 2016	Non-native
Montbretia, *Crocosmia pottsii x aurea = C. x crocosmiiflora*	5	2009 - 2016	Non-native
Mugwort, *Artemisia vulgaris*	88	1988 - 2018	Non-native
Narrow-leaved Pepperwort, *Lepidium ruderale*	8	2001 - 2019	Non-native
Nonesuch Daffodil, *Narcissus poeticus x pseudonarcissus = N. x incomparabilis*	6	2010 - 2014	Non-native
Norway Maple, *Acer platanoides*	13	2008 - 2016	Non-native
Nuttall's Waterweed, *Elodea nuttallii*	64	1993 - 2019	Non-native
Oat, *Avena sativa*	1	2008 - 2008	Non-native
Oil-seed Rape, *Brassica napus subsp. oleifera*	77	2001 - 2018	Non-native
Opium Poppy, *Papaver somniferum*	13	2008 - 2018	Non-native
Orange Whitebeam, *Sorbus croceocarpa*	1	2011 - 2011	Non-native
Oregon-grape, *Mahonia aquifolium*	3	2012 - 2016	Non-native
Oriental Poppy, *Papaver pseudoorientale*	1	2014 - 2014	Non-native
Osier, *Salix viminalis*	31	1998 - 2016	Non-native
Oxford Ragwort, *Senecio squalidus*	19	1993 - 2018	Non-native
Pampas-grass, *Cortaderia selloana*	1	2014 - 2014	Non-native
Peach-leaved Bellflower, *Campanula persicifolia*	1	2016 - 2016	Non-native
Pear, *Pyrus communis*	2	2008 - 2012	Non-native
Perennial Cornflower, *Centaurea montana*	2	2016 - 2016	Non-native
Persian Ivy, *Hedera colchica*	1	2016 - 2016	Non-native
Petty Spurge, *Euphorbia peplus*	38	1997 - 2018	Non-native
Pheasant's Eye, *Narcissus poeticus subsp. poeticus*	1	2010 - 2010	Non-native
Phlox paniculata, *Phlox paniculata*	1	2016 - 2016	Non-native
Pineappleweed, *Matricaria discoidea*	89	1977 - 2018	Non-native
Pink-sorrel, *Oxalis articulata*	3	2009 - 2016	Non-native
Pirri-pirri-bur, *Acaena novae-zelandiae*	1	2010 - 2010	Non-native
Portugal Laurel, *Prunus lusitanica*	3	2016 - 2018	Non-native

Flowering Plant (294 taxa)			
Pot Marigold, *Calendula officinalis*	2	2016 - 2018	Non-native
Potato, *Solanum tuberosum*	4	2011 - 2016	Non-native
Prickly Lettuce, *Lactuca serriola*	51	1997 - 2018	Non-native
Prickly Poppy, *Papaver argemone*	2	1988 - 1988	Non-native
Primrose-peerless, *Narcissus tazetta x poeticus = N. x medioluteus*	5	2012 - 2014	Non-native
Procumbent Yellow-sorrel, *Oxalis corniculata*	1	2016 - 2016	Non-native
Purple Toadflax, *Linaria purpurea*	16	2001 - 2018	Non-native
Pyrus communis, *Pyrus communis sens.lat.*	2	2010 - 2011	Non-native
Rape, *Brassica napus*	9	1984 - 2014	Non-native
Rat's-tail Fescue, *Vulpia myuros*	6	2008 - 2016	Non-native
Red Buffalo-bur, *Solanum sisymbriifolium*	1	2016 - 2016	Non-native
Red Dead-nettle, *Lamium purpureum*	76	1988 - 2018	Non-native
Red Horse-chestnut, *Aesculus carnea*	4	2011 - 2018	Non-native
Red Oak, *Quercus rubra*	1	2011 - 2011	Non-native
Red Valerian, *Centranthus ruber*	16	2001 - 2018	Non-native
Red-osier Dogwood, *Cornus sericea*	1	2016 - 2016	Non-native
Reflexed Stonecrop, *Sedum rupestre*	12	2011 - 2018	Non-native
Rhubarb, *Rheum palmatum x rhaponticum = R. x hybridum*	3	2010 - 2016	Non-native
Ribbed Melilot, *Melilotus officinalis*	3	1988 - 2009	Non-native
Root Beet, *Beta vulgaris subsp. vulgaris*	10	2010 - 2016	Non-native
Rose Campion, *Silene coronaria*	2	2016 - 2018	Non-native
Rose-of-Sharon, *Hypericum calycinum*	1	2016 - 2016	Non-native
Rough Poppy, *Papaver hybridum*	2	2014 - 2014	Non-native
Russian Comfrey, *Symphytum officinale x asperum = S. x uplandicum*	20	2008 - 2019	Non-native
Russian-vine, *Fallopia baldschuanica*	2	2009 - 2016	Non-native
Rye Brome, *Bromus secalinus*	1	2011 - 2011	Non-native
Salsify, *Tragopogon porrifolius*	2	2014 - 2014	Non-native
Scented Mayweed, *Matricaria chamomilla*	46	1977 - 2018	Non-native
Scentless Mayweed, *Tripleurospermum inodorum*	93	1993 - 2018	Non-native
Scorpion Weed, *Phacelia tanacetifolia*	4	2012 - 2017	Non-native
Shaggy Soldier, *Galinsoga quadriradiata*	3	2010 - 2016	Non-native
Sharp-toothed Whitebeam, *Sorbus decipiens*	1	2013 - 2013	Non-native
Shepherd's-purse, *Capsella bursa-pastoris*	119	1988 - 2018	Non-native
Silver Maple, *Acer saccharinum*	1	2011 - 2011	Non-native
Slender Soft-brome, *Bromus lepidus*	1	2015 - 2015	Non-native
Slender Speedwell, *Veronica filiformis*	17	2000 - 2016	Non-native
Small Nettle, *Urtica urens*	52	1988 - 2018	Non-native

Flowering Plant (294 taxa)			
Snapdragon, *Antirrhinum majus*	4	2001 - 2016	Non-native
Snow-in-summer, *Cerastium tomentosum*	6	2010 - 2016	Non-native
Snowberry, *Symphoricarpos albus*	13	2008 - 2017	Non-native
Snowdrop, *Galanthus nivalis*	52	1984 - 2017	Non-native
Soapwort, *Saponaria officinalis*	1	2017 - 2017	Non-native
Sowbread, *Cyclamen hederifolium*	1	2016 - 2016	Non-native
Spanish Bluebell, *Hyacinthoides hispanica*	1	2012 - 2012	Non-native
Spanish Daffodil, *Narcissus pseudonarcissus subsp. major*	4	2014 - 2014	Non-native
Spear Mint, *Mentha spicata*	2	2014 - 2016	Non-native
Spotted Dead-nettle, *Lamium maculatum*	4	2014 - 2016	Non-native
Spurge, *Euphorbia amygdaloides subsp. robbiae*	2	2016 - 2016	Non-native
Stag's-horn Sumach, *Rhus typhina*	6	2008 - 2016	Non-native
Stinking Chamomile, *Anthemis cotula*	1	1988 - 1988	Non-native
Summer Snowflake, *Leucojum aestivum subsp. pulchellum*	1	2015 - 2015	Non-native
Sun Spurge, *Euphorbia helioscopia*	48	1993 - 2018	Non-native
Sunflower, *Helianthus annuus*	1	2011 - 2011	Non-native
Swedish Whitebeam, *Sorbus intermedia*	4	2008 - 2016	Non-native
Sweet Alison, *Lobularia maritima*	1	2014 - 2014	Non-native
Sweet Chestnut, *Castanea sativa*	3	2014 - 2014	Non-native
Swine-cress, *Lepidium coronopus*	54	1977 - 2018	Non-native
Sycamore, *Acer pseudoplatanus*	117	1988 - 2018	Non-native
Tall Melilot, *Melilotus altissimus*	4	1993 - 2011	Non-native
Tall Tutsan, *Hypericum androsaemum x hircinum = H. x inodorum*	1	2016 - 2016	Non-native
Tamarisk, *Tamarix gallica*	1	2016 - 2016	Non-native
Thorn-apple, *Datura stramonium*	1	2016 - 2016	Non-native
Tomato, *Lycopersicon esculentum*	3	2011 - 2018	Non-native
Trailing Bellflower, *Campanula poscharskyana*	2	2016 - 2016	Non-native
Tubular Water-dropwort, *Oenanthe fistulosa*	1	2011 - 2011	Priority
Turkey Oak, *Quercus cerris*	2	2011 - 2016	Non-native
Turkish Sage, *Phlomis russeliana*	1	2013 - 2013	Non-native
Turnip, *Brassica rapa*	2	1998 - 2016	Non-native
Turnip-rape, *Brassica rapa subsp. oleifera*	2	1997 - 1997	Non-native
Two-rowed Barley, *Hordeum distichon*	2	2010 - 2014	Non-native
Upright Yellow-sorrel, *Oxalis stricta*	1	2011 - 2011	Non-native
Virginia-creeper, *Parthenocissus quinquefolia*	1	2016 - 2016	Non-native
Wall Barley, *Hordeum murinum*	69	1988 - 2018	Non-native
Wall Cotoneaster, *Cotoneaster horizontalis*	2	2009 - 2014	Non-native

Flowering Plant (294 taxa)			
Wallflower, *Erysimum cheiri*	1	2016 - 2016	Non-native
Walnut, *Juglans regia*	20	2008 - 2018	Non-native
Water Bent, *Polypogon viridis*	1	2016 - 2016	Non-native
Weeping Crack-willow, *Salix euxina x alba x babylonica = S. x pendulina*	12	2010 - 2013	Non-native
Weeping Willow, *Salix alba x babylonica = S. x sepulcralis*	13	1993 - 2018	Non-native
Weld, *Reseda luteola*	27	1988 - 2016	Non-native
Western Balsam-poplar, *Populus trichocarpa*	1	2013 - 2013	Non-native
White Campion, *Silene latifolia*	59	1988 - 2016	Non-native
White Comfrey, *Symphytum orientale*	1	2017 - 2017	Non-native
White Dead-nettle, *Lamium album*	162	1988 - 2018	Non-native
White Melilot, *Melilotus albus*	1	2011 - 2011	Non-native
White Mustard, *Sinapis alba*	1	2013 - 2013	Non-native
White Poplar, *Populus alba*	6	2008 - 2017	Non-native
White Stonecrop, *Sedum album*	13	1997 - 2016	Non-native
White Willow, *Salix alba*	56	1988 - 2018	Non-native
Wild Plum, *Prunus domestica*	44	1998 - 2018	Non-native
Wild Radish, *Raphanus raphanistrum subsp. raphanistrum*	5	1999 - 2017	Non-native
Wild Turnip, *Brassica rapa subsp. campestris*	6	2014 - 2017	Non-native
Wild-oat, *Avena fatua*	72	1988 - 2018	Non-native
Wilson's Honeysuckle, *Lonicera nitida*	3	2012 - 2017	Non-native
Winter Aconite, *Eranthis hyemalis*	5	2001 - 2016	Non-native
Winter Heliotrope, *Petasites fragrans*	5	2009 - 2016	Non-native
Wormwood, *Artemisia absinthium*	2	1988 - 1988	Non-native
Yellow Corydalis, *Pseudofumaria lutea*	10	2001 - 2018	Non-native
Yellow-juiced Poppy, *Papaver dubium subsp. lecoqii*	1	2014 - 2014	Non-native

Insect - Beetle (Coleoptera) (3 taxa)			
Bean Seed Beetle, *Bruchus rufimanus*	1	2019 - 2019	Non-native
Black Oil-beetle, *Meloe proscarabaeus*	1	2019 - 2019	Priority
Harlequin Ladybird, *Harmonia axyridis*	19	2011 - 2019	Non-native

Insect - Butterfly (4 taxa)			
Small Heath, *Coenonympha pamphilus*	74	1988 - 2021	Priority
Wall, *Lasiommata megera*	238	1992 - 2014	Priority
White Admiral, *Limenitis camilla*	2	2009 - 2014	Priority
White-letter Hairstreak, *Satyrium w-album*	13	2010 - 2021	Protected, Priority

Insect - Hymenopteran (2 taxa)

Asian Hornet, *Vespa velutina*	1	2018 - 2018	Non-native
Large Garden Bumblebee, *Bombus ruderatus*	2	2019 - 2019	Priority

Insect - Moth (33 taxa)

Beaded Chestnut, *Agrochola lychnidis*	13	2006 - 2020	Priority
Blair's Shoulder-knot, *Lithophane leautieri*	3	2006 - 2009	Non-native
Blood-vein, *Timandra comae*	24	2006 - 2020	Priority
Buff Ermine, *Spilosoma lutea*	58	2006 - 2011	Priority
Centre-barred Sallow, *Atethmia centrago*	7	2006 - 2020	Priority
Cinnabar, *Tyria jacobaeae*	125	1998 - 2021	Priority
Dark-barred Twin-spot Carpet, *Xanthorhoe ferrugata*	13	2006 - 2020	Priority
Dot Moth, *Melanchra persicariae*	16	2006 - 2020	Priority
Dusky Brocade, *Apamea remissa*	2	2019 - 2019	Priority
Dusky Thorn, *Ennomos fuscantaria*	2	2020 - 2020	Priority
Dusky-lemon Sallow, *Cirrhia gilvago*	1	2006 - 2006	Priority
Four-spotted, *Tyta luctuosa*	1	2006 - 2006	Priority
Ghost Moth, *Hepialus humuli*	5	2006 - 2010	Priority
Goat Moth, *Cossus cossus*	1	2007 - 2007	Priority
Green-brindled Crescent, *Allophyes oxyacanthae*	2	2011 - 2011	Priority
Knot Grass, *Acronicta rumicis*	5	2017 - 2020	Priority
Lackey, *Malacosoma neustria*	4	2006 - 2020	Priority
Large Nutmeg, *Apamea anceps*	5	2007 - 2008	Priority
Large Wainscot, *Rhizedra lutosa*	9	2006 - 2011	Priority
Latticed Heath, *Chiasmia clathrata*	27	2004 - 2020	Priority
Mottled Rustic, *Caradrina morpheus*	44	2006 - 2020	Priority
Mouse Moth, *Amphipyra tragopoginis*	1	2006 - 2006	Priority
Oak Hook-tip, *Watsonalla binaria*	1	2007 - 2007	Priority
Powdered Quaker, *Orthosia gracilis*	6	2007 - 2009	Priority
Rosy Minor, *Litoligia literosa*	3	2006 - 2007	Priority
Rosy Rustic, *Hydraecia micacea*	19	2006 - 2020	Priority
Rustic, *Hoplodrina blanda*	22	2006 - 2020	Priority
Sallow, *Cirrhia icteritia*	11	2006 - 2011	Priority
Shaded Broad-bar, *Scotopteryx chenopodiata*	12	2006 - 2021	Priority
Shoulder-striped Wainscot, *Leucania comma*	6	2006 - 2006	Priority
Small Phoenix, *Ecliptopera silaceata*	2	2006 - 2017	Priority
Small Square-spot, *Diarsia rubi*	67	2006 - 2020	Priority
White Ermine, *Spilosoma lubricipeda*	21	2007 - 2020	Priority

Insect - True Bug (Hemiptera) (1 taxa)			
Western Conifer Seed Bug, *Leptoglossus occidentalis*	2	2014 - 2021	Non-native

Mollusc (11 taxa)			
Bladder snails, *Physa*	11	2006 - 2010	Non-native
Budapest Keeled Slug, *Tandonia budapestensis*	2	2005 - 2005	Non-native
Common Bladder Snail, *Physa fontinalis*	3	1990 - 1998	Non-native
Common Garden Snail, *Cornu aspersum*	3	1972 - 2019	Non-native
False Dark Mussel, *Mytilopsis leucophaeata*	21	2006 - 2015	Non-native
Gulf Wedge Clam, *Rangia cuneata*	4	2015 - 2016	Non-native
Jenkins' Spire Snail, *Potamopyrgus antipodarum*	719	1972 - 2019	Non-native
Physella acuta, *Physella acuta*	6	2006 - 2015	Non-native
Tramp Slug, *Deroceras invadens*	1	2003 - 2003	Non-native
Witham Orb Mussel, *Sphaerium solidum*	3	1974 - 1974	Priority
Zebra Mussel, *Dreissena polymorpha*	83	1973 - 2019	Non-native

Reptile (3 taxa)			
Common Lizard, *Zootoca vivipara*	1	2017 - 2017	Protected, Priority
Grass Snake, *Natrix helvetica*	18	1976 - 2018	Protected, Priority
Slow-worm, *Anguis fragilis*	1	2009 - 2009	Protected, Priority

Spider (Araneae) (1 taxa)			
Woodlouse Spider, *Dysdera crocata*	2	2005 - 2005	Non-native

Terrestrial Mammal (14 taxa)			
American Mink, *Neovison vison*	35	1989 - 2021	Non-native
Brown Hare, *Lepus europaeus*	348	1976 - 2021	Priority
Brown Rat, *Rattus norvegicus*	52	1977 - 2015	Non-native
Chinese Muntjac, *Muntiacus reevesi*	30	2003 - 2021	Non-native
Eastern Grey Squirrel, *Sciurus carolinensis*	44	1977 - 2019	Non-native
Eurasian Badger, *Meles meles*	269	1991 - 2021	Protected
Eurasian Otter, *Lutra lutra*	53	1970 - 2019	Protected, Priority
European Rabbit, *Oryctolagus cuniculus*	115	1977 - 2017	Non-native
European Water Vole, *Arvicola amphibius*	691	1976 - 2021	Protected, Priority, Local Priority
Fallow Deer, *Dama dama*	1	2008 - 2008	Non-native
Ferret, *Mustela putorius subsp. furo*	7	2010 - 2020	Protected, Priority, Non-native
Harvest Mouse, *Micromys minutus*	10	1972 - 2019	Priority
House Mouse, *Mus musculus*	21	1977 - 2015	Non-native
West European Hedgehog, *Erinaceus europaeus*	216	1976 - 2021	Priority

Terrestrial Mammal (bat) (12 taxa)			
Bat, *Chiroptera*	491	1970 - 2021	Protected, Priority, Local Priority
Brown Long-eared Bat, *Plecotus auritus*	30	1982 - 2019	Protected, Priority, Local Priority
Common Pipistrelle, *Pipistrellus pipistrellus sensu stricto*	43	2001 - 2021	Protected, Local Priority
Daubenton's Bat, *Myotis daubentonii*	20	1979 - 2019	Protected, Local Priority
Myotis Bat species, *Myotis*	7	2002 - 2015	Protected, Priority, Local Priority
Nathusius's Pipistrelle, *Pipistrellus nathusii*	1	2012 - 2012	Protected, Local Priority
Natterer's Bat, *Myotis nattereri*	2	1998 - 2003	Protected, Local Priority
Noctule Bat, *Nyctalus noctula*	8	2000 - 2018	Protected, Priority, Local Priority
Pipistrelle, *Pipistrellus pipistrellus sensu lato*	5	1993 - 2004	Protected, Local Priority
Pipistrelle Bat species, *Pipistrellus*	81	1980 - 2020	Protected, Priority, Local Priority
Soprano Pipistrelle, *Pipistrellus pygmaeus*	18	2003 - 2018	Protected, Priority, Local Priority
Western Barbastelle, *Barbastella barbastellus*	2	2001 - 2017	Protected, Priority, Local Priority

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Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 8.4- Preliminary Biodiversity Net Gain Calculation- Headline Results

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

APPENDIX 8.4- PRELIMINARY BIODIVERSITY NET GAIN CALCULATION- HEADLINE RESULTS

Return to results menu

Headline Results

On-site baseline	*Habitat units*	1193.60
	Hedgerow units	0.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	3650.38
	Hedgerow units	0.00
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	205.83%
	Hedgerow units	0.00%
	River units	0.00%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	2456.78
	Hedgerow units	0.00
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	205.83%
	Hedgerow units	0.00%
	River units	0.00%
Trading rules Satisfied?		Yes

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 9.1- Hydraulic Modelling Method Statement Correspondence with Environment Agency

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

creating a better place

Environment Agency

Stuart Harwood

Our ref: AN/2021/132242/05-L01

Agreement number: ENVPAC/1/LNA/00127

Date: 22 April 2022

Dear Stuart

Planning advice for Heckington Fen Solar

Thank you for accepting our offer to provide planning advice for flood risk management at the proposed solar farm development at Six Hundred Farm. We are providing our planning advice under project number ENVPAC/1/LNA/00127 and an invoice for £300 (3 hours) plus VAT will be issued shortly to Ecotricity Group Limited under PO-008261.

We have reviewed the technical report produced by JBA Consulting, Project Code 2021s1226 in the email sent to us on the 22 March 2022.

We are satisfied the model method statement is adequate and includes enough information for the model in relation to the works being proposed and will allow the outputs to inform the flood risk assessment accordingly. We have no further comments to make and will be happy to review the model if JBA feel this appropriate once complete. We would need to provide a further cost estimate for this.

Should you require any additional information, or wish to discuss these matters further, please do not hesitate to contact me on the number below.

Yours sincerely

Mrs Sharon Nolan
Sustainable Places Planning Advisor

Direct dial
E-mail

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 10.1- Summary Report of Geophysical Survey Results

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Heckington Fen Solar Park
Summary of Geophysical Survey Results

THE COLLECTION ACCESSION NO:	LCNCC: 2022.55
PEGASUS REF:	P20-2370
AUTHOR:	Dr Elizabeth Pratt (MCIfA)
DATE:	18th May 2022

Introduction

1.1 Pegasus Group, on behalf of Ecotricity (Heck Fen Solar) Limited, intend to make a Development Consent Order application for ground-mounted solar panels and an energy storage facility on *c.*586.85ha of agricultural land outlying Six Hundreds Farm on Six Hundreds Drove at East Heckington, a below-ground grid connection to Bicker Fen substation, and all associated infrastructure works.

1.2 Jan Allen and Matthew Adams, the archaeological advisors to Lincolnshire County Council, and Denise Drury, the archaeological advisor to North Kesteven and Boston District Councils, have identified a need for the application to be informed by staged assessment work to characterise the known and potential archaeological resource of the proposed development site and to assess the development impacts thereupon.

1.3 The staged assessment work includes geophysical (magnetometry) survey. Given the size of the proposed development site, a single contractor could not complete the survey during the relatively narrow window when ground conditions were anticipated to be dry and when crop was expected to be at a fairly damage-resistant stage of growth. As such, the site was split into quadrants, shown on Figure 1, and allocated to four contractors as follows:

- Area 1 (*c.*112ha) – SUMO
- Area 2 (*c.*178ha) – Headland Archaeology
- Area 3 (*c.*112ha) – ASWYAS
- Area 4 (*c.* 115ha) – Magnitude Surveys

1.4 The surveys were carried out in late March and early to mid-April 2022. Full details of the survey methodology and aims and objectives, and approaches to data processing, analysis, reporting, and archiving were outlined in an overarching Written Scheme of Investigation (WSI) prepared by Pegasus Group (PG 2022a), with the individual WSIs prepared by each contractor provided as an appendix. The documents were submitted to the archaeological advisors prior to commencement.

1.5 Each contractor has prepared a survey report for their respective Area. The intention of this Summary is to describe, illustrate and discuss the data from each Area in the

context of the proposed development site as a whole, in order to fully understand the archaeological potential of the proposed development site and to inform discussions with the archaeological advisors regarding the need for, and the timing and scope of, additional archaeological evaluation and mitigation.

Results

1.6 The survey data from all four Areas is principally characterised by magnetic responses deriving from the superficial geology and palaeochannels, and 18th-century and later agricultural activity. Only in Areas 2 and Area 4 have anomalies of a probable and/or possible archaeological origin been identified. The combined interpretation plots are illustrated on Figure 2.

1.7 In **Area 1**, geological responses are especially strong in the fields between Head Dike and Labour in Vain Drain. Magnetic disturbance and adjoining rectilinear trends in the far north correspond with the former enclosures and buildings of New Grange Farm, as first shown on the 1888 Ordnance Survey (OS) map. Linear trends representing other former field boundaries shown on the 1888 OS map were identified elsewhere, together with intermittent plough trends. Of uncertain origin are a broadly west/east-aligned linear crossing the four fields to the south of Labour in Vain Drain, two short parallel linears and discrete pit-like features in the south-west, indeterminate small clusters in fields directly north of Labour in Vain Drain, and several scattered pit-like responses.

1.8 In **Area 2**, geological responses account for 80% of the collected data. Broad sinuous anomalies representing former meandering channels and feeder streams can be seen. Magnetic disturbance recorded midway along the eastern boundary corresponds with the former location of an outfarm shown on the 1888 OS map. Former field boundaries shown on the 1888 OS map were identified predominantly in the central and southern fields. Modern field drains were detected in the far south-western corner. In the field to their east are some multidirectional linear trends that may form irregularly-shaped enclosures and are classified as possible archaeology.

1.9 In **Area 3**, geological responses again dominate the dataset. Palaeochannels and possible oxbow lakes are visible. Agricultural-derived anomalies comprise former field boundaries and the diamond-shaped coverts shown on the 1888 OS map, as well as plough trends. An area of magnetic disturbance just south of centre corresponds with a pond and sheepfold shown on the 1888 OS map. A fragmented linear anomaly that may represent a former continuation of Labour in Vain Drain (or an antecedent) was detected in the north-western corner. Discrete anomalies of uncertain origin were detected to the south-west, and a curving anomaly of uncertain origin was detected to the far south.

1.10 In **Area 4**, geological responses are present throughout. Former field boundaries and magnetic disturbance corresponding to former outfarms shown on the 1888 OS map were identified. A documented duck decoy to the north of centre was detected. Anomalies of uncertain origin include a small sub-square enclosure in the field south of the former Six Hundreds Farm, a discrete cluster to the far north, and various linear trends elsewhere. Anomalies of probable and possible archaeological origin include a sub-square enclosure and an oval spread in the north-eastern and eastern parts of the second-northernmost field, and linear and sub-square features along the eastern edge of the field to its south.

Discussion

1.11 The proposed development site comprised saltmarsh before the engineered drainage of this part of the Lincolnshire Fens from the mid-17th century onwards. The mottled geological responses in the geophysical survey data relate to the underlying tidal flat superficial deposits; the sinuous trends represent dendritic palaeochannels that were created by sea level transgression and the inland movement of tidal channels. Such features are also clearly visible on historic aerial photographs.

1.12 The linear trends identified in the south-western part of Area 2 co-locate with a record for the discovery of briquetage (a coarse ceramic used to make evaporation vessels to extract salt from seawater, an activity known to have taken place in the Iron Age and Roman periods) before/during installation of the North Sea Gas Pipeline in 1971 (Lincolnshire HER ref. MLI87892). Other finds made in 1971 included Roman pottery sherds and tile from the neighbouring field to the south and from another field to the north of Rectory Farm, both in Area 3 (Lincolnshire HER refs. MLI87647, MLI87891).

1.13 Probable and possible archaeological anomalies [2b] and [3a] in Area 4 co-locate with areas of magnetic enhancement previously identified by the geophysical survey carried out for Heckington Wind Farm (Plate 1). The 2011 responses were considered suggestive of pits and/or burning, the latter perhaps associated with industrial activity such as salt production (although note that no associated surface finds are recorded in this location; the aforementioned briquetage was found *c.*1–1.5km to the west).

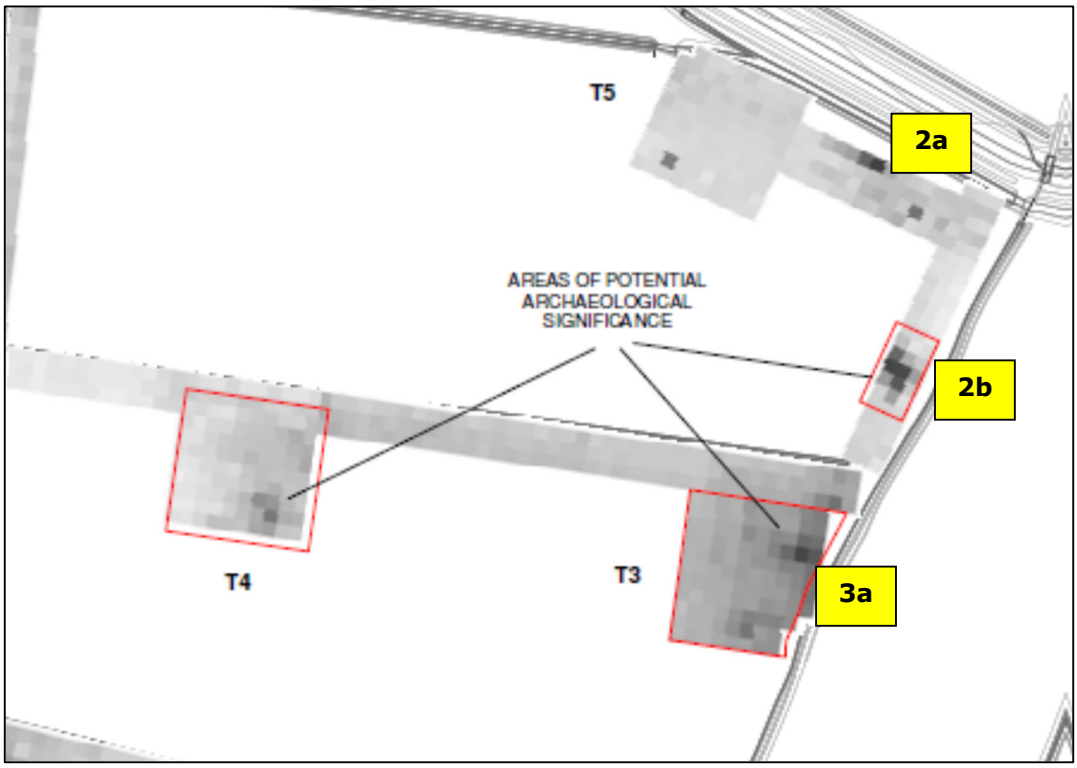

Plate 1: Extract from Figure 4 of the geophysical survey report for Heckington Fen Wind Park (Pre-Construct Geophysics 2011)

1.14 Probable archaeological anomalies [2a] in Area 4 indicate a 45m-wide rectilinear form with discrete responses at its centre. No responses of interest are described in this location by the 2011 survey report although some enhancement is illustrated here in the greyscale (PCG 2011; Plate 1).

1.15 Aerial photographs dated 5th June 1950 show a pentagon-shaped cropmark of a former post-medieval duck decoy in the northern-central part of Area 4. This feature was discussed in the heritage assessment prepared for the Heckington Wind Farm (OAA 2011). It was only partly-detected by the present geophysical survey, probably because the remainder has been destroyed by repeated ploughing over the decades since the photograph was taken.

1.16 Almost all of the former field boundaries detected across the proposed development site are shown on the first edition Ordnance Survey maps of 1888. The only available detailed mapping of the site that pre-dates this is the Heckington parish enclosure map of 1764. It only illustrates land divisions in Area 1, demonstrating a mid-18th century origin for the Ordnance Survey-documented (and extant) field layout here and in all likelihood much of the rest of the site too.

1.17 OS mapping and aerial photographs document the removal, principally in the late-20th century, of certain 18th–19th century field boundaries and the demolition of all outfarms except for the now-ruinous Six Hundreds Farm located mid-way along Six Hundreds Drove. (NB A different complex, located at the south end of Six Hundreds Drove, appears to have been the original Six Hundreds Farm).

1.18 The detection of the probable and possible archaeological anomalies in Areas 2 and 4 and part of the former duck decoy in Area 4, and the uncertain linear and discrete trends and former field boundaries in all Areas, indicate that the geophysical survey technique has been successful on this site. That said, the limitations of magnetometry in identifying small discrete features such as post-holes should be recognised.

1.19 Notwithstanding this caveat, the survey results appear to indicate low archaeological potential for much of the site. The notable exceptions are the south-western part of Area 2 and the eastern margin of Area 4, where probable and possible archaeological anomalies have been identified. These responses may derive from Iron Age and/or Roman salt-working, peripheral to the rural settlements indicated by the extensive cropmarks and findspots recorded between Sidebar Lane and Sandless Lane to the west of the site (PG 2022b).

1.20 It is suggested that further evaluation of the site should now comprise targeted trial trenching of the survey anomalies of both probable/possible archaeological origin and uncertain origin, to ascertain the character, date, and buried depth of any features. A selection of 'blank' areas should also be lightly tested to clarify the potential masking effect of agricultural trends and/or superficial deposits on buried archaeology.

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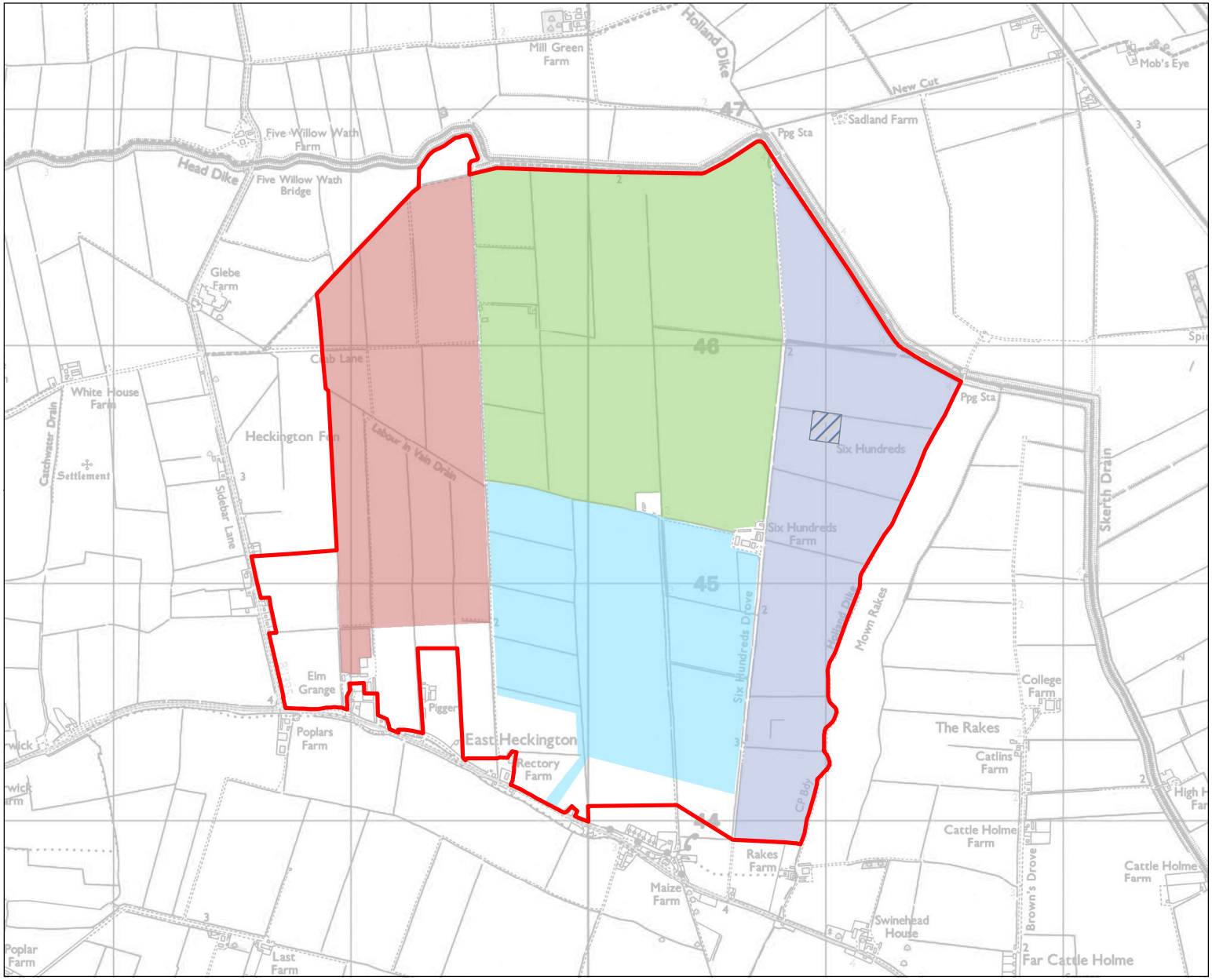
SUMO Geophysics, 2022. *Geophysical Survey Report: Area 1, Heckington Fen Solar Park, Lincolnshire.* Report No. 05153.

Figure 1: Geophysical Survey Areas



KEY

- Energy Park
- Test Area "T4"
- Area 1 - SUMO
- Area 2 - Headland Archaeology
- Area 3 - ASWYAS
- Area 4 - Magnitude Surveys

Unshaded land to the north/west/south of Area 1 and to the south of Area 3 are proposed for ecological enhancement; there will be no groundworks here for construction, operation/maintenance or decommissioning.

Figure 1: Geophysical Survey Areas

Heckington Fen Solar Park

Client: Ecotricity (Heck Fen Solar) Ltd

DRWG No: P20-2370 Sheet No: - REV: -

Drawn by: EP Approved by: GS

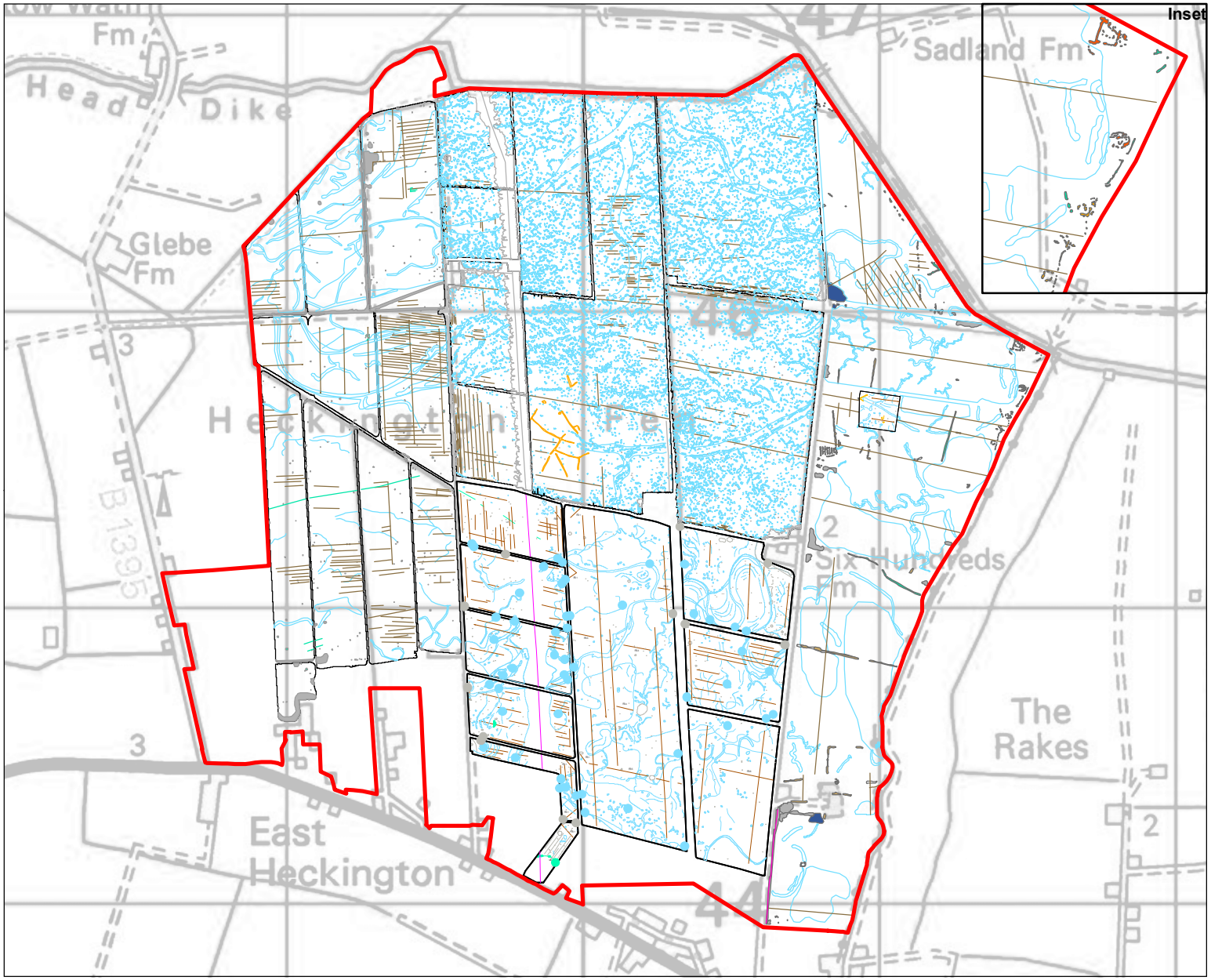
Date: 18/05/2022

Scale: 1:25,000 @ A4

PLANNING | DESIGN | ENVIRONMENT | ECONOMICS | HERITAGE

Pegasus Group

Figure 2: Combined Interpretation Overview



KEY

Energy Park

Probable Archaeology – Red

Possible Archaeology – Orange

Agricultural – Brown

Industrial/Modern – Purple

Uncertain/Undetermined – Turquoise

Magnetic Disturbance/Ferrous - Grey

Natural/Geological – Pale blue

Service – Pink

Inset shows the probable and possible archaeology recorded within the eastern boundary of Area 4.

Figure 2: Geophysical Survey Interpretation (Combined)

Heckington Fen Solar Park

Client: Ecotricity (Heck Fen Solar) Ltd

DRWG No: P20-2370 Sheet No: - REV: -

Drawn by: EP Approved by: GS

Date: 26/05/2022

Scale: 1:20,000 @ A4

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Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 12.1- Noise Survey

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Heckington Fen Solar Park.
Appendix 12.1: Background noise survey.

1. Introduction

Hoare Lea has undertaken a background noise survey in 2022 at noise sensitive receptors near the Proposed Development on land near East Heckington, Lincolnshire. This technical Appendix sets out the existing noise climate and sets out the results of the survey undertaken as well as additional and summarising the results of historical survey data. Prevailing background noise levels have been determined at the closest noise-sensitive receptors, in line with the methodology within BS 4142:2014, to assist with setting suitable plant noise limits.

2. Site Context

The Site boundary extends north of East Heckington and the A17 and is bordered by the B1395 to the west, approximately 4 km east of Heckington, Sleaford. The application boundary for the site is presented in Figures 12.1.1 and 12.1.2. These figures also set out the attended and unattended measurement locations for the 2022 survey, as well as noise sensitive receptors identified.

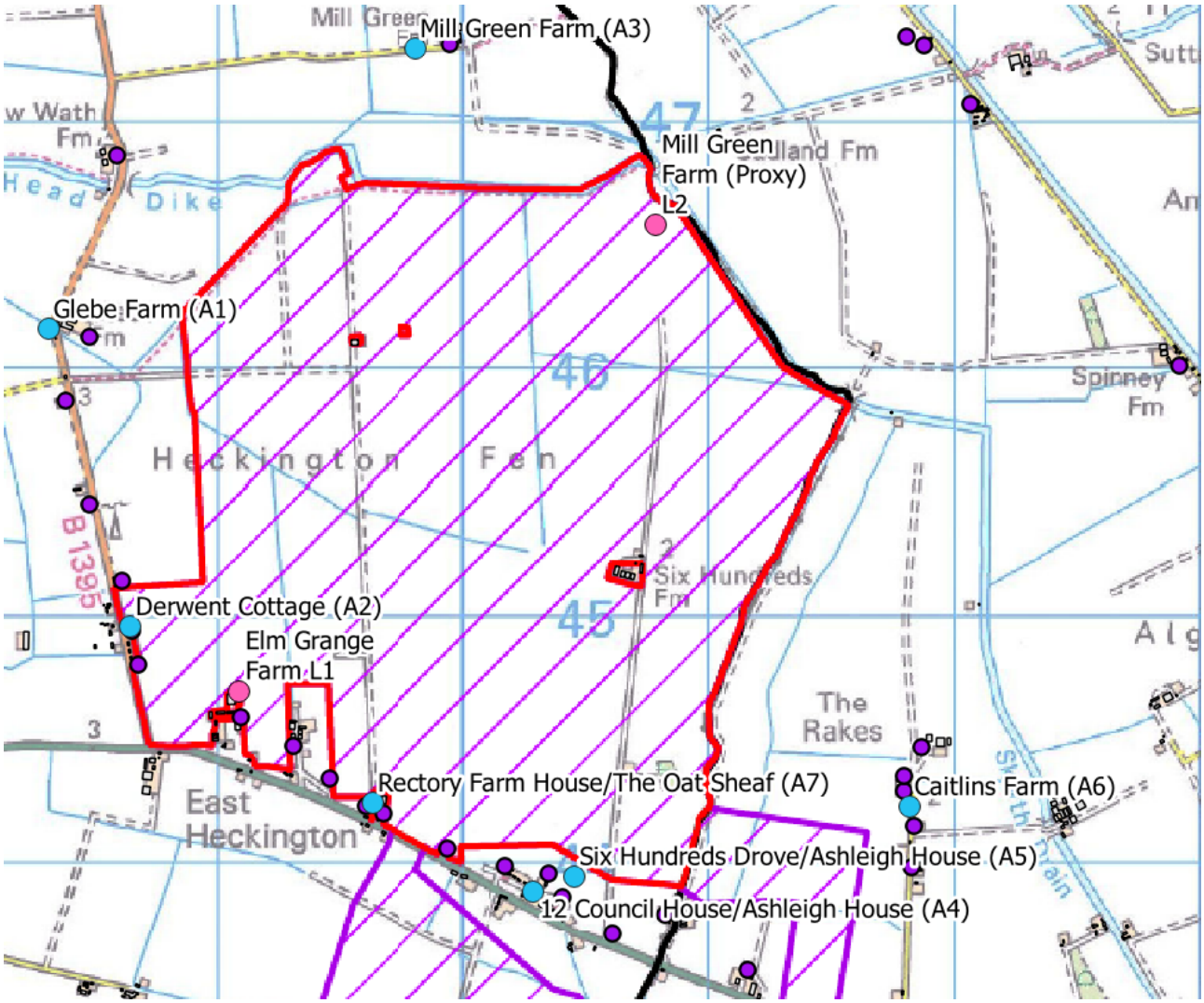


Figure 12.1.1 - 2022 background noise survey locations representative of identified noise sensitive residential receptors. Site boundary (red line), EIA application area (purple lines), Noise sensitive receptors nearest the redline site boundary (purple markers), attended short term survey locations (labelled blue markers) and unattended long term logger survey locations (labelled pink markers).

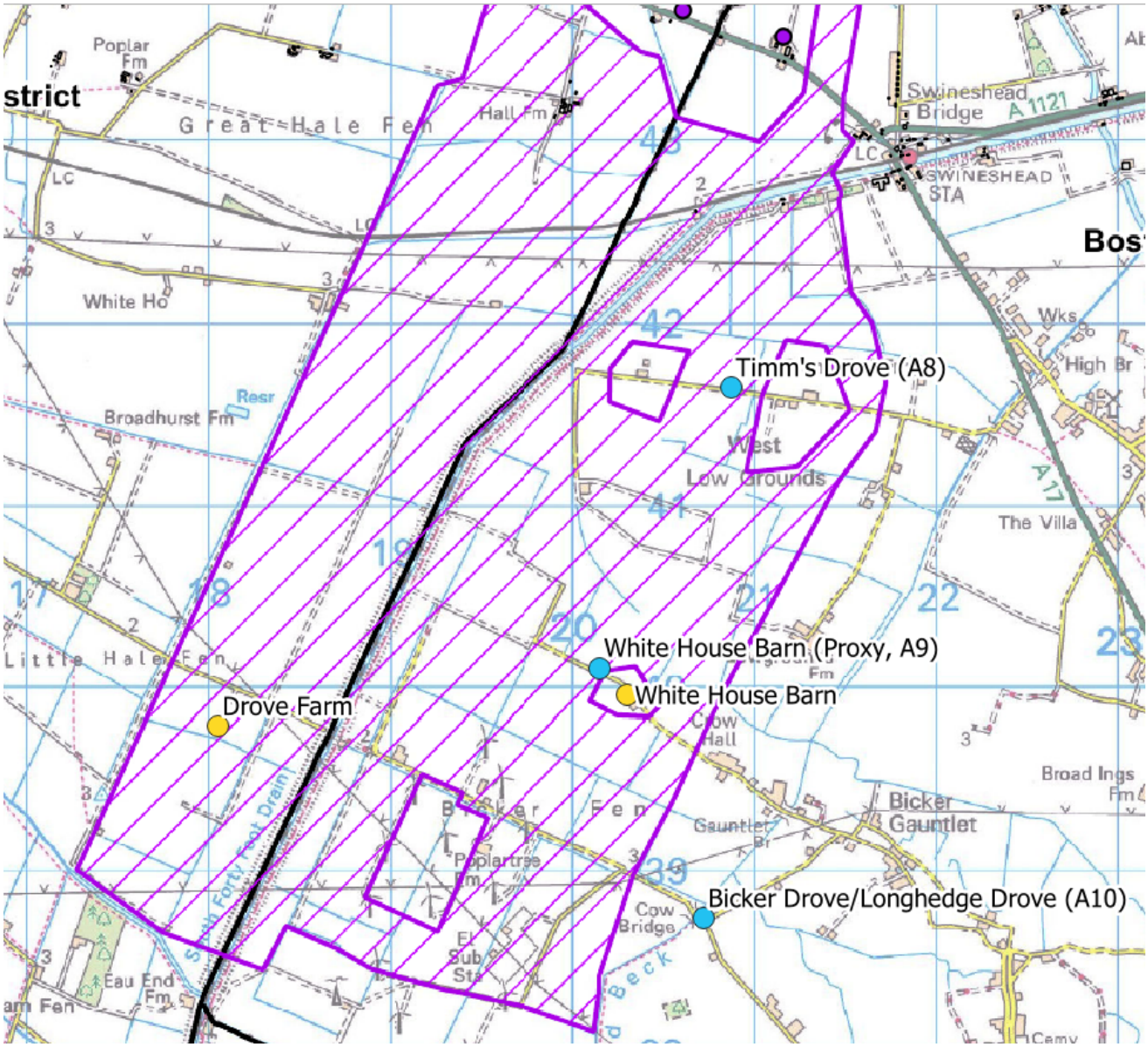


Figure 12.1.2 – 2022 background noise survey locations representative of identified noise sensitive residential receptors to the south along the proposed gird connection route. EIA application area (purple lines), attended short term survey locations (labelled blue markers) and historical survey locations from the Triton Knoll Onshore application in 2014 (labelled yellow markers).

3. British Standard 4142

Current Government advice to local planning authorities in England makes reference to BS 4142:2014-A1 2019 (BS 4142) (BSI, 2019) as being the appropriate guidance for assessing noise from commercial operations and plant noise such as that from building services or other similar sources. The standard provides an objective method for rating the significance of impact from industrial and commercial operations. It describes a means of determining sound levels from fixed plant installations and determining the background sound levels that prevail on a site.

The assessment of the impacts is based on the subtraction of the pre-existing background sound level ($L_{A90,T}$) from the rating level ($L_{Ar,Tr}$).

The standard does not give a definitive method for determining the background sound level but instead, as a commentary, states that *"the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods".*

Clause 8.1.4 of the standard, which discusses the monitoring duration, states "*there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.*" As a note to this clause the following commentary is given on obtaining a representative backgrounds sound level:

"*To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value.*"

The rating level is defined objectively as the specific source noise level in question (either measured or predicted) with graduated corrections for tonality (up to +6 decibels (dB) A-weighted sound level (A)), impulsivity (up to +9 dB(A)), intermittency (+3 dB(A)) and other sound characteristics (+3 dB(A)) which may be determined either subjectively or objectively, if necessary.

The background sound level is subtracted from the rating level. The following is considered to evaluate the likelihood of complaint:

- A difference of around +10 dB is likely to be an indication of a significant adverse impact, depending on context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context; and
- A difference of +0 dB or less is an indication of the specific sound source having a low impact, depending on the context.

This method is only applicable for external noise levels.

4. New background Noise Survey.

A new series of acoustic measurements have been undertaken in 2022 at the site to quantify the existing background noise climate in the area. Locations of the background noise measurements are shown in Figures 12.1.1 and 12.1.2. Resultant background noise levels are presented in Table 12.1.1 (Unattended logger measurements) and Table 12.1.2 (Attended measurements).

4.1 Methodology.

The acoustic survey included two unattended and 10 attended measurements, at locations spatially distributed across the site area, representative of the existing noise environment at nearby residential receptors. Unattended background noise measurements were undertaken from 25/02/2022 to 01/03/2022. The attended measurements, used to supplement the unattended measurement data, were undertaken during the day on the 25/02/2022 and 01/03/2022. Both sets of unattended measurements captured background noise levels over weekday and weekend, during daytime and night-time periods.

Measurements were made under free-field conditions and the weather conditions were generally suitable for majority of the survey period, except rainfall on the mornings of 28/02/2022 and 01/03/2022, which were excluded from the analysis using rain gauge data on site. Dry conditions and low to moderate winds persisted for the remainder of the unattended survey period. No severe Covid-19 restrictions were in place during the survey period. It was therefore expected that the pandemic would have had either no substantial influence on human

activity and road traffic levels and therefore background noise, or that levels would only be marginally lower than normal therefore resulting in a more conservative assessment.

The local noise climate is typical of a rural location, with a varying influence of road traffic noise from the A17. The noise sources observed on visits to site at the various measurement positions consisted of road traffic noise, vegetation noise and occasional bird noise. These sources were present, depending on location, however varied in dominance of the local noise climate. Closer to the Bicker Fen Wind Farm, noise from the turbines was sometimes audible, depending on the conditions.

All survey equipment was field calibrated at the start and end of each set of measurements with no discernible drift in level observed. The measurement instrumentation used is listed in Annex A attached.

4.2 Results.

Time history plots of the two unattended measurements can be found in Annex B attached. During the unattended measurements at positions L1 and L2, two periods of rainfall on the early mornings of 28/02/2022 and 01/03/2022 measured by the rain gauge positioned at L1 were excluded from the analysis. Outside of these exclusions and for the attended survey days, weather and road surfaces were generally dry during the measured periods, as no periods of rainfall or strong adverse weather were observed on site or measured using the rain gauge. Therefore, no further exclusions were made to the attended noise data or the initial unattended noise data at positions L1 and L2.

4.3 Background noise levels.

In line with the requirements of BS 4142, in order to "*quantify what is typical during particular time periods*", a statistical analysis of the measured background sound levels has been undertaken. The periods of interest have been taken as daytime (07:00 to 19:00), evening (19:00 to 23:00) and night-time (23:00 to 07:00).

Assessment durations of 15-minutes are used for day, evening and night-time periods. A single $L_{A90,1h}$ measurement would always be higher than the lowest of the four 15-minute duration background sound levels it comprises. Therefore, this represents a conservative case.

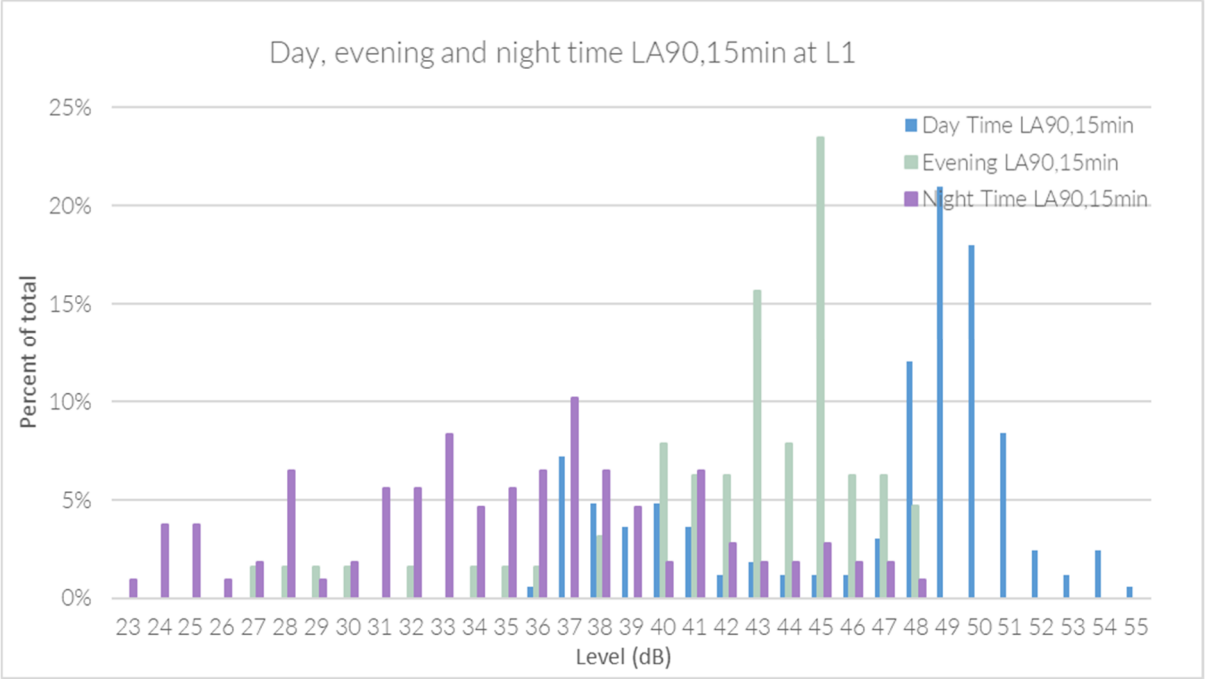


Chart 12.1.1 - Statistical analysis of measured background noise levels at Logger 1 (Elm Grange Farm).

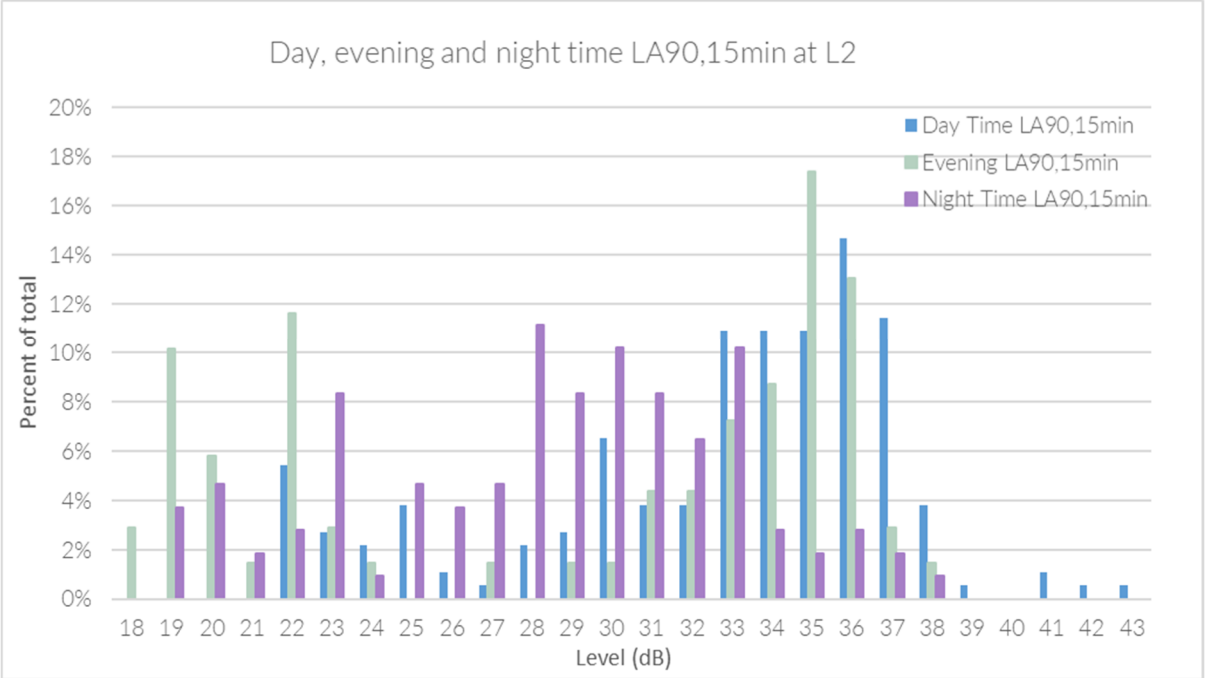


Chart 12.1.2 - Statistical analysis of measured background noise levels at Logger 2 (north-east of Site).

Using the above statistical analysis charts together with the time history charts included in Annex B, given the context of the site, typical lowest common background noise levels have been determined to represent each of the periods of interest. The results are set out in Table 12.1.1 for the unattended measurement positions.

Monitoring Location	$L_{A90,T}$ rep Background Noise Level (dB) measurement period (T) result		
	Day	Evening	Night
L1	49	45	37
L2	33	31	23

Table 12.1.1 - Resultant unattended measurement L_{A90} background noise levels

4.4 Attended measurements.

Attended noise measurements were carried out at 10 positions, over a 15-minute period per position on 25/02/2022 and 01/03/2022 during day-time hours. The attended measurements carried out were synchronised with the initial pair of unattended loggers' 15-minute measurement intervals.

Attended measurement position ID	Measurement periods start time	Noise level at Attended measurement position (dB)		Unattended background noise level comparison against synchronised attended background noise levels (dB)	
		$L_{A90,\ 15min}$	$L_{Aeq,\ 15min}$	$L_{A90,\ 15min}$ Noise level at L1 Logger position	$L_{A90,\ 15min}$ Noise level at L2 Logger position
A1	25/02/2022 14:45	41	65	37	32
A2	01/03/2022 09:30	36	50	38	29
A3	01/03/2022 10:00	30	42	38	32
A4	01/03/2022 10:30	50	54	37	29
A5	01/03/2022 11:00	42	46	38	33
A6	01/03/2022 11:30	34	45	37	30
A7	01/03/2022 13:45	50	56	43	35
A8	01/03/2022 12:00	40	44	37	31
A9	01/03/2022 12:30	37	45	37	30
A10	01/03/2022 13:00	36	57	39	31

Table 12.1.2 - Attended survey results – 15 minute measurements.

5. Historical Background Noise Survey Data

Historical background noise data from previous noise surveys in the area was referenced from the applications for the Heckington Fen Wind Park and the Triton Knoll Onshore Electrical works. These can be considered relevant in relation to the background noise environment, in addition to the above survey, despite the developments which have occurred in the immediate area around the Site since the completion of the historical surveys in 2011 and 2014 respectively .

5.1 Heckington Fen Wind Park

Figure 12.1.2 below (document ref. Heckington Fen Wind Park EIA Chapter 10: Noise, Annex 10.B, March 2011) represents the historical unattended background logger locations, for a background noise survey undertaken for the Heckington Fen Wind Park application, for a measurement period between 29th March 2011 to 12th April 2011.

Figure 12.1.2 – Historical March 2011 Background noise survey locations (blue) and noise sensitive receptor locations (orange) from the Heckington Fen Wind Park application.

The historical L_{A90} (dB) background noise charts from the Heckington Fen Wind Park survey at relevant measurement locations are reproduced in Charts 3 to 16 in Annex C (document ref. Heckington Fen Wind Park Environmental Statement (ES), Chapter 10: Noise, Annex E, March 2011). These can be compared to the 2022 survey results at locations L1 and L2 described above. Loggers L1 and L2 measured existing background noise levels in the north and south areas of the proposed development respectively, with road traffic noise generally observed as the dominant source to the south of the proposed site and but less present as survey progressed further north. Measurement data during periods of rainfall were excluded. For the purpose of the present analysis, background noise levels during periods within little to low wind speeds (< 5 m/s) are relevant. Charts for

daytime periods are representative of evening and weekend periods as detailed in the Heckington Fen Wind Park ES.

The northern L2 measurement location is very close to the historical Mill Green Farm (proxy) survey location, and a comparable range of results were obtained in both cases. Table 12.1.1 derives a typical level of 31 L_{A90} (dB) for evening periods whereas lower levels were previously experienced in Chart 12.1.3 for wind speeds below 5 m/s. During night-time periods however the results are closer, with typical measurements below L_{A90} 25 dB in Chart 12.1.4.

Logger L1 was positioned towards the north of Elm Grange Farm in the southern-west area of the Site, as shown in Figure 12.1.1. Although the 2022 attended measurements (Table 12.1.2) suggest levels are marginally lower at Derwent Cottage, the historical data in Charts 5 and 6 shows substantially lower levels of around 35 dB for evening periods and below 30 dB for night-time. College Farm (charts 9 and 10) experienced

Historical background noise data was measured in the rear amenity area at 2 Council House in East Heckington, relatively sheltered from the dominant road traffic noise source from the A17. Charts 7 and 8 show the historical evening and night-time L_{A90} background noise data at this location, which are comparable to the typical levels measured at L1 (Table 12.1.1), with typical measurements around 40 dB for quiet day-time periods and on average around 35 dB for the night-time periods, for wind speed conditions below 5 m/s. This is despite L1 being located further away from the A17, but with less screening from the road noise provided by intervening buildings.

Comparison of the historical background noise levels suggests that traffic noise levels on the A17 may have increased, as suggested in some of the consultation responses, and the 2022 survey results can be considered in addition to the historical results.

5.2 Triton Knoll Wind Farm

Historical background noise surveys supporting application for the Triton Knoll Wind Farm onshore Electrical System works were undertaken at Drove Farm and White House Barn in June 2014 (locations illustrated on Figure 12.1.2). Table 12.1.3 below summarises the typical L_{A90} (dB) background noise levels determined in line with BS-4142 methodology, as set out in Table 1 in the Triton Knoll Onshore Electrical System Baseline Noise Report (Annex 11.1 of the Triton Knoll Electrical System Environmental Statement (ES), dated 11/12/2014).

Measurement Location	Typical Background Noise Levels (dB)			
	Daytime (07:00 to 23:00)		Night-time (23:00 to 07:00)	
	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}
Drove Farm	35	50	28	42
White House Barn	34	48	31	48

Table 12.1.3 - Historical background noise levels at noise sensitive receptors relevant to the proposed development, from the Triton Knoll Electrical System ES

Annex A: Acoustic survey equipment & photos.

Equipment	Type	Serial Number	Last Calibrated
Sound Level Meter	Rion NL-52	331833	12/05/2021
Pre-amplifier	Rion NH-25	21784	12/05/2021
Microphone	Rion UC-59	4900	12/05/2021

Table 12.1.B1 – Logger 1 – Unattended survey

Equipment	Type	Serial Number	Last Calibrated
Sound Level Meter	Rion NL-52	832245	30/09/2021
Pre-amplifier	Rion NH-25	32273	30/09/2021
Microphone	Rion UC-59	05472	30/09/2021

Table 12.1.B1 – Logger 2 – Unattended survey

Equipment	Type	Serial Number	Last Calibrated
Sound Level Meter	Rion NL-52	632045	23/11/2021
Pre-amplifier	Rion NH-25	32073	23/11/2021
Microphone	Rion UC-59	11317	23/11/2021

Table 12.1.B2 – Sound level meter (SLM) 3 - Attended survey

A field calibration was carried out at the start and end of the measurements, using:

Equipment	Type	Serial Number	Last Calibrated
Calibrator	Rion NC-74	34172706	14/06/2021

Table 12.1.B3 - Calibrator

Figure 12.1.B1 - **Logger** 1 – Unattended

Figure 12.1.B2 - Logger 2 – Unattended

Figure 12.1.B3 – SLM 3 – Attended 1

Figure 12.1.B3 – SLM 3 – Attended 2

Figure 12.1.B5 – SLM 3 – Attended 3

Figure 12.1.B6 - SLM 3 – Attended 4

Figure 12.1.B7 – SLM 3 – Attended 5

Figure 12.1.B8 - SLM 3 – Attended 6

Figure 12.1.B9 – SLM 3 – Attended 7

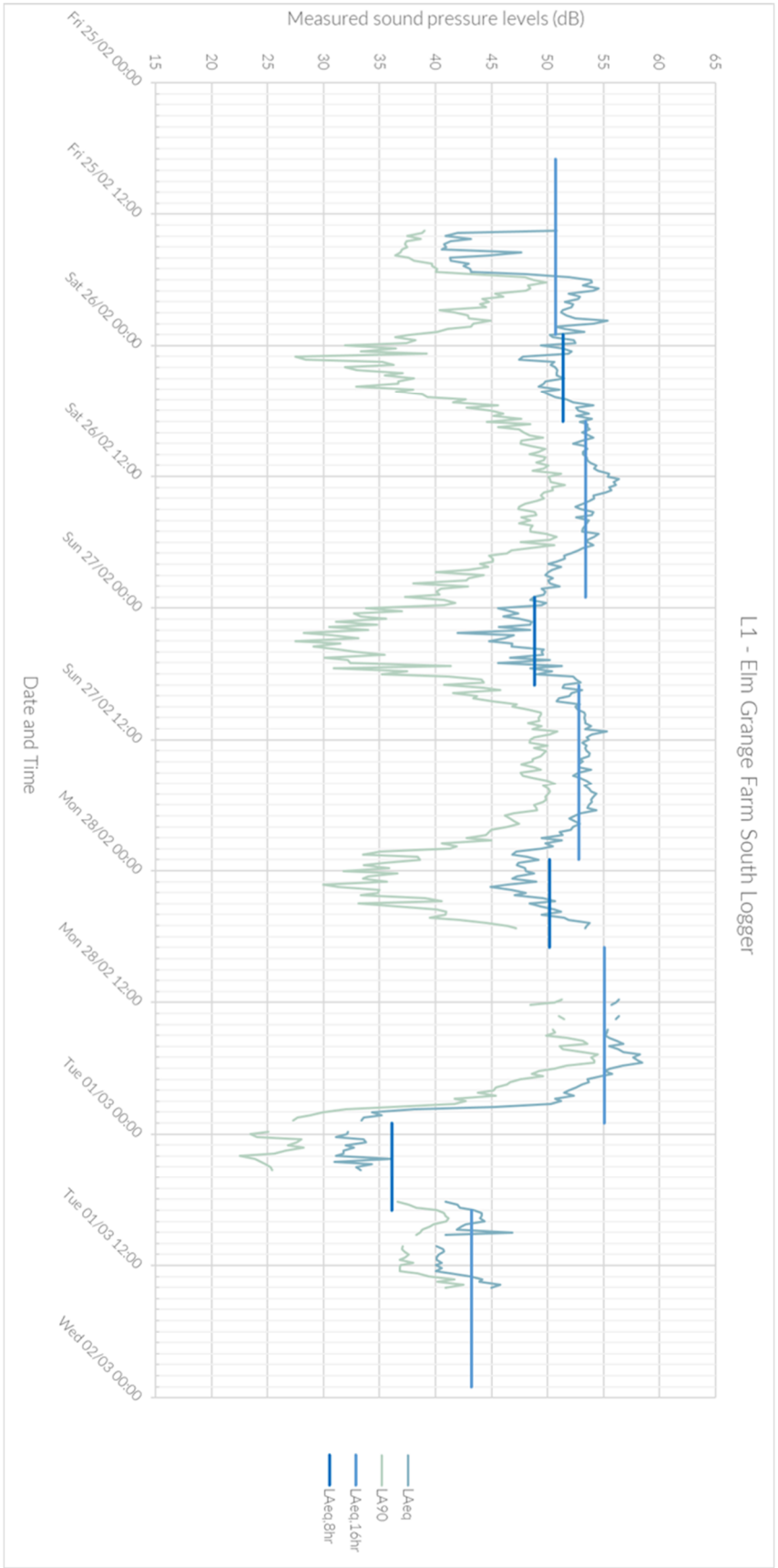
Figure 12.1.B10 – SLM 3 – Attended 8

Figure 12.1.B11 - SLM 3 – Attended 9

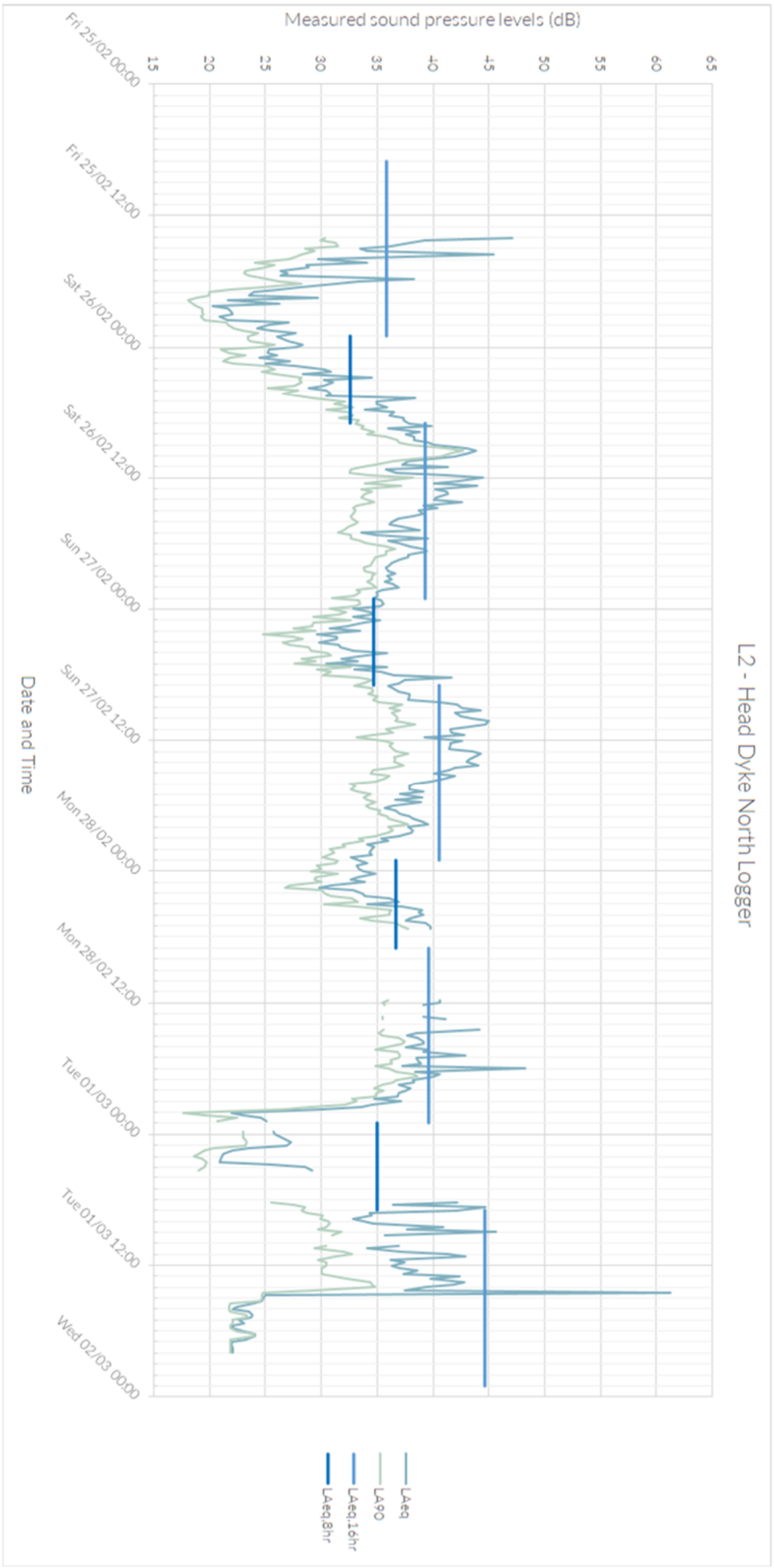
Figure 12.1.B12 – SLM 3 – Attended 10

Annex B: Time history chart.

B.1 Unattended measurement position L1 (Elm Grange Farm)



B.2 Unattended measurement position L2 (Head Dyke Northeast Site Area)



Annex C: Historical background noise data charts

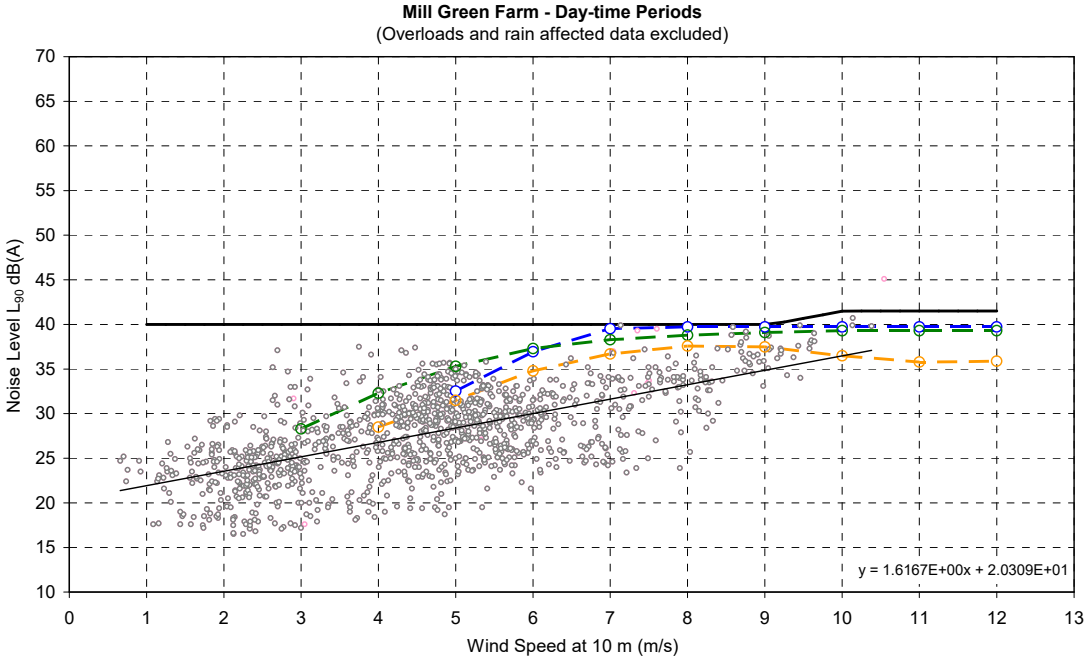


Chart 12.1.3 - Historical Mill Green Farm (proxy) daytime background noise data

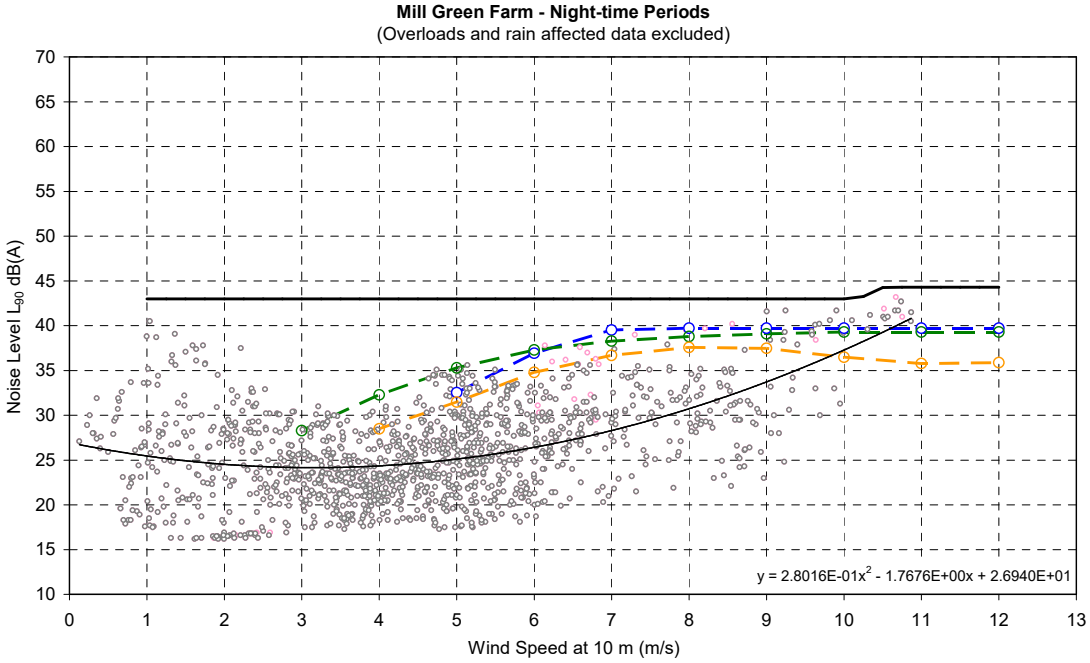


Chart 12.1.4 - Historical Mill Green Farm (proxy) night-time background noise data

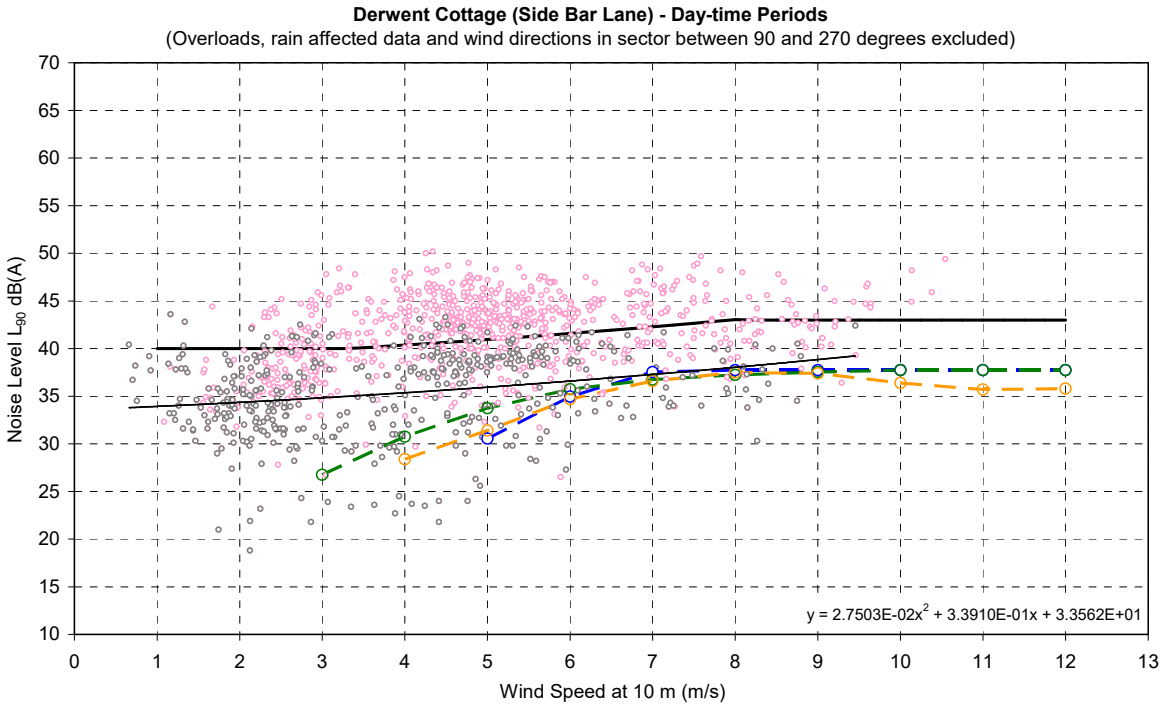


Chart 12.1.5 – Historical Derwent Cottage daytime background noise data

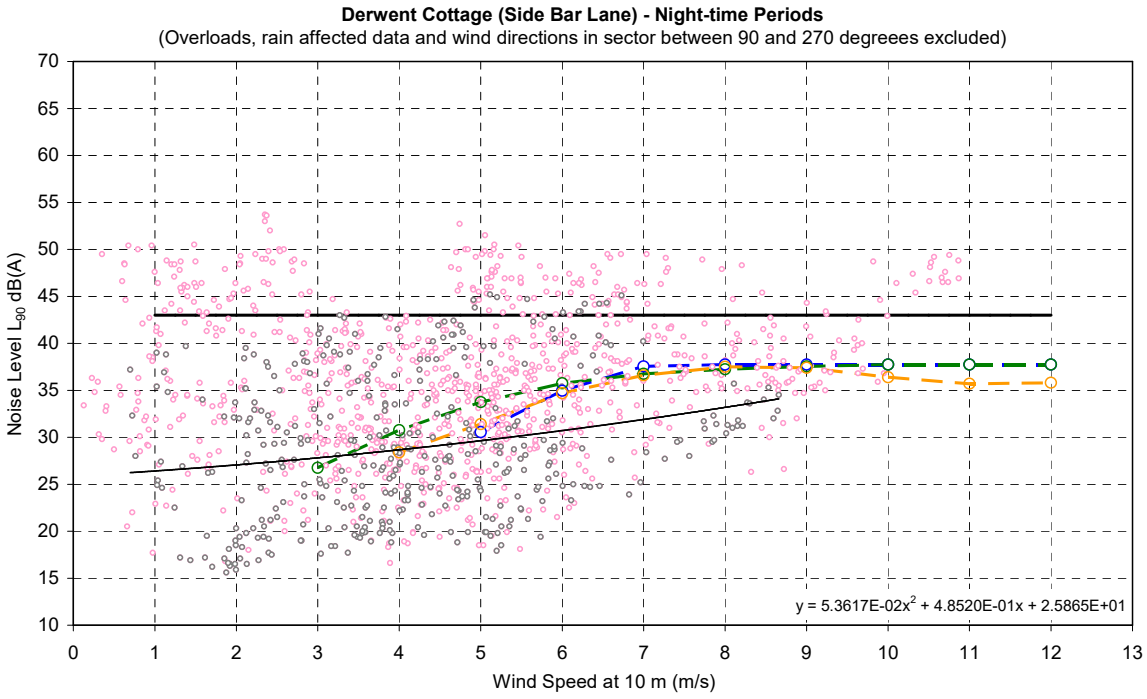


Chart 12.1.6 - Historical Derwent Cottage night-time background noise data

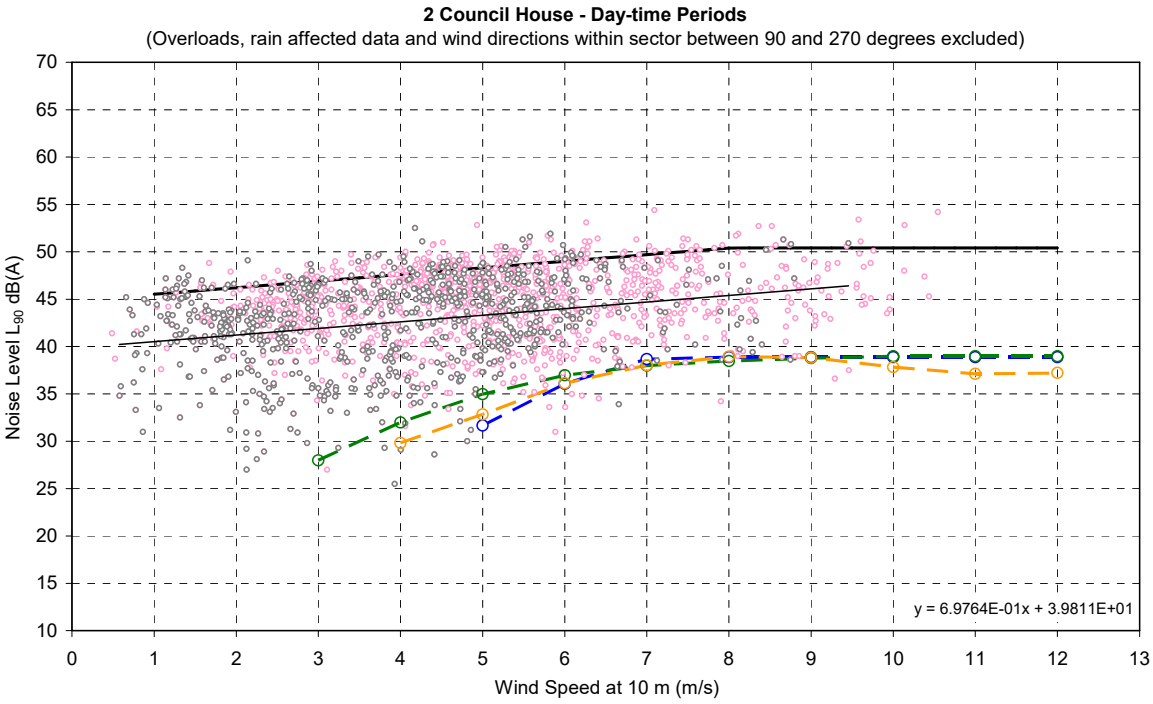


Chart 12.1.7 – Historical 2 Council House daytime background noise data

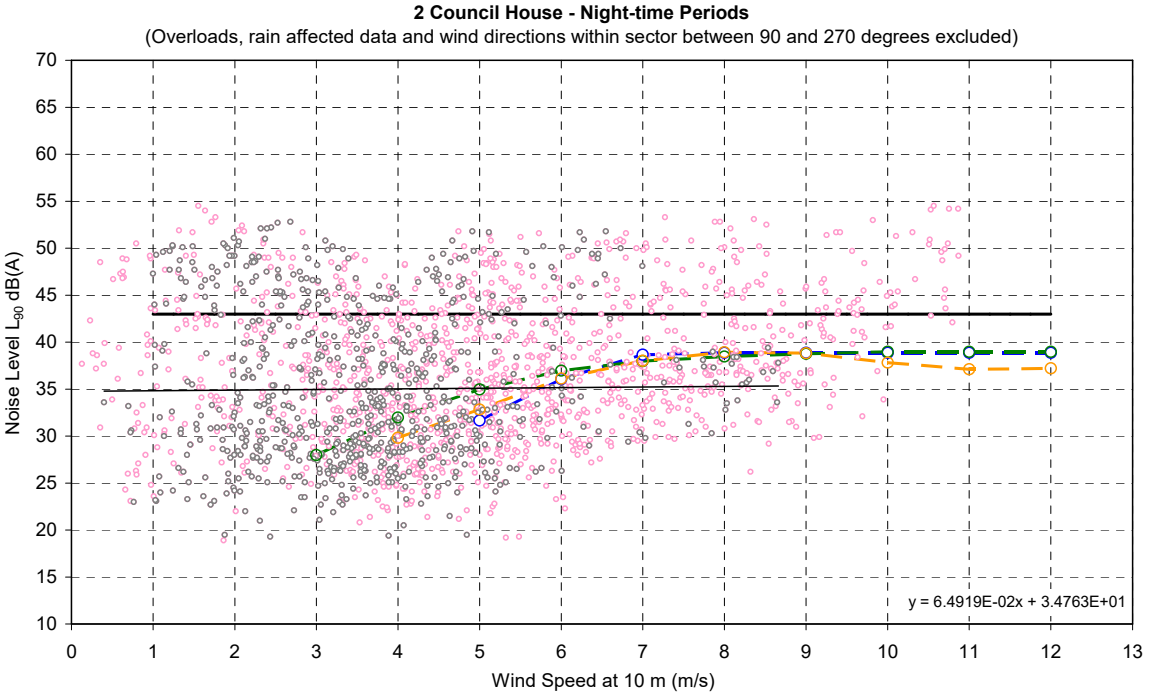


Chart 12.1.8 - Historical 2 Council House night-time background noise data

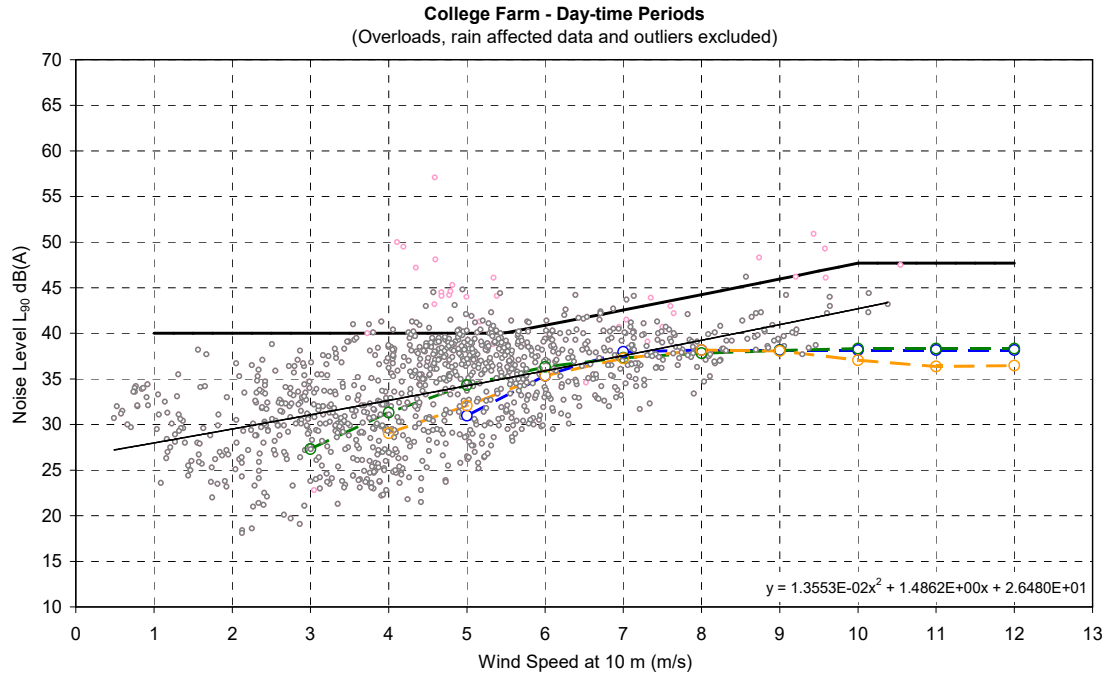


Chart 12.1.9 - Historical College Farm daytime background noise data

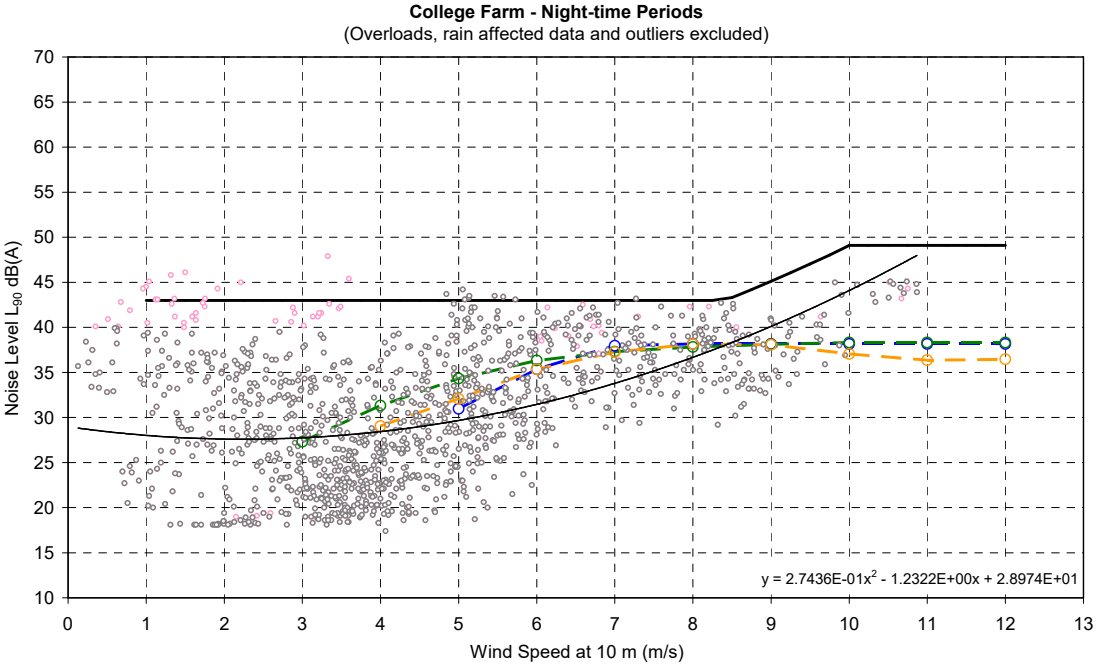


Chart 12.1.10 - Historical College Farm night-time background noise data

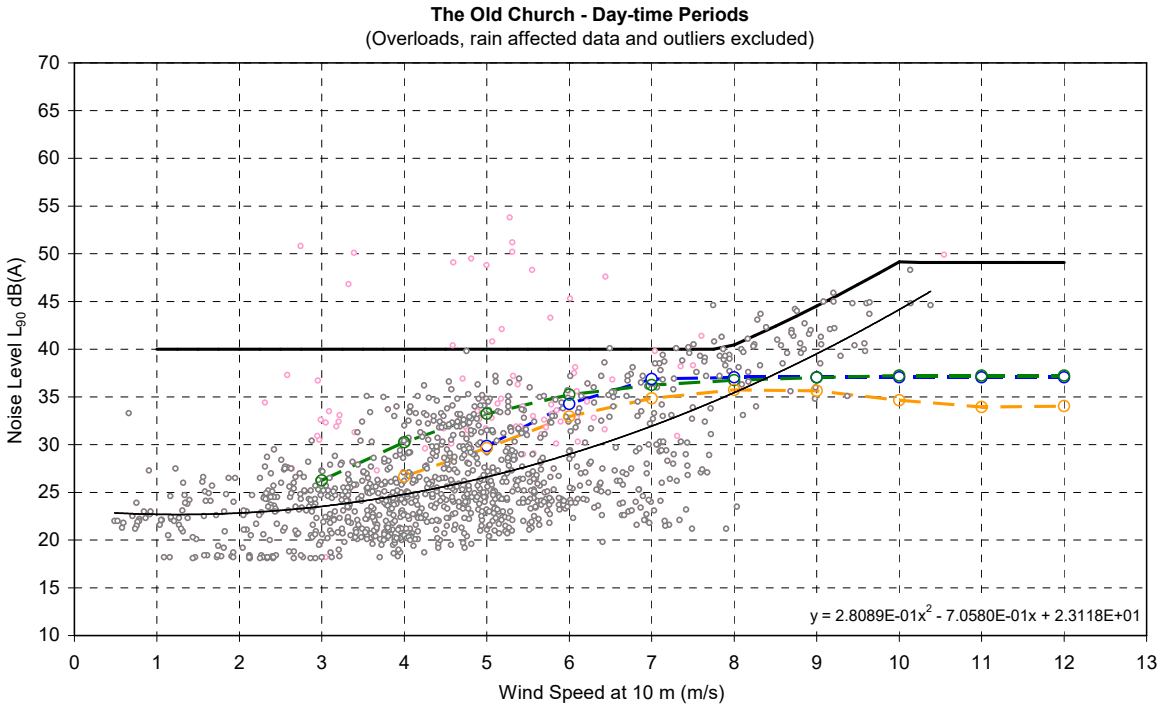


Chart 12.1.11 - Historical The Old Church daytime background noise data

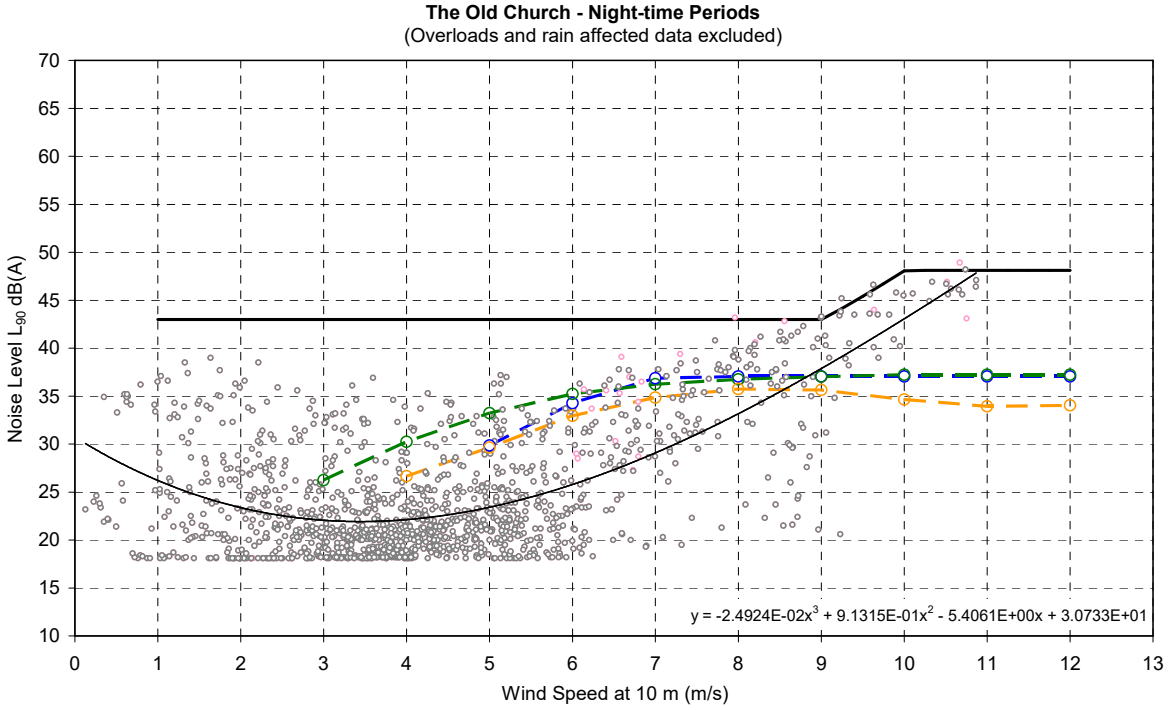


Chart 12.1.12 - Historical The Old Church daytime background noise data

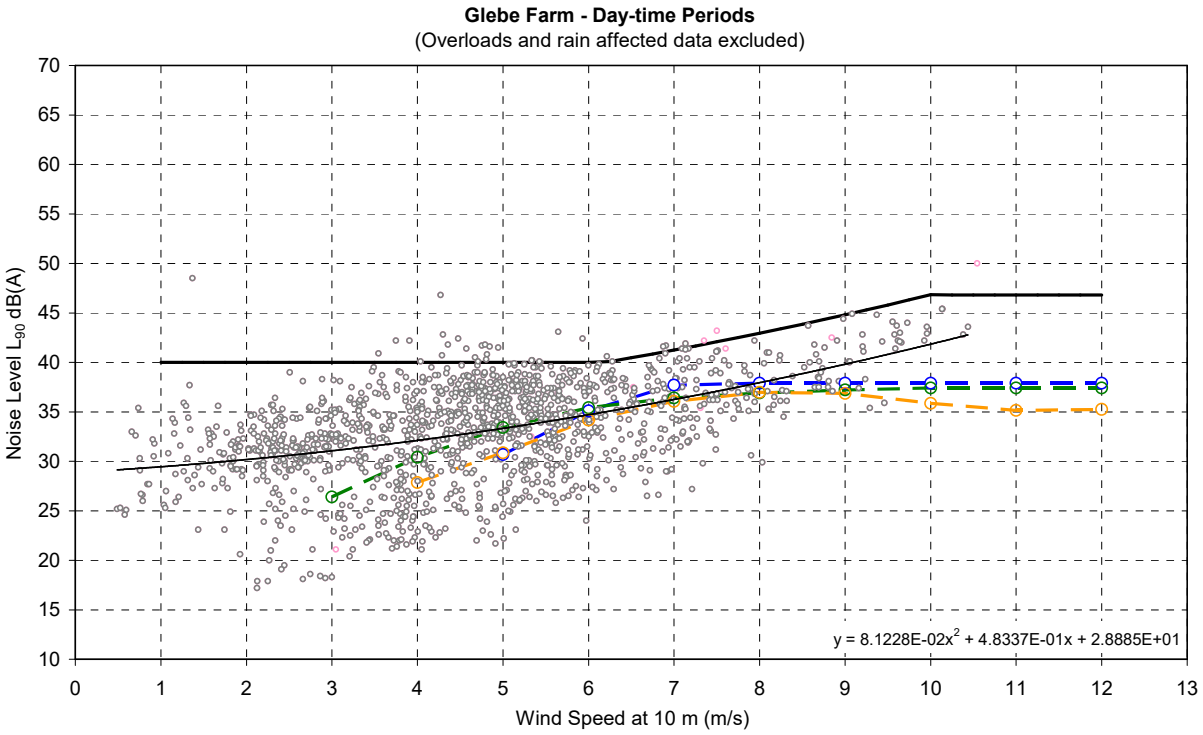


Chart 12.1.13 - Historical Glebe Farm daytime background noise data

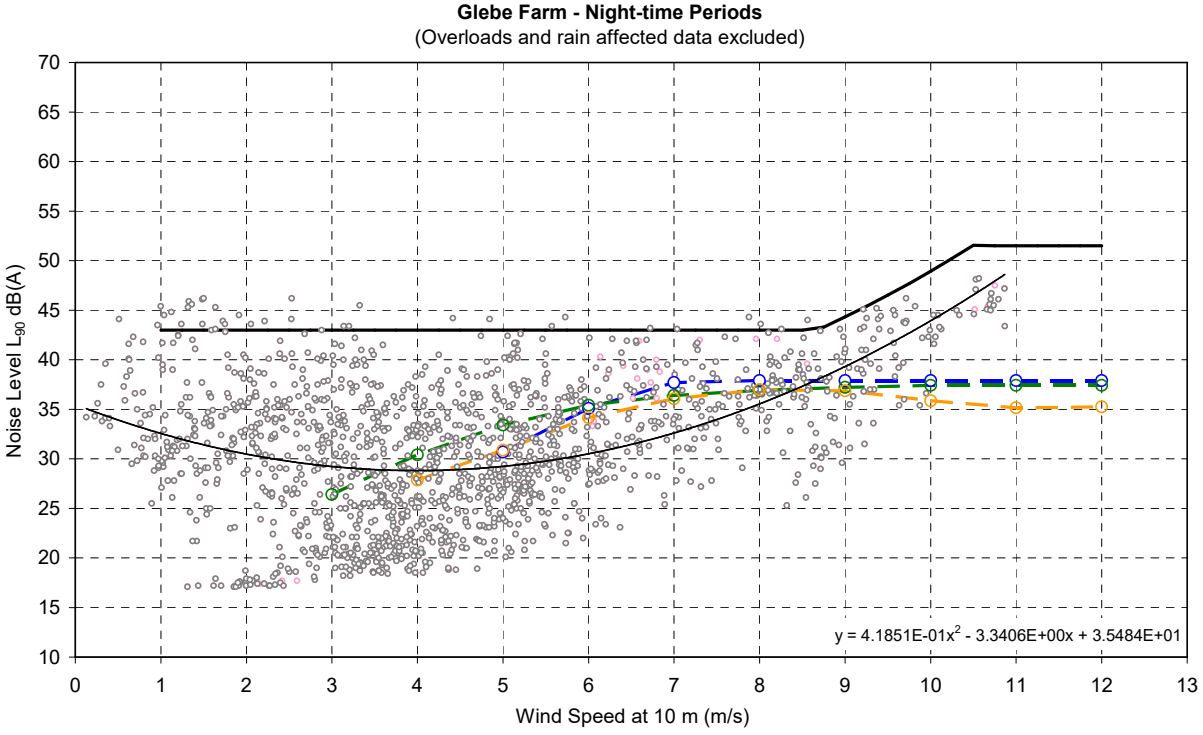


Chart 12.1.14 - Historical Glebe Farm night-time background noise data

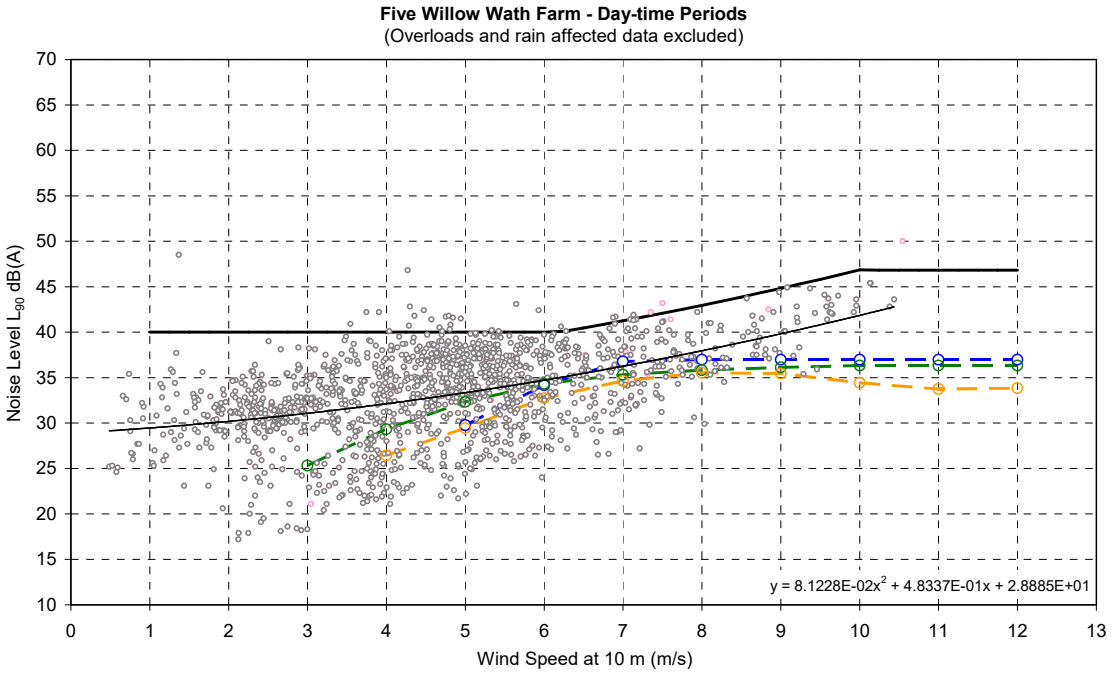


Chart 12.1.15 - Historical Five Willow Wath Farm daytime background noise data

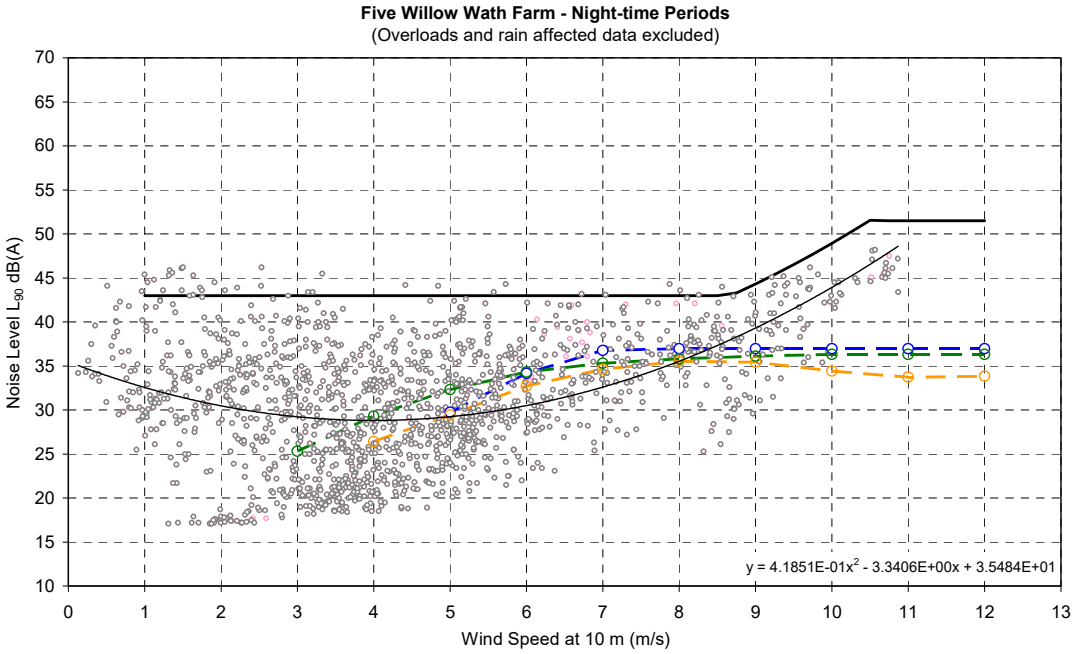


Chart 12.1.16 - Historical Five Willow Wath Farm night-time background noise data

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report
Appendix 12.2- Noise Modelling

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Heckington Fen Solar Park. Appendix 12.2: Noise modelling.

1. Identified noise-sensitive receptors

A selection of receptor locations, which was determined as representative of dwellings around the Site (rather than an exhaustive list of all dwellings), is shown in Figure 12.2.1 (and Figure 12.1). A detailed list of these representative receptors and their minimum separation distance from the Solar PV Site is set out in Table 12.2.1.

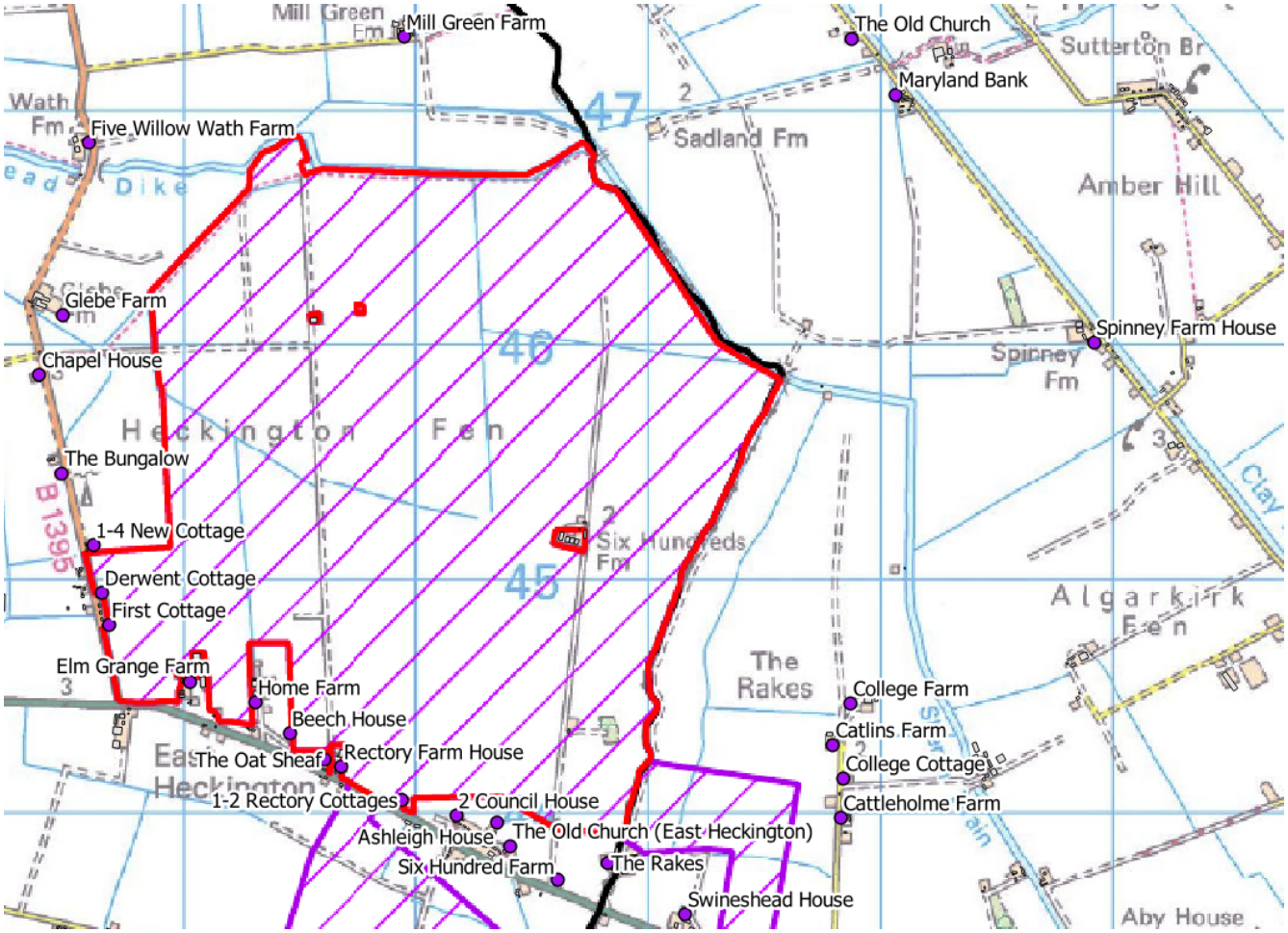


Figure 12.2.1 - Representative noise sensitive assessment locations near the site redline boundary.

Receptor Name	Easting	Northing	Approximate distance to Solar Park area (m)
The Rakes	520828	343785	150
Ashleigh House	520352	343957	210
Six Hundred Farm	520611	343711	220
1-2 Rectory Cottages	519942	344054	220
2 Council House	520176	343987	230
The Old Church (East Heckington)	520408	343858	230
Elm Grange Farm	519036	344562	270
First Cottage	518686	344806	290
Beech House	519461	344339	290
Derwent Cottage	518656	344943	310
Home Farm	519314	344474	330
Rectory Farm House	519683	344197	330
1-4 New Cottage	518617	345148	340
The Oat Sheaf	519612	344228	340
Glebe Farm	518487	346136	390
The Bungalow	518484	345458	460
Swineshead House	521161	343564	460
Chapel House	518387	345879	510
Mill Green Farm	519952	347329	600
Five Willow Wath Farm	518597	346875	650
Catlins Farm	521796	344291	770
College Farm	521871	344469	830
College Cottage	521839	344147	830
Cattleholme Farm	521830	343978	860
The Old Church	521877	347322	1210
Maryland Bank	522066	347083	1230
Spinney Farm House	522916	346019	1360

Table 12.2.1 – Representative noise sensitive assessment locations identified

2. Construction Noise and vibration

2.1 2. Construction Noise

Full details of the exact construction method, plant and duration are not available at this stage of the Proposed Development. The construction noise impact assessment considers the typical activity based on the type and scale of development. Table 12.2.2 below shows the assumed construction stages that would take place on the Site and the associated sound power levels during these stages. These sound power levels are based on likely worst-case scenarios. The typical emission levels of Table 12.2.2 have been based on assumptions in terms of what plant items will be in operation and the percentage of time the relevant plant will be in use during a 10-hour period: these are detailed in Table 10.2.2. Reference data for the emissions of typical construction plant and activities set out in BS 5228-1 (BSI, 2014) was used.

Table 12.2.2 Construction plant and equipment assumptions (based on BS 5228-1 guidance)

Work Stage	Plant / Equipment Description	Maximum Power (sound power, L_{wA} (dB))	On-Time (%)	Assumed Overall Sound Power L_{wA} (dB)
Earthworks	Tracked Excavator	106	70	111
	Dozer	108	70	
	Wheeled backhoe loader	96	50	
	Articulated dump truck	109	50	
Solar array mounts	Tubular steel piling - hydraulic jacking - 240mm diameter	117	90	117
	Mobile Cranes	105	50	
	Wheeled backhoe loader	96	50	
Access Road works	Tracked Excavator (16t)	104	60	108
	Dumper (5t)	106	70	
	Tamper	91	50	
	Vibratory roller (3t)	101	50	
	Asphalt paver + tipper lorry	105	50	
Horizontal Directional Drilling (HDD)	HDD power unit and drill / HDD generator / Bentonite pump / Bentonite mixer / Generator for Site Offices	115	100	115
Construct temporary Site compounds	360 deg Excavators (Large)	105	100	115
	20tonne Excavator	102	90	
	Wheeled backhoe loader	96	90	
	Vibratory roller	102	80	
	Dozer	108	80	

The resulting likely construction noise level estimates at different distances from the work has been undertaken in accordance with British Standard (BS) 5228-1 *'Code of Practice for Noise and Vibration Control on*

Construction and Open Sites Part 1: Noise' (British Standards Institution (BSI), 2014) which provides methods for undertaking such predictions. It has been conservatively assumed that there are no screening effects, and that the ground cover is characterised as 50% hard / 50% soft.

Table 12.2.3 Predicted L_{Aeq} noise levels (dB) over the working day based at different distances for each of the working stages

Distance (m)	Earthworks	Solar array mounts	Access Road works	HDD works	Construct temporary site compounds
50	68	74	65	72	68
60	67	73	64	71	67
70	65	71	62	69	65
80	64	70	61	68	64
90	63	69	60	67	63
100	62	68	59	66	62
150	58	64	55	62	58
200	55	61	52	59	55
250	53	59	50	57	53
300	51	57	48	55	51
350	50	56	47	54	50
400	48	54	45	52	48
450	47	53	44	51	47
500	46	52	43	50	46
550	45	51	42	49	45
600	44	50	41	48	44
700	43	49	40	47	43
800	42	48	39	46	42
900	40	46	37	44	40
1000	39	45	36	43	39

2.2 Construction vibration

Vibration predictions have been undertaken using reference information from BS 5228-2 *'Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 2: Vibration*' (BSI, 2014) for vibratory plant at varying distances, based on worst-case assumptions likely to over-estimate actual vibration levels in practice. Although HDD plant may also generate vibration locally, given this work is relatively distant from the nearest sensitive receptors, it does not require further consideration.

For vibratory ground compaction, predictions were made assuming a 0.8mm drum vibration amplitude and a 1.5m drum width, both for steady state and at start-up/run-down. For the percussive piling, predictions are based on toe at refusal with an 85 Joule hammer energy. Table 12.2.4 sets out the resulting predictions for different separation distances.

Table 12.2.4 Predicted worst-case vibration levels (PPV, mm/s) for key activities

Distance (m)	Vibratory compaction, steady-state	Vibratory compaction, start-up/run-down	Percussive piling	Auger boring / HDD drilling
20	1.0	1.4	<1 mm/s	<1 mm/s
65	0.3	0.5	0.2	0.2
150	0.2	0.3	0.1	0.1
200	0.1	0.1	0.0	0.0

3. Operational Noise

Prediction of sound propagation at representative noise sensitive receptors, closest to the site boundary, has been undertaken in accordance with ISO 9613-2 'Acoustics – attenuation of sound during propagation outdoors – Part 2: General method of Calculation (International Organisation for Standardisation (ISO), 1996). This was implemented in the CadnaA®[1] prediction software. Propagation over soft ground was assumed, typical of cultivated land in rural conditions, with receptor locations modelled at a height of 4 m to represent a first floor window. Please note that the model did not consider any screening from the solar PV panels themselves which were not included in the noise model as solid elements.

3.1 Noise sources assumed

The exact design of the solar installation will be the result of a future tendering process and therefore representative equipment has been assumed for this noise assessment, based on indicative manufacturer selection, The assumed noise emission levels are set out below in Table 12.2.5. Spectral data (where relevant) was based on manufacturer data when available or from experience of representative units

Table 12.2.5 - Solar energy electrical/mechanical plant – assumed sound power levels (dB)

Noise Source	Model	Octave Band Centre Frequency (Hz)						
	assumed	63	125	250	500	1000	2000	dB(A)
Energy Storage - inverter	CAB1000/AC	93	93	92	90	88	84	93
Energy Storage – cooling	Vertiv Liebetert HPS 14kW	-	-	-	-	-	-	70
Solar panel – central inverters	SMA SC4600UP	65	74	82	82	83	83	91
Solar panel – central transformers	Generic data	-	-	-	-	-	-	80

1 DataKustik GmbH, Computer Aided Noise Abatement (CadnaA®) software package, (Link https://www.datakustik.com/products/cadnaa/cadnaa/)

Noise Source	Model assumed	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	dB(A)
132 kV transformers	Generic data	85	92	91	79	76	71	85
Main 400/33 kV transformer and associated equipment	Generic data	88	95	94	82	79	74	88

The Battery Energy Storage Solution (BESS) area was assumed as including 96 energy storage units, each of which included one battery container (no noise emissions), one inverter and cooling unit. As the inverter was the clearly dominant noise source in each case (based on the available data as set out Table 12.2.5), only these were included in the noise model. The BESS area also included two 132kV transformer units, in addition to 6 other similar units distributed around the Site.

The solar panels are associated with 120 inverters and smaller transformers distributed around the Site. Table 12.2.5 however demonstrates that the inveters also represent the dominant noise source and so these were included in the model around the Site at representative locations.

The 400/33 kV transformer is considered likely to represent the main source of noise at the proposed main substation, positioned southeast in the Site area, with a representative sound power of 85 dB(A). Additional plant likely to be used at the substation may also include STATCOM reactive compensation and harmonic filter plant to regulate the current. In the absence of specific design information for the plant at this stage of the Proposed Development, the overall noise emission levels for the substation was increased to 88 dB(A) as set out above.

The solar panels may use Single Axis Tracking (SAT) technology. with typically one motor operating for 100m of solar array. Manufacturer data for a typical SAT engine suggests a sound power of 50 dB(A) for such units. Initial modelling for a portion of the Site was undertaken by assuming that the acoustic energy is contained in the 500Hz band. Constant operation of the motor was assumed on a conservative basis despite indications this would only typically run for a few seconds every few minutes. It was concluded that the resulting noise levels are very low, with predicted levels of 11 dB at 50 metres the edge of the solar area. Therefore, the SAT motor sources are considered negligible, and were not included in the overall site model.

3.2 Prediction results.

The resulting predictions are detailed below in Table 12.2.6 and illustrated in Figures 12.2.2-12.2.3, with separate results provided for the contribution of the plant in the BESS area and other plant modelled across the Site. The resulting detailed BS 4142 assessment is set out for day- and night-time periods in Table 12.2.8. and 12.2.9.

Figure 12.2.4 and Figure 12.2.5 illustrate predicted noise levels with a 3 m solid barrier placed along the south, east and west boundaries of the BESS area. If a further 6 dB reduction in noise levels is assumed overall through selection of quieter units and other plant acoustic mitigation measures, the resulting BS 4142 assessment are set out in Table 12.2.10. and 12.2.11.

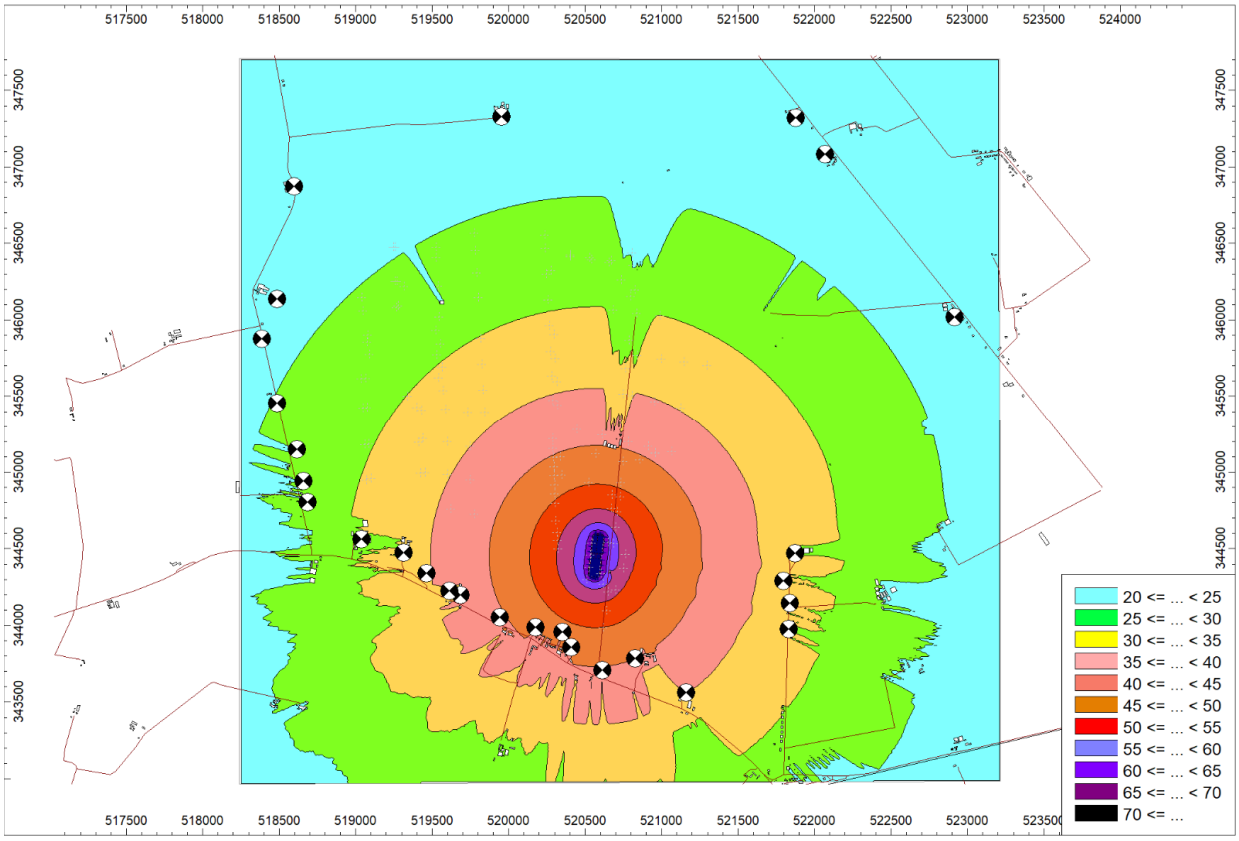


Figure 12.2.2 - L_{Aeq} (dB) noise map for the BESS area only.

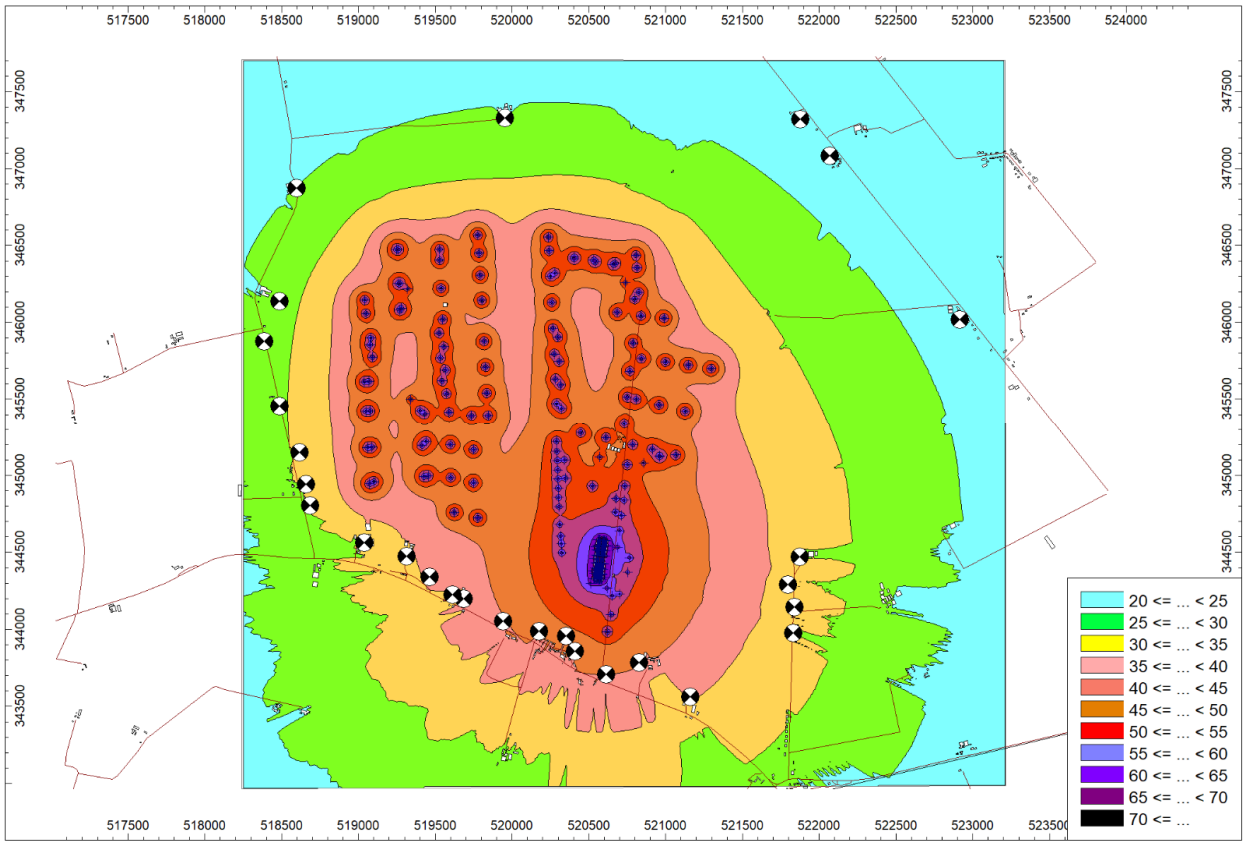


Figure 12.2.3 - L_{Aeq} (dB) noise map for all plant noise sources.

Receptor name	All Plant	Inverters, Substations & Transformers only	BESS Storage only
Elm Grange Farm	30	27	27
First Cottage	31	29	28
Derwent Cottage	31	28	27
1-4 New Cottage	31	29	27
Home Farm	34	27	33
Beech House	36	28	35
Rectory Farm House	37	27	37
The Oat Sheaf	34	27	34
1-2 Rectory Cottages	40	29	40
2 Council House	42	30	42
Ashleigh House	44	32	43
The Old Church (East Heckington)	44	34	44
The Rakes	41	31	40
Swineshead House	35	23	35
Cattleholme Farm	33	21	32
College Cottage	33	21	33
Catlins Farm	34	22	33
Six Hundred Farm	41	31	41
College Farm	33	22	33
The Bungalow	30	28	25
Chapel House	28	26	24
Glebe Farm	28	27	23
Five Willow Wath Farm	25	23	21
Mill Green Farm	26	24	22
The Old Church	22	17	21
Maryland Bank	23	17	21
Spinney Farm House	23	15	22

Table 12.2.7 - Prediction model results (L_{Aeq}, dB) .

Property	Typical background (L_{A90})	Predicted plant noise level (L_{Aeq})	Predicted rated plant noise (L_{Ar})	Difference with background	Magnitude of Change	Noise limit
Elm Grange Farm	40	30.2	34.2	-6	negligible	44
First Cottage	35	31.2	35.2	+0	low	39
Derwent Cottage	35	30.9	34.9	+0	low	39
1-4 New Cottage	35	31.1	35.1	+0	low	39
Home Farm	40	34.2	38.2	-2	low	44
Beech House	40	35.6	39.6	+0	low	44
Rectory Farm House	40	37.4	41.4	+1	low	44
The Oat Sheaf	40	34.4	38.4	-2	low	44
1-2 Rectory Cottages	40	40.2	44.2	+4	low	44
2 Council House	40	42.1	46.1	+6	medium	44
Ashleigh House	40	43.6	47.6	+8	medium	44
The Old Church (East Heckington)	40	44.2	48.2	+8	medium	44
The Rakes	40	40.7	44.7	+5	medium	44
Swineshead House	40	35.3	39.3	-1	low	44
Cattleholme Farm	30	32.6	36.6	+7	medium	35
College Cottage	30	32.8	36.8	+7	medium	35
Catlins Farm	30	33.5	37.5	+8	medium	35
Six Hundred Farm	40	41.3	45.3	+5	medium	44
College Farm	30	33.1	37.1	+7	medium	35
The Bungalow	30	29.9	33.9	+4	low	35
Chapel House	30	27.8	31.8	+2	low	35
Glebe Farm	30	28.2	32.2	+2	low	35
Five Willow Wath Farm	30	25.1	29.1	-1	low	35
Mill Green Farm	30	25.8	29.8	+0	low	35
The Old Church	30	22.3	26.3	-4	low	35
Maryland Bank	30	22.8	26.8	-3	low	35
Spinney Farm House	30	23.1	27.1	-3	low	35

Table 12.2.8 - Derived background, predicted rated noise levels (dB) and BS 4142 assessment at key receptors – day-time

Property	Typical background (L_{A90})	Predicted plant noise level (L_{Aeq})	Predicted rated plant noise (L_{Ar})	Difference with background	Magnitude of Change	Noise limit
Elm Grange Farm	35	30.2	34.2	-1	low	39
First Cottage	28	31.2	35.2	+7	low	35
Derwent Cottage	28	30.9	34.9	+7	low	35
1-4 New Cottage	28	31.1	35.1	+7	low	35
Home Farm	35	34.2	38.2	+3	low	39
Beech House	35	35.6	39.6	+5	medium	39
Rectory Farm House	35	37.4	41.4	+6	medium	39
The Oat Sheaf	35	34.4	38.4	+3	low	39
1-2 Rectory Cottages	35	40.2	44.2	+9	medium	39
2 Council House	35	42.1	46.1	+11	high	39
Ashleigh House	35	43.6	47.6	+13	high	39
The Old Church (East Heckington)	35	44.2	48.2	+13	high	39
The Rakes	35	40.7	44.7	+10	high	39
Swineshead House	35	35.3	39.3	+4	low	39
Cattleholme Farm	23	32.6	36.6	+14	high	35
College Cottage	23	32.8	36.8	+14	high	35
Catlins Farm	23	33.5	37.5	+15	high	35
Six Hundred Farm	35	41.3	45.3	+10	high	39
College Farm	23	33.1	37.1	+14	high	35
The Bungalow	23	29.9	33.9	+11	low	35
Chapel House	23	27.8	31.8	+9	low	35
Glebe Farm	23	28.2	32.2	+9	low	35
Five Willow Wath Farm	23	25.1	29.1	+6	low	35
Mill Green Farm	23	25.8	29.8	+7	low	35
The Old Church	23	22.3	26.3	+3	low	35
Maryland Bank	23	22.8	26.8	+4	low	35
Spinney Farm House	23	23.1	27.1	+4	low	35

Table 12.2.9 - Derived background, predicted rated noise levels (dB) and BS 4142 assessment at key receptors – night-time

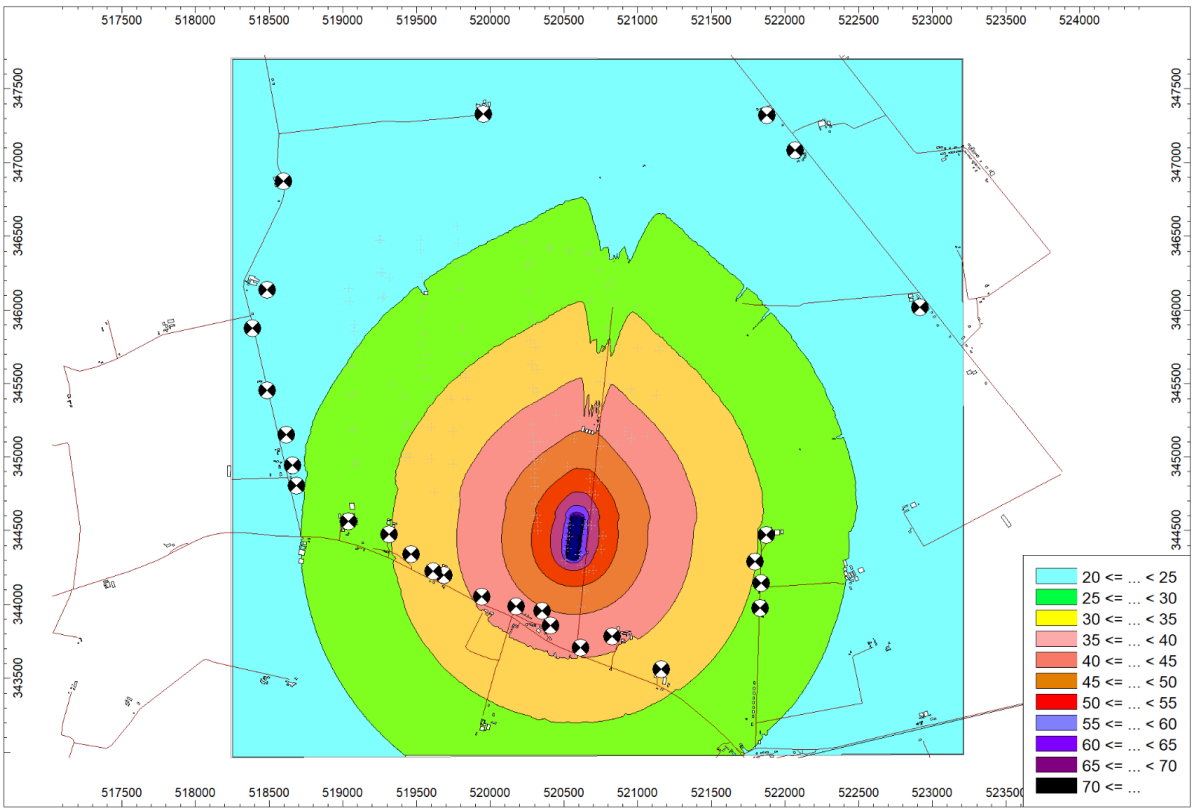


Figure 12.2.4 - L_{Aeq} (dB) noise map for the BESS plant only, with a 3m tall barrier to the south, east and west of the BESS area.

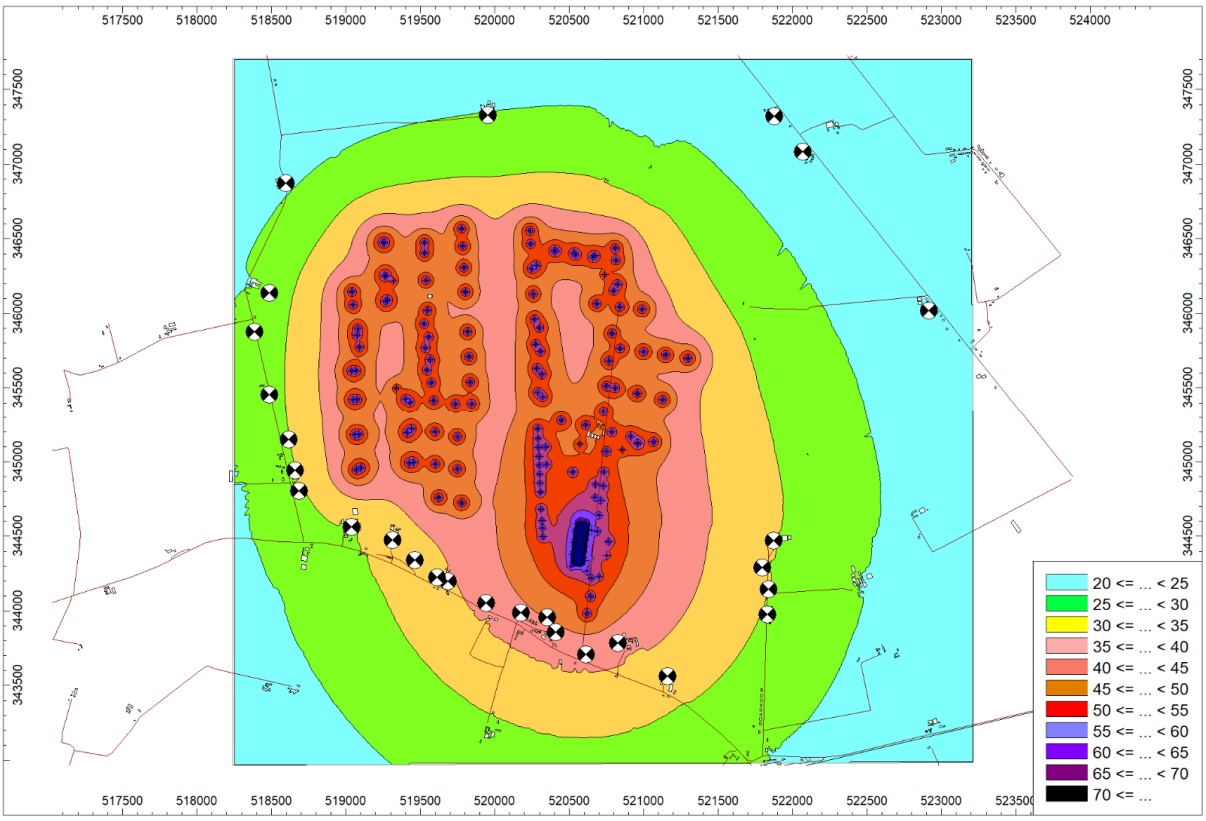


Figure 12.2.5 - L_{Aeq} (dB) noise map for all plant noise sources, with a 3m tall barrier to the south, east and west of the BESS area.

Property	Typical background (L_{A90})	Predicted plant noise level (L_{Aeq})	Predicted rated plant noise (L_{Ar})	Difference with background	Magnitude of Change	Noise limit
Elm Grange Farm	40	24.1	28.1	-12	negligible	44
First Cottage	35	24.0	28	-7	negligible	39
Derwent Cottage	35	23.8	27.8	-7	negligible	39
1-4 New Cottage	35	24.2	28.2	-7	negligible	39
Home Farm	40	25.8	29.8	-10	negligible	44
Beech House	40	27.0	31	-9	negligible	44
Rectory Farm House	40	28.3	32.3	-8	negligible	44
The Oat Sheaf	40	27.6	31.6	-8	negligible	44
1-2 Rectory Cottages	40	30.9	34.9	-5	negligible	44
2 Council House	40	32.8	36.8	-3	low	44
Ashleigh House	40	34.2	38.2	-2	low	44
The Old Church (East Heckington)	40	34.9	38.9	-1	low	44
The Rakes	40	31.7	35.7	-4	low	44
Swineshead House	40	26.3	30.3	-10	negligible	44
Cattleholme Farm	30	23.6	27.6	-2	low	35
College Cottage	30	24.0	28	-2	low	35
Catlins Farm	30	24.7	28.7	-1	low	35
Six Hundred Farm	40	32.0	36	-4	low	44
College Farm	30	24.2	28.2	-2	low	35
The Bungalow	30	23.2	27.2	-3	low	35
Chapel House	30	21.0	25	-5	negligible	35
Glebe Farm	30	21.6	25.6	-4	low	35
Five Willow Wath Farm	30	18.3	22.3	-8	negligible	35
Mill Green Farm	30	19.3	23.3	-7	negligible	35
The Old Church	30	15.4	19.4	-11	negligible	35
Maryland Bank	30	15.7	19.7	-10	negligible	35
Spinney Farm House	30	15.2	19.2	-11	negligible	35

Table 12.2.10 - Derived background, predicted rated noise levels (dB) and BS 4142 assessment at key receptors – day-time– with additional mitigation (3m noise barrier and further noise reduction)

Property	Typical background (L_{A90})	Predicted plant noise level (L_{Aeq})	Predicted rated plant noise (L_{Ar})	Difference with background	Magnitude of Change	Noise limit
Elm Grange Farm	35	24.1	28.1	-7	negligible	39
First Cottage	28	24.0	28	+0	low	35
Derwent Cottage	28	23.8	27.8	+0	low	35
1-4 New Cottage	28	24.2	28.2	+0	low	35
Home Farm	35	25.8	29.8	-5	negligible	39
Beech House	35	27.0	31	-4	low	39
Rectory Farm House	35	28.3	32.3	-3	low	39
The Oat Sheaf	35	27.6	31.6	-3	low	39
1-2 Rectory Cottages	35	30.9	34.9	+0	low	39
2 Council House	35	32.8	36.8	+2	low	39
Ashleigh House	35	34.2	38.2	+3	low	39
The Old Church (East Heckington)	35	34.9	38.9	+4	low	39
The Rakes	35	31.7	35.7	+1	low	39
Swineshead House	35	26.3	30.3	-5	negligible	39
Cattleholme Farm	23	23.6	27.6	+5	low	35
College Cottage	23	24.0	28	+5	low	35
Catlins Farm	23	24.7	28.7	+6	low	35
Six Hundred Farm	35	32.0	36	+1	low	39
College Farm	23	24.2	28.2	+5	low	35
The Bungalow	23	23.2	27.2	+4	low	35
Chapel House	23	21.0	25	+2	low	35
Glebe Farm	23	21.6	25.6	+3	low	35
Five Willow Wath Farm	23	18.3	22.3	-1	low	35
Mill Green Farm	23	19.3	23.3	+0	low	35
The Old Church	23	15.4	19.4	-4	low	35
Maryland Bank	23	15.7	19.7	-3	low	35
Spinney Farm House	23	15.2	19.2	-4	low	35

Table 12.2.11 - Derived background, predicted rated noise levels (dB) and BS 4142 assessment at key receptors – night-time – with additional mitigation (3m noise barrier and further noise reduction)

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 14.1- Draft Outline Construction Traffic Management Plan

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Draft Outline Construction Traffic Management Plan.

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection To Bicker Fen Substation and All Associated Infrastructure Works.

Land At Six Hundred Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire.

On Behalf of Ecotricity (Heck Fen Solar) Limited.

Date: June 2022 | Pegasus Ref: P20-2370 TR01

Document Management.

Version	Date	Author	Checked/ Approved by:	Reason for revision
-	June 2022	LD	KS	-

Contents.

Figures.

Appendices.

1. Introduction

1.1. This Draft Outline Construction Traffic Management Plan (OCTMP) has been prepared by Pegasus Group on behalf of Ecotricity (Heck Fen Solar) Limited (the Applicant), in order to address the traffic and transportation issues associated with the construction of a new large-scale ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (The Energy Park). The cable route for the grid connection and the above ground works needed for connection to the National Grid Bicker Fen Substation are also considered. The Heckington Fen Solar Park will compromise of the following three elements: the Energy Park, cable route to, and above ground works at, the National Grid Bicker Fen Substation (referred to within this document as "the Proposed Development").

1.2. The site is located at land at Six Hundred Farm, Six Hundreds Drove, East Heckington, Sleaford. Planning permission for a wind farm at the site was previously granted consent and the highway authority offered no objection to those proposals. The form and location of the access arrangements agreed as part of the wind farm have been taken into consideration for the development of the Energy Park.

1.3. The Proposed Development comprises the construction, operation (including maintenance) and decommissioning of ground mounted solar PV panel arrays, an energy storage facility and supporting infrastructure. The connecting cable route extends from the Energy Park to the connection point at the National Grid Bicker Fen Substation, around nine kilometres from the centre of the site to the south. Further details of the proposal and the technology used together with the proposed site layout are provided separately as part of the planning documentation.

1.4. The site is located to the immediate north of the A17, approximately 3.7 kilometres to the east of the village of Heckington and around 8.9 kilometres to the west of Boston.

1.5. Access to the site during the construction and operational phases is proposed with the A17 to the south of the site, approximately 900 metres northwest of the junction with Six Hundreds Drove. Whilst the proposed access is under construction, a temporary construction access will be provided via an existing junction with the A17, approximately 600 metres southeast of B1395 Sidebar Lane junction.

1.6. At this stage, access to the proposed Point of Connection (PoC) is not confirmed. However, it is anticipated that access to the north of the railway line will be served via Parks Farm. The preferred access option to the south of the railway is via the Triton Knoll or National Grid access points at the A17 and the A52 Bicker Road respectively. However, access will also be provided via the lane that runs to Royalty Farm.

1.7. This draft OCTMP describes the arrangements that are proposed for the period of construction activities at the site and sets out the following:

i. Site access arrangements;

ii. Routing for construction traffic;

iii. Vehicle numbers, size and frequency;

iv. Details relating to the proposed cable route; and

v. Proposed mitigation, including condition surveys.

1.8. It will be the responsibility of the appointed contractor to comply with all statutory regulations and guidelines as appropriate, in relation to construction and movement activities.

1.9. The appointed contractors will be provided with a copy of the final CTMP and will adhere to it as part of the DCO consent. The CTMP will form part of the information provided as part of the construction personnel's on-site induction processes. The contact details of the contractor, including a 24-hour emergency contact number, and those of the highway department at Lincolnshire County Council will be exchanged before commencement of the works on the site.

2. Site Characteristics

Site Location and Description

2.1. The Energy Park comprises fields to the north of the A17 within the vicinity of East Heckington. It is bound by undeveloped parcels of land and Head Dike to the north, Sidebar Lane and undeveloped land to the west, the A17 to the south and Holland Dike to the east. The cable route comprises further agricultural fields, and will require the crossing of infrastructure such as the A17, the railway, the South Forty Foot Drain, a gas pipeline and other roads and watercourses.

2.2. A site location plan is included at Figure 2.1 and the proposed site layout is included within the wider submission.

Local Highway Network - Energy Park Access

A17

2.3. The A17 is a single carriageway road which is routed between Newark-on-Trent to the north and Kings Lynn to the south. Locally, the A17 provides a connection between Sleaford and Boston and Spalding. It links with the A52 at a roundabout junction approximately seven kilometres south of the proposed site access and with the A15 at a roundabout junction approximately 15 kilometres north of the proposed Energy Park access. The road is subject to a 50mph speed limit within the vicinity of the Energy Park frontage.

2.4. The carriageway measures approximately eight metres wide at the Energy Park frontage. A footway measuring approximately two metres wide is located on the southern side of the carriageway between the Four Winds Service Station in the east to The Heathers House to the west.

2.5. The A17, A52 and A15 are all principal routes that are used by heavy goods vehicles (HGVs) on a regular basis.

Local Highway Network – Substation Access

Royalty Farm Lane

2.6. The lane that runs to Royalty Farm from the A17 is a no through road located to the south of South Forty Foot Drain and is subject to the national speed limit (60mph). It measures around five metres wide for the first 200 metres before narrowing to around 2.5 metres wide. There are no footways located along the lane. It should be noted that the name of the lane is spelt a number of ways including Royalty Lane, Royality Lane, and Royalty Farm Lane.

Parks Farm Access Road

2.7. The Parks Farm access road is located approximately two kilometres north of the lane leading to Royalty Farm, to the north of South Forty Foot Drain. It measures around five metres wide at the bellmouth and tapers to around three metres wide within the site. There are no footways located along the access road.

Triton Knoll Access Road

2.8. The Triton Knoll access road is located approximately 660 metres south of the lane leading to Royalty Farm, to the north of South Forty Foot Drain. It measures around 35 metres wide at the bellmouth and tapers to around seven metres wide within the site. There are no footways located along the access road.

National Grid Access Road

2.9. The National Grid access road is served from the A52 Bicker Bar, approximately 600 metres south west of the junction with Drury Lane. It measures around 55 metres wide at the bellmouth and tapers to around eleven metres wide internally. There are no footways located along the access road.

Recorded Traffic Flows and Speeds

2.10. Automatic Traffic Count (ATC) surveys were carried out on the approaches to the proposed Energy Park access point between 24th March to 31st March 2022 to ascertain existing vehicle speeds. The full survey dataset is included at Appendix A.

2.11. The average 85th percentile speeds calculated in accordance with the Design Manual for Roads and Bridges (DMRB) 'CA 185 Vehicle Speed Measurement' equate to:

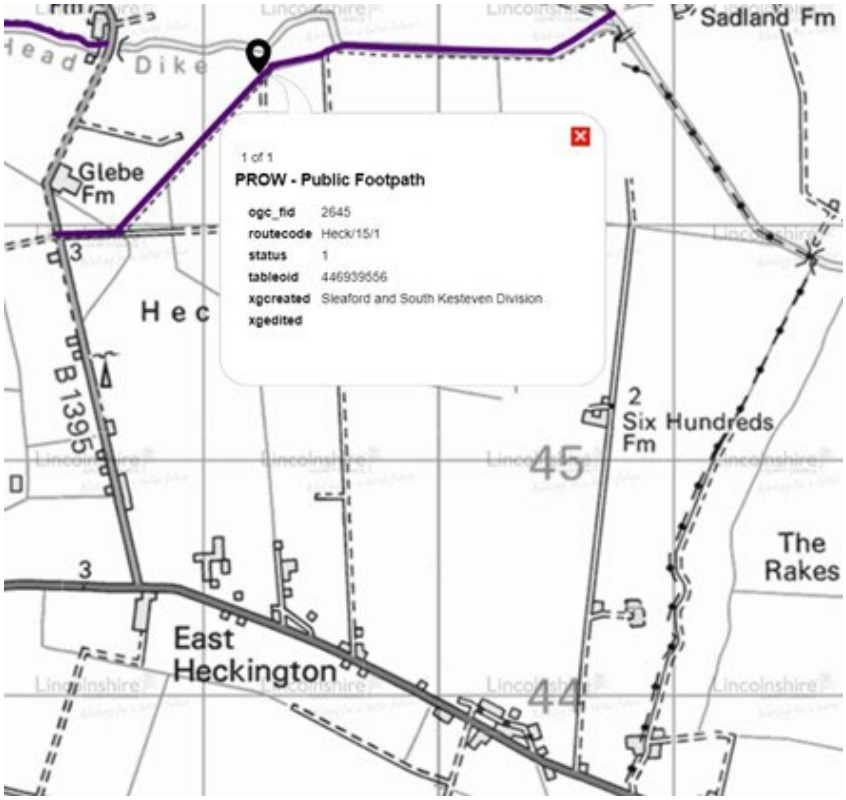
- 51.10 mph for eastbound traffic; and
- 53 mph for westbound traffic.

2.12. These speeds equate to a required Stopping Sight Distance (SSD) of 164.23 metres eastbound (looking right out) and 154.48 metres westbound (looking left out).

Public Rights of Way

2.13. Public Right of Way (PRoW) footpath HECK/15/1 is located along the northern boundary of the site, as shown indicatively at **Plate 2.1**.

Plate 2.1 – ProW HECK/15/1



2.14. The footpath follows field boundaries towards the Head Dike from the B3195 Sidebar Lane in the west towards Maryland Bank in the east. Access onto the Head Dike raised bank is no longer possible with a bridge crossing the drainage ditch no longer in existence.

Highway Safety

2.15. Personal Injury Collision (PIC) data has been obtained from Lincolnshire Road Safety Partnership for the most recent five-year period between 31/03/2018 and 31/03/2022. The study area comprises approximately 4.5 kilometres along the A17 between the junction with the A1121 to the east and the layby serving Garwick café to the west.

2.16. Lincolnshire Road Safety Partnership has confirmed that there has been a total of 14 slight, three serious and one fatal incident within this five-year study period within the study area. A summary of these incidents along with the full PIC reports are included at **Appendix B**.

2.17. With respect to the fatal incident which occurred on 16/04/2020 at 10:00, it is understood that two vehicles were involved, including a car and a 7.5 tonne goods vehicle. The incident appears to have occurred when the car, which was travelling westbound along the A17, drove towards the nearside kerb and when correcting the direction of the vehicle, entered the opposing side of the carriageway into the path of the goods vehicle. Road conditions were dry, daylight was present, and the weather was fine without high winds.

2.18. Assessment of these incidents confirms that they are generally randomly located and that there are no obvious highway safety patterns or problems within the study area.

2.19. There is forecast to be a relatively limited increase in daily trips associated with the Proposed Development and the movement of construction vehicles will be strictly managed through the construction phase, as detailed in **Section 5**. Therefore, it is expected that there will not be any material impact on the safety of the local highway network arising from the scheme.

3. Proposed Energy Park Access Arrangements

Temporary Construction Access

3.1. Whilst the proposed permanent construction and operational access is under construction, temporary construction access is proposed to be provided via an existing junction with the A17, approximately 600 metres southeast of B1395 Sidebar Lane junction.

3.2. The existing access, adjacent to Elm Grange, is shown at **Figure 3.1**. Visibility splays of 2.4 x 215 metres can be achieved in both directions to the nearside kerb, commensurate with speeds of 60mph (notwithstanding recorded speeds of less than this).

3.3. Access to a new school for children with Special Educational Needs and Disabilities (SEND) is provided in this location. Any vehicle movements associated with the construction of the Energy Park will be minimised and restricted to avoid the start and end of the school day (where it is understood that the majority of pupils arrive and depart by taxi). The Site Manager will liaise with the school on a regular basis to inform them of expected vehicle movements and to manage the arrival and departure of the largest vehicles.

3.4. The temporary construction access will only be in place until such a time that the permanent access is completed. This is estimated to be a period of around two months.

Main Construction and Operational Access

3.5. Vehicular access to the site during the construction and operational phases is proposed via a new priority junction with the A17 to the south of the site, approximately 900 metres northwest of the junction with Six Hundred Drove. The proposed junction arrangement is illustrated at **Figure 3.2**. This is in the approximate position agreed as part of the previous wind farm planning consent at the site.

3.6. Following pre-application discussions with highways officers, all construction traffic (including light and heavy vehicles) will be required to make a "left in – left out" manoeuvre at the site access. Drivers will be made aware of this upon arriving and departing the site and appropriate signage will be provided at the site access.

3.7. The junction will provide a seven metre wide access road, wide enough to accommodate two HGVs simultaneously.

3.8. Junction radii of 12 metres on the north-western side and ten metres on the south-eastern side will be provided to accommodate the swept path of the largest vehicles associated with the proposed Energy Park.

3.9. All construction vehicles will enter and exit the Energy Park in forward gear. **Figure 3.2** demonstrates the Swept Path Analysis of a 16.5 metre articulated vehicle at the access. A 16.5m articulated HGV will access the site frequently during the construction phase, as set out in **Section 5**. A low loader will be required to transport a small number of deliveries associated with battery units. These deliveries will be managed to ensure that the access road is clear at all times. **Figure 3.2** confirms that a low loader can manoeuvre appropriately at the site access.

3.10. Delivery vehicles seeking to access and egress the Site could be assisted by the use of banksmen, should it be considered necessary by local highway officers. However, **Figure 3.2** demonstrates that visibility splays of 215 metres can be provided to the nearside kerb in both directions. This is commensurate with vehicle speeds of 60mph and therefore in excess of the recorded speeds in this location.

3.11. The extent of the access tracks within the site is shown on the site layout included as part of the wider submission.

Public Rights of Way

3.12. As set out in **Chapter 2**, PRoW HECK/15/1 is located along the northern boundary of the site. Given its location on the periphery of the Energy Park, it is not anticipated that the proposals will materially affect access to the footpath. However, should it be considered necessary by the highway authority appropriate signage and fencing could be erected.

Construction Compounds

3.13. Due to the size of the Energy Park, there will be multiple construction compounds located within the site. The compounds will be of suitable size for an articulated vehicle to enter, turn and exit in a forward gear.

3.14. A temporary car parking area (including space for minibuses) will be provided on the site within the contractor's compounds, as shown on the layout plan included with the submission. Parking will therefore be contained within the site and no unnecessary parking will occur on the local highway network. The compounds will also include areas for the storage of plant and equipment. No parking by contractors, visitors or delivery vehicles will be permitted on the access track leading to the site compound during the construction phase. Visitors will be advised of the parking arrangements in advance of travelling to the site.

Proposed Mitigation

3.15. The arrival and departure of HGVs at the Site will be strictly managed by the Site Manager. Drivers will adhere to a delivery schedule and will be required to call ahead to ensure that any emerging HGVs can be held within the construction compound. No HGVs will be permitted to wait on the public highway.

3.16. As set out above, all vehicles will only be permitted to turn left in and left out of the site access junctions and banksmen can be located at the site access, if necessary, to assist the largest vehicles exiting the site.

3.17. Temporary signage will be erected in the vicinity of the Site during construction phase. Diagram 7301 'WORKS TRAFFIC ONLY' in the Traffic Signs Regulations and General Directions 2016 (TSRGD) will be used to indicate that heavy construction vehicles are turning. Signage will be white text and red background 1050 x 750mm mounted in 'A' frame, as illustrated at **Appendix C.**

3.18. Wheel washing may be required until the internal access tracks are completed. A drive through 'dry' wheel wash will be provided within the Site close to the A17 to ensure that vehicle's wheels are clear of mud and detritus before exiting on to the local highway network.

3.19. The contractor will dispose of any waste material arising from the works responsibly, ensuring compliance with all legislation including, but not limited to the Waste Duty of Care Code of Practice (2018). Any HGVs transporting materials off site will be covered to reduce the propensity of dust and dirt.

3.20. As set out in the **Section 1** of this OCTMP, the contact details of the contractor and those of the highway department at Lincolnshire County Council will be exchanged before commencement of the works on site

4. Construction Traffic Routing

4.1. The Applicant has confirmed that the solar farm components could be imported to the UK via Goole Port. It is therefore likely that construction traffic will arrive at the site from the east via the A1(M) and A17 or the M180 and A15, as shown at **Figure 4.1**.

4.2. In order to prevent construction traffic crossing opposing traffic on the A17, any vehicles approaching from the east (right in movements) will be required to turn at the roundabout junction with the A15 and A17 at Sleaford to the west of the site.

4.3. Vehicles leaving the site will only be permitted to turn left out. Therefore, any vehicle wishing to continue its journey to the west will be required to turn at the roundabout between the A17 and A52 at Bicker to the east, or continue on routes to the east of the site such as the A52 and A15.

4.4. Construction vehicles will only access the Site via the designated construction route identified in this draft OCTMP. This route will ensure, as far as practicable, that heavy construction vehicles associated with the site will not unnecessarily pass through small villages in the vicinity of the site.

4.5. All roads along the designated routes are already used by HGVs. The local highway network within the immediate vicinity of the site is generally comprised of distributor roads, is not subject to any weight or height restrictions and is suitable to accommodate all types of vehicles including maximum articulated delivery vehicles. The route is therefore considered suitable for use by the relatively low number of HGVs that will be associated with the limited temporary construction period, details of which are set out at **Section 5**.

4.6. Drivers will be informed of the route prior to arriving at and / or departing from the Site. Drivers will be advised not to use Sat-Navs to reach the Site.

5. Energy Park Vehicle Trip Attraction

Construction Phase

5.1. The Applicant has confirmed that the Energy Park will take approximately 18 months to complete, split roughly into four or five areas across the site. The cable route and works at Bicker Fen will take place within the same timeframe. It is estimated that 40MWp could be installed each month for 13 months, with the batteries delivered over four months after each solar phase is built out.

5.2. The construction phase includes the preparation of the site, the temporary access roads, erection of security fencing, assembly and erection of the PV strings, installation of the inverters/transformers/battery units and grid connection.

5.3. If considered necessary by local highway officers, construction traffic and delivery vehicles will be limited to outside of the AM and PM peak hours.

5.4. A maximum of up to 100 construction workers are forecast to be on site during peak times during the construction period. As set out in **Section 3**, a temporary construction compound will be provided which will include car parking for contractors, ensuring that all parking associated with the construction is contained on site.

5.5. The location of where staff will travel from is unknown at this stage as it will depend on the appointed contractor. However, it is anticipated at this stage that the non-local workforce will stay at local accommodation and the vast majority of general operatives will be transported to the site by minibuses to minimise the impact on the local highway network. As such there could be 15 to 20 crew minibuses per day. The number of car trips to the site will be minimised to those senior staff such as project managers and the Health and Safety Executive.

5.6. The construction period will include the use of Heavy Good Vehicles (HGVs) to bring equipment onto the site and this will be strictly managed to ensure that vehicle movement is controlled and kept to a minimum. A small number of abnormal indivisible loads will be required to transfer heavier equipment such as transformers.

5.7. The route identified at **Section 4** for construction traffic means that large vehicles will only utilise A-roads for the whole construction route, with impacts on local residential areas minimised.

5.8. The Applicant has confirmed that approximately 2,000 modules are anticipated to be delivered per hectare of land. It is anticipated that the Energy Park could require up to 930,000 modules, which could be delivered at 496 modules per container. This therefore equates to a total of around 1,875 modules to be delivered or around 3,750 two-way 16.5 metre long HGV trips across an 18 month period.

5.9. The proposed Energy Park will have a total of 127 standalone inverters. These are around 4.5 metres long by three metres high. It is assumed that each inverter will arrive at the site by the smallest possible vehicle, which could be a 12 metre long rigid HGV. It is assumed that the inverters will be transported individually due to their weight and as such this would equate to a total of 127 deliveries.

5.10. There will be 192 Battery Units. These will be delivered to the site individually by a 16.5 metre long articulated HGV due to their size. Therefore, 192 deliveries will be required.

5.11. The design assumes 1 x 400kV Substation, and up to 6 x 132kV Substations. The transformers will require an abnormal indivisible load (AIL) and a crane to move the transformer into place, but the remaining parts of the Substations are expected to be delivered on around 150 16/5 metre HGVs. There will therefore be two AIL deliveries; one for the transformer and one for the crane.

5.12. The transformer would have a mass in the order of 120 tonnes, with a max width of 4m, and max height of 4.5m. We noted this would be delivered on a 16.5m articulated low loader with max axle loads in the order of 15tonnes.

5.13. It is envisaged that approximately 58 16.5 metre long articulated HGVs will also be required to transport the compound portacabins/storage and spares containers to the site.

5.14. Some deliveries will be associated with the preparation of the access tracks within the site. As a worst case, stone may be required to construct the temporary access tracks on the site. Stone is likely to arrive on ten metre tipper trucks. The precise number will depend on the amount of stone required, but for the purpose of this assessment we have assumed that around 500 deliveries of stone may be required. This is considered to provide a robust estimate of the likely number of deliveries for the access track as in reality, it is likely that temporary access matting will be used instead resulting in fewer deliveries.

5.15. A number of front end JCBs will also be required to transport equipment around the site and distribute stone as necessary. This is a similar size to a tractor and will be either transported or driven to the site.

5.16. In summary, the following HGV movements could be associated with the construction period as set out in **Table 5.2.**

Table 5.2 Heavy Goods Vehicle Movements – Energy Park Construction Period

Activity	Type of Vehicle	Total Number of Construction Vehicles
Solar Farm Components – Modules	16.5 metre articulated	1,875
Solar Farm Components - Frames		938
Battery Units		192
Substations		150
Spares Containers		10
Compound Containers		48
Inverters	12 metre rigid	127
Transformer	Abnormal Indivisible Load	1
Crane		1
Access Tracks	10 metre tipper trucks	500
General	Front End JCB	10
Total		**3,852 (4,045 including 5% contingency)**

5.17. Assuming an 18 month construction period (total) and a six day working week (468 days total) equates to around nine HGV deliveries per day on average (or up to 18 two way movements per day). This could be higher or lower at times depending on the stage of construction.

5.18. In addition to the HGV movements identified in **Table 5.2**, there will also be a small number of construction movements associated with smaller vehicles such as the collection of skips for waste management, the transport of construction workers and sub-contractors.

5.19. The Energy Park will be associated with fewer large, abnormal loads that the consented wind farm at the site.

Operational Phase

5.20. It is currently anticipated that once the site is operational, there will be approximately one visit per day associated with a Shepherd (for sheep grazing on site) and for equipment maintenance.

5.21. The largest vehicles that are likely to be used during the operational phase is expected to be no larger than a 7.5t van or 4x4 vehicles.

5.22. Whilst the contractor's compound will have been removed, space will remain within the site for such a vehicle to turn around to ensure that reversing will not occur onto the adjacent highway.

Summary

5.23. It is expected that there will be approximately 18 two-way movements per day by large vehicles at the site (i.e. eight arrivals and eight departures) over an 18 month period. There will also be construction workers arriving at the site first thing in the morning and departing in the evening, although the numbers involved are forecast to be relatively low on a day-to-day basis and minibuses will be provided for general operatives.

5.24. The level of traffic during the temporary 18 month (468 days total) construction phase is not considered to be material and it is considered that this will not have a detrimental impact on the safety or operation of the local or strategic highway network.

6. Condition Survey

6.1. A pre-commencement walk-over Condition Survey on the local highway network will be carried out to assess the baseline condition of the adopted highway before construction activities commence. At this stage it is envisaged that the extent of the survey will be the A17 in the vicinity of the temporary and permanent site access junctions only.

6.2. The survey will incorporate photographic records as appropriate. The survey will be accompanied by highway officers at Lincolnshire County Council, as required, and a date for this survey will be agreed before construction activities commence.

6.3. This would be followed by a further Condition Survey with a further photographic record covering the same extents as previously assessed at the end of construction activities, in order to identify and agree any remedial works reasonably attributable to construction activities. A date for this survey will be agreed once construction of the site is complete.

7. Construction Traffic Method Statement – Point of Connection Cable Routing

7.1. The development proposals comprise the laying of an underground cable between the solar farm and a point of connection (PoC) approximately nine kilometres to the south of the centre of the site at the National Grid Bicker Fen Substation.

7.2. This Section sets out the following:

i. Typical daily traffic movements.

ii. The location and layout of site compounds.

iii. The need for any temporary off-site mitigation including traffic management; and

Proposed Cable Route

7.3. The cable route will follow a southernly trajectory between the site and the Substation over agricultural land.

7.4. The cable route will cross the A17 south of the Energy Park before crossing agricultural land south of the A17 before crossing the Skegness to Grantham railway line and the South Forty Foot Drain.

7.5. The traditional trench and duct method is anticipated primarily at this stage. However, the horizontal directional drilling method is likely to be used where there are identified constraints including the A17, railway line and drain. Horizontal directional drilling allows for the required ductworks to be conducted and executed without the need to open, empty and backfill the traditional trenches. Crossing of the Internal Drainage Board, and landowner maintained watercourses will also be required.

7.6. The exact location of the cable route within the A17 highway will be identified by the contractor who will produce a cable route feasibility report prior to commencement. Appropriate street works notices will be secured and suitable traffic management and procedures will be implemented along the route to minimise disruption to background traffic on the local highway network.

7.7. It will also be necessary for the cable to cross minor roads between the A17 in the north and the Substation, including (but not limited to) Bicker Drove, North Drove and Timms Drove.

Construction Period

7.8. In previous similar projects, a single construction team has the potential to complete approximately 100m of cable installation per day when all factors are favourable. It is anticipated that two teams will be deployed working from either end of the route with around 200 metres of cable to be installed per day (subject to no Engineering difficulties or solid ground). As such the duration of the works is expected to last around 45 working days. A maximum of 10 staff will be working on the cable run at any one time.

7.9. Core working hours are currently anticipated to be between the hours of 08:00 to 18:00 Monday to Saturday and between 0900 and 1300 on Sundays. Some occasional night-time working may also be required.

Proposed Access to Cable Route and POC

7.10. At this stage, access to the proposed Point of Connection (PoC) is not confirmed. However, it is anticipated that access to the north of the railway line will be served via Park Farm. The preferred access option to the south of the railway is via the Triton Knoll or National Grid access points at the A17 and the A52 Bicker Road respectively. However, an alternative is via the lane leading to Royalty Farm. Preliminary access arrangements at each of the potential junction locations are included at **Figure 7.1** to **Figure 7.4**.

7.11. The proposed access arrangements will seek to ensure that no vehicles associated with the construction of the cable route will pass through the village of Bicker, as far as practicable. However, should it ultimately be necessary to route vehicles via Bicker, the number of vehicles would be considered negligible and would be on a temporary basis.

7.12. Access to the existing National Grid Bicker Fen Substation will be unaffected by the cable route and will be maintained via its existing junction with Vicarage Drove and routes through Bicker village.

Proposed Construction Compound

7.13. All materials and plant will be stored within a dedicated compound adjacent to the cable route. This compound will be relocated along the route of the cable run as the works progress. A designated area will be allocated for the storage of materials, machinery, and vehicles when not in use. Where possible plant and materials will be delivered to site in the early stages and kept on site for the duration of the works.

7.14. All contractor vehicles will park within the site compound in a designated parking area, available for both visitors and site operatives. Signage will be erected advising / designating where parking is available.

7.15. Where possible, plant and materials will be delivered to the compound in suitable sized loads to ensure vehicles have sufficient turning areas within the confines of the site. A banksman will assist any delivery vehicles in turning / entering / exiting the site.

Forecast Traffic Impact

7.16. It is anticipated that the construction of the cable route will be associated with the following vehicles and machinery:

i. 1x 21t Excavator - digging trench.

ii. 1x 9t+ Dumper - transporting Sand / CBS.

iii. 1x 12t Excavator - backfilling trench.

iv. 1x 8t Excavator at sand storage.

v. 1x Rammax Trench compactor.

vi. 500l Towable Fuel bowser; and

vii. 1 x pick-up truck / off road vehicle for staff.

7.17. For the heavy and slow plant such as excavators, these would be brought to the site at the start of the project and stored overnight within a temporary fenced area at the Point of Work. Light plant, fuel and staff vehicles would return to the compound on a daily basis.

7.18. Based on the above, it is estimated that there could be between 20 and 40 daily vehicle movements in total.

7.19. The construction phase will be temporary and, alongside traffic management and mitigation measures set out below, the impact of the works on the local highway network are therefore not considered to be severe.

Proposed Traffic Management and Mitigation Measures

Traffic Management

7.20. It is envisaged at this stage that the cable run will be constructed outside of the peak construction periods for the proposed Energy Park, minimising the potential for conflicts and impacts on the highway network.

7.21. Where required, suitable traffic management would be implemented to ensure safe operation and to reduce as far as reasonably practicable the impact of the cable route works on the local highway network. It may be necessary to implement some night-time closures of the A17, in order to install the cable across the carriageway.

7.22. There will be appropriate signing, lighting and guarding of the temporary works as per the Code of Practice "Safety at Street Works and Road Works" and Chapter 8 of the Traffic Signs Manual 1991, as required by Section 65 of the New Roads and Street Works Act, 1991.

7.23. Detailed traffic management layouts, site specific risk assessments and method statements would be produced and agreed with Lincolnshire County Council for all traffic management and highways related construction activities. The precise nature and locations of signage would be agreed with Lincolnshire County Council and will remain in place for the duration of the construction period.

7.24. The following traffic management measures could be implemented along the cable route, depending on the nature of the carriageway within which the works are taking place, and whether the cable will be laid within the carriageway or where the cable route crosses the highway:

Give and Take:

7.25. On roads along the route where the speed limit is 30mph or less, a give and take arrangement will be implemented whereby traffic gives way to oncoming vehicles past the works.

Stop/Go boards:

7.26. On roads along the route where the speed limit does not exceed 60mph (and where adequate visibility and lighting is available), stop/go boards shall be used to manage the flow of traffic past the cable works. Use of Stop/Go boards would be restricted to daylight hours.

7.27. Where manually rotated signs are in use and the operatives are not in direct line of sight, then two-way radio communication between operators must be used.

Temporary traffic signals:

7.28. Two way and / or multi-phase traffic signals will be considered where Stop/Go and Give and Take methods cannot be implemented.

Road closure:

7.29. Whilst this would be avoided, where possible, if it becomes necessary a Temporary Traffic Regulation Order (TTRO) could be applied for by the contractor to close a road or part of a road along the construction route.

7.30. If necessary, pedestrian access to properties within the affected road/s will be maintained at all times.

7.31. Appropriate traffic control signage will be agreed and provided as part of any of the above traffic management measures, in line with the Traffic Signs Regulations and General Directions (TSRGD) 2016 and Traffic Signs Manual Chapter 8.

Public Rights of Way Management

7.32. The only PRoW along the cable route follow the alignment of the South Forty Foot Drain. As such, they should be unaffected by the cable routing as directional drilling will take place with no impacts on the surfacing of the PRoW. Therefore, no PRoWs are required to be excavated or altered as a result of the cable run.

Banksmen

7.33. Where required, banksmen will be deployed at either end of construction areas to control site traffic on the highway. Banksmen will communicate between vehicles / site management via CB radio (to be agreed between the contractor and Highway Officers). This will ensure traffic is controlled in a 'one way only' fashion in the vicinity of construction areas.

Disposal of Waste

7.34. The contractor will dispose of any waste material arising from the works responsibly, ensuring compliance with all legislation including, but not limited to the Waste Duty of Care Code of Practice.

Compliance Inspections

7.35. Lincolnshire County Council will meet with the contractor at regular intervals to ensure that the highway is reinstated according to standards. Inspections will take place during the works. The precise details will be confirmed in due course; however this is expected to be six months following reinstatement, and within three months of the guarantee period (likely to be up to 3 years). The guarantee period defines the length of time that the applicant / contractor must return to bring the road surface back to normal if any defects occur.

Figures

N

A17

Sleaford

No access for construction vehicles

Heckington

Approximate Site Boundary

Site Access

Approximate Site Boundary

Site Access

A17

Swineshead

Construction Traffic Route for Vehicles Traveling East

Construction Traffic Route for Vehicles Traveling West

\\10.1.1.1\DATA\PROJECTS\CIRENCESTER\SQ 2020\P20-2370 HECKINGTON FEN SOLAR FARM\2021\TR2_DRAWINGS\C_SKETCHES\P20-2370_SK03_ROUTE PLAN.DWG

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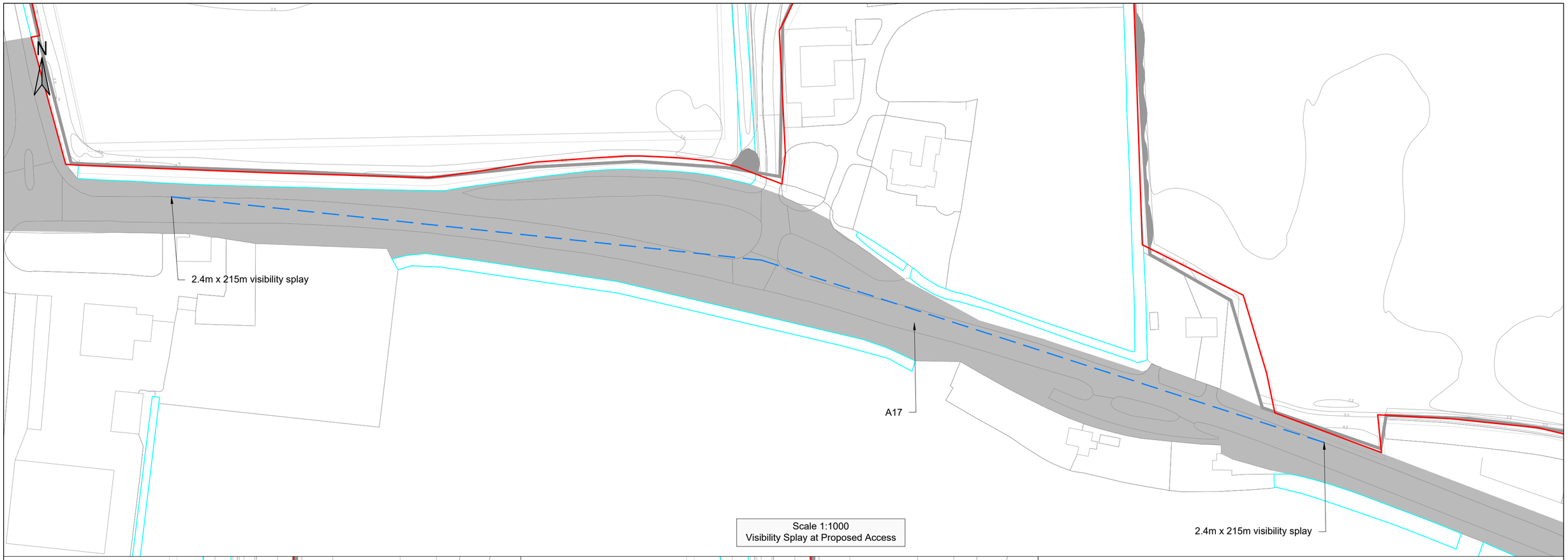
REV	DATE	BY	DESCRIPTION	CHK	APD

CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED

PROJECT: HECKINGTON FEN ENERGY PARK

TITLE: CONSTRUCTION TRAFFIC ROUTING PLAN

SCALE @ A2:	CHECKED:	APPROVED:
NOT TO SCALE	LB	KSS
DATE:	DESIGN-DRAWN:	DRAWING-STATUS:
11/05/2022	JAN	FOR INFO
PROJECT No:	DRAWING No:	REV:
P20-2370	FIGURE 2.1	



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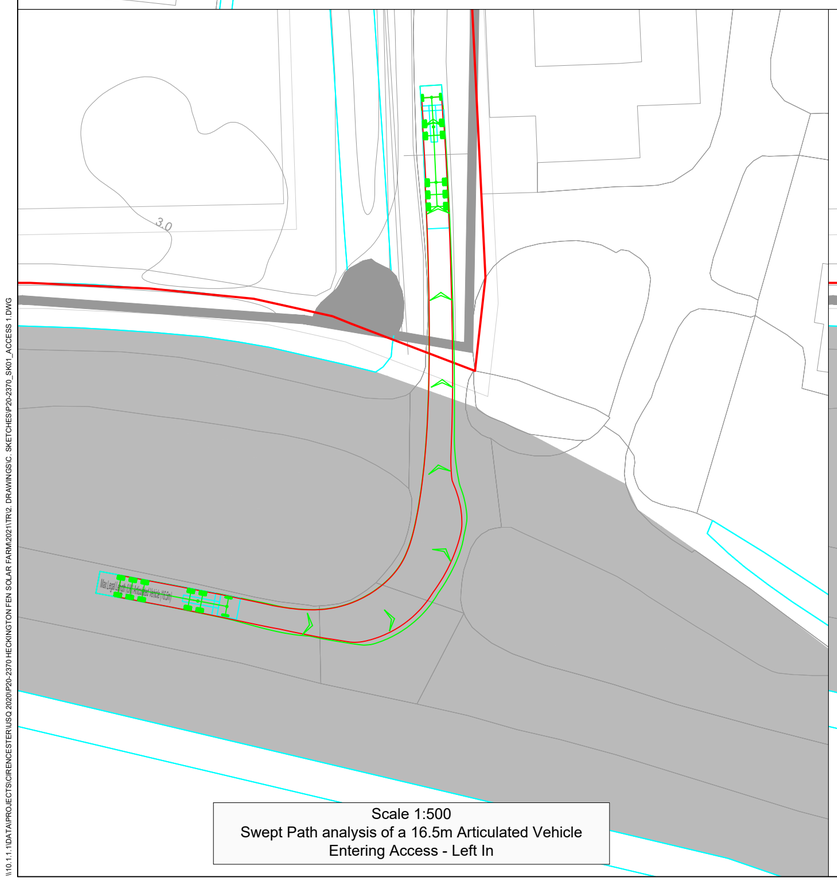
Visibility Splay at Proposed Access



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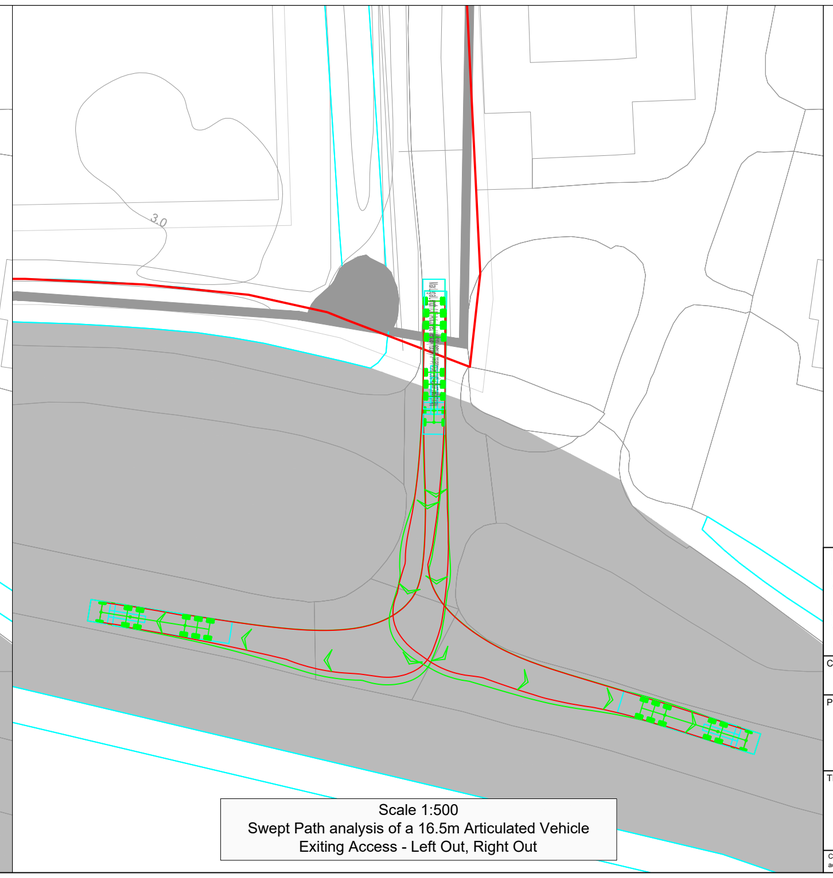
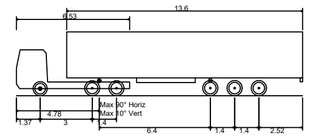
Swept Path analysis of a 16.5m Articulated Vehicle
Entering Access - Left In



Scale 1:500
Swept Path analysis of a 16.5m Articulated Vehicle
Exiting Access - Left Out, Right Out



Max Legal Length (UK) Articulated Vehicle (16.5m)

Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

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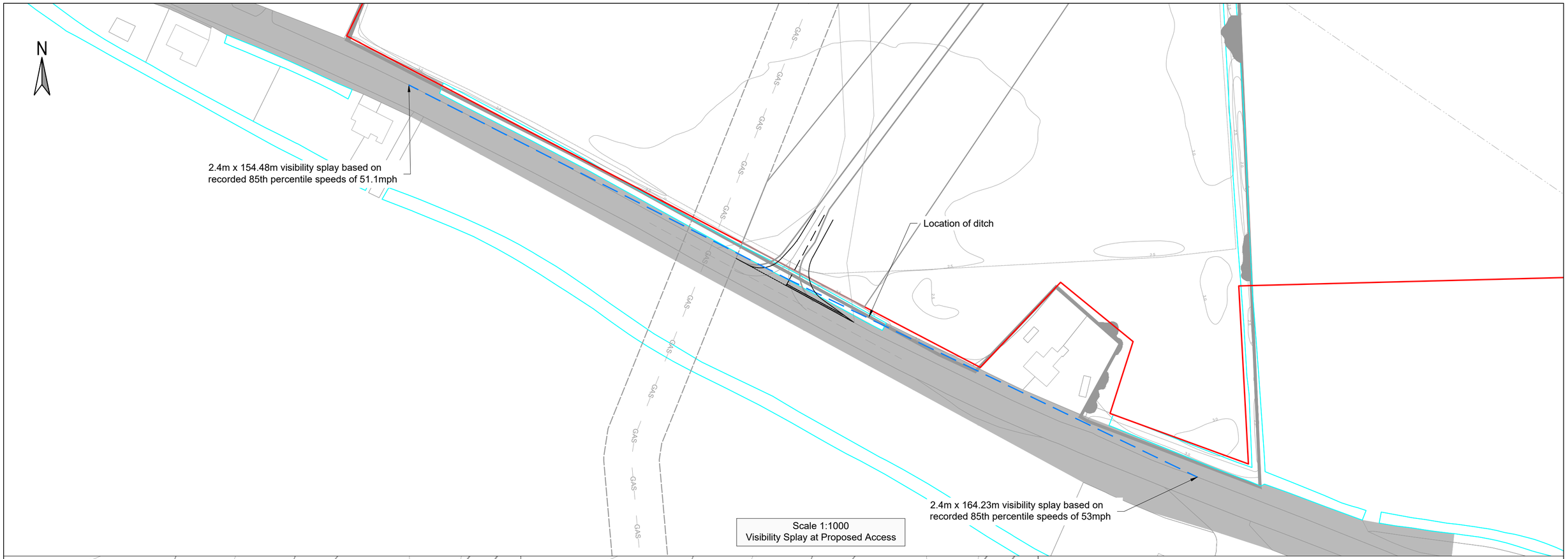
REV	DATE	BY	DESCRIPTION	CHK	APD

CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED

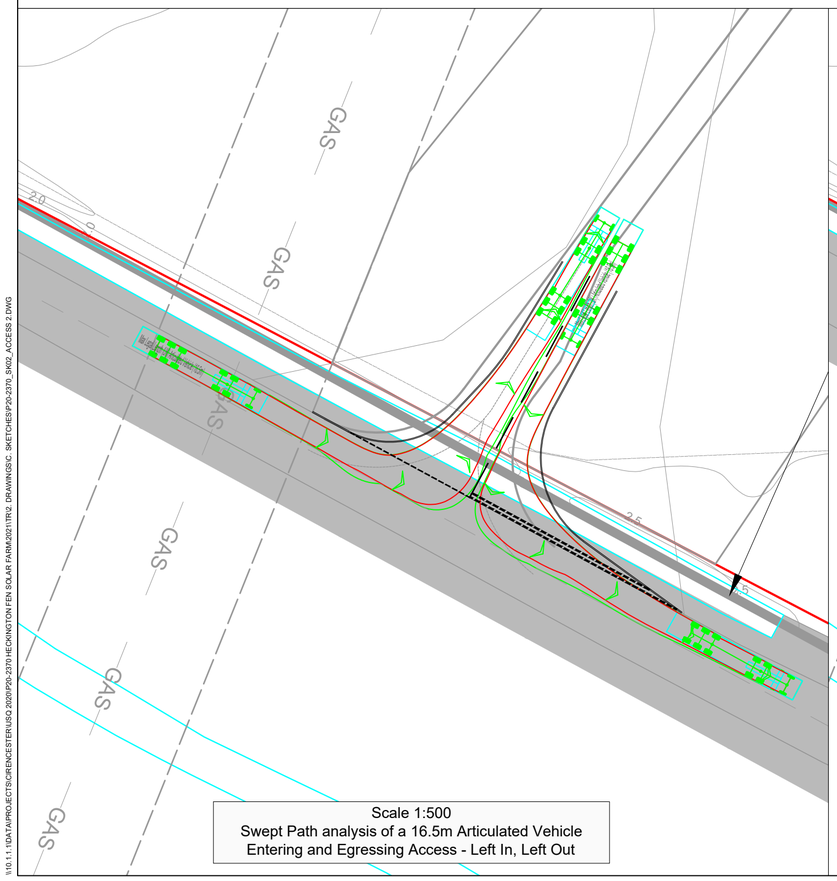
PROJECT: HECKINGTON FEN ENERGY PARK

TITLE: TEMPORARY SITE ACCESS ARRANGEMENTS

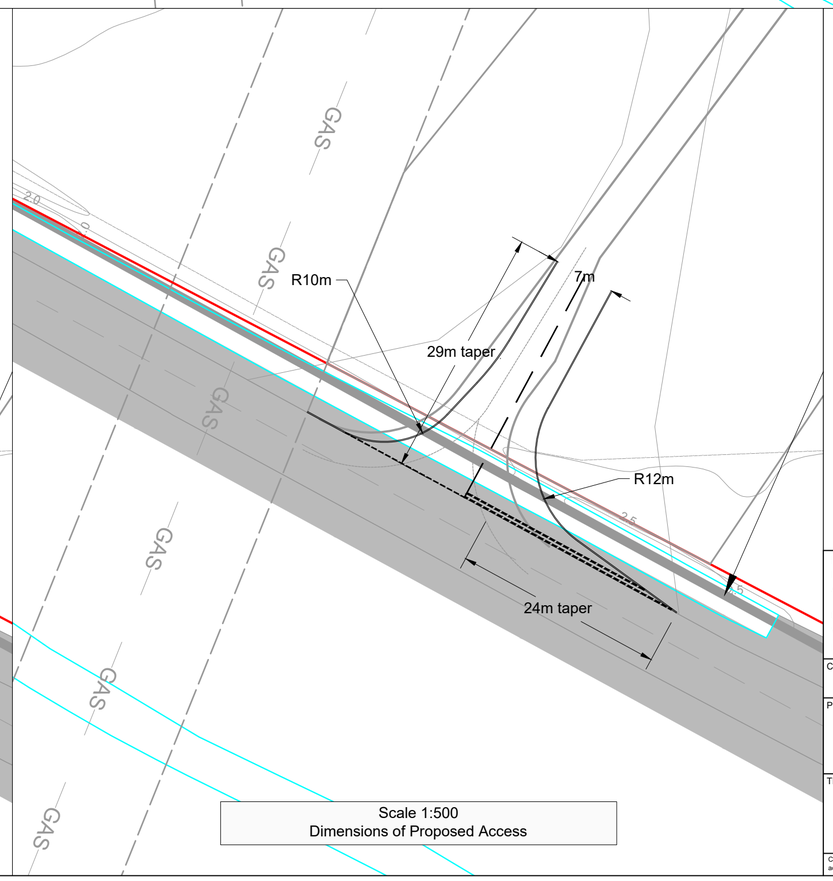
SCALE @ A2:	CHECKED:	APPROVED:
AS SHOWN	KSS	KSS
DATE:	**DESIGN-DRAWN:**	**DRAWING-STATUS:**
19/10/2021	JAN	DRAFT
PROJECT No:	**DRAWING No:**	**REV:**
P20-2370	FIGURE 3.1	



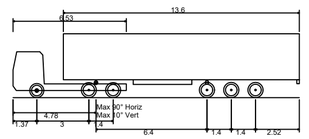
Scale 1:1000
Visibility Splay at Proposed Access



Scale 1:500
Swept Path analysis of a 16.5m Articulated Vehicle Entering and Egressing Access - Left In, Left Out



Scale 1:500
Dimensions of Proposed Access



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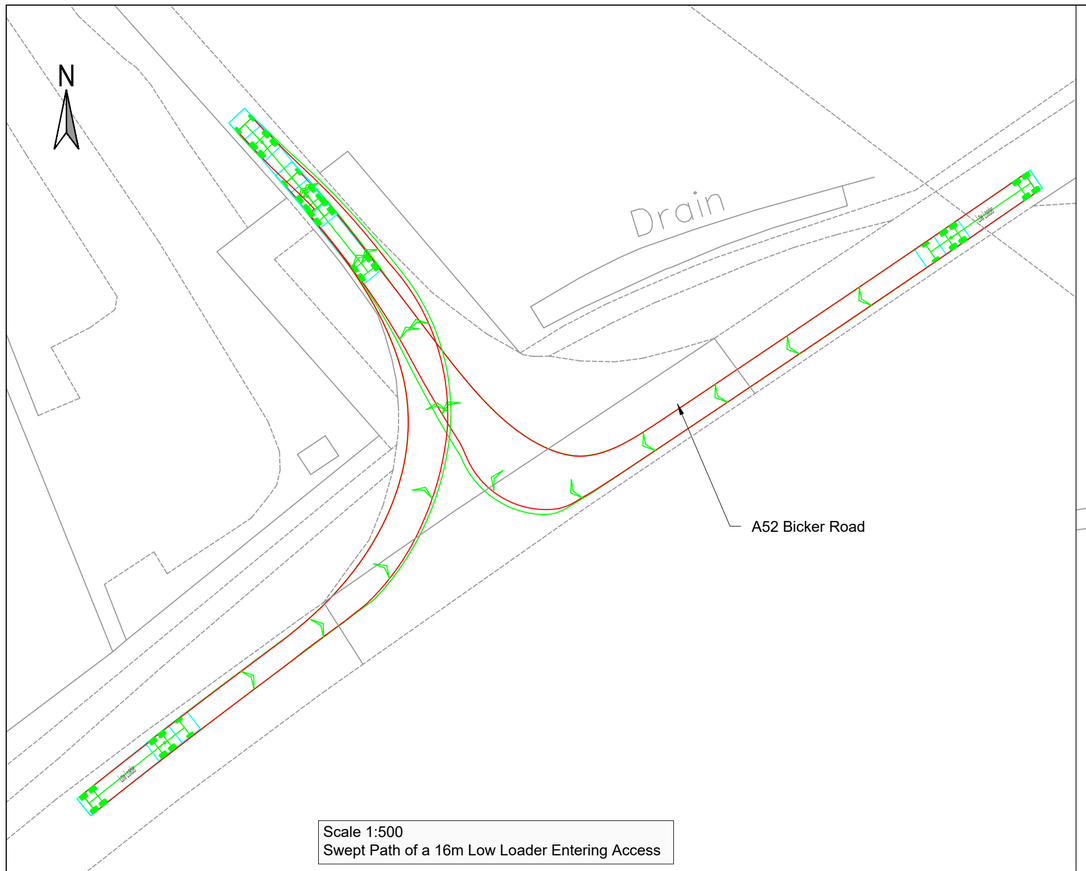
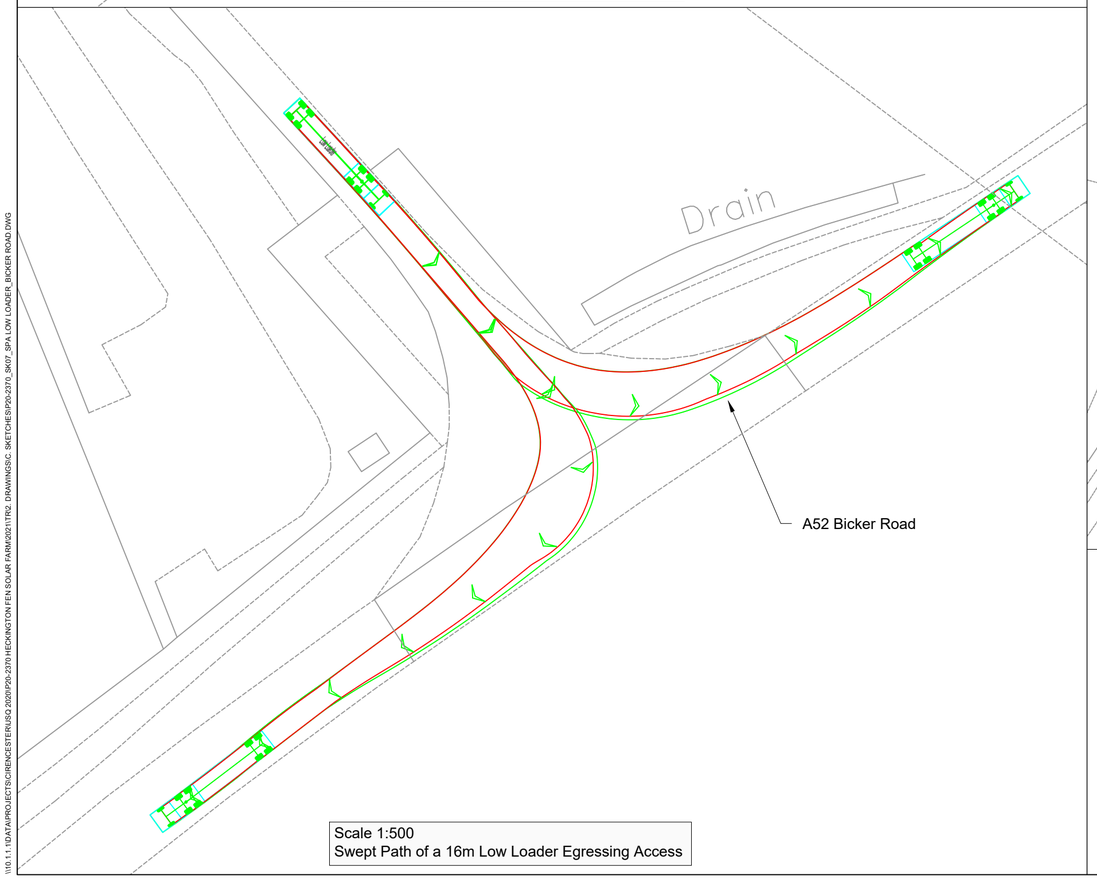
REV	DATE	BY	DESCRIPTION	CHK	APD

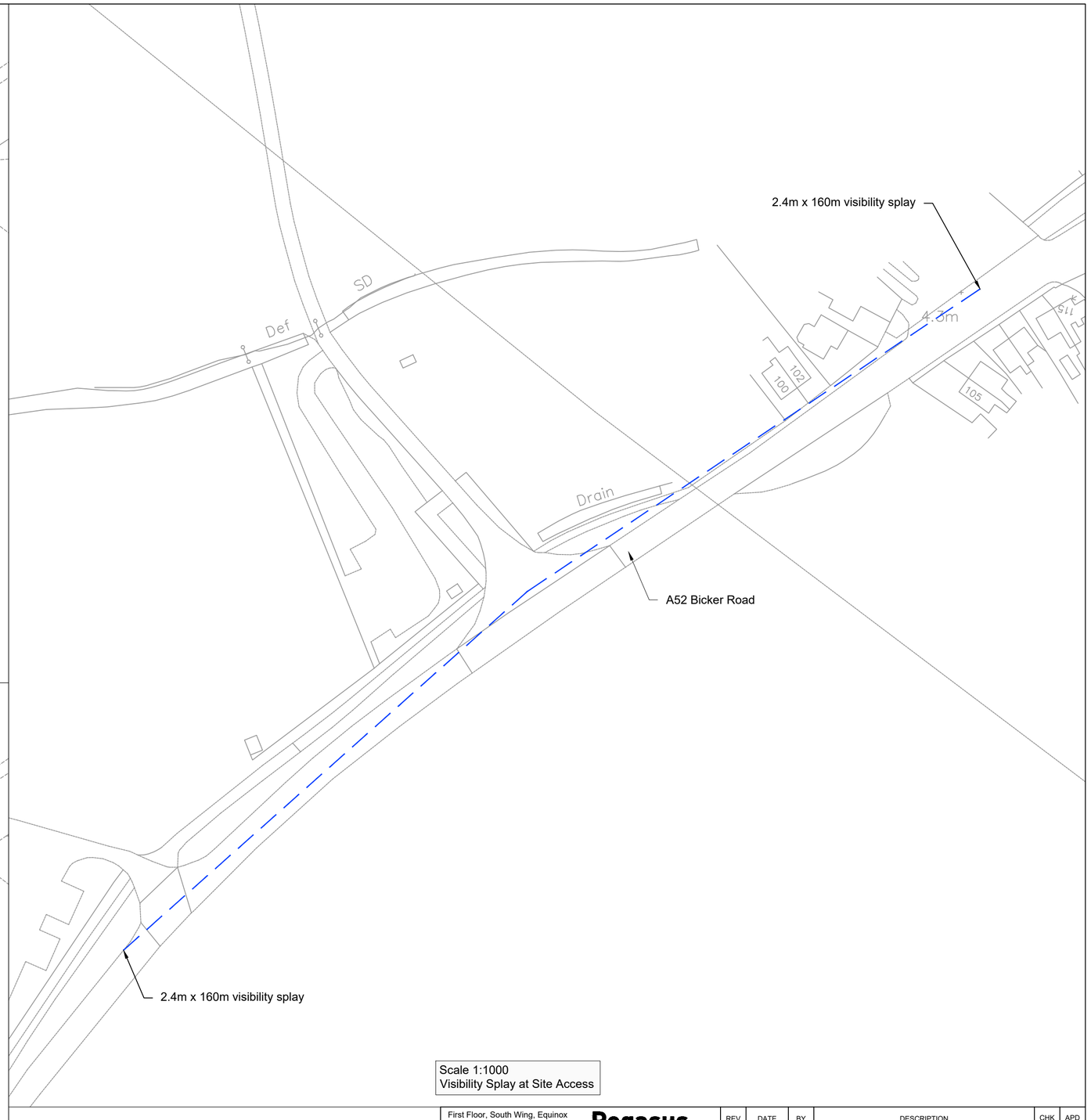
CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED	SCALE @ A2: AS SHOWN	CHECKED: KSS	APPROVED: KSS
PROJECT: HECKINGTON FEN SOLAR FARM	DATE: 11/05/2022	DESIGN-DRAWN: JAN	DRAWING-STATUS: DRAFT
TITLE: PERMANENT SITE ACCESS ARRANGEMENTS	PROJECT No: P20-2370	DRAWING No: FIGURE 3.2	REV:



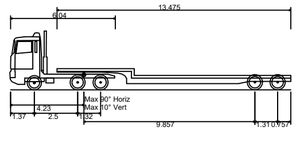
Scale 1:500
Swept Path of a 16m Low Loader Entering Access



Scale 1:500
Swept Path of a 16m Low Loader Egressing Access



Scale 1:1000
Visibility Splay at Site Access



Low Loader	
Overall Length	16.154m
Overall Width	2.520m
Overall Body Height	3.393m
Min Body Ground Clearance	0.318m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.990m

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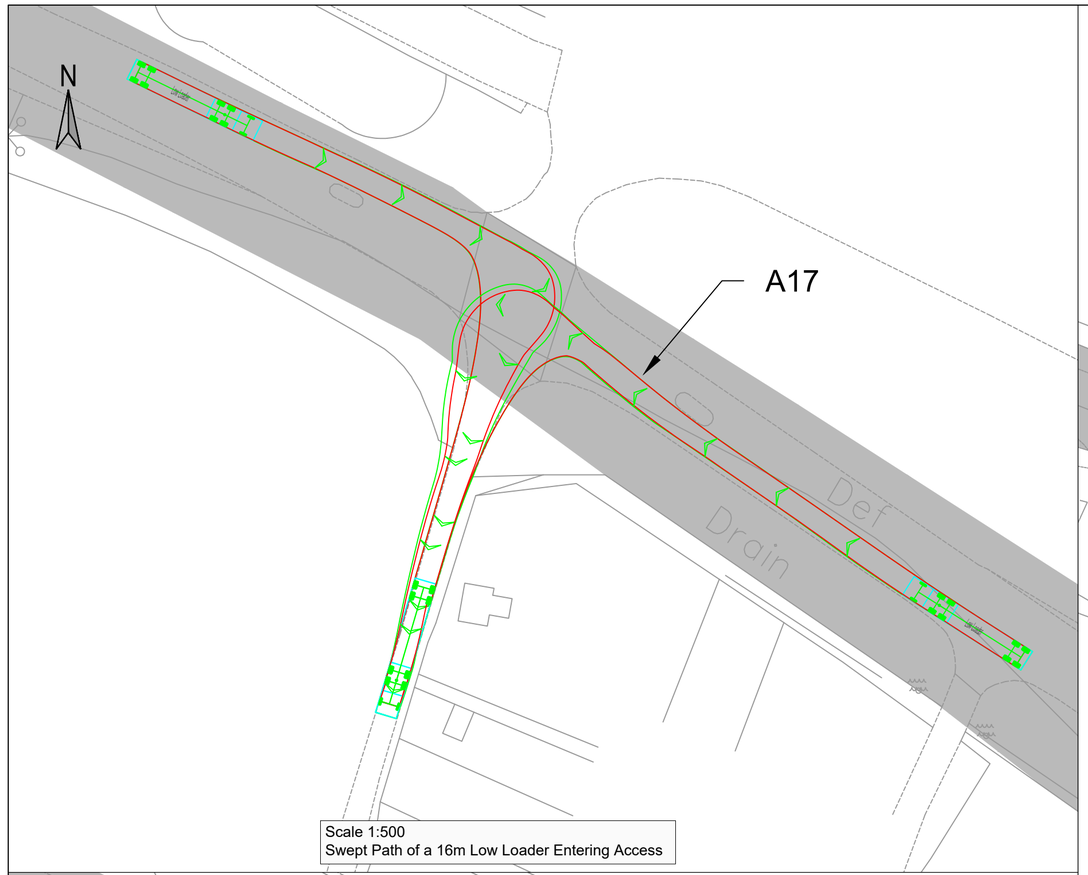
REV	DATE	BY	DESCRIPTION	CHK	APD

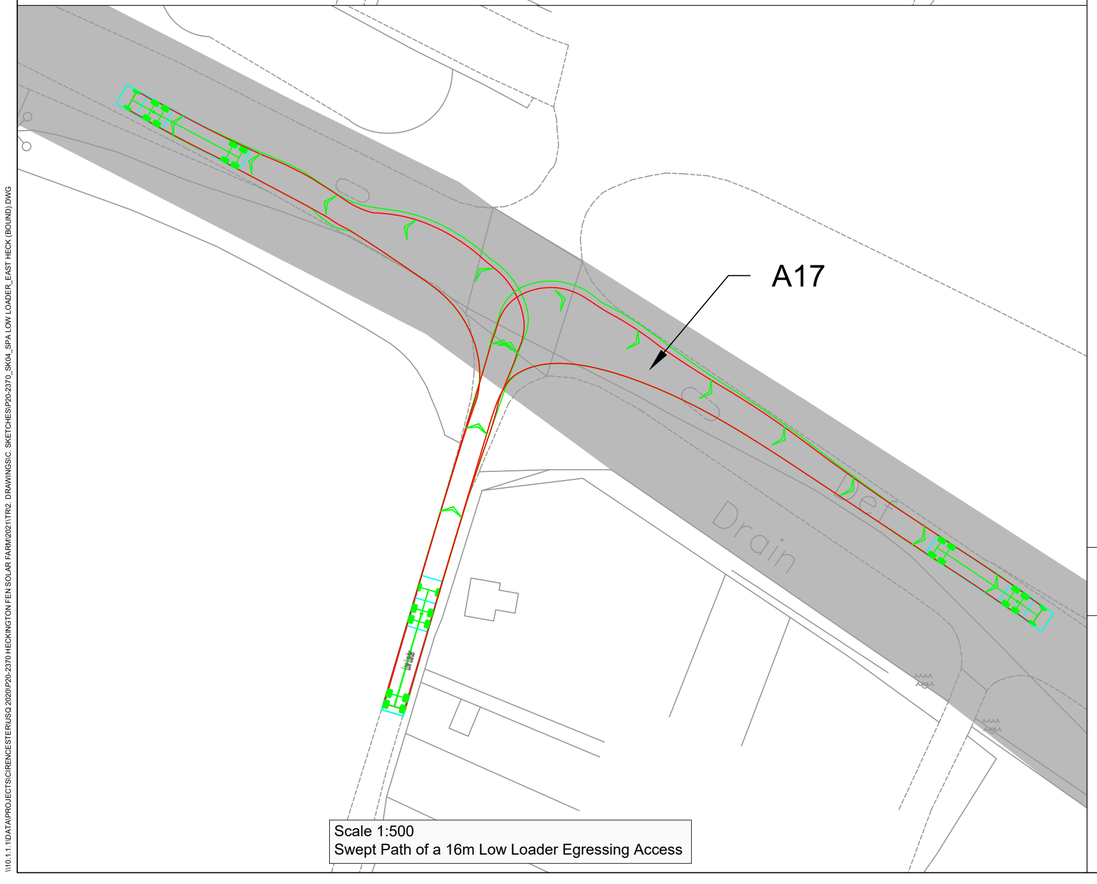
CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED

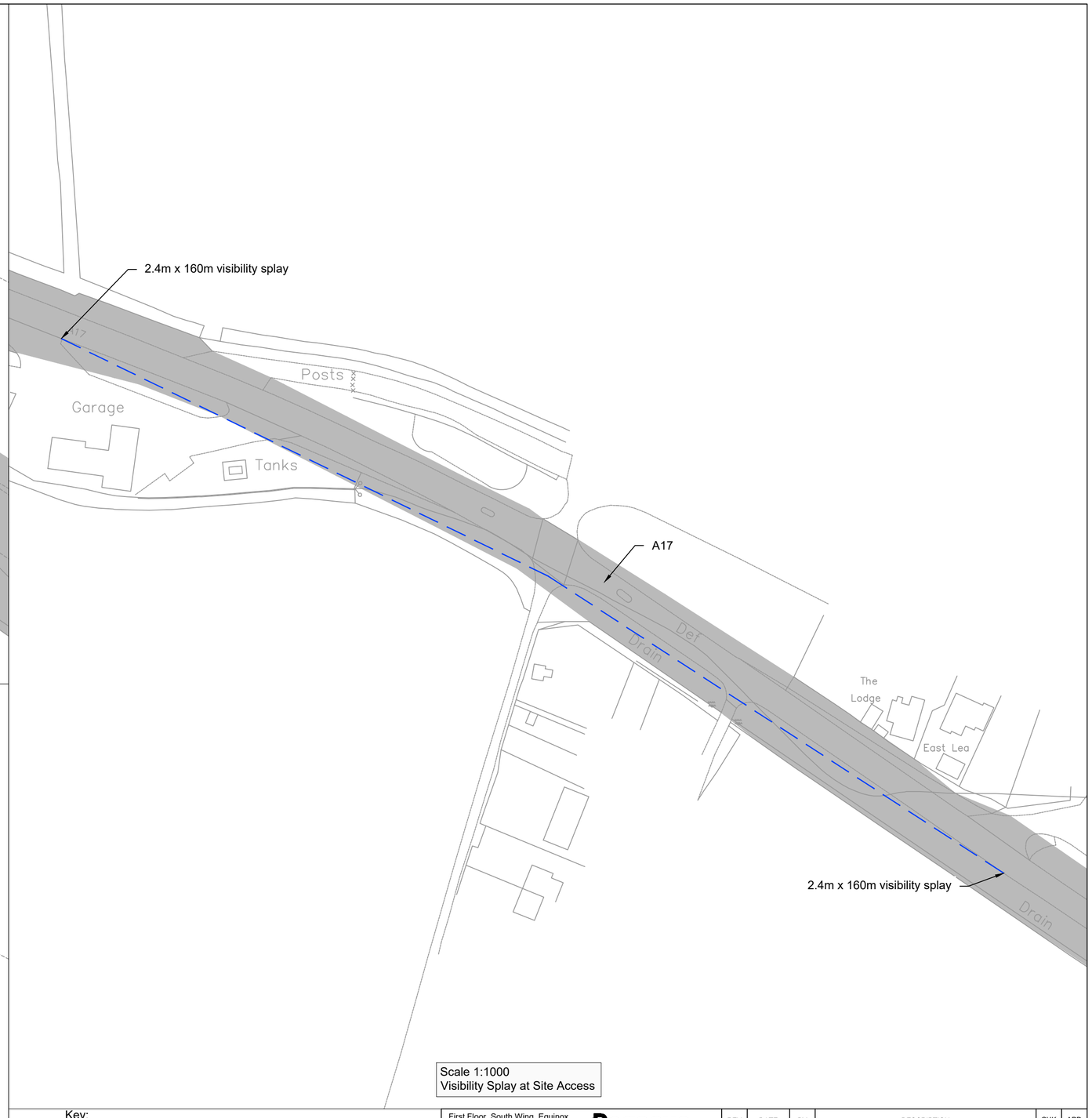
PROJECT: HECKINGTON FEN ENERGY PARK

TITLE: SWEPT PATH ANALYSIS OF A 16m LOW LOADER AT POTENTIAL NATIONAL GRID ACCESS

SCALE @ A2:	CHECKED:	APPROVED:
AS SHOWN	LD	KSS
DATE:	**DESIGN-DRAWN:**	**DRAWING-STATUS:**
08/06/2022	JAN	DRAFT
PROJECT No:	**DRAWING No:**	**REV:**
P20-2370	FIGURE 7.1	

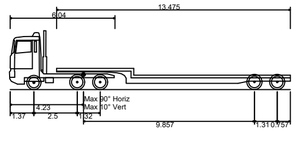






Key:

Approximate Extent of Adopted Highway



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Kerb to Kerb Turning Radius	6.990m

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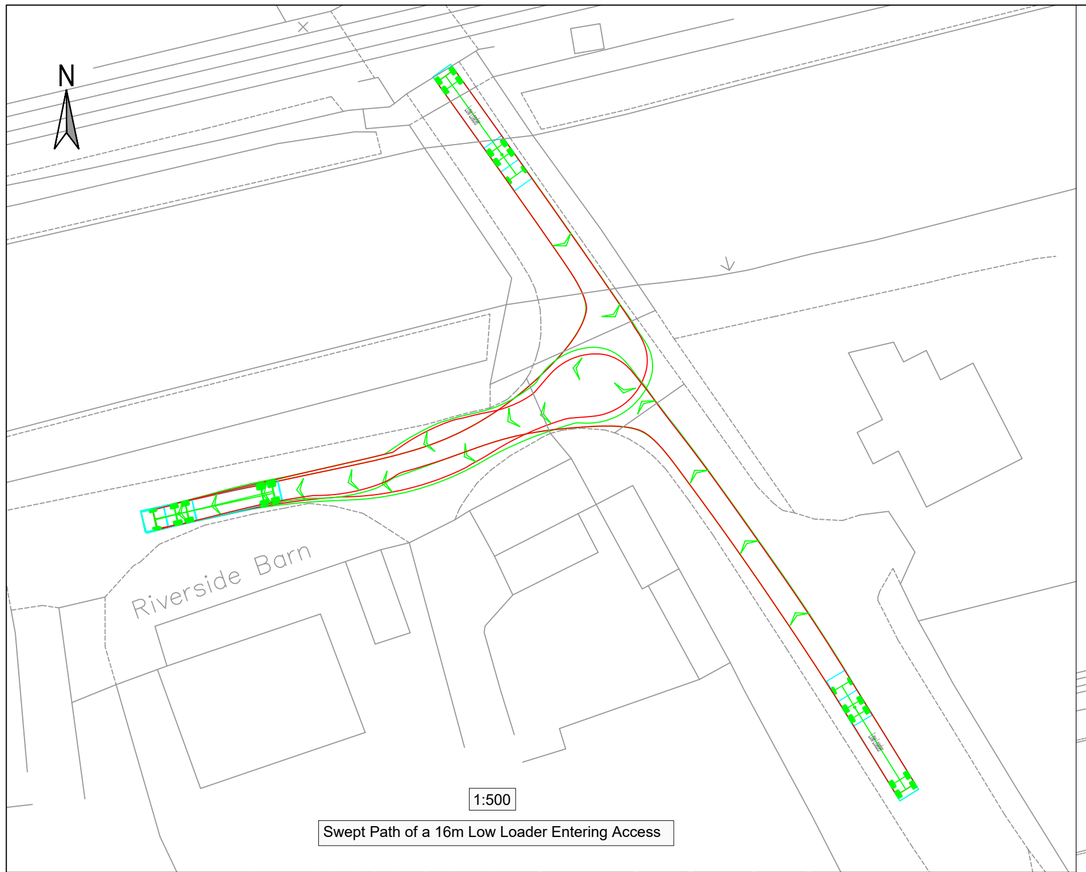
REV	DATE	BY	DESCRIPTION	CHK	APD

CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED

PROJECT: HECKINGTON FEN ENERGY PARK

TITLE: SWEPT PATH ANALYSIS OF A 16m LOW LOADER AT POTENTIAL PARKS FARM ACCESS

SCALE @ A2:	CHECKED:	APPROVED:
AS SHOWN	LD	KSS
DATE:	**DESIGN-DRAWN:**	**DRAWING-STATUS:**
08/06/2022	JAN	DRAFT
PROJECT No:	**DRAWING No:**	**REV:**
P20-2370	FIGURE 7.2	

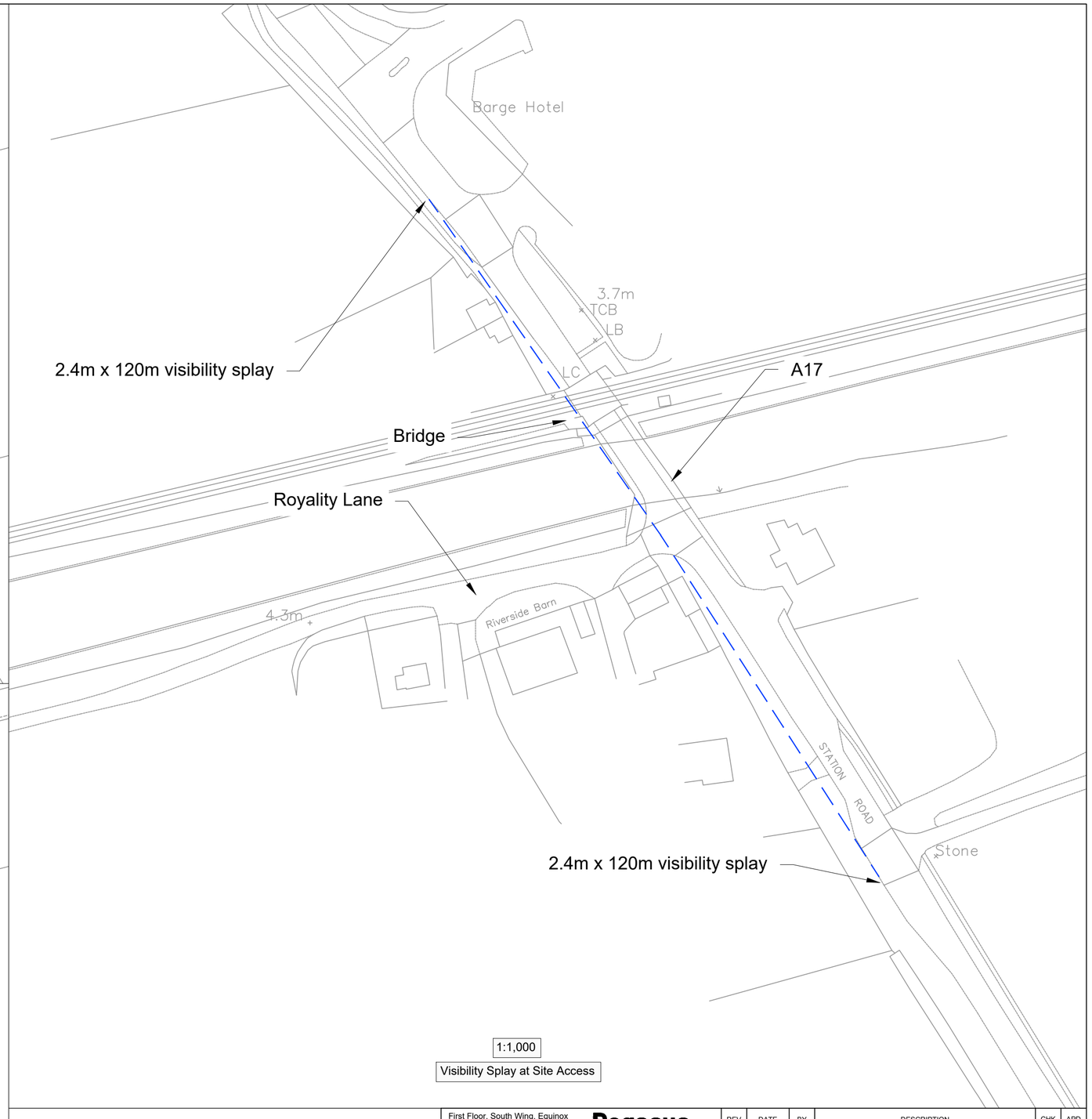


1:500

Swept Path of a 16m Low Loader Entering Access

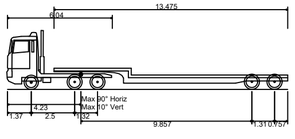
1:500

Swept Path of a 16m Low Loader Egressing Access



1:1,000

Visibility Splay at Site Access



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Lock to lock time	6.00s
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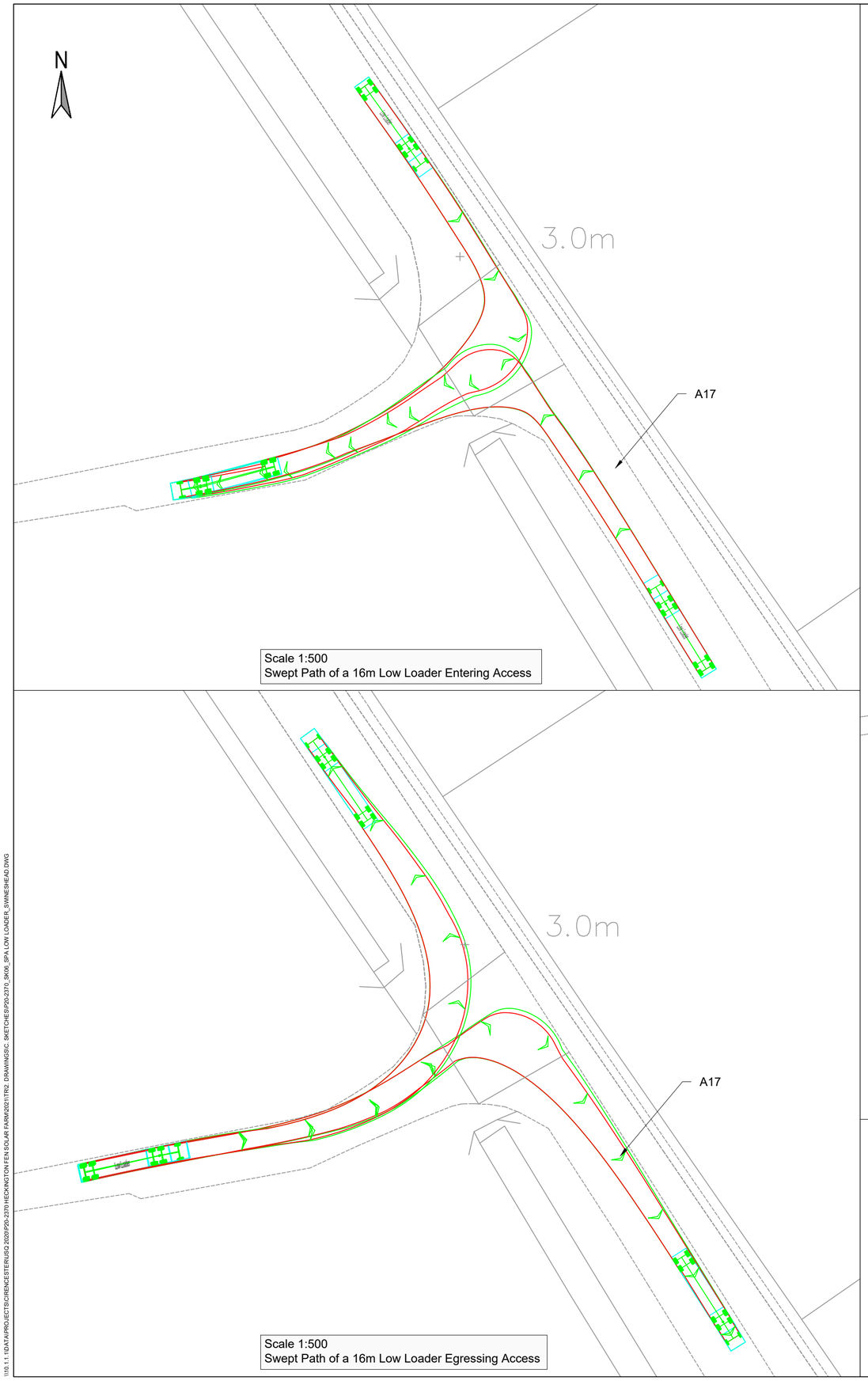
REV	DATE	BY	DESCRIPTION	CHK	APD

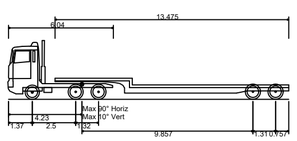
CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED

PROJECT: HECKINGTON FEN ENERGY PARK

TITLE: SWEPT PATH ANLYSIS OF A 16m LOW LOADER AT POTENTIAL ROYALTY FARM LANE ACCESS

SCALE @ A2:	CHECKED:	APPROVED:
AS SHOWN	LD	KSS
DATE:	**DESIGN-DRAWN:**	**DRAWING-STATUS:**
08/06/2022	JAN	DRAFT
PROJECT No:	**DRAWING No:**	**REV:**
P20-2370	FIGURE 7.3	





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Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.990m

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REV	DATE	BY	DESCRIPTION	CHK	APD

CLIENT: ECOTRICITY (HECK FEN SOLAR) LIMITED

PROJECT: HECKINGTON FEN ENERGY PARK

TITLE: SWEPT PATH ANALYSIS OF A 16m LOW LOADER AT POTENTIAL TRITON KNOLL ACCESS

SCALE @ A2:	CHECKED:	APPROVED:
AS SHOWN	LD	KSS
DATE:	DESIGN-DRAWN:	DRAWING-STATUS:
08/06/2022	JAN	DRAFT
PROJECT No:	DRAWING No:	REV:
P20-2370	FIGURE 7.4	

Appendix A

Date / Time	Reference	Location	Severity	Conditions Weather/ Road	Involvement	Causation Factors
19/04/2017 05:30	170161906	100 yards west of B1395	Serious	Fine / Dry	1 Vehicle	Driver appears to have lost control and veered towards the nearside carriageway edge, clipping the grass verge. The driver appears to have over corrected the manoeuvre and subsequently the vehicle has overturned onto its roof.
04/07/2017 19:00	170283523	Junction of Sidebar Lane - B1395 and A17	Slight	Fine / Dry	2 Vehicles	Vehicle 2 appears to have been waiting to go ahead at junction. Vehicle 1 collided into rear of vehicle 2. It appears that the driver of vehicle 1 failed to judge the path or speed of Vehicle 2.
07/12/2018 05:14	180591881	East Heckington	Slight	Raining / Wet	2 Vehicles	Vehicle 1 appears to have veered onto the opposite side of the road and collided with vehicle 2. Vehicle 1 was reported to be driving carelessly / recklessly with possible fatigue.
06/03/2019 12:55	190115936	Counterflow traffic road with national speed limit	Serious	Raining / Wet	2 Vehicles	Vehicle 2 travelling along the A17 towards Sleaford has indicated to turn into a side road leading to Elm Grange Studio. Vehicle 2 braked and vehicle 1 appears to have collided with the rear of vehicle 2. Vehicle 2 was reported to be driving carelessly / recklessly, distracted, exceeding the speed limit and fatigued.
24/09/2020 10:30	200502879	Junction with B1395 Side Bar Lane	Slight	Fine / Dry	2 Vehicles	Vehicle 1 appears to have pulled out of Side Bar Lane into the path of vehicle 2 travelling on the A17. Vehicle 1 was reported to have failed to look properly.
25/05/2017 11:25	170218632	East Heckington	Slight	Fine / Dry	2 Vehicles	Vehicle 1 appears to have collided with the rear of vehicle 2. Vehicle 2 was static in a queue of traffic. Vehicle 1 appears to have failed to judge the path or speed of vehicle 2.

17/11/2018 17:34	180557125	Approx 100 metres short of Shell garage at a site of small central reservation	Slight	Fine / Dry	1 Vehicle	Vehicle 1 travelling eastbound on the A17 appears to have moved across its lane and clipped the curb with the front offside wheel. This appears to have caused the driver to lose control and the vehicle to roll onto its passenger side.
16/01/2019 01:30	190024430	Central reservation to the east of the junction leading to East Heckington	Slight	Fine / Dry	1 Vehicle	Vehicle 1 appears to have swerved to avoid an animal in the carriageway and collided with the central island.
18/04/2021 13:00	210211827	Opposite Jet service station on A17	Slight	Fine / Day	2 Vehicles	Vehicle 2 travelling from Heckington towards Swineshead Bridge appears to have been stationary behind another vehicle signalling to turn right into the Jet petrol station. Vehicle 1 appears to have collided with the rear of vehicle 2.
18/08/2021 07:55	210464384	East Heckington near to the Jet garage	Slight	Fine / Dry	1 Vehicles	Vehicle 1 appears to have collided with the central reservation and lost control, subsequently falling from their motorcycle.
29/09/2021 08:20	210565608	Opposite Four Winds petrol station	Slight	Fine / Dry	2 Vehicles	Vehicle 1 appears to have collided with the rear of vehicle 2. It is reported that the sunlight and angle of the sun played a significant part in the incident. It appears likely that vehicle 1 was dazzled by the sun.
01/10/2021 10:55	210570504	A17 westbound outside Jet garage	Slight	Fine / Wet	2 Vehicles	Traffic slowing westbound on A17 to enter Jet petrol station. Vehicle 2 travelling behind another appears to have braked following a late decision of the vehicle in front to turn. Vehicle 1 behind vehicle 2 appears to have also braked hard but collided with the rear of vehicle 2.
23/04/2021	10222130	Outside Shell garage	Slight	Fine / Dry	3 Vehicles	Vehicle 3 appears to have been braking in traffic. Vehicle 2 behind vehicle 3 also appears to have slowed. Vehicle 1 has failed to slow and

08:00						subsequently collided with the rear of vehicle 2, which was shunted into the rear of vehicle 3.
04/04/2017 18:10	170141596	East Heckington – A17 outside Jet garage	Slight	Fine / Dry	2 Vehicles	Vehicle 2 travelling southeastbound on the A17 appears to have stopped due to a fuel tanker turning right into jet garage. Vehicle 1 travelling behind vehicle 2 appears to have collided with the rear of vehicle 1.
03/12/2020 15:10	200640620	Outside Carpenters Cottage, East Heckington	Slight	Raining/ Wet	2 Vehicles	Vehicle 1 appears to have pulled out into path of vehicle 2, failing to judge the speed of vehicle 2.
29/07/2021 19:15	210425853	A17	Serious	Fine / Dry	1 Vehicle	Vehicle 1 appears to have been travelling at excessive speed along the A17 from Boston. Vehicle appears to have left the road and rolled across a private road bridge and into a ditch.
16/07/2017 22:49	170303390	Junction of A17 and A1121	Slight	Fine / Dry	2 Vehicles	Vehicle 1 involved in a police pursuit. Vehicle has travelled along the A1121 and approached the junction with the A17. Vehicle appears to have failed to negotiate the junction and travelled straight over and hit the kerb, resulting in the vehicle flipping onto its roof.
20/06/2018 08:48	180285069	Junction of A17 and A1121	Slight	Fine / Dry	2 Vehicles	Vehicle 1 turning right appears to have collided with vehicle 2.
17/09/2018 08:23	180444373	Single carriageway 50mph road.	Slight	Raining/ Wet	2 Vehicles	Vehicle 2 appears to have been slowing down due to traffic ahead. Vehicle 1 appears to have collided with the rear of vehicle 2.
15/01/2019 17:25	190024319	Junction of A17 and A1121	Slight	Fine / Dry	3 Vehicles	Vehicle 2 travelling along A17 at the junction with the A1121. Vehicle 1 appears to have turned into the path of vehicle 2 resulting in a collision.

						Vehicle 2 appears to have spun into the opposite side of the road and vehicle 3 then collided with vehicle 2.
21/02/2019 18:23	190092020	Outside the Barge public house	Slight	Fine / Dry	2 Vehicles	Vehicle 2 travelling from Sleaford towards Sutterton. Vehicle 1 has pulled across the front as it was heading in the opposite direction.
18/08/2021 16:54	210465669	Junction of A17 and A1121	Slight	Fine/ Dry	2 Vehicles	Vehicle 1 cut across the path of vehicle 2 when changing direction at a junction.
30/10/2021 15:46	210632038	Junction of A17 and A1121	Serious	Fine / Dry	2 Vehicles	Vehicle 1 travelling north west along the A17 towards Heckington. Vehicle 1 turned right across traffic which appears to have caused vehicle 2 to collide with it.

Date Printed - 13/04/2022

The LINCOLNSHIRE ROAD SAFETY Partnership

A17 East Heckington Area - 5 Years Injury Collisions (to 31/03/2022)

Data up to - 31/03/2022

0 500 1000 1500 2000 Metres

Fatal Injury
Serious Injury
Slight Injury

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 170161906

Road Number : A17 GRID REF: 518521,344459 SPEED LIMIT: 60
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Serious
POLICE DIVISION : West

LOCATION : 100YDS WEST OF B1395

DESCRIPTION : DRIVER LOST CONTROL VIA UNKNOWN REASONS AND VEERED NEARSIDE CLIPPING THE GRASS VERGE. HAS OVER CORRECTED AND ENDED UP ROLLING ON TO ROOF AND SPINNING ON THE ROOF IN THE MIDDLE OF THECARRIAGEWAY

DATE : 19/04/2017 - Wednesday TIME: 530

NUMBER OF VEHICLES : 1
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Loss of control
2.
3.
4.
5.
6.

VEHICLES:

1 Taxi / Private Hire Car Going ahead West To East Overturned Driver: Male 30 Breath Test: Not Requested

CASUALTIES:

1 Driver 30 Male Serious In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 170283523

Road Number : B1395 GRID REF: 518728,344459 SPEED LIMIT: 60
Road 2 Number : A17

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : EAST HECKINGTON- JUNCTION OF SIDEBAR LANE- B1395 AND A17 (GRID REF:518710, 344491).

DESCRIPTION : V2 WAITING TO GO AHEAD AT JUNCTION. V1 COLLIDED INTO REAR. NO VISIBLE PERMANANT DAMAGE. V2 DRIVER STATED SHE HAS BACK PAIN.

DATE : 04/07/2017 - Tuesday TIME: 1900

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Possible Failed to judge other person's path or speed
2.
3.
4.
5.
6.

VEHICLES:

1 Car Going ahead South To North No Skdng /Jck-Knfg /Ovrtrng Driver: Male 33 Breath Test: Negative
2 Car Going ahead South To North No Skdng /Jck-Knfg /Ovrtrng Driver: Female 36 Breath Test: Negative

CASUALTIES:

1 Driver 36 Female Slight In Vehicle 2

DATE PRINTED: 13/04/2022

CURRENT DATADATE: 31/03/2022

All Accidents

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 180591881

Road Number : A17 GRID REF: 518854,344452 SPEED LIMIT: 60
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : EAST HECKINGTON

DESCRIPTION : VEH 1 HAS VEERED ONTO THE OPPOSITE SIDE OF THE ROAD AND COLLIDED WITH VEH 002

DATE : 07/12/2018 - Friday TIME: 514

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Raining (Without High Wind)

LIGHT CONDITIONS : Dark - No street lighting

SURFACE CONDITIONS: Wet or Damp

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Careless/Reckless/In a hurry
2.V1 Possible Fatigue
3.
4.
5.
6.

VEHICLES:

1 Goods Vehicle - unknown weight Going ahead West To East Skidding Driver: Male 26
Breath Test: Negative
2 Goods Vehicle - unknown weight Going ahead East To West Skidding Driver: Male 54
Breath Test: Negative

CASUALTIES:

1 Driver 26 Male Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 190115936

Road Number : A17 GRID REF: 518976,344431 SPEED LIMIT: 60
Road 2 Number : D

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Serious
POLICE DIVISION : West

LOCATION : COUNTERFLOW TRAFFIC ROAD WITH NATIONAL SPEED LIMIT

DESCRIPTION : V2 HAS BEEN TRAVELLING ALONG THE A17 TOWARDS SLEAFORD FOLLOW A VAN. V2 HAS COME TO A STOP AS THE VAN HAS INDICATED TO TURN INTO A SIDE ROAD LEADING TO ELM GARAGE STUDIO AND SOME HOUSES. V2 HAS JUST APPLIED THEIR HAND BRAKE WHEN V1 HAS STRUCK V2 FROM BEHIND. V1 HAS JUST CAUGHT THE REAR NEAR SIDE OF V2 AND IT IS HIGHLY LIKELY THAT V1 HAS ATTEMPTED TO AVOID V2 LEADING TO V1 COMING OFF THE ROAD LANDING IN A DITCH

DATE : 06/03/2019 - Wednesday TIME: 1255

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Using Private drive or Entrance
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Raining (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Wet or Damp

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V2 Possible Careless/Reckless/In a hurry
2.V2 Possible Distraction in vehicle
3.V2 Possible Distraction outside vehicle
4.V2 Possible Exceeding speed limit
5.V2 Possible Fatigue
6.V2 Very Likely Failed to judge other person's path or speed

VEHICLES:

1 Car Going ahead South East To North West Skidding & Overturned Driver: Male 28
Breath Test: Not Requested
2 Goods Vehicle - unknown weight Stopping South East To North West No Skdng
/Jck-Knfg /Ovrtrng Driver: Male 55 Breath Test: Negative

CASUALTIES:

1 Driver 28 Male Serious In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 200502879

Road Number : A17 GRID REF: 518715,344462 SPEED LIMIT: 60
Road 2 Number : B1395

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : AT JUNCTION WITH B1395 SIDE BAR LANE

DESCRIPTION : IT WOULD APPEAR VEH 1 PULLED OUT OF SIDE ROAD JUNCTION AND INTO THE PATH OF VEH 2 TRAVELLING ON MAIN ROAD

DATE : 24/09/2020 - Thursday TIME: 1030

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 3

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to look properly
2.
3.
4.
5.
6.

VEHICLES:

1 Car Turning Right North To East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 50 Breath Test: Negative
2 Car Going ahead West To East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 47 Breath Test: Negative

CASUALTIES:

1 Driver 50 Female Slight In Vehicle 1
2 Driver 47 Male Slight In Vehicle 2
3 Veh Passenger 38 Female Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 170218632

Road Number : A17 GRID REF: 519916,344017 SPEED LIMIT: 50
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : EATS HECKINGTON

DESCRIPTION : V1 RAN INTO BACK OF V2, V2 WAS STATIC IN LINE OF TRAFFIC

DATE : 25/05/2017 - Thursday TIME: 1125

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to judge other person's path or speed
2.
3.
4.
5.
6.

VEHICLES:

1 Car Going ahead West To East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 90 Breath Test: Negative
2 Motorcycle over 500cc (Combination before 2004) Waitng to go ahead, held up Parked To Parked No Skdng /Jck-Knfg /Ovrtrng Driver: Male 44 Breath Test: Negative

CASUALTIES:

1 Driver 44 Male Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 180557125

Road Number : A17 GRID REF: 519815,344071 SPEED LIMIT: 60
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : APPROX 100 METERS SHORT OF SHELL GARAGE AT A SITE OF SMALL CENTRAL RESERVATION

DESCRIPTION : V1 WAS TRAVELLING EASTBOUND ON A17 THE VEHICLE MOVED ACROSS ITS LANE TOWARDS THE RIGHT AND CLIPPED THE CURB WITH THE FRONT OFFSIDE WHEEL CAUSING THE DRIVER TO LOOSE CONTROL AND THE VEHICLE TO COME TO A STOP BY ROLLING ONTO ITS PASSANGER SIDE STAYING IN THE SAME LANE

DATE : 17/11/2018 - Saturday TIME: 1734

NUMBER OF VEHICLES : 1
NUMBER OF CASUALTIES: 2

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Dark - No street lighting

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Dazzling headlights
2.
3.
4.
5.
6.

VEHICLES:

1 Car Going ahead West To East Overturned Driver: Female 18 Breath Test: Negative

CASUALTIES:

1 Veh Passenger 17 Female Slight In Vehicle 1
2 Veh Passenger 18 Male Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 190024430

Road Number : A17 GRID REF: 520167,343906 SPEED LIMIT: 50
Road 2 Number : D

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : CENTRAL RESERVATION TO THE EAST OF THE JUNCTION LEADING TO EAST HECKINGTON

DESCRIPTION : V1 HAS SWERVED TO AVOID AN ANIMAL IN THE CARRIAGEWAY AND COLLIDED WITH THE CENTRAL ISLAND

DATE : 16/01/2019 - Wednesday TIME: 130

NUMBER OF VEHICLES : 1
NUMBER OF CASUALTIES: 2

JUNCTION DETAIL : Crossroads
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Dark - No street lighting

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Possible Animal or object in carriageway
2.V1 Possible Swerved
3.
4.
5.
6.

VEHICLES:

1 Goods Vehicle - unknown weight Going ahead West To East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 59 Breath Test: Negative

CASUALTIES:

1 Driver 59 Male Slight In Vehicle 1
2 Veh Passenger 40 Male Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 200195427

Road Number : A17 GRID REF: 519052,344410 SPEED LIMIT: 50
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Fatal
POLICE DIVISION : West

LOCATION : 50M WEST OF EAST HECKINGTON

DESCRIPTION : VEH1 WAS TRAVELLING WEST ALONG THE A17 AND WAS SEEN BY WITNESSES TO DRIVE UP THE NEARSIDE KERB AND THE CORRECT ITSELF, CROSS THE CARRIAGEWAY DIRECTLY INTO THE PATH OF VEH2 WHICH COULD NOT AVOID A COLLISION.

DATE : 16/04/2020 - Thursday TIME: 1000

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Swerved
2.
3.
4.
5.
6.

VEHICLES:

1 Car Going ahead East To West No Skdng /Jck-Knfg /Ovrtrng Driver: Male 81 Breath Test: Not Requested
2 Goods vehicle 7.5 tonnes mgw and over Going ahead West To East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 57 Breath Test: Negative

CASUALTIES:

1 Driver 81 Male Fatal In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210211827

Road Number : A17 GRID REF: 520024,343974 SPEED LIMIT: 50
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : OPPOSITE JET SERVICE STATION ON A17

DESCRIPTION : VEH 2 HAS BEEN TRAVELLING FROM HECKINGTON TOWARDS SWINESHEAD BRIDGE. VEH HAS BEEN STATIONARY BEHIND ANOTHER VEH SIGNALLING TO TURN RIGHT INTO THE JET PETROL STATION. VEH 1 HAS BEEN TRAVELLING BEHIND VEH 2 AND COLLIDED INTO THE REAR OF VEH 2 CAUSING DAMAGE. DRIVER OF VEH 1 HAS PAIN IN HIS BACK AND IS TRAVELLING TO BOSTON HOSPITAL FOR EXAMINATION.

DATE : 18/04/2021 - Sunday TIME: 1300

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to judge other person's path or speed
2.
3.
4.
5.
6.

VEHICLES:

1 Motorcycle over 500cc (Combination before 2004) Going ahead North West To South East Skidding & Overturned Driver: Male 56 Breath Test: Negative
2 Car Waitng to go ahead, held up North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 21 Breath Test: Negative

CASUALTIES:

1 Driver 56 Male Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210464384

Road Number : A17 GRID REF: 519281,344335 SPEED LIMIT: 60
Road 2 Number : D

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : EAST HECKINGTON NEAR TO THE JET GARAGE

DESCRIPTION : VEH 1 CARRIED OUT POOR MANOEUVRE AND HIT THE CENTRAL RESERVATION AND LOST CONTROL COMING OFF HIS MOTORCYCLE, NO OTHER VEH'S INVOLVED

DATE : 18/08/2021 - Wednesday TIME: 755

NUMBER OF VEHICLES : 1
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to look properly
2.
3.
4.
5.
6.

VEHICLES:

1 Motorcycle over 50cc and up to 125cc Ovrtkg stry Veh on offside North West To South East Skidding Driver: Male 20 Breath Test: Negative

CASUALTIES:

1 Driver 20 Male Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210565608

Road Number : A17 GRID REF: 520016,343977 SPEED LIMIT: 60
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : OPPOSITE FOUR WINDS PETROL STATION

DESCRIPTION : VEH 1 RAN INTO THE BACK OF VEH 2, THE SUNLIGHT AND ANGLE OF THE SUN PLAYED A SIGNIFICANT PART IN THE RTC. AMBULANCE ARRIVED, CASUALTY WILL MAKE OWN WAY TO HOSPITAL TO GET XRAY ON WRIST.

DATE : 29/09/2021 - Wednesday TIME: 820

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 2

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Dazzling sun
2.
3.
4.
5.
6.

VEHICLES:

1 Car Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 42 Breath Test: Negative
2 Goods vehicle 7.5 tonnes mgw and over Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 54 Breath Test: Negative

CASUALTIES:

1 Driver 42 Female Slight In Vehicle 1
2 Veh Passenger 11 Female Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210570504

Road Number : A17 GRID REF: 519272,344333 SPEED LIMIT: 50
Road 2 Number : D

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : A17 WESTBOUND OUTSIDE JET PETROL SERVICES

DESCRIPTION : TRAFFIC SLOWING WESTBOUND ON A17 TO ENTER JET PETROL STATION IN EAST HECKINGTON. VEH 2 BEHIND A VEH THAT HAS DECIDED TO TURN INTO THE PETROL STATION LATE WHICH HAS MADE VEH 2 BRAKE HARD. VEH 1 BEHIND HAS HAD TO BRAKE HARD BUT HAD A TRAILER ON THE BACK WHICH HAS LOCKED UP AND VEH 1 HAS HIT THE REAR OF VEH 2.

DATE : 01/10/2021 - Friday TIME: 1055

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Other Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Wet or Damp

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Possible Following too close
2.V2 Possible Following too close
3.V2 Possible Failed to judge other person's path or speed
4.
5.
6.

VEHICLES:

1 Car Stopping South East To North West Skidding Driver: Female 31 Breath Test: Negative
2 Car Stopping South East To North West No Skdng /Jck-Knfg /Ovrtrng Driver: Female 29 Breath Test: Negative

CASUALTIES:

1 Driver 29 Female Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210222130

Road Number : A17 GRID REF: 520292,343819 SPEED LIMIT: 60
Road 2 Number :

PARISH : HECKINGTON DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : OUTSIDE SHELL GARAGE

DESCRIPTION : IT WOULD APPEAR VEH 3 WAS SLOWING DOWN IN TRAFFIC. VEH 2 BEHIND VEH 3 ALSO SLOWED. VEH 1 HAS FAILED TO SLOW AND DRIVEN INTO THE REAR OF VEH 2 WHICH WAS SHUNTED INTO THE REAR OF VEH 3

DATE : 23/04/2021 - Friday TIME: 800

NUMBER OF VEHICLES : 3
NUMBER OF CASUALTIES: 2

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Following too close
2.
3.
4.
5.
6.

VEHICLES:

1 Car Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 25 Breath Test: Negative
2 Car Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 38 Breath Test: Negative
3 Goods vehicle 7.5 tonnes mgw and over Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 52 Breath Test: Negative

CASUALTIES:

1 Driver 25 Female Slight In Vehicle 1
2 Driver 38 Female Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 170141596

Road Number : A17 GRID REF: 520527,343681 SPEED LIMIT: 50
Road 2 Number :

PARISH : GREAT HALE DIVISION: DISTRICT: North

POLICE SECTOR : Sleaford SEVERITY: Slight
POLICE DIVISION : West

LOCATION : EAST HECKINGTON- A17 OUTSIDE JET GARAGE (NO GRID REF).

DESCRIPTION : V2 HAS BEEN TRAVELLING S/E ON THE A17 AND HAS COME TO A STOP DUE TO A FUEL TANKER TURNING RIGHT INTO JET GARAGE. V1 HAS BEEN TRAVELLING DIRECTLY BEHIND V2 BUT HAS FAILED TO BRAKE IN TIME COLLIDING INTO THE REAR.

DATE : 04/04/2017 - Tuesday TIME: 1810

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to look properly
2.V1 Very Likely Sudden braking
3.V1 Very Likely Inexperienced or learner driver/rider
4.V1 Very Likely Nervous/Uncertain/ Panic
5.
6.

VEHICLES:

1 Car Stopping North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 18 Breath Test: Driver not contcted at time
2 Car Waitng to go ahead, held up North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 26 Breath Test: Not provided(Medical reasons)

CASUALTIES:

1 Driver 26 Female Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 200640620

Road Number : A17 GRID REF: 520820,343579 SPEED LIMIT: 60
Road 2 Number :

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : OUTSIDE CARPENTERS COTTAGE, EAST HECKINGTON

DESCRIPTION : VEH 1 HAS PULLED OUT INTO PATH OF VEH 2 FAILING TO JUDGE THE APPROACHING VEH'S SPEED.

DATE : 03/12/2020 - Thursday TIME: 1510

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Using Private drive or Entrance
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Raining (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Wet or Damp

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to judge other person's path or speed
2.
3.
4.
5.
6.

VEHICLES:

1 Car Turning Left North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 60 Breath Test: Not Requested
2 Goods vehicle 7.5 tonnes mgw and over Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 37 Breath Test: Negative

CASUALTIES:

1 Driver 60 Female Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210425853

Road Number : A17 GRID REF: 521204,343417 SPEED LIMIT: 50
Road 2 Number : D

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Serious
POLICE DIVISION : East

LOCATION : A17

DESCRIPTION : DRIVER OF VEH 1 DRIVING AT EXCESSIVE SPEED ALONG THE A17 FROM BOSTON. VEH LEFT ROAD AND ROLLED ACROSS PRIVATE ROAD BRIDGE AND WENT INTO A DITCH. WITNESS STATED THEY HAS SEEN THEM DRIVING AGGRESSIVELY AND SPEEDING.

DATE : 29/07/2021 - Thursday TIME: 1915

NUMBER OF VEHICLES : 1
NUMBER OF CASUALTIES: 2

JUNCTION DETAIL : Using Private drive or Entrance
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Aggressive driving
2.
3.
4.
5.
6.

VEHICLES:

1 Goods vehicle 3.5 tonnes mgw and under Going ahead left hand bend South East To North West Overturned Driver: Male 21 Breath Test: Negative

CASUALTIES:

1 Driver 21 Male Slight In Vehicle 1
2 Veh Passenger 18 Male Serious In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 170303390

Road Number : A17 GRID REF: 521709,342992 SPEED LIMIT: 40
Road 2 Number : A1121

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : BOSTON- JUNCTION OF A17 AND A1121 (NO GRID REF).

DESCRIPTION : V1 INVOLVED IN A PURSUIT. VEHICLE HAD FAILED TO STEP FOR A MARKED POLICE CAR EARLIER ON IN THE EVENING. SOME TIME LATER MARKED POLICE VEHICLE GOT BEHIND V1 AND AGAIN INDICATED FOR IT TO STOP. VEHICLE FAILED TO STOP AGAIN AND PURSUIT WAS AUTHORISED. VEHICLE HAS TRAVELLED A1121 BOARDSIDES AND APPROACHED JUNCTION A17. VEHICLE HAS FAILED TO NEGOTIATE THE T JUNCTION GOING STRAIGHT OVER AND HIT THE KERB, RESULTING IN VEHICLE FLIPPING ONTO ITS ROOF. DRIVER THEN DE-CAMPED AND DETAINED.

DATE : 16/07/2017 - Sunday TIME: 2249

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Dark - Lit Street Lights

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Vehicle in course of crime
2.V1 Very Likely Careless/Reckless/In a hurry
3.
4.
5.
6.

VEHICLES:

1 Car Turning Left South To West Skidding Driver: Male 24 Breath Test: Negative
2 Other Vehicle Going ahead South To West No Skdng /Jck-Knfg /Ovrtrng Driver: Male 35 Breath Test: Negative

CASUALTIES:

1 Veh Passenger 23 Female Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 180285069

Road Number : A1121 GRID REF: 521711,342983 SPEED LIMIT: 40
Road 2 Number : A17

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : JUNCTION BETWEEN A17 AND A1121

DESCRIPTION : RTC AT JUNCTION SWINESHEAD. V1 TURNING RIGHT, COLLIDED INTO V2

DATE : 20/06/2018 - Wednesday TIME: 848

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 2

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Careless/Reckless/In a hurry
2.
3.
4.
5.
6.

VEHICLES:

1 Car Turning Right North To East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 63 Breath Test: Negative
2 Goods Vehicle - unknown weight Going ahead West To East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 68 Breath Test: Negative

CASUALTIES:

1 Driver 63 Male Slight In Vehicle 1
2 Driver 68 Male Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 180444373

Road Number : A17 GRID REF: 521786,342879 SPEED LIMIT: 50
Road 2 Number :

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : SINGLE CARRIAGEWAY 50MPH ROAD. RELATIVELY STRAIGHT

DESCRIPTION : V2 WAS SLOWING DOWN DUE TO TRAFFIC AHEAD. V1 COLLIDED WITH THE REAR OF V2. V1 DID NOT STOP IN TIME.

DATE : 17/09/2018 - Monday TIME: 823

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Not at/within 20m of Junction.
JUNCTION CONTROL:

WEATHER : Raining (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Wet or Damp

DID AN OFFICER ATTEND THE SCENE? No

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Careless/Reckless/In a hurry
2.
3.
4.
5.
6.

VEHICLES:

1 Car Stopping East To West No Skdng /Jck-Knfg /Ovrtrng Driver: Female 40 Breath Test: Negative
2 Car Stopping East To West No Skdng /Jck-Knfg /Ovrtrng Driver: Male 22 Breath Test: Negative

CASUALTIES:

1 Driver 40 Female Slight In Vehicle 1

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 190024319

Road Number : A17 GRID REF: 521717,342982 SPEED LIMIT: 40
Road 2 Number : A1121

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : JUNCTION OF A17 AND A1121

DESCRIPTION : V2 WAS TRAVELLINF ALONG A17 WHEN HE REACHED THE JUNCTION WITH A1121 V1 TURNED INFRONT OF V2 AND THE VEHICLES COLLIDED. V2 SPUN INTO THE OPPOSITE SIDE OF THE ROAD AND V3 THEN COLLIDED WITH V2

DATE : 15/01/2019 - Tuesday TIME: 1725

NUMBER OF VEHICLES : 3
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Dark - Lit Street Lights

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Careless/Reckless/In a hurry
2.
3.
4.
5.
6.

VEHICLES:

1 Car Changing Lane to Right South To North East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 55 Breath Test: Negative
2 Car Going ahead North To South No Skdng /Jck-Knfg /Ovrtrng Driver: Male 41 Breath Test: Negative
3 Car Going ahead South To North No Skdng /Jck-Knfg /Ovrtrng Driver: Female 26 Breath Test: Negative

CASUALTIES:

1 Veh Passenger 32 Female Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 190092020

Road Number : A17 GRID REF: 521742,342936 SPEED LIMIT: 60
Road 2 Number : A1121

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : OUTSIDE THE BARGE PUBLIC HOUSE

DESCRIPTION : V2 TRAVELLING FROM SLEAFORD DIRECTION TOWARDS SUTTERTON. V1 HAS PULLED ACROSS THE FRONT AS IT WAS HEADING IN THE OPPOSITE DIRECTION

DATE : 21/02/2019 - Thursday TIME: 1823

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Dark - Lit Street Lights

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to judge other person's path or speed
2.
3.
4.
5.
6.

VEHICLES:

1 Car Turning Right East To North No Skdng /Jck-Knfg /Ovrtrng Driver: Male 35 Breath Test: Negative
2 Car Going ahead West To East No Skdng /Jck-Knfg /Ovrtrng Driver: Female 57 Breath Test: Negative

CASUALTIES:

1 Driver 57 Female Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210465669

Road Number : A17 GRID REF: 521711,342985 SPEED LIMIT: 40
Road 2 Number : A1121

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Slight
POLICE DIVISION : East

LOCATION : JUNCTION OF A17 AND A1121

DESCRIPTION : VEH 1 CUT ACROSS THE PATH OF VEH 2 WHEN CHANGING DIRECTION AT A JUNCTION.

DATE : 18/08/2021 - Wednesday TIME: 1654

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 1

JUNCTION DETAIL : Other Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Very Likely Failed to look properly
2.
3.
4.
5.
6.

VEHICLES:

1 Car Turning Right South East To North East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 69 Breath Test: Negative
2 Car Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 41 Breath Test: Negative

CASUALTIES:

1 Driver 41 Male Slight In Vehicle 2

LINCOLNSHIRE ROAD SAFETY PARTNERSHIP

ACCIDENT REFERENCE: 210632038

Road Number : A17 GRID REF: 521717,342981 SPEED LIMIT: 60
Road 2 Number : A1121

PARISH : SWINESHEAD DIVISION: DISTRICT: Boston

POLICE SECTOR : Boston-Rural SEVERITY: Serious
POLICE DIVISION : East

LOCATION : JUNCTION OF A17 STATION ROAD AND A1121 LINESIDE

DESCRIPTION : VEH 1 HAS BEEN TRAVELLING NORTH WEST ALONG TEH A17 STATION ROAD TOWARDS HECKINGTON. VEH 1 TURNED RIGHT ACROSS TRAFFIC TO TRAVEL DOWN LINSIDE CAUSING VEH 2 TO COLLIDE WITH IT. DAMAGE TO FRONT NEARSIDE OF VEH 1 ASN SEVERE DAMAGE TO FRONT BUMPER OF VEH 2, CAUSING AIRBAGS TO DEPLOY.

DATE : 30/10/2021 - Saturday TIME: 1546

NUMBER OF VEHICLES : 2
NUMBER OF CASUALTIES: 3

JUNCTION DETAIL : 'T' or Staggered Junction
JUNCTION CONTROL: Give Way or Uncontrolled

WEATHER : Fine (Without High Wind)

LIGHT CONDITIONS : Daylight

SURFACE CONDITIONS: Dry

DID AN OFFICER ATTEND THE SCENE? Yes

PRE 2005 CONTRIBUTORY FACTORS

CONTRIBUTORY FACTOR 1:
CONTRIBUTORY FACTOR 2:
CONTRIBUTORY FACTOR 3:

2005+ CONTRIBUTORY FACTORS

1.V1 Possible Uncorrected, defective eyesight
2.
3.
4.
5.
6.

VEHICLES:

1 Car Turning Right South East To North East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 83 Breath Test: Negative
2 Car Going ahead North West To South East No Skdng /Jck-Knfg /Ovrtrng Driver: Male 54 Breath Test: Negative

CASUALTIES:

1 Driver 83 Male Slight In Vehicle 1
2 Veh Passenger 87 Male Slight In Vehicle 1
3 Veh Passenger 62 Female Serious In Vehicle 2

Appendix B

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	108	128	84	72	77	65	115	99	93
01:00	84	99	74	50	41	54	74	70	68
02:00	89	73	70	0	53	86	76	75	64
03:00	79	71	64	36	57	87	112	81	72
04:00	166	198	84	39	113	161	166	161	132
05:00	300	373	160	83	299	305	357	327	268
06:00	770	727	287	136	723	719	623	712	569
07:00	1094	1016	348	173	1160	1235	1056	1112	869
08:00	925	812	455	236	1099	997	942	955	781
09:00	783	709	615	419	822	892	856	812	728
10:00	601	741	643	536	802	771	768	737	695
11:00	687	689	634	629	776	696	751	720	695
12:00	599	703	648	686	741	694	771	702	692
13:00	572	755	595	617	621	681	699	666	649
14:00	800	847	548	588	714	661	785	761	706
15:00	728	827	556	558	640	693	716	721	674
16:00	821	758	538	625	769	756	817	784	726
17:00	719	714	541	589	689	752	740	723	678
18:00	645	634	512	589	565	507	588	588	577
19:00	396	451	308	437	328	354	394	385	381
20:00	298	309	280	356	238	272	276	279	290
21:00	255	230	250	269	210	263	253	242	247
22:00	193	199	136	123	171	194	172	186	170
23:00	151	115	116	84	125	134	140	133	124
Total									
12H(7-19)	8974	9205	6633	6245	9398	9335	9489	9280	8468
16H(6-22)	10693	10922	7758	7443	10897	10943	11035	10898	9956
18H(6-24)	11037	11236	8010	7650	11193	11271	11347	11217	10249
24H(0-24)	11863	12178	8546	7930	11833	12029	12247	12030	10947
AM Peak	07:00	07:00	10:00	11:00	07:00	07:00	07:00	07:00	07:00
	1094	1016	643	629	1160	1235	1056	1112	869
PM Peak	16:00	14:00	12:00	12:00	16:00	16:00	16:00	16:00	16:00
	821	847	648	686	769	756	817	784	726

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Direction: Westbound

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	67	70	59	54	50	63	78	66	63
01:00	75	61	43	55	39	64	96	67	62
02:00	86	85	69	0	65	70	107	83	69
03:00	103	111	78	58	136	121	162	127	110
04:00	197	183	101	91	192	210	289	214	180
05:00	388	350	230	132	413	383	355	378	322
06:00	490	491	281	145	534	516	580	522	434
07:00	694	675	409	217	779	746	802	739	617
08:00	678	656	544	327	744	758	726	712	633
09:00	675	657	593	508	646	623	662	653	623
10:00	596	700	640	587	681	618	636	646	637
11:00	646	785	698	756	786	654	726	719	722
12:00	639	858	662	680	658	771	715	728	712
13:00	698	799	592	642	762	822	803	777	731
14:00	758	844	548	591	644	710	809	753	701
15:00	753	804	562	597	764	785	744	770	716
16:00	836	890	494	658	792	839	829	837	763
17:00	843	759	475	506	877	782	862	825	729
18:00	578	537	456	487	562	517	513	541	521
19:00	372	328	302	440	360	355	300	343	351
20:00	258	282	228	302	249	258	227	255	258
21:00	166	156	127	194	143	184	153	160	160
22:00	110	108	107	98	96	120	112	109	107
23:00	86	89	79	87	79	86	66	81	82
Total									
12H(7-19)	8394	8964	6673	6556	8695	8625	8827	8701	8105
16H(6-22)	9680	10221	7611	7637	9981	9938	10087	9981	9308
18H(6-24)	9876	10418	7797	7822	10156	10144	10265	10172	9497
24H(0-24)	10792	11278	8377	8212	11051	11055	11352	11106	10302
AM Peak	07:00	11:00	11:00	11:00	11:00	08:00	07:00	07:00	11:00
	694	785	698	756	786	758	802	739	722
PM Peak	17:00	16:00	12:00	12:00	17:00	16:00	17:00	16:00	16:00
	843	890	662	680	877	839	862	837	763

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Direction: Total Flow

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	175	198	143	126	127	128	193	164	156
01:00	159	160	117	105	80	118	170	137	130
02:00	175	158	139	0	118	156	183	158	133
03:00	182	182	142	94	193	208	274	208	182
04:00	363	381	185	130	305	371	455	375	313
05:00	688	723	390	215	712	688	712	705	590
06:00	1260	1218	568	281	1257	1235	1203	1235	1003
07:00	1788	1691	757	390	1939	1981	1858	1851	1486
08:00	1603	1468	999	563	1843	1755	1668	1667	1414
09:00	1458	1366	1208	927	1468	1515	1518	1465	1351
10:00	1197	1441	1283	1123	1483	1389	1404	1383	1331
11:00	1333	1474	1332	1385	1562	1350	1477	1439	1416
12:00	1238	1561	1310	1366	1399	1465	1486	1430	1404
13:00	1270	1554	1187	1259	1383	1503	1502	1442	1380
14:00	1558	1691	1096	1179	1358	1371	1594	1514	1407
15:00	1481	1631	1118	1155	1404	1478	1460	1491	1390
16:00	1657	1648	1032	1283	1561	1595	1646	1621	1489
17:00	1562	1473	1016	1095	1566	1534	1602	1547	1407
18:00	1223	1171	968	1076	1127	1024	1101	1129	1099
19:00	768	779	610	877	688	709	694	728	732
20:00	556	591	508	658	487	530	503	533	548
21:00	421	386	377	463	353	447	406	403	408
22:00	303	307	243	221	267	314	284	295	277
23:00	237	204	195	171	204	220	206	214	205
Total									
12H(7-19)	17368	18169	13306	12801	18093	17960	18316	17981	16573
16H(6-22)	20373	21143	15369	15080	20878	20881	21122	20879	19264
18H(6-24)	20913	21654	15807	15472	21349	21415	21612	21389	19746
24H(0-24)	22655	23456	16923	16142	22884	23084	23599	23136	21249
AM Peak	07:00	07:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00
	1788	1691	1332	1385	1939	1981	1858	1851	1486
PM Peak	16:00	14:00	12:00	12:00	17:00	16:00	16:00	16:00	16:00
	1657	1691	1310	1366	1566	1595	1646	1621	1489

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East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	11863	10056	1300	426	81
Fri 25 Mar 2022	12178	10561	1212	352	53
Sat 26 Mar 2022	8546	7686	680	164	16
Sun 27 Mar 2022	7930	7341	493	84	12
Mon 28 Mar 2022	11833	10258	1161	366	48
Tue 29 Mar 2022	12029	10762	1015	214	38
Wed 30 Mar 2022	12247	11177	873	160	37
5 Day Ave.	12030	10563	1112	304	51
7 Day Ave.	10947	9692	962	252	41

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	84.8%	11.0%	3.6%	0.7%
Fri 25 Mar 2022	100.0%	86.7%	10.0%	2.9%	0.4%
Sat 26 Mar 2022	100.0%	89.9%	8.0%	1.9%	0.2%
Sun 27 Mar 2022	100.0%	92.6%	6.2%	1.1%	0.2%
Mon 28 Mar 2022	100.0%	86.7%	9.8%	3.1%	0.4%
Tue 29 Mar 2022	100.0%	89.5%	8.4%	1.8%	0.3%
Wed 30 Mar 2022	100.0%	91.3%	7.1%	1.3%	0.3%
5 Day Ave.	100.0%	87.8%	9.2%	2.5%	0.4%
7 Day Ave.	100.0%	88.5%	8.8%	2.3%	0.4%

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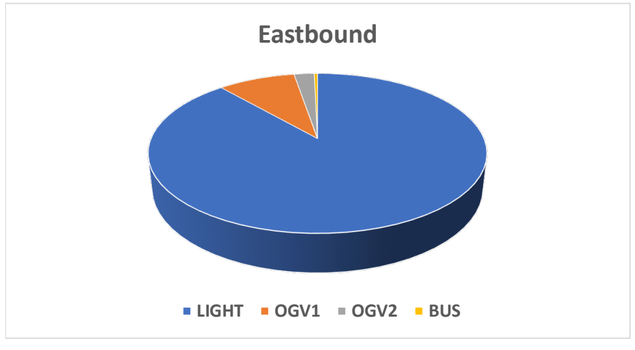

Direction: Westbound

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	10792	7771	1918	950	153
Fri 25 Mar 2022	11278	8508	1844	780	146
Sat 26 Mar 2022	8377	6927	1062	343	45
Sun 27 Mar 2022	8212	7018	871	291	32
Mon 28 Mar 2022	11051	8481	1717	727	126
Tue 29 Mar 2022	11055	8733	1567	639	116
Wed 30 Mar 2022	11352	9066	1602	559	125
5 Day Ave.	11106	8512	1730	731	133
7 Day Ave.	10302	8072	1512	613	106

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	72.0%	17.8%	8.8%	1.4%
Fri 25 Mar 2022	100.0%	75.4%	16.4%	6.9%	1.3%
Sat 26 Mar 2022	100.0%	82.7%	12.7%	4.1%	0.5%
Sun 27 Mar 2022	100.0%	85.5%	10.6%	3.5%	0.4%
Mon 28 Mar 2022	100.0%	76.7%	15.5%	6.6%	1.1%
Tue 29 Mar 2022	100.0%	79.0%	14.2%	5.8%	1.0%
Wed 30 Mar 2022	100.0%	79.9%	14.1%	4.9%	1.1%
5 Day Ave.	100.0%	76.6%	15.6%	6.6%	1.2%
7 Day Ave.	100.0%	78.4%	14.7%	5.9%	1.0%

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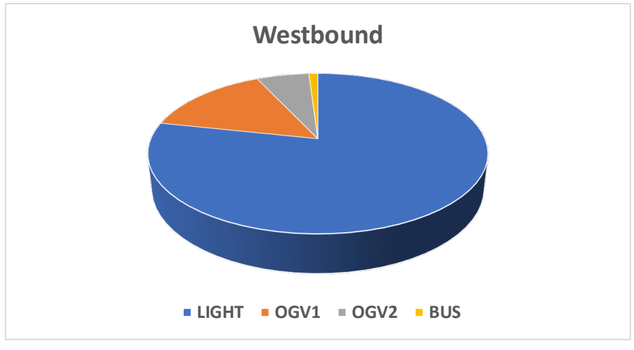

Direction: Total Flow

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	22655	17827	3218	1376	234
Fri 25 Mar 2022	23456	19069	3056	1132	199
Sat 26 Mar 2022	16923	14613	1742	507	61
Sun 27 Mar 2022	16142	14359	1364	375	44
Mon 28 Mar 2022	22884	18739	2878	1093	174
Tue 29 Mar 2022	23084	19495	2582	853	154
Wed 30 Mar 2022	23599	20243	2475	719	162
5 Day Ave.	23136	19075	2842	1035	185
7 Day Ave.	21249	17764	2474	865	147

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	78.7%	14.2%	6.1%	1.0%
Fri 25 Mar 2022	100.0%	81.3%	13.0%	4.8%	0.8%
Sat 26 Mar 2022	100.0%	86.3%	10.3%	3.0%	0.4%
Sun 27 Mar 2022	100.0%	89.0%	8.5%	2.3%	0.3%
Mon 28 Mar 2022	100.0%	81.9%	12.6%	4.8%	0.8%
Tue 29 Mar 2022	100.0%	84.5%	11.2%	3.7%	0.7%
Wed 30 Mar 2022	100.0%	85.8%	10.5%	3.0%	0.7%
5 Day Ave.	100.0%	82.4%	12.3%	4.5%	0.8%
7 Day Ave.	100.0%	83.6%	11.6%	4.1%	0.7%

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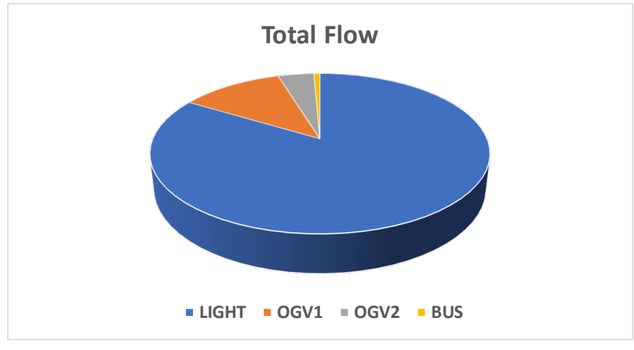

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	11863	49.8	44.2	5.5	1	10	199	512	1120	4213	4922	781	79	21	3	2
Fri 25 Mar 2022	12178	50.3	44.4	5.7	4	46	192	376	1085	4354	5007	965	106	32	6	5
Sat 26 Mar 2022	8546	50.9	45.6	5.1	0	2	88	118	579	2743	3922	939	101	42	11	1
Sun 27 Mar 2022	7930	50.5	46.1	4.3	0	0	4	45	375	2564	4018	777	93	47	5	2
Mon 28 Mar 2022	11833	49.8	43.1	6.4	6	144	259	623	1386	4547	4071	689	84	21	2	1
Tue 29 Mar 2022	12029	49.7	44.2	5.2	5	12	101	431	1253	4631	4631	830	104	26	1	4
Wed 30 Mar 2022	12247	49.7	44.4	5.1	2	12	108	328	1251	4675	4992	733	94	37	7	8
5 Day Ave.	12030	49.9	44.1	5.6	4	45	172	454	1219	4484	4725	800	93	27	4	4
7 Day Ave.	10947	50.1	44.6	5.3	3	32	136	348	1007	3961	4509	816	94	32	5	3

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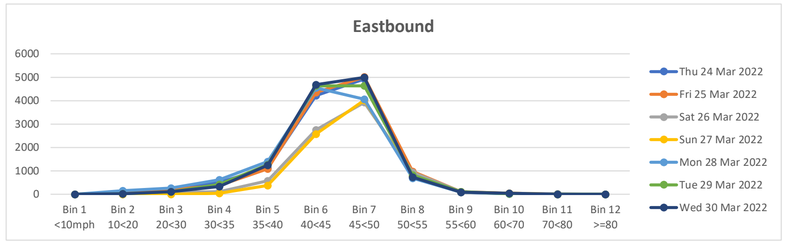

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	10792	54.9	47.0	7.6	6	88	310	402	433	1633	4214	3007	565	111	16	7
Fri 25 Mar 2022	11278	54.8	47.4	7.2	17	58	264	350	428	1697	4477	3259	575	133	17	3
Sat 26 Mar 2022	8377	55.5	49.0	6.2	0	27	55	130	177	1013	3371	2813	601	147	38	5
Sun 27 Mar 2022	8212	55.7	49.3	6.1	2	26	66	77	214	802	3342	2861	609	184	24	5
Mon 28 Mar 2022	11051	54.6	46.6	7.8	13	86	374	451	543	1704	4386	2852	501	115	20	6
Tue 29 Mar 2022	11055	54.7	47.4	7.1	10	61	277	305	391	1575	4647	3125	530	108	17	9
Wed 30 Mar 2022	11352	54.0	47.3	6.6	7	38	201	234	573	2039	4611	3000	520	111	17	1
5 Day Ave.	11106	54.6	47.1	7.2	11	66	285	348	474	1730	4467	3049	538	116	17	5
7 Day Ave.	10302	54.9	47.7	6.9	8	55	221	278	394	1495	4150	2988	557	130	21	5

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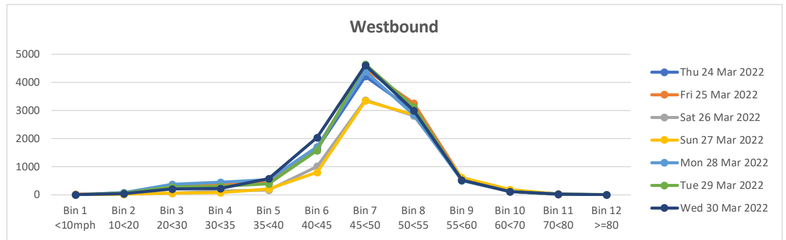
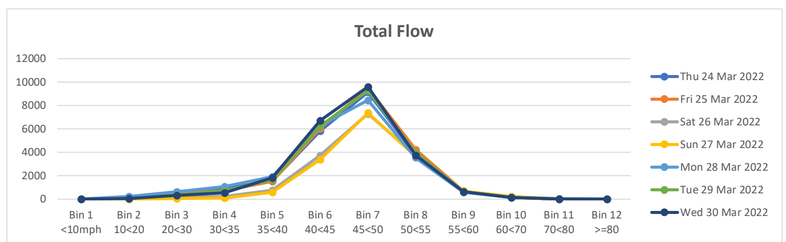


Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	22655	52.5	45.5	6.7	7	98	509	914	1553	5846	9136	3788	644	132	19	9
Fri 25 Mar 2022	23456	52.7	45.8	6.6	21	104	456	726	1513	6051	9484	4224	681	165	23	8
Sat 26 Mar 2022	16923	53.4	47.3	5.9	0	29	143	248	756	3756	7293	3752	702	189	49	6
Sun 27 Mar 2022	16142	53.5	47.7	5.6	2	26	70	122	589	3366	7360	3638	702	231	29	7
Mon 28 Mar 2022	22884	52.4	44.8	7.3	19	230	633	1074	1929	6251	8457	3541	585	136	22	7
Tue 29 Mar 2022	23084	52.4	45.7	6.4	15	73	378	736	1644	6206	9278	3955	634	134	18	13
Wed 30 Mar 2022	23599	52.0	45.8	6.0	9	50	309	562	1824	6714	9603	3733	614	148	24	9
5 Day Ave.	23136	52.4	45.5	6.6	14	111	457	802	1693	6214	9192	3848	632	143	21	9
7 Day Ave.	21249	52.7	46.1	6.4	10	87	357	626	1401	5456	8659	3804	652	162	26	8

360 TSL Ltd



East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1288	48.3	43.1	5.0	0	0	13	92	162	517	474	26	3	1	0	0
Fri 25 Mar 2022	1430	47.9	42.8	4.9	0	0	19	69	246	627	423	39	7	0	0	0
Sat 26 Mar 2022	1277	49.2	43.7	5.3	0	2	32	29	135	530	479	63	6	1	0	0
Sun 27 Mar 2022	1165	49.3	45.3	3.8	0	0	0	2	75	449	548	82	8	1	0	0
Mon 28 Mar 2022	1578	47.2	41.6	5.5	0	7	29	138	281	770	312	37	3	0	1	0
Tue 29 Mar 2022	1467	47.9	43.2	4.5	0	0	8	81	150	727	458	40	3	0	0	0
Wed 30 Mar 2022	1519	47.8	43.5	4.1	0	0	2	35	221	692	531	36	2	0	0	0
5 Day Ave.	1456	47.8	42.8	4.8	0	1	14	83	212	667	440	36	4	0	0	0
7 Day Ave.	1389	48.2	43.3	4.7	0	1	15	64	181	616	461	46	5	0	0	0

360 TSL Ltd

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1242	53.1	46.3	6.6	0	8	27	61	35	226	575	283	25	1	0	1
Fri 25 Mar 2022	1485	52.4	44.8	7.3	1	10	53	116	84	301	603	302	15	0	0	0
Sat 26 Mar 2022	1338	53.3	47.2	5.9	0	2	27	40	42	187	650	351	36	3	0	0
Sun 27 Mar 2022	1343	53.0	47.4	5.4	0	2	14	20	42	234	661	324	38	6	2	0
Mon 28 Mar 2022	1467	52.3	45.8	6.3	1	14	17	46	93	312	689	278	15	2	0	0
Tue 29 Mar 2022	1272	53.2	46.0	7.0	1	8	45	57	46	201	591	303	20	0	0	0
Wed 30 Mar 2022	1362	52.4	45.6	6.6	1	4	50	39	92	243	660	257	15	1	0	0
5 Day Ave.	1366	52.7	45.7	6.7	1	9	38	64	70	257	624	285	18	1	0	0
7 Day Ave.	1358	52.8	46.2	6.4	1	7	33	54	62	243	633	300	23	2	0	0

360 TSL Ltd

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	2530	50.9	44.6	6.1	0	8	40	153	197	743	1049	309	28	2	0	1
Fri 25 Mar 2022	2915	50.4	43.8	6.3	1	10	72	185	330	928	1026	341	22	0	0	0
Sat 26 Mar 2022	2615	51.6	45.5	5.9	0	4	59	69	177	717	1129	414	42	4	0	0
Sun 27 Mar 2022	2508	51.5	46.5	4.8	0	2	14	22	117	683	1209	406	46	7	2	0
Mon 28 Mar 2022	3045	50.1	43.6	6.2	1	21	46	184	374	1082	1001	315	18	2	1	0
Tue 29 Mar 2022	2739	50.7	44.5	5.9	1	8	53	138	196	928	1049	343	23	0	0	0
Wed 30 Mar 2022	2881	50.2	44.5	5.5	1	4	52	74	313	935	1191	293	17	1	0	0
5 Day Ave.	2822	50.4	44.2	6.0	1	10	53	147	282	923	1063	320	22	1	0	0
7 Day Ave.	2748	50.8	44.7	5.8	1	8	48	118	243	859	1093	346	28	2	0	0

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1528	48.7	42.1	6.4	0	9	68	121	183	643	439	60	4	1	0	0
Fri 25 Mar 2022	1674	49.3	42.8	6.3	0	25	50	61	175	693	620	46	4	0	0	0
Sat 26 Mar 2022	1104	49.8	44.7	4.9	0	0	17	23	97	369	515	76	7	0	0	0
Sun 27 Mar 2022	1146	50.0	45.8	4.1	0	0	0	16	63	354	595	110	5	3	0	0
Mon 28 Mar 2022	1354	49.5	43.5	5.8	1	2	42	68	120	491	562	68	0	0	0	0
Tue 29 Mar 2022	1354	49.0	44.1	4.7	0	0	15	21	170	519	555	69	4	1	0	0
Wed 30 Mar 2022	1501	48.0	43.2	4.6	0	0	16	74	166	716	486	43	0	0	0	0
5 Day Ave.	1482	48.9	43.1	5.5	0	7	38	69	163	612	532	57	2	0	0	0
7 Day Ave.	1380	49.2	43.7	5.2	0	5	30	55	139	541	539	67	3	1	0	0

360 TSL Ltd

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1511	53.2	45.7	7.2	0	9	46	84	99	291	560	378	42	1	1	0
Fri 25 Mar 2022	1648	53.7	46.6	6.9	2	16	30	44	61	356	650	422	58	9	0	0
Sat 26 Mar 2022	1110	55.1	49.0	5.9	0	7	3	19	24	116	444	411	66	20	0	0
Sun 27 Mar 2022	1188	55.4	48.7	6.4	0	7	21	13	29	104	496	435	62	20	0	1
Mon 28 Mar 2022	1408	54.1	46.4	7.5	1	23	31	51	48	240	605	356	46	6	1	0
Tue 29 Mar 2022	1495	53.1	45.6	7.2	0	10	64	49	109	238	660	338	23	4	0	0
Wed 30 Mar 2022	1553	52.3	46.6	5.5	0	5	15	16	70	391	715	306	26	5	4	0
5 Day Ave.	1523	53.3	46.2	6.9	1	13	37	49	77	303	638	360	39	5	1	0
7 Day Ave.	1416	53.9	47.0	6.7	0	11	30	39	63	248	590	378	46	9	1	0

360 TSL Ltd

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	3039	51.2	43.9	7.1	0	18	114	205	282	934	999	438	46	2	1	0
Fri 25 Mar 2022	3322	51.8	44.7	6.8	2	41	80	105	236	1049	1270	468	62	9	0	0
Sat 26 Mar 2022	2214	52.9	46.9	5.9	0	7	20	42	121	485	959	487	73	20	0	0
Sun 27 Mar 2022	2334	53.1	47.3	5.6	0	7	21	29	92	458	1091	545	67	23	0	1
Mon 28 Mar 2022	2762	52.1	45.0	6.8	2	25	73	119	168	731	1167	424	46	6	1	0
Tue 29 Mar 2022	2849	51.3	44.9	6.2	0	10	79	70	279	757	1215	407	27	5	0	0
Wed 30 Mar 2022	3054	50.5	44.9	5.4	0	5	31	90	236	1107	1201	349	26	5	4	0
5 Day Ave.	3005	51.4	44.7	6.5	1	20	75	118	240	916	1170	417	41	5	1	0
7 Day Ave.	2796	51.8	45.4	6.2	1	16	60	94	202	789	1129	445	50	10	1	0

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

24/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	108	93	9	6	0
01:00	84	68	10	5	1
02:00	89	77	5	7	0
03:00	79	68	5	6	0
04:00	166	142	17	6	1
05:00	300	266	24	6	4
06:00	770	702	55	12	1
07:00	1094	967	112	7	8
08:00	925	773	127	23	2
09:00	783	627	109	40	7
10:00	601	458	93	40	10
11:00	687	510	105	62	10
12:00	599	467	86	39	7
13:00	572	455	72	36	9
14:00	800	669	88	39	4
15:00	728	599	93	31	5
16:00	821	703	91	22	5
17:00	719	633	74	11	1
18:00	645	598	39	6	2
19:00	396	366	25	2	3
20:00	298	267	25	5	1
21:00	255	233	17	5	0
22:00	193	175	11	7	0
23:00	151	140	8	3	0
Total 12H(7-19)	8974	7459	1089	356	70
16H(6-22)	10693	9027	1211	380	75
18H(6-24)	11037	9342	1230	390	75
24H(0-24)	11863	10056	1300	426	81
AM Peak	07:00	07:00	08:00	11:00	10:00
	1094	967	127	62	10
PM Peak	16:00	16:00	15:00	12:00	13:00
	821	703	93	39	9

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	67	40	14	12	1
01:00	75	35	10	30	0
02:00	86	42	11	31	2
03:00	103	58	10	34	1
04:00	197	125	20	46	6
05:00	388	262	67	54	5
06:00	490	317	111	54	8
07:00	694	517	133	38	6
08:00	678	479	140	50	9
09:00	675	458	145	61	11
10:00	596	409	107	59	21
11:00	646	442	120	73	11
12:00	639	460	107	62	10
13:00	698	486	154	46	12
14:00	758	556	144	44	14
15:00	753	538	151	51	13
16:00	836	632	151	46	7
17:00	843	693	118	29	3
18:00	578	467	78	29	4
19:00	372	297	47	25	3
20:00	258	208	30	18	2
21:00	166	126	21	15	4
22:00	110	77	12	21	0
23:00	86	47	17	22	0
Total 12H(7-19)	8394	6137	1548	588	121
16H(6-22)	9680	7085	1757	700	138
18H(6-24)	9876	7209	1786	743	138
24H(0-24)	10792	7771	1918	950	153
AM Peak	07:00	07:00	09:00	11:00	10:00
	694	517	145	73	21
PM Peak	17:00	17:00	13:00	12:00	14:00
	843	693	154	62	14

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	175	133	23	18	1
01:00	159	103	20	35	1
02:00	175	119	16	38	2
03:00	182	126	15	40	1
04:00	363	267	37	52	7
05:00	688	528	91	60	9
06:00	1260	1019	166	66	9
07:00	1788	1484	245	45	14
08:00	1603	1252	267	73	11
09:00	1458	1085	254	101	18
10:00	1197	867	200	99	31
11:00	1333	952	225	135	21
12:00	1238	927	193	101	17
13:00	1270	941	226	82	21
14:00	1558	1225	232	83	18
15:00	1481	1137	244	82	18
16:00	1657	1335	242	68	12
17:00	1562	1326	192	40	4
18:00	1223	1065	117	35	6
19:00	768	663	72	27	6
20:00	556	475	55	23	3
21:00	421	359	38	20	4
22:00	303	252	23	28	0
23:00	237	187	25	25	0
Total 12H(7-19)	17368	13596	2637	944	191
16H(6-22)	20373	16112	2968	1080	213
18H(6-24)	20913	16551	3016	1133	213
24H(0-24)	22655	17827	3218	1376	234
AM Peak	07:00	07:00	08:00	11:00	10:00
	1788	1484	267	135	31
PM Peak	16:00	16:00	15:00	12:00	13:00
	1657	1335	244	101	21

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

25/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	128	123	2	3	0
01:00	99	82	8	8	1
02:00	73	60	6	6	1
03:00	71	58	9	3	1
04:00	198	179	14	4	1
05:00	373	333	32	4	4
06:00	727	658	64	4	1
07:00	1016	894	106	8	8
08:00	812	694	97	19	2
09:00	709	565	101	38	5
10:00	741	614	83	40	4
11:00	689	573	83	28	5
12:00	703	563	95	40	5
13:00	755	635	79	35	6
14:00	847	728	90	26	3
15:00	827	706	83	36	2
16:00	758	664	84	8	2
17:00	714	643	60	11	0
18:00	634	592	31	10	1
19:00	451	406	37	8	0
20:00	309	291	17	1	0
21:00	230	212	12	6	0
22:00	199	182	12	4	1
23:00	115	106	7	2	0
Total 12H(7-19)	9205	7871	992	299	43
16H(6-22)	10922	9438	1122	318	44
18H(6-24)	11236	9726	1141	324	45
24H(0-24)	12178	10561	1212	352	53
AM Peak	07:00	07:00	07:00	10:00	07:00
	1016	894	106	40	8
PM Peak	14:00	14:00	12:00	12:00	13:00
	847	728	95	40	6

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	70	38	11	19	2
01:00	61	26	8	24	3
02:00	85	40	10	35	0
03:00	111	67	18	26	0
04:00	183	115	28	38	2
05:00	350	246	44	52	8
06:00	491	345	100	43	3
07:00	675	495	129	42	9
08:00	656	459	127	53	17
09:00	657	458	122	63	14
10:00	700	523	114	53	10
11:00	785	591	132	47	15
12:00	858	667	141	40	10
13:00	799	598	152	42	7
14:00	844	649	146	39	10
15:00	804	603	141	50	10
16:00	890	717	139	22	12
17:00	759	656	89	11	3
18:00	537	455	67	11	4
19:00	328	266	45	11	6
20:00	282	228	36	17	1
21:00	156	125	16	15	0
22:00	108	80	14	14	0
23:00	89	61	15	13	0
Total 12H(7-19)	8964	6871	1499	473	121
16H(6-22)	10221	7835	1696	559	131
18H(6-24)	10418	7976	1725	586	131
24H(0-24)	11278	8508	1844	780	146
AM Peak	11:00	11:00	11:00	09:00	08:00
	785	591	132	63	17
PM Peak	16:00	16:00	13:00	15:00	16:00
	890	717	152	50	12

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	198	161	13	22	2
01:00	160	108	16	32	4
02:00	158	100	16	41	1
03:00	182	125	27	29	1
04:00	381	294	42	42	3
05:00	723	579	76	56	12
06:00	1218	1003	164	47	4
07:00	1691	1389	235	50	17
08:00	1468	1153	224	72	19
09:00	1366	1023	223	101	19
10:00	1441	1137	197	93	14
11:00	1474	1164	215	75	20
12:00	1561	1230	236	80	15
13:00	1554	1233	231	77	13
14:00	1691	1377	236	65	13
15:00	1631	1309	224	86	12
16:00	1648	1381	223	30	14
17:00	1473	1299	149	22	3
18:00	1171	1047	98	21	5
19:00	779	672	82	19	6
20:00	591	519	53	18	1
21:00	386	337	28	21	0
22:00	307	262	26	18	1
23:00	204	167	22	15	0
Total 12H(7-19)	18169	14742	2491	772	164
16H(6-22)	21143	17273	2818	877	175
18H(6-24)	21654	17702	2866	910	176
24H(0-24)	23456	19069	3056	1132	199
AM Peak	07:00	07:00	07:00	09:00	11:00
	1691	1389	235	101	20
PM Peak	14:00	16:00	12:00	15:00	12:00
	1691	1381	236	86	15

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

26/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	84	70	7	6	1
01:00	74	66	4	4	0
02:00	70	57	11	2	0
03:00	64	49	7	8	0
04:00	84	63	12	9	0
05:00	160	140	15	4	1
06:00	287	258	23	4	2
07:00	348	297	47	4	0
08:00	455	399	50	4	2
09:00	615	549	50	15	1
10:00	643	583	50	7	3
11:00	634	563	51	20	0
12:00	648	581	51	15	1
13:00	595	539	40	16	0
14:00	548	505	38	4	1
15:00	556	500	49	7	0
16:00	538	494	37	7	0
17:00	541	493	41	5	2
18:00	512	482	24	6	0
19:00	308	285	22	1	0
20:00	280	257	18	5	0
21:00	250	229	18	3	0
22:00	136	122	9	4	1
23:00	116	105	6	4	1
Total					
12H(7-19)	6633	5985	528	110	10
16H(6-22)	7758	7014	609	123	12
18H(6-24)	8010	7241	624	131	14
24H(0-24)	8546	7686	680	164	16
AM Peak	10:00	10:00	11:00	11:00	10:00
	643	583	51	20	3
PM Peak	12:00	12:00	12:00	13:00	17:00
	648	581	51	16	2

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	59	37	9	13	0
01:00	43	21	7	15	0
02:00	69	44	6	18	1
03:00	78	38	15	23	2
04:00	101	52	20	27	2
05:00	230	169	35	22	4
06:00	281	217	40	19	5
07:00	409	315	61	31	2
08:00	544	448	71	23	2
09:00	593	495	74	22	2
10:00	640	551	65	20	4
11:00	698	598	86	13	1
12:00	662	569	76	14	3
13:00	592	488	90	12	2
14:00	548	459	72	14	3
15:00	562	491	61	9	1
16:00	494	424	62	5	3
17:00	475	414	49	9	3
18:00	456	397	52	3	4
19:00	302	260	37	4	1
20:00	228	199	24	5	0
21:00	127	97	25	5	0
22:00	107	80	19	8	0
23:00	79	64	6	9	0
Total					
12H(7-19)	6673	5649	819	175	30
16H(6-22)	7611	6422	945	208	36
18H(6-24)	7797	6566	970	225	36
24H(0-24)	8377	6927	1062	343	45
AM Peak	11:00	11:00	11:00	07:00	06:00
	698	598	86	31	5
PM Peak	12:00	12:00	13:00	12:00	18:00
	662	569	90	14	4

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	143	107	16	19	1
01:00	117	87	11	19	0
02:00	139	101	17	20	1
03:00	142	87	22	31	2
04:00	185	115	32	36	2
05:00	390	309	50	26	5
06:00	568	475	63	23	7
07:00	757	612	108	35	2
08:00	999	847	121	27	4
09:00	1208	1044	124	37	3
10:00	1283	1134	115	27	7
11:00	1332	1161	137	33	1
12:00	1310	1150	127	29	4
13:00	1187	1027	130	28	2
14:00	1096	964	110	18	4
15:00	1118	991	110	16	1
16:00	1032	918	99	12	3
17:00	1016	907	90	14	5
18:00	968	879	76	9	4
19:00	610	545	59	5	1
20:00	508	456	42	10	0
21:00	377	326	43	8	0
22:00	243	202	28	12	1
23:00	195	169	12	13	1
Total					
12H(7-19)	13306	11634	1347	285	40
16H(6-22)	15369	13436	1554	331	48
18H(6-24)	15807	13807	1594	356	50
24H(0-24)	16923	14613	1742	507	61
AM Peak	11:00	11:00	11:00	09:00	06:00
	1332	1161	137	37	7
PM Peak	12:00	12:00	13:00	12:00	17:00
	1310	1150	130	29	5

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

27/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	72	65	3	4	0
01:00	50	42	5	3	0
02:00	0	0	0	0	0
03:00	36	27	4	4	1
04:00	39	32	2	5	0
05:00	83	72	9	2	0
06:00	136	122	14	0	0
07:00	173	153	18	1	1
08:00	236	211	22	3	0
09:00	419	386	28	5	0
10:00	536	499	36	1	0
11:00	629	591	34	4	0
12:00	686	629	50	5	2
13:00	617	572	40	3	2
14:00	588	546	32	8	2
15:00	558	525	27	5	1
16:00	625	589	31	5	0
17:00	589	549	37	3	0
18:00	589	553	29	6	1
19:00	437	411	22	4	0
20:00	356	335	20	1	0
21:00	269	243	22	4	0
22:00	123	110	8	4	1
23:00	84	79	0	4	1
Total 12H(7-19)	6245	5803	384	49	9
16H(6-22)	7443	6914	462	58	9
18H(6-24)	7650	7103	470	66	11
24H(0-24)	7930	7341	493	84	12
AM Peak	11:00	11:00	10:00	04:00	03:00
	629	591	36	5	1
PM Peak	12:00	12:00	12:00	14:00	12:00
	686	629	50	8	2

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	54	32	15	7	0
01:00	55	39	5	10	1
02:00	0	0	0	0	0
03:00	58	36	5	17	0
04:00	91	64	5	20	2
05:00	132	94	24	14	0
06:00	145	101	29	14	1
07:00	217	168	34	15	0
08:00	327	251	60	14	2
09:00	508	424	63	21	0
10:00	587	504	55	26	2
11:00	756	664	68	22	2
12:00	680	615	47	16	2
13:00	642	561	65	15	1
14:00	591	525	55	10	1
15:00	597	525	62	7	3
16:00	658	607	41	6	4
17:00	506	453	47	5	1
18:00	487	422	53	9	3
19:00	440	362	66	9	3
20:00	302	262	30	7	3
21:00	194	168	17	9	0
22:00	98	77	12	9	0
23:00	87	64	13	9	1
Total 12H(7-19)	6556	5719	650	166	21
16H(6-22)	7637	6612	792	205	28
18H(6-24)	7822	6753	817	223	29
24H(0-24)	8212	7018	871	291	32
AM Peak	11:00	11:00	11:00	10:00	04:00
	756	664	68	26	2
PM Peak	12:00	12:00	19:00	12:00	16:00
	680	615	66	16	4

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	126	97	18	11	0
01:00	105	81	10	13	1
02:00	0	0	0	0	0
03:00	94	63	9	21	1
04:00	130	96	7	25	2
05:00	215	166	33	16	0
06:00	281	223	43	14	1
07:00	390	321	52	16	1
08:00	563	462	82	17	2
09:00	927	810	91	26	0
10:00	1123	1003	91	27	2
11:00	1385	1255	102	26	2
12:00	1366	1244	97	21	4
13:00	1259	1133	105	18	3
14:00	1179	1071	87	18	3
15:00	1155	1050	89	12	4
16:00	1283	1196	72	11	4
17:00	1095	1002	84	8	1
18:00	1076	975	82	15	4
19:00	877	773	88	13	3
20:00	658	597	50	8	3
21:00	463	411	39	13	0
22:00	221	187	20	13	1
23:00	171	143	13	13	2
Total 12H(7-19)	12801	11522	1034	215	30
16H(6-22)	15080	13526	1254	263	37
18H(6-24)	15472	13856	1287	289	40
24H(0-24)	16142	14359	1364	375	44
AM Peak	11:00	11:00	11:00	10:00	04:00
	1385	1255	102	27	2
PM Peak	12:00	12:00	13:00	12:00	12:00
	1366	1244	105	21	4

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

28/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	77	63	3	11	0
01:00	41	33	3	5	0
02:00	53	41	8	4	0
03:00	57	47	6	4	0
04:00	113	100	8	5	0
05:00	299	269	22	5	3
06:00	723	658	56	7	2
07:00	1160	1065	89	6	0
08:00	1099	999	91	7	2
09:00	822	704	96	19	3
10:00	802	658	109	31	4
11:00	776	637	99	31	9
12:00	741	598	92	49	2
13:00	621	499	69	46	7
14:00	714	582	77	50	5
15:00	640	539	76	23	2
16:00	769	669	74	22	4
17:00	689	599	78	11	1
18:00	565	514	35	15	1
19:00	328	298	26	3	1
20:00	238	221	15	2	0
21:00	210	187	19	4	0
22:00	171	160	5	4	2
23:00	125	118	5	2	0
Total 12H(7-19)	9398	8063	985	310	40
16H(6-22)	10897	9427	1101	326	43
18H(6-24)	11193	9705	1111	332	45
24H(0-24)	11833	10258	1161	366	48
AM Peak	07:00	07:00	10:00	10:00	11:00
	1160	1065	109	31	9
PM Peak	16:00	16:00	12:00	14:00	13:00
	769	669	92	50	7

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	50	33	4	13	0
01:00	39	21	7	10	1
02:00	65	25	9	31	0
03:00	136	83	21	31	1
04:00	192	128	23	36	5
05:00	413	330	44	33	6
06:00	534	401	83	43	7
07:00	779	633	106	32	8
08:00	744	601	101	37	5
09:00	646	490	102	51	3
10:00	681	522	103	51	5
11:00	786	607	121	50	8
12:00	658	492	112	38	16
13:00	762	564	134	50	14
14:00	644	465	133	39	7
15:00	764	566	148	36	14
16:00	792	608	147	29	8
17:00	877	710	125	35	7
18:00	562	455	76	24	7
19:00	360	298	45	15	2
20:00	249	213	27	9	0
21:00	143	110	24	9	0
22:00	96	66	16	13	1
23:00	79	60	6	12	1
Total 12H(7-19)	8695	6713	1408	472	102
16H(6-22)	9981	7735	1587	548	111
18H(6-24)	10156	7861	1609	573	113
24H(0-24)	11051	8481	1717	727	126
AM Peak	11:00	07:00	11:00	09:00	07:00
	786	633	121	51	8
PM Peak	17:00	17:00	15:00	13:00	12:00
	877	710	148	50	16

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	127	96	7	24	0
01:00	80	54	10	15	1
02:00	118	66	17	35	0
03:00	193	130	27	35	1
04:00	305	228	31	41	5
05:00	712	599	66	38	9
06:00	1257	1059	139	50	9
07:00	1939	1698	195	38	8
08:00	1843	1600	192	44	7
09:00	1468	1194	198	70	6
10:00	1483	1180	212	82	9
11:00	1562	1244	220	81	17
12:00	1399	1090	204	87	18
13:00	1383	1063	203	96	21
14:00	1358	1047	210	89	12
15:00	1404	1105	224	59	16
16:00	1561	1277	221	51	12
17:00	1566	1309	203	46	8
18:00	1127	969	111	39	8
19:00	688	596	71	18	3
20:00	487	434	42	11	0
21:00	353	297	43	13	0
22:00	267	226	21	17	3
23:00	204	178	11	14	1
Total 12H(7-19)	18093	14776	2393	782	142
16H(6-22)	20878	17162	2688	874	154
18H(6-24)	21349	17566	2720	905	158
24H(0-24)	22884	18739	2878	1093	174
AM Peak	07:00	07:00	11:00	10:00	11:00
	1939	1698	220	82	17
PM Peak	17:00	17:00	15:00	13:00	13:00
	1566	1309	224	96	21

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

29/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	65	62	2	1	0
01:00	54	49	4	1	0
02:00	86	79	3	4	0
03:00	87	79	8	0	0
04:00	161	144	12	5	0
05:00	305	277	21	6	1
06:00	719	664	42	11	2
07:00	1235	1132	88	11	4
08:00	997	898	85	11	3
09:00	892	790	88	11	3
10:00	771	667	84	15	5
11:00	696	606	75	13	2
12:00	694	615	59	20	0
13:00	681	604	60	15	2
14:00	661	565	65	25	6
15:00	693	604	65	20	4
16:00	756	672	71	9	4
17:00	752	674	68	9	1
18:00	507	457	39	11	0
19:00	354	320	26	7	1
20:00	272	254	18	0	0
21:00	263	245	16	2	0
22:00	194	176	12	6	0
23:00	134	129	4	1	0
Total					
12H(7-19)	9335	8284	847	170	34
16H(6-22)	10943	9767	949	190	37
18H(6-24)	11271	10072	965	197	37
24H(0-24)	12029	10762	1015	214	38
AM Peak	07:00	07:00	07:00	10:00	10:00
	1235	1132	88	15	5
PM Peak	16:00	17:00	16:00	14:00	14:00
	756	674	71	25	6

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	63	41	9	11	2
01:00	64	39	7	18	0
02:00	70	45	5	19	1
03:00	121	79	16	24	2
04:00	210	152	23	33	2
05:00	383	303	46	32	2
06:00	516	412	79	23	2
07:00	746	619	101	18	8
08:00	758	627	102	24	5
09:00	623	493	91	34	5
10:00	618	489	80	40	9
11:00	654	493	103	47	11
12:00	771	613	114	35	9
13:00	822	631	109	68	14
14:00	710	524	129	47	10
15:00	785	606	138	36	5
16:00	839	653	149	24	13
17:00	782	653	98	26	5
18:00	517	437	60	16	4
19:00	355	296	38	18	3
20:00	258	224	22	11	1
21:00	184	153	22	8	1
22:00	120	90	18	11	1
23:00	86	61	8	16	1
Total					
12H(7-19)	8625	6838	1274	415	98
16H(6-22)	9938	7923	1435	475	105
18H(6-24)	10144	8074	1461	502	107
24H(0-24)	11055	8733	1567	639	116
AM Peak	08:00	08:00	11:00	11:00	11:00
	758	627	103	47	11
PM Peak	16:00	16:00	16:00	13:00	13:00
	839	653	149	68	14

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	128	103	11	12	2
01:00	118	88	11	19	0
02:00	156	124	8	23	1
03:00	208	158	24	24	2
04:00	371	296	35	38	2
05:00	688	580	67	38	3
06:00	1235	1076	121	34	4
07:00	1981	1751	189	29	12
08:00	1755	1525	187	35	8
09:00	1515	1283	179	45	8
10:00	1389	1156	164	55	14
11:00	1350	1099	178	60	13
12:00	1465	1228	173	55	9
13:00	1503	1235	169	83	16
14:00	1371	1089	194	72	16
15:00	1478	1210	203	56	9
16:00	1595	1325	220	33	17
17:00	1534	1327	166	35	6
18:00	1024	894	99	27	4
19:00	709	616	64	25	4
20:00	530	478	40	11	1
21:00	447	398	38	10	1
22:00	314	266	30	17	1
23:00	220	190	12	17	1
Total					
12H(7-19)	17960	15122	2121	585	132
16H(6-22)	20881	17690	2384	665	142
18H(6-24)	21415	18146	2426	699	144
24H(0-24)	23084	19495	2582	853	154
AM Peak	07:00	07:00	07:00	11:00	10:00
	1981	1751	189	60	14
PM Peak	16:00	17:00	16:00	13:00	16:00
	1595	1327	220	83	17

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

30/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	115	106	4	5	0
01:00	74	66	6	2	0
02:00	76	70	3	3	0
03:00	112	106	4	2	0
04:00	166	146	16	4	0
05:00	357	336	13	5	3
06:00	623	572	45	5	1
07:00	1056	964	79	8	5
08:00	942	822	98	16	6
09:00	856	766	80	9	1
10:00	768	672	80	12	4
11:00	751	660	65	23	3
12:00	771	716	43	10	2
13:00	699	636	50	11	2
14:00	785	720	49	13	3
15:00	716	667	41	6	2
16:00	817	764	46	7	0
17:00	740	692	45	2	1
18:00	588	548	32	7	1
19:00	394	367	25	2	0
20:00	276	260	15	0	1
21:00	253	229	21	2	1
22:00	172	162	8	2	0
23:00	140	130	5	4	1
Total 12H(7-19)	9489	8627	708	124	30
16H(6-22)	11035	10055	814	133	33
18H(6-24)	11347	10347	827	139	34
24H(0-24)	12247	11177	873	160	37
AM Peak	07:00	07:00	08:00	11:00	08:00
	1056	**964**	**98**	**23**	**6**
PM Peak	16:00	16:00	13:00	14:00	14:00
	817	**764**	**50**	**13**	**3**

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	78	60	10	7	1
01:00	96	71	5	17	3
02:00	107	83	10	12	2
03:00	162	116	27	17	2
04:00	289	239	29	19	2
05:00	355	291	29	28	7
06:00	580	455	98	26	1
07:00	802	662	96	33	11
08:00	726	603	96	20	7
09:00	662	525	97	31	9
10:00	636	483	99	44	10
11:00	726	568	102	48	8
12:00	715	564	99	43	9
13:00	803	621	135	38	9
14:00	809	646	128	28	7
15:00	744	568	143	21	12
16:00	829	660	125	34	10
17:00	862	736	103	21	2
18:00	513	424	68	16	5
19:00	300	248	38	11	3
20:00	227	182	26	19	0
21:00	153	129	17	5	2
22:00	112	88	13	8	3
23:00	66	44	9	13	0
Total 12H(7-19)	8827	7060	1291	377	99
16H(6-22)	10087	8074	1470	438	105
18H(6-24)	10265	8206	1492	459	108
24H(0-24)	11352	9066	1602	559	125
AM Peak	07:00	07:00	11:00	11:00	07:00
	802	**662**	**102**	**48**	**11**
PM Peak	17:00	17:00	15:00	12:00	15:00
	862	**736**	**143**	**43**	**12**

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	193	166	14	12	1
01:00	170	137	11	19	3
02:00	183	153	13	15	2
03:00	274	222	31	19	2
04:00	455	385	45	23	2
05:00	712	627	42	33	10
06:00	1203	1027	143	31	2
07:00	1858	1626	175	41	16
08:00	1668	1425	194	36	13
09:00	1518	1291	177	40	10
10:00	1404	1155	179	56	14
11:00	1477	1228	167	71	11
12:00	1486	1280	142	53	11
13:00	1502	1257	185	49	11
14:00	1594	1366	177	41	10
15:00	1460	1235	184	27	14
16:00	1646	1424	171	41	10
17:00	1602	1428	148	23	3
18:00	1101	972	100	23	6
19:00	694	615	63	13	3
20:00	503	442	41	19	1
21:00	406	358	38	7	3
22:00	284	250	21	10	3
23:00	206	174	14	17	1
Total 12H(7-19)	18316	15687	1999	501	129
16H(6-22)	21122	18129	2284	571	138
18H(6-24)	21612	18553	2319	598	142
24H(0-24)	23599	20243	2475	719	162
AM Peak	07:00	07:00	08:00	11:00	07:00
	1858	**1626**	**194**	**71**	**16**
PM Peak	16:00	17:00	13:00	12:00	15:00
	1646	**1428**	**185**	**53**	**14**

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

24/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	108	53.0	47.9	4.9	0	0	0	2	7	4	69	20	5	1	0	0
01:00	84	53.3	49.9	3.4	0	0	0	0	0	2	45	34	2	1	0	0
02:00	89	51.0	48.1	2.9	0	0	0	0	0	7	68	11	3	0	0	0
03:00	79	55.0	50.3	4.5	0	0	0	0	1	4	37	25	11	1	0	0
04:00	166	52.7	49.0	3.6	0	0	0	0	1	9	105	45	4	2	0	0
05:00	300	50.8	47.8	2.9	0	0	0	0	1	26	234	36	2	0	1	0
06:00	770	49.7	45.6	4.0	0	0	0	12	43	228	430	52	4	1	0	0
07:00	1094	48.6	44.0	4.4	1	0	20	8	57	568	396	44	0	0	0	0
08:00	925	47.6	41.5	5.8	0	0	37	91	151	387	242	14	3	0	0	0
09:00	783	48.5	42.5	5.8	0	0	13	63	137	302	249	14	1	2	0	2
10:00	601	48.3	43.3	4.8	0	0	3	42	64	258	221	9	3	1	0	0
11:00	687	48.3	42.9	5.2	0	0	10	50	98	259	253	17	0	0	0	0
12:00	599	49.2	44.1	4.9	0	0	2	20	88	208	239	37	4	1	0	0
13:00	572	49.4	42.4	6.7	0	0	37	36	57	242	162	32	3	3	0	0
14:00	800	48.0	40.6	7.2	0	9	62	82	118	321	178	29	1	0	0	0
15:00	728	48.7	43.7	4.9	0	0	6	39	65	322	261	31	3	1	0	0
16:00	821	48.7	43.6	4.9	0	0	4	45	113	304	319	32	4	0	0	0
17:00	719	50.0	46.0	3.9	0	1	0	0	35	214	396	68	4	1	0	0
18:00	645	49.6	44.7	4.7	0	0	3	17	54	235	302	29	2	1	2	0
19:00	396	49.6	45.4	4.1	0	0	2	5	20	137	200	31	1	0	0	0
20:00	298	51.2	46.9	4.1	0	0	0	0	7	85	153	43	9	1	0	0
21:00	255	51.1	47.7	3.3	0	0	0	0	1	40	169	41	3	1	0	0
22:00	193	51.5	47.9	3.4	0	0	0	0	1	26	130	30	5	1	0	0
23:00	151	53.2	48.9	4.2	0	0	0	0	1	25	64	57	2	2	0	0
Total 2H(10-12)	1288	48.3	43.1	5.0	0	0	13	92	162	517	474	26	3	1	0	0
2H(14-16)	1528	48.7	42.1	6.4	0	9	68	121	183	643	439	60	4	1	0	0
12H(7-19)	8974	48.9	43.2	5.5	1	10	197	493	1037	3620	3218	356	28	10	2	2
24H(0-24)	11863	49.8	44.2	5.5	1	10	199	512	1120	4213	4922	781	79	21	3	2
AM Peak	07:00	03:00	03:00	08:00	07:00	00:00	08:00	08:00	08:00	07:00	06:00	06:00	03:00	04:00	05:00	09:00
	1094	55.0	50.3	5.8	1	0	37	91	151	568	430	52	11	2	1	2
PM Peak	16:00	23:00	23:00	14:00	12:00	14:00	14:00	14:00	14:00	15:00	17:00	17:00	20:00	13:00	18:00	12:00
	821	53.2	48.9	7.2	0	9	62	82	118	322	396	68	9	3	2	0

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	67	57.7	53.2	4.3	0	0	0	0	0	2	9	38	15	3	0	0
01:00	75	57.9	53.0	4.7	0	0	0	0	0	1	16	37	19	1	1	0
02:00	86	60.3	53.5	6.6	0	0	0	0	1	4	17	33	26	3	1	1
03:00	103	56.8	53.0	3.7	0	0	0	0	0	2	11	69	18	3	0	0
04:00	197	58.4	52.8	5.5	0	0	0	0	0	10	43	95	37	9	3	0
05:00	388	58.0	48.1	9.6	0	8	20	10	16	29	100	155	40	7	3	0
06:00	490	55.5	48.4	6.8	1	1	5	30	3	43	195	166	40	6	0	0
07:00	694	54.5	48.2	6.1	0	0	15	13	17	77	317	208	41	5	1	0
08:00	678	53.4	46.0	7.0	0	0	26	29	35	143	266	150	21	8	0	0
09:00	675	52.9	47.2	5.5	0	1	5	20	21	113	338	156	18	2	1	0
10:00	596	53.8	46.8	6.8	0	3	14	33	8	93	268	158	18	0	0	1
11:00	646	52.4	45.8	6.4	0	5	13	28	27	133	307	125	7	1	0	0
12:00	639	53.8	46.0	7.6	0	6	19	42	16	120	270	140	20	5	0	1
13:00	698	54.0	45.8	7.8	0	12	26	32	23	102	320	162	18	3	0	0
14:00	758	52.8	44.9	7.7	0	4	32	63	57	130	287	165	20	0	0	0
15:00	753	53.5	46.6	6.7	0	5	14	21	42	161	273	213	22	1	1	0
16:00	836	54.1	44.7	9.1	1	11	64	55	54	115	294	212	25	5	0	0
17:00	843	55.3	46.1	8.9	2	22	41	9	40	113	343	241	22	8	1	1
18:00	578	54.1	46.5	7.4	1	7	11	8	43	121	218	135	28	5	1	0
19:00	372	54.7	48.6	5.8	0	2	1	3	13	61	126	142	21	2	1	0
20:00	258	56.5	48.9	7.4	1	1	1	5	10	43	83	74	31	8	1	0
21:00	166	60.0	51.1	8.6	0	0	3	1	6	13	52	57	17	14	0	3
22:00	110	59.0	53.6	5.2	0	0	0	0	0	3	20	51	28	7	1	0
23:00	86	56.7	51.3	5.2	0	0	0	0	1	1	41	25	13	5	0	0
Total 2H(10-12)	1242	53.1	46.3	6.6	0	8	27	61	35	226	575	283	25	1	0	1
2H(14-16)	1511	53.2	45.7	7.2	0	9	46	84	99	291	560	378	42	1	1	0
12H(7-19)	8394	53.9	46.2	7.4	4	76	280	353	383	1421	3501	2065	260	43	5	3
24H(0-24)	10792	54.9	47.0	7.6	6	88	310	402	433	1633	4214	3007	565	111	16	7
AM Peak	07:00	02:00	02:00	05:00	06:00	05:00	08:00	10:00	08:00	08:00	09:00	07:00	07:00	04:00	04:00	02:00
	694	60.3	53.5	9.6	1	8	26	33	35	143	338	208	41	9	3	1
PM Peak	17:00	21:00	22:00	16:00	17:00	17:00	16:00	14:00	14:00	15:00	17:00	17:00	20:00	21:00	15:00	21:00
	843	60.0	53.6	9.1	2	22	64	63	57	161	343	241	31	14	1	3

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	175	55.5	50.0	5.3	0	0	0	2	7	6	78	58	20	4	0	0
01:00	159	55.8	51.4	4.3	0	0	0	0	0	3	61	71	21	2	1	0
02:00	175	56.6	50.7	5.7	0	0	0	0	1	11	85	44	29	3	1	1
03:00	182	56.3	51.8	4.3	0	0	0	0	1	6	48	94	29	4	0	0
04:00	363	56.3	51.0	5.1	0	0	0	0	1	19	148	140	41	11	3	0
05:00	688	55.6	47.9	7.4	0	8	20	10	17	55	334	191	42	7	4	0
06:00	1260	52.4	46.7	5.4	1	1	5	42	46	271	625	218	44	7	0	0
07:00	1788	51.3	45.6	5.5	1	0	35	21	74	645	713	252	41	5	1	0
08:00	1603	50.4	43.4	6.8	0	0	63	120	186	530	508	164	24	8	0	0
09:00	1458	51.0	44.7	6.1	0	1	18	83	158	415	587	170	19	4	1	2
10:00	1197	51.4	45.0	6.1	0	3	17	75	72	351	489	167	21	1	0	1
11:00	1333	50.5	44.3	6.0	0	5	23	78	125	392	560	142	7	1	0	0
12:00	1238	51.8	45.1	6.5	0	6	21	62	104	328	509	177	24	6	0	1
13:00	1270	52.1	44.3	7.5	0	12	63	68	80	344	482	194	21	6	0	0
14:00	1558	50.7	42.7	7.7	0	13	94	145	175	451	465	194	21	0	0	0
15:00	1481	51.4	45.2	6.0	0	5	20	60	107	483	534	244	25	2	1	0
16:00	1657	51.7	44.1	7.3	1	11	68	100	167	419	613	244	29	5	0	0
17:00	1562	53.4	46.1	7.1	2	23	41	9	75	327	739	309	26	9	1	1
18:00	1223	51.9	45.5	6.2	1	7	14	25	97	356	520	164	30	6	3	0
19:00	768	52.4	46.9	5.3	0	2	3	8	33	198	326	173	22	2	1	0
20:00	556	54.0	47.8	5.9	1	1	1	5	17	128	236	117	40	9	1	0
21:00	421	55.4	49.0	6.2	0	0	3	1	7	53	221	98	20	15	0	3
22:00	303	55.1	50.0	5.0	0	0	0	0	1	29	150	81	33	8	1	0
23:00	237	54.7	49.7	4.8	0	0	0	0	2	26	105	82	15	7	0	0
Total 2H(10-12)	2530	50.9	44.6	6.1	0	8	40	153	197	743	1049	309	28	2	0	1
2H(14-16)	3039	51.2	43.9	7.1	0	18	114	205	282	934	999	438	46	2	1	0
12H(7-19)	17368	51.6	44.6	6.7	5	86	477	846	1420	5041	6719	2421	288	53	7	5
24H(0-24)	22655	52.5	45.5	6.7	7	98	509	914	1553	5846	9136	3788	644	132	19	9
AM Peak	07:00	02:00	03:00	05:00	06:00	05:00	08:00	08:00	08:00	07:00	07:00	07:00	06:00	04:00	05:00	09:00
	1788	56.6	51.8	7.4	1	8	63	120	186	645	713	252	44	11	4	2
PM Peak	16:00	21:00	22:00	14:00	17:00	17:00	14:00	14:00	14:00	15:00	17:00	17:00	20:00	21:00	18:00	21:00
	1657	55.4	50.0	7.7	2	23	94	145	175	483	739	309	40	15	3	3

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

25/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	128	54.4	50.0	4.2	0	0	0	0	2	11	44	65	4	2	0	0
01:00	99	54.2	49.8	4.3	0	0	0	0	0	4	56	34	3	1	1	0
02:00	73	54.3	50.5	3.6	0	0	0	0	0	2	32	34	4	1	0	0
03:00	71	53.0	49.3	3.6	0	0	0	0	1	3	41	22	4	0	0	0
04:00	198	54.7	50.4	4.1	0	0	0	0	1	8	88	80	18	3	0	0
05:00	373	52.3	48.6	3.6	0	0	0	0	2	38	224	96	11	2	0	0
06:00	727	51.2	45.8	5.2	0	0	16	3	55	151	423	64	13	2	0	0
07:00	1016	50.3	43.7	6.4	1	2	24	70	89	345	435	42	3	1	0	4
08:00	812	48.6	43.3	5.1	1	2	11	34	80	371	288	24	1	0	0	0
09:00	709	49.2	44.0	5.1	0	2	10	21	35	349	271	14	0	6	1	0
10:00	741	47.9	43.2	4.5	0	0	3	33	103	348	231	17	6	0	0	0
11:00	689	47.8	42.3	5.3	0	0	16	36	143	279	192	22	1	0	0	0
12:00	703	48.9	42.3	6.3	1	15	16	10	98	344	197	21	1	0	0	0
13:00	755	48.5	41.9	6.3	0	0	40	65	104	284	234	28	0	0	0	0
14:00	847	49.7	42.1	7.4	0	24	34	45	81	350	277	34	2	0	0	0
15:00	827	48.6	43.6	4.8	0	1	16	16	94	343	343	12	2	0	0	0
16:00	758	49.2	44.9	4.2	0	0	0	14	64	288	339	51	1	1	0	0
17:00	714	50.2	45.1	4.9	1	0	6	20	40	240	334	69	4	0	0	0
18:00	634	49.8	45.8	3.8	0	0	0	0	41	198	334	54	7	0	0	0
19:00	451	49.3	44.9	4.2	0	0	0	6	31	210	154	49	0	1	0	0
20:00	309	51.1	46.6	4.4	0	0	0	2	6	96	165	28	8	4	0	0
21:00	230	50.1	46.2	3.7	0	0	0	0	14	57	137	19	3	0	0	0
22:00	199	54.6	49.0	5.4	0	0	0	1	0	29	107	49	7	4	1	1
23:00	115	56.5	50.3	6.0	0	0	0	0	1	6	61	37	3	4	3	0
Total 2H(10-12)	1430	47.9	42.8	4.9	0	0	19	69	246	627	423	39	7	0	0	0
2H(14-16)	1674	49.3	42.8	6.3	0	25	50	61	175	693	620	46	4	0	0	0
12H(7-19)	9205	49.3	43.5	5.6	4	46	176	364	972	3739	3475	388	28	8	1	4
24H(0-24)	12178	50.3	44.4	5.7	4	46	192	376	1085	4354	5007	965	106	32	6	5
AM Peak	07:00	04:00	02:00	07:00	07:00	07:00	07:00	07:00	11:00	08:00	07:00	05:00	04:00	09:00	01:00	07:00
	1016	54.7	50.5	6.4	1	2	24	70	143	371	435	96	18	6	1	4
PM Peak	14:00	23:00	23:00	14:00	12:00	14:00	13:00	13:00	13:00	14:00	15:00	17:00	20:00	20:00	23:00	22:00
	847	56.5	50.3	7.4	1	24	40	65	104	350	343	69	8	4	3	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	70	59.6	52.9	6.4	0	0	0	1	0	3	18	25	17	5	1	0
01:00	61	57.8	53.6	4.0	0	0	0	0	0	0	10	30	19	2	0	0
02:00	85	59.0	53.5	5.3	0	0	0	0	0	4	14	38	24	4	1	0
03:00	111	59.8	54.0	5.6	0	0	0	0	0	4	16	54	25	11	1	0
04:00	183	58.5	53.2	5.1	0	0	0	0	0	3	45	81	41	12	1	0
05:00	350	58.9	51.3	7.4	1	0	8	0	1	25	88	156	53	13	4	1
06:00	491	56.1	50.1	5.8	1	0	4	4	7	31	178	219	35	11	0	1
07:00	675	55.0	47.7	7.0	1	0	30	3	29	67	291	211	35	8	0	0
08:00	656	53.8	46.3	7.2	1	3	21	41	23	85	283	185	13	1	0	0
09:00	657	52.8	45.8	6.8	0	5	7	45	38	133	268	145	13	3	0	0
10:00	700	52.6	44.5	7.9	0	9	38	40	45	129	294	141	4	0	0	0
11:00	785	52.1	45.1	6.8	1	1	15	76	39	172	309	161	11	0	0	0
12:00	858	52.4	44.5	7.7	4	3	38	57	71	165	354	153	11	2	0	0
13:00	799	53.9	46.2	7.4	1	5	44	16	25	112	374	208	11	3	0	0
14:00	844	53.1	45.6	7.2	2	15	16	22	34	215	350	173	15	2	0	0
15:00	804	54.2	47.7	6.3	0	1	14	22	27	141	300	249	43	7	0	0
16:00	890	53.8	48.0	5.6	0	7	4	8	28	115	411	281	34	2	0	0
17:00	759	54.6	47.2	7.2	3	9	10	7	34	122	337	198	32	4	3	0
18:00	537	55.3	48.3	6.8	2	0	13	7	10	71	222	176	23	12	1	0
19:00	328	54.3	48.6	5.4	0	0	0	0	13	66	124	97	21	6	1	0
20:00	282	56.0	50.9	4.9	0	0	0	0	3	17	99	128	27	6	2	0
21:00	156	57.0	51.3	5.5	0	0	0	1	1	11	51	66	16	10	0	0
22:00	108	59.9	52.5	7.1	0	0	2	0	0	2	28	52	15	7	1	1
23:00	89	59.2	53.9	5.1	0	0	0	0	0	4	13	32	37	2	1	0
Total 2H(10-12)	1485	52.4	44.8	7.3	1	10	53	116	84	301	603	302	15	0	0	0
2H(14-16)	1648	53.7	46.6	6.9	2	16	30	44	61	356	650	422	58	9	0	0
12H(7-19)	8964	53.7	46.4	7.1	15	58	250	344	403	1527	3793	2281	245	44	4	0
24H(0-24)	11278	54.8	47.4	7.2	17	58	264	350	428	1697	4477	3259	575	133	17	3
AM Peak	11:00	03:00	03:00	10:00	05:00	10:00	10:00	11:00	10:00	11:00	11:00	06:00	05:00	05:00	05:00	05:00
	785	59.8	54.0	7.9	1	9	38	76	45	172	309	219	53	13	4	1
PM Peak	16:00	22:00	23:00	12:00	12:00	14:00	13:00	12:00	12:00	14:00	16:00	16:00	15:00	18:00	17:00	22:00
	890	59.9	53.9	7.7	4	15	44	57	71	215	411	281	43	12	3	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	198	56.5	51.1	5.3	0	0	0	1	2	14	62	90	21	7	1	0
01:00	160	56.0	51.3	4.6	0	0	0	0	0	4	66	64	22	3	1	0
02:00	158	57.1	52.1	4.9	0	0	0	0	0	6	46	72	28	5	1	0
03:00	182	57.7	52.1	5.4	0	0	0	0	1	7	57	76	29	11	1	0
04:00	381	56.7	51.8	4.8	0	0	0	0	1	11	133	161	59	15	1	0
05:00	723	56.0	49.9	5.9	1	0	8	0	3	63	312	252	64	15	4	1
06:00	1218	53.6	47.5	5.8	1	0	20	7	62	182	601	283	48	13	0	1
07:00	1691	52.5	45.3	6.9	2	2	54	73	118	412	726	253	38	9	0	4
08:00	1468	51.2	44.6	6.3	2	5	32	75	103	456	571	209	14	1	0	0
09:00	1366	51.1	44.8	6.0	0	7	17	66	73	482	539	159	13	9	1	0
10:00	1441	50.5	43.8	6.4	0	9	41	73	148	477	525	158	10	0	0	0
11:00	1474	50.3	43.8	6.3	1	1	31	112	182	451	501	183	12	0	0	0
12:00	1561	51.0	43.5	7.2	5	18	54	67	169	509	551	174	12	2	0	0
13:00	1554	51.6	44.1	7.2	1	5	84	81	129	396	608	236	11	3	0	0
14:00	1691	51.6	43.8	7.5	2	39	50	67	115	565	627	207	17	2	0	0
15:00	1631	51.8	45.6	5.9	0	2	30	38	121	484	643	261	45	7	0	0
16:00	1648	52.0	46.6	5.2	0	7	4	22	92	403	750	332	35	3	0	0
17:00	1473	52.7	46.2	6.3	4	9	16	27	74	362	671	267	36	4	3	0
18:00	1171	52.7	47.0	5.5	2	0	13	7	51	269	556	230	30	12	1	0
19:00	779	51.8	46.4	5.1	0	0	0	6	44	276	278	146	21	7	1	0
20:00	591	53.9	48.6	5.1	0	0	0	2	9	113	264	156	35	10	2	0
21:00	386	53.6	48.2	5.2	0	0	0	1	15	68	188	85	19	10	0	0
22:00	307	56.7	50.2	6.3	0	0	2	1	0	31	135	101	22	11	2	2
23:00	204	58.0	51.9	5.9	0	0	0	0	1	10	74	69	40	6	4	0
Total 2H(10-12)	2915	50.4	43.8	6.3	1	10	72	185	330	928	1026	341	22	0	0	0
2H(14-16)	3322	51.8	44.7	6.8	2	41	80	105	236	1049	1270	468	62	9	0	0
12H(7-19)	18169	51.7	44.9	6.6	19	104	426	708	1375	5266	7268	2669	273	52	5	4
24H(0-24)	23456	52.7	45.8	6.6	21	104	456	726	1513	6051	9484	4224	681	165	23	8
AM Peak	07:00	03:00	03:00	07:00	07:00	10:00	07:00	11:00	11:00	09:00	07:00	06:00	05:00	04:00	05:00	07:00
	1691	57.7	52.1	6.9	2	9	54	112	182	482	726	283	64	15	4	4
PM Peak	14:00	23:00	23:00	14:00	12:00	14:00	13:00	13:00	12:00	14:00	16:00	16:00	15:00	18:00	23:00	22:00
	1691	58.0	51.9	7.5	5	39	84	81	169	565	750	332	45	12	4	2

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

26/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	84	56.2	50.6	5.4	0	0	0	0	0	4	36	40	1	2	0	1
01:00	74	53.5	49.5	3.9	0	0	0	0	0	4	43	24	1	2	0	0
02:00	70	59.8	53.0	6.6	0	0	0	0	0	3	17	37	6	4	3	0
03:00	64	55.0	49.1	5.7	0	0	0	0	3	6	33	17	1	4	0	0
04:00	84	55.5	50.4	4.9	0	0	0	0	1	9	28	35	9	2	0	0
05:00	160	52.5	48.5	3.8	0	0	0	0	0	24	87	43	5	1	0	0
06:00	287	52.4	48.2	4.1	0	0	0	0	0	51	165	58	11	1	1	0
07:00	348	51.1	45.4	5.4	0	0	1	13	24	124	128	48	7	3	0	0
08:00	455	49.4	45.6	3.7	0	0	0	0	12	196	209	34	2	2	0	0
09:00	615	48.7	43.5	5.0	0	0	10	22	78	258	217	27	3	0	0	0
10:00	643	48.9	44.0	4.7	0	0	9	18	57	275	251	30	3	0	0	0
11:00	634	49.4	43.4	5.8	0	2	23	11	78	255	228	33	3	1	0	0
12:00	648	49.3	44.6	4.5	0	0	6	2	65	261	269	40	3	2	0	0
13:00	595	50.8	44.7	5.9	0	0	20	16	45	181	272	56	1	4	0	0
14:00	548	49.4	44.8	4.4	0	0	2	14	43	201	249	35	4	0	0	0
15:00	556	50.1	44.6	5.3	0	0	15	9	54	168	266	41	3	0	0	0
16:00	538	49.9	45.5	4.3	0	0	2	8	30	179	275	38	5	1	0	0
17:00	541	50.2	46.0	4.1	0	0	0	0	31	177	273	53	5	1	1	0
18:00	512	50.3	46.0	4.2	0	0	0	0	41	137	280	49	3	1	1	0
19:00	308	50.9	46.9	3.8	0	0	0	1	2	83	175	43	3	0	1	0
20:00	280	52.4	47.6	4.6	0	0	0	0	3	67	151	51	1	6	1	0
21:00	250	52.0	47.5	4.3	0	0	0	1	12	36	145	52	3	0	1	0
22:00	136	53.5	48.1	5.3	0	0	0	3	0	28	68	28	5	4	0	0
23:00	116	55.5	49.7	5.6	0	0	0	0	0	16	57	27	13	1	2	0
Total																
2H(10-12)	1277	49.2	43.7	5.3	0	2	32	29	135	530	479	63	6	1	0	0
2H(14-16)	1104	49.8	44.7	4.9	0	0	17	23	97	369	515	76	7	0	0	0
12H(7-19)	6633	49.9	44.8	4.9	0	2	88	113	558	2412	2917	484	42	15	2	0
24H(0-24)	8546	50.9	45.6	5.1	0	2	88	118	579	2743	3922	939	101	42	11	1
AM Peak	10:00	02:00	02:00	02:00	00:00	11:00	11:00	09:00	09:00	10:00	10:00	06:00	06:00	02:00	02:00	00:00
	643	**59.8**	**53.0**	**6.6**	**0**	**2**	**23**	**22**	**78**	**275**	**251**	**58**	**11**	**4**	**3**	**1**
PM Peak	12:00	23:00	23:00	13:00	12:00	12:00	13:00	13:00	12:00	12:00	18:00	13:00	23:00	20:00	23:00	12:00
	648	**55.5**	**49.7**	**5.9**	**0**	**0**	**20**	**16**	**65**	**261**	**280**	**56**	**13**	**6**	**2**	**0**

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	59	60.8	53.9	6.7	0	0	0	0	0	0	17	26	7	7	2	0
01:00	43	59.8	53.6	6.0	0	0	0	0	0	2	9	16	13	2	1	0
02:00	69	59.2	54.1	4.9	0	0	0	0	0	2	7	33	24	2	1	0
03:00	78	59.7	54.0	5.5	0	0	0	0	1	0	10	44	17	4	2	0
04:00	101	62.4	53.7	8.4	0	0	0	0	0	9	19	47	14	5	5	2
05:00	230	60.0	52.4	7.4	0	0	3	1	4	17	38	109	38	14	6	0
06:00	281	58.5	51.4	6.8	0	0	0	9	5	18	59	134	45	7	2	2
07:00	409	56.0	50.8	5.0	0	0	0	6	1	22	144	181	44	10	1	0
08:00	544	54.5	49.4	4.8	0	0	3	2	2	56	250	183	41	6	1	0
09:00	593	54.2	47.7	6.4	0	2	5	22	22	87	254	166	28	5	2	0
10:00	640	53.5	46.2	7.1	0	1	25	39	21	88	297	148	18	3	0	0
11:00	698	52.6	48.1	4.4	0	1	2	1	21	99	353	203	18	0	0	0
12:00	662	52.7	47.0	5.5	0	2	3	8	27	161	297	142	16	5	0	1
13:00	592	54.2	49.3	4.7	0	0	1	2	5	71	260	214	28	10	1	0
14:00	548	55.5	49.7	5.6	0	1	1	12	9	40	210	226	35	14	0	0
15:00	562	54.7	48.3	6.2	0	6	2	7	15	76	234	185	31	6	0	0
16:00	494	55.7	48.6	6.9	0	6	2	13	9	61	194	162	36	11	0	0
17:00	475	54.8	49.3	5.3	0	1	3	1	6	50	216	155	35	7	1	0
18:00	456	53.8	48.8	4.8	0	0	3	1	7	55	216	149	22	2	1	0
19:00	302	54.4	48.3	5.9	0	1	1	2	10	61	112	90	21	3	1	0
20:00	228	57.8	49.6	7.9	0	4	1	3	7	16	84	80	23	7	3	0
21:00	127	59.6	53.1	6.3	0	0	0	0	2	4	33	52	22	12	2	0
22:00	107	60.1	52.5	7.3	0	1	0	0	0	8	22	50	19	3	4	0
23:00	79	57.1	48.9	7.9	0	1	0	1	3	10	36	18	6	2	2	0
Total																
2H(10-12)	1338	53.3	47.2	5.9	0	2	27	40	42	187	650	351	36	3	0	0
2H(14-16)	1110	55.1	49.0	5.9	0	7	3	19	24	116	444	411	66	20	0	0
12H(7-19)	6673	54.4	48.5	5.8	0	20	50	114	145	866	2925	2114	352	79	7	1
24H(0-24)	8377	55.5	49.0	6.2	0	27	55	130	177	1013	3371	2813	601	147	38	5
AM Peak	11:00	04:00	02:00	04:00	00:00	09:00	10:00	10:00	09:00	11:00	11:00	11:00	06:00	05:00	05:00	04:00
	698	**62.4**	**54.1**	**8.4**	**0**	**2**	**25**	**39**	**22**	**99**	**353**	**203**	**45**	**14**	**6**	**2**
PM Peak	12:00	22:00	21:00	20:00	12:00	15:00	12:00	16:00	12:00	12:00	12:00	14:00	16:00	14:00	22:00	12:00
	662	**60.1**	**53.1**	**7.9**	**0**	**6**	**3**	**13**	**27**	**161**	**297**	**226**	**36**	**14**	**4**	**1**

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	143	58.3	52.0	6.1	0	0	0	0	0	4	53	66	8	9	2	1
01:00	117	56.4	51.0	5.2	0	0	0	0	0	6	52	40	14	4	1	0
02:00	139	59.6	53.5	5.8	0	0	0	0	0	5	24	70	30	6	4	0
03:00	142	58.1	51.8	6.1	0	0	0	0	4	6	43	61	18	8	2	0
04:00	185	59.7	52.2	7.2	0	0	0	0	1	18	47	82	23	7	5	2
05:00	390	57.5	50.8	6.4	0	0	3	1	4	41	125	152	43	15	6	0
06:00	568	55.8	49.8	5.8	0	0	0	9	5	69	224	192	56	8	3	2
07:00	757	54.4	48.3	5.9	0	0	1	19	25	146	272	229	51	13	1	0
08:00	999	52.6	47.7	4.8	0	0	3	2	14	252	459	217	43	8	1	0
09:00	1208	51.8	45.5	6.1	0	2	15	44	100	345	471	193	31	5	2	0
10:00	1283	51.4	45.1	6.1	0	1	34	57	78	363	548	178	21	3	0	0
11:00	1332	51.7	45.9	5.6	0	3	25	12	99	354	581	236	21	1	0	0
12:00	1310	51.2	45.8	5.2	0	2	9	10	92	422	566	182	19	7	0	1
13:00	1187	53.1	47.0	5.8	0	0	21	18	50	252	532	270	29	14	1	0
14:00	1096	53.0	47.2	5.6	0	1	3	26	52	241	459	261	39	14	0	0
15:00	1118	52.8	46.5	6.1	0	6	17	16	69	244	500	226	34	6	0	0
16:00	1032	53.0	46.9	5.9	0	6	4	21	39	240	469	200	41	12	0	0
17:00	1016	52.7	47.5	5.0	0	1	3	1	37	227	489	208	40	8	2	0
18:00	968	52.2	47.3	4.7	0	0	3	1	48	192	496	198	25	3	2	0
19:00	610	52.8	47.6	5.0	0	1	1	3	12	144	287	133	24	3	2	0
20:00	508	55.1	48.5	6.4	0	4	1	3	10	83	235	131	24	13	4	0
21:00	377	55.3	49.4	5.7	0	0	0	1	14	40	178	104	25	12	3	0
22:00	243	56.9	50.0	6.6	0	1	0	3	0	36	90	78	24	7	4	0
23:00	195	56.3	49.4	6.6	0	1	0	1	3	26	93	45	19	3	4	0
Total																
2H(10-12)	2615	51.6	45.5	5.9	0	4	59	69	177	717	1129	414	42	4	0	0
2H(14-16)	2214	52.9	46.9	5.9	0	7	20	42	121	485	959	487	73	20	0	0
12H(7-19)	13306	52.5	46.6	5.7	0	22	138	227	703	3278	5842	2598	394	94	9	1
24H(0-24)	16923	53.4	47.3	5.9	0	29	143	248	756	3756	7293	3752	702	189	49	6
AM Peak	11:00	04:00	02:00	04:00	00:00	11:00	10:00	10:00	09:00	10:00	11:00	11:00	06:00	05:00	05:00	04:00
	1332	**59.7**	**53.5**	**7.2**	**0**	**3**	**34**	**57**	**100**	**363**	**581**	**236**	**56**	**15**	**6**	**2**
PM Peak	12:00	22:00	22:00	22:00	12:00	15:00	13:00	14:00	12:00	12:00	12:00	13:00	16:00	13:00	20:00	12:00
	1310	**56.9**	**50.0**	**6.6**	**0**	**6**	**21**	**26**	**92**	**422**	**566**	**270**	**41**	**14**	**4**	**1**

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

27/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	72	54.0	48.2	5.6	0	0	0	0	4	14	32	15	5	2	0	0
01:00	50	56.4	49.9	6.3	0	0	0	0	1	7	21	16	2	2	1	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	36	55.7	48.4	7.0	0	0	0	2	0	6	18	6	1	3	0	0
04:00	39	54.8	49.6	5.1	0	0	0	0	0	4	22	9	2	2	0	0
05:00	83	56.0	50.8	5.0	0	0	0	0	0	7	33	28	12	3	0	0
06:00	136	54.8	48.8	5.8	0	0	0	0	4	15	85	18	8	4	2	0
07:00	173	53.0	48.7	4.1	0	0	0	0	2	20	101	39	9	2	0	0
08:00	236	52.1	47.8	4.1	0	0	0	1	3	42	135	46	7	2	0	0
09:00	419	49.8	45.7	3.9	0	0	1	5	17	132	231	30	3	0	0	0
10:00	536	49.5	45.6	3.8	0	0	0	1	32	185	277	37	3	1	0	0
11:00	629	49.1	45.1	3.8	0	0	0	1	43	264	271	45	5	0	0	0
12:00	686	48.6	44.9	3.6	0	0	0	8	36	298	310	34	0	0	0	0
13:00	617	48.6	44.8	3.7	0	0	0	1	39	292	254	27	2	2	0	0
14:00	588	49.5	45.0	4.4	0	0	0	15	50	196	284	39	3	1	0	0
15:00	558	50.4	46.6	3.7	0	0	0	1	13	158	311	71	2	2	0	0
16:00	625	49.7	45.4	4.1	0	0	3	5	30	231	306	46	2	2	0	0
17:00	589	50.1	45.8	4.1	0	0	0	1	29	205	301	46	4	1	2	0
18:00	589	50.1	45.9	4.1	0	0	0	2	52	138	338	55	3	1	0	0
19:00	437	49.9	46.0	3.8	0	0	0	1	15	148	227	41	4	1	0	0
20:00	356	50.2	46.5	3.5	0	0	0	1	4	105	204	37	5	0	0	0
21:00	269	53.8	48.1	5.4	0	0	0	0	0	70	130	54	4	10	0	1
22:00	123	54.1	48.8	5.2	0	0	0	0	1	20	69	22	5	6	0	0
23:00	84	53.9	48.7	5.0	0	0	0	0	0	7	58	16	2	0	0	1
Total 2H(10-12)	1165	49.3	45.3	3.8	0	0	0	2	75	449	548	82	8	1	0	0
2H(14-16)	1146	50.0	45.8	4.1	0	0	0	16	63	354	595	110	5	3	0	0
12H(7-19)	6245	49.8	45.6	4.0	0	0	4	41	346	2161	3119	515	43	14	2	0
24H(0-24)	7930	50.5	46.1	4.3	0	0	4	45	375	2564	4018	777	93	47	5	2
AM Peak	11:00	01:00	05:00	03:00	00:00	00:00	09:00	09:00	11:00	11:00	10:00	08:00	05:00	06:00	06:00	00:00
	629	56.4	50.8	7.0	0	0	1	5	43	264	277	46	12	4	2	0
PM Peak	12:00	22:00	22:00	21:00	12:00	12:00	16:00	14:00	18:00	12:00	18:00	15:00	20:00	21:00	17:00	21:00
	686	54.1	48.8	5.4	0	0	3	15	52	298	338	71	5	10	2	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	54	60.5	52.4	7.8	0	0	0	2	1	2	10	25	10	3	0	1
01:00	55	60.3	53.5	6.5	0	0	0	0	1	4	8	21	16	4	1	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	58	57.2	52.4	4.7	0	0	0	0	0	4	8	36	7	3	0	0
04:00	91	60.1	53.8	6.1	0	0	0	0	0	4	16	40	23	7	0	1
05:00	132	61.2	52.8	8.1	0	0	0	0	1	17	34	46	10	19	5	0
06:00	145	58.2	52.3	5.7	0	0	0	1	3	4	37	63	29	7	1	0
07:00	217	56.2	50.7	5.3	0	0	0	0	1	20	83	80	26	5	2	0
08:00	327	55.0	50.3	4.6	0	0	1	1	1	20	135	137	25	7	0	0
09:00	508	55.7	47.8	7.6	0	5	15	10	23	52	204	153	35	11	0	0
10:00	587	53.8	47.1	6.5	0	1	14	20	28	84	253	158	27	2	0	0
11:00	756	52.2	47.7	4.3	0	1	0	0	14	150	408	166	11	4	2	0
12:00	680	53.2	48.6	4.5	0	1	0	2	14	89	331	213	26	4	0	0
13:00	642	53.9	48.7	5.0	0	0	4	3	11	90	297	201	29	5	2	0
14:00	591	55.8	48.1	7.4	0	5	19	11	15	49	255	198	26	12	0	1
15:00	597	54.8	49.4	5.2	0	2	2	2	14	55	241	237	36	8	0	0
16:00	658	55.5	49.1	6.2	0	4	2	8	38	31	281	228	53	13	0	0
17:00	506	56.3	50.4	5.7	0	3	0	3	9	22	188	223	43	13	2	0
18:00	487	56.2	50.0	6.0	1	2	1	6	9	30	180	205	41	11	1	0
19:00	440	56.7	49.5	6.9	0	0	6	6	26	41	132	170	42	15	2	0
20:00	302	56.1	49.6	6.3	1	1	1	2	4	26	136	93	30	6	2	0
21:00	194	58.0	52.1	5.7	0	1	1	0	0	2	57	91	31	11	0	0
22:00	98	61.9	53.6	8.0	0	0	0	0	1	4	26	41	14	7	3	2
23:00	87	59.2	53.4	5.7	0	0	0	0	0	2	22	36	19	7	1	0
Total 2H(10-12)	1343	53.0	47.4	5.4	0	2	14	20	42	234	661	324	38	6	2	0
2H(14-16)	1188	55.4	48.7	6.4	0	7	21	13	29	104	496	435	62	20	0	1
12H(7-19)	6556	54.9	48.8	5.9	1	24	58	66	177	692	2856	2199	378	95	9	1
24H(0-24)	8212	55.7	49.3	6.1	2	26	66	77	214	802	3342	2861	609	184	24	5
AM Peak	11:00	05:00	04:00	05:00	00:00	09:00	09:00	10:00	10:00	11:00	11:00	11:00	09:00	05:00	05:00	00:00
	756	61.2	53.8	8.1	0	5	15	20	28	150	408	166	35	19	5	1
PM Peak	12:00	22:00	22:00	22:00	18:00	14:00	14:00	14:00	16:00	13:00	12:00	15:00	16:00	19:00	22:00	22:00
	680	61.9	53.6	8.0	1	5	19	11	38	90	331	237	53	15	3	2

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	126	57.2	50.0	6.9	0	0	0	2	5	16	42	40	15	5	0	1
01:00	105	58.7	51.8	6.7	0	0	0	0	2	11	29	37	18	6	2	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	94	57.1	50.9	6.0	0	0	0	2	0	10	26	42	8	6	0	0
04:00	130	58.8	52.5	6.1	0	0	0	0	0	8	38	49	25	9	0	1
05:00	215	59.4	52.1	7.1	0	0	0	0	1	24	67	74	22	22	5	0
06:00	281	56.8	50.6	6.0	0	0	0	1	7	19	122	81	37	11	3	0
07:00	390	54.9	49.8	4.9	0	0	0	0	3	40	184	119	35	7	2	0
08:00	563	54.0	49.3	4.6	0	0	1	2	4	62	270	183	32	9	0	0
09:00	927	53.4	46.9	6.3	0	5	16	15	40	184	435	183	38	11	0	0
10:00	1123	52.0	46.4	5.4	0	1	14	21	60	269	530	195	30	3	0	0
11:00	1385	51.0	46.5	4.3	0	1	0	1	57	414	679	211	16	4	2	0
12:00	1366	51.4	46.7	4.5	0	1	0	10	50	387	641	247	26	4	0	0
13:00	1259	51.8	46.8	4.8	0	0	4	4	50	382	551	228	31	7	2	0
14:00	1179	53.1	46.6	6.3	0	5	19	26	65	245	539	237	29	13	0	1
15:00	1155	52.9	48.0	4.8	0	2	2	3	27	213	552	308	38	10	0	0
16:00	1283	53.1	47.3	5.6	0	4	5	13	68	262	587	274	55	15	0	0
17:00	1095	53.6	48.0	5.4	0	3	0	4	38	227	489	269	47	14	4	0
18:00	1076	53.4	47.8	5.4	1	2	1	8	61	168	518	260	44	12	1	0
19:00	877	53.8	47.8	5.8	0	0	6	7	41	189	359	211	46	16	2	0
20:00	658	53.3	47.9	5.2	1	1	1	3	8	131	340	130	35	6	2	0
21:00	463	55.9	49.8	5.9	0	1	1	0	0	72	187	145	35	21	0	1
22:00	221	58.2	50.9	7.0	0	0	0	0	2	24	95	63	19	13	3	2
23:00	171	57.1	51.1	5.8	0	0	0	0	0	9	80	52	21	7	1	1
Total 2H(10-12)	2508	51.5	46.5	4.8	0	2	14	22	117	683	1209	406	46	7	2	0
2H(14-16)	2334	53.1	47.3	5.6	0	7	21	29	92	458	1091	545	67	23	0	1
12H(7-19)	12801	52.7	47.2	5.3	1	24	62	107	523	2853	5975	2714	421	109	11	1
24H(0-24)	16142	53.5	47.7	5.6	2	26	70	122	589	3366	7360	3638	702	231	29	7
AM Peak	11:00	05:00	04:00	05:00	00:00	09:00	09:00	10:00	10:00	11:00	11:00	11:00	09:00	05:00	05:00	00:00
	1385	59.4	52.5	7.1	0	5	16	21	60	414	679	211	38	22	5	1
PM Peak	12:00	22:00	23:00	22:00	18:00	14:00	14:00	14:00	16:00	12:00	12:00	15:00	16:00	21:00	17:00	22:00
	1366	58.2	51.1	7.0	1	5	19	26	68	387	641	308	55	21	4	2

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

28/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	77	54.6	48.6	5.7	0	0	0	0	2	7	52	9	6	0	0	1
01:00	41	54.5	49.3	5.0	0	0	0	0	1	6	16	15	2	1	0	0
02:00	53	54.7	50.8	3.8	0	0	0	0	0	2	20	27	3	1	0	0
03:00	57	56.4	50.7	5.5	0	0	0	0	0	5	26	17	5	4	0	0
04:00	113	53.9	50.4	3.4	0	0	0	0	0	2	52	52	6	1	0	0
05:00	299	51.5	48.1	3.3	0	0	0	0	1	29	217	41	9	2	0	0
06:00	723	48.4	44.3	4.0	0	0	0	8	81	318	278	37	1	0	0	0
07:00	1160	48.6	38.3	9.9	1	104	108	91	130	440	275	10	1	0	0	0
08:00	1099	46.5	41.7	4.6	0	1	7	84	229	545	221	11	0	1	0	0
09:00	822	47.3	42.8	4.3	0	0	1	50	90	456	200	24	1	0	0	0
10:00	802	47.3	42.8	4.4	0	1	3	30	136	390	226	15	1	0	0	0
11:00	776	46.6	40.3	6.1	0	6	26	108	145	380	86	22	2	0	1	0
12:00	741	47.6	40.1	7.2	0	22	32	72	155	299	148	12	0	1	0	0
13:00	621	49.0	41.6	7.1	0	8	33	49	99	218	182	29	3	0	0	0
14:00	714	49.3	43.1	6.0	1	2	24	42	71	264	281	29	0	0	0	0
15:00	640	49.6	44.0	5.4	0	0	18	26	49	227	281	39	0	0	0	0
16:00	769	49.2	43.6	5.4	2	0	6	35	88	327	266	38	5	1	1	0
17:00	689	50.3	45.2	4.9	2	0	0	25	43	202	360	52	3	2	0	0
18:00	565	49.8	46.1	3.6	0	0	0	1	14	185	313	45	6	1	0	0
19:00	328	50.7	46.5	4.0	0	0	0	0	20	75	188	40	4	1	0	0
20:00	238	49.4	45.4	3.8	0	0	1	1	10	90	118	17	1	0	0	0
21:00	210	51.1	47.2	3.8	0	0	0	0	6	44	121	35	4	0	0	0
22:00	171	53.7	49.1	4.4	0	0	0	0	0	23	89	44	12	3	0	0
23:00	125	53.9	47.7	5.9	0	0	0	1	16	13	55	29	9	2	0	0
Total 2H(10-12)	1578	47.2	41.6	5.5	0	7	29	138	281	770	312	37	3	0	1	0
2H(14-16)	1354	49.5	43.5	5.8	1	2	42	68	120	491	562	68	0	0	0	0
12H(7-19)	9398	48.9	42.2	6.5	6	144	258	613	1249	3933	2839	326	22	6	2	0
24H(0-24)	11833	49.8	43.1	6.4	6	144	259	623	1386	4547	4071	689	84	21	2	1
AM Peak	07:00	03:00	02:00	07:00	07:00	07:00	07:00	11:00	08:00	08:00	06:00	04:00	05:00	03:00	11:00	00:00
	1160	56.4	50.8	9.9	1	104	108	108	229	545	278	52	9	4	1	1
PM Peak	16:00	23:00	22:00	12:00	16:00	12:00	13:00	12:00	12:00	16:00	17:00	17:00	22:00	22:00	16:00	12:00
	769	53.9	49.1	7.2	2	22	33	72	155	327	360	52	12	3	1	0

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	50	58.8	52.9	5.7	0	0	0	0	0	1	13	25	7	3	1	0
01:00	39	59.0	54.6	4.2	0	0	0	0	0	2	1	16	19	1	0	0
02:00	65	58.0	53.2	4.7	0	0	0	0	0	3	10	32	17	3	0	0
03:00	136	59.2	54.0	5.1	0	0	0	0	1	0	14	80	34	5	1	1
04:00	192	60.3	53.9	6.2	0	0	0	0	0	3	44	86	38	15	6	0
05:00	413	57.1	48.3	8.5	0	2	30	1	12	23	140	159	38	7	1	0
06:00	534	53.9	46.0	7.7	0	0	25	41	28	62	217	139	20	1	1	0
07:00	779	52.6	42.6	9.6	0	8	115	41	59	120	298	124	6	8	0	0
08:00	744	53.2	46.8	6.2	1	1	14	17	25	148	356	159	18	3	1	1
09:00	646	53.1	44.7	8.1	0	3	40	37	53	130	220	148	11	3	0	1
10:00	681	52.3	46.7	5.3	0	2	7	18	18	133	353	138	11	1	0	0
11:00	786	52.1	45.0	6.9	1	12	10	28	75	179	336	140	4	1	0	0
12:00	658	52.8	44.1	8.4	2	17	17	66	30	127	269	122	8	0	0	0
13:00	762	53.2	44.2	8.7	5	8	42	61	51	124	304	159	4	3	1	0
14:00	644	53.7	47.3	6.1	0	3	4	27	19	112	269	178	29	3	0	0
15:00	764	54.2	45.6	8.3	1	20	27	24	29	128	336	178	17	3	1	0
16:00	792	53.4	45.5	7.7	0	4	26	61	62	117	310	185	25	0	1	1
17:00	877	52.9	47.3	5.4	0	1	4	13	59	162	375	227	34	2	0	0
18:00	562	56.2	48.7	7.2	3	0	11	13	12	57	214	205	33	12	1	1
19:00	360	55.6	49.6	5.8	0	3	0	1	8	34	139	132	38	5	0	0
20:00	249	56.8	50.6	5.9	0	1	1	2	0	25	73	110	29	7	1	0
21:00	143	59.3	51.8	7.2	0	1	1	0	1	6	50	49	22	11	2	0
22:00	96	59.7	52.8	6.7	0	0	0	0	0	4	30	37	18	4	2	1
23:00	79	61.3	54.4	6.6	0	0	0	0	1	4	15	24	21	14	0	0
Total 2H(10-12)	1467	52.3	45.8	6.3	1	14	17	46	93	312	689	278	15	2	0	0
2H(14-16)	1408	54.1	46.4	7.5	1	23	31	51	48	240	605	356	46	6	1	0
12H(7-19)	8695	53.5	45.6	7.6	13	79	317	406	492	1537	3640	1963	200	39	5	4
24H(0-24)	11051	54.6	46.6	7.8	13	86	374	451	543	1704	4386	2852	501	115	20	6
AM Peak	11:00	04:00	01:00	07:00	08:00	11:00	07:00	06:00	11:00	11:00	08:00	05:00	04:00	04:00	04:00	03:00
	786	60.3	54.6	9.6	1	12	115	41	75	179	356	159	38	15	6	1
PM Peak	17:00	23:00	23:00	13:00	13:00	15:00	13:00	12:00	16:00	17:00	17:00	17:00	19:00	23:00	21:00	16:00
	877	61.3	54.4	8.7	5	20	42	66	62	162	375	227	38	14	2	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	127	56.6	50.3	6.1	0	0	0	0	2	8	65	34	13	3	1	1
01:00	80	57.4	51.9	5.3	0	0	0	0	1	8	17	31	21	2	0	0
02:00	118	56.7	52.1	4.5	0	0	0	0	0	5	30	59	20	4	0	0
03:00	193	58.6	53.0	5.4	0	0	0	0	1	5	40	97	39	9	1	1
04:00	305	58.4	52.6	5.6	0	0	0	0	0	5	96	138	44	16	6	0
05:00	712	55.3	48.2	6.8	0	2	30	1	13	52	357	200	47	9	1	0
06:00	1257	51.1	45.0	5.9	0	0	25	49	109	380	495	176	21	1	1	0
07:00	1939	50.4	40.0	10.0	1	112	223	132	189	560	573	134	7	8	0	0
08:00	1843	49.8	43.7	5.9	1	2	21	101	254	693	577	170	18	4	1	1
09:00	1468	50.2	43.7	6.3	0	3	41	87	143	586	420	172	12	3	0	1
10:00	1483	50.0	44.6	5.2	0	3	10	48	154	523	579	153	12	1	0	0
11:00	1562	49.8	42.7	6.9	1	18	36	136	220	559	422	162	6	1	1	0
12:00	1399	50.3	42.0	8.1	2	39	49	138	185	426	417	134	8	1	0	0
13:00	1383	51.4	43.0	8.1	5	16	75	110	150	342	486	188	7	3	1	0
14:00	1358	51.8	45.1	6.4	1	5	28	69	90	376	550	207	29	3	0	0
15:00	1404	52.3	44.9	7.2	1	20	45	50	78	355	617	217	17	3	1	0
16:00	1561	51.5	44.6	6.7	2	4	32	96	150	444	576	223	30	1	2	1
17:00	1566	51.9	46.4	5.3	2	1	4	38	102	364	735	279	37	4	0	0
18:00	1127	53.4	47.4	5.8	3	0	11	14	26	242	527	250	39	13	1	1
19:00	688	53.6	48.2	5.3	0	3	0	1	28	109	327	172	42	6	0	0
20:00	487	53.9	48.1	5.7	0	1	2	3	10	115	191	127	30	7	1	0
21:00	353	55.2	49.1	5.9	0	1	1	0	7	50	171	84	26	11	2	0
22:00	267	56.3	50.4	5.6	0	0	0	0	0	27	119	81	30	7	2	1
23:00	204	57.6	50.3	7.0	0	0	0	1	17	17	70	53	30	16	0	0
Total 2H(10-12)	3045	50.1	43.6	6.2	1	21	46	184	374	1082	1001	315	18	2	1	0
2H(14-16)	2762	52.1	45.0	6.8	2	25	73	119	168	731	1167	424	46	6	1	0
12H(7-19)	18093	51.4	43.8	7.3	19	223	575	1019	1741	5470	6479	2289	222	45	7	4
24H(0-24)	22884	52.4	44.8	7.3	19	230	633	1074	1929	6251	8457	3541	585	136	22	7
AM Peak	07:00	03:00	03:00	07:00	07:00	07:00	07:00	11:00	08:00	08:00	10:00	05:00	05:00	04:00	04:00	00:00
	1939	58.6	53.0	10.0	1	112	223	136	254	693	579	200	47	16	6	1
PM Peak	17:00	23:00	22:00	13:00	13:00	12:00	13:00	12:00	12:00	16:00	17:00	17:00	19:00	23:00	16:00	16:00
	1566	57.6	50.4	8.1	5	39	75	138	185	444	735	279	42	16	2	1

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

29/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	65	51.9	47.2	4.5	0	0	0	0	0	19	37	4	4	1	0	0
01:00	54	55.2	50.8	4.3	0	0	0	0	0	2	24	20	7	1	0	0
02:00	86	52.5	48.6	3.8	0	0	0	0	1	11	45	26	3	0	0	0
03:00	87	55.5	51.2	4.2	0	0	0	0	0	0	41	31	13	2	0	0
04:00	161	53.0	48.4	4.4	0	0	0	0	4	28	69	55	4	1	0	0
05:00	305	50.6	46.6	3.9	0	0	0	2	5	92	161	41	3	1	0	0
06:00	719	49.9	45.1	4.6	0	0	0	2	57	322	267	58	7	5	0	1
07:00	1235	46.2	40.2	5.8	3	10	31	124	323	573	153	17	0	0	1	0
08:00	997	48.0	43.0	4.8	0	0	17	46	126	445	346	17	0	0	0	0
09:00	892	48.2	43.4	4.6	1	0	1	42	113	387	322	24	2	0	0	0
10:00	771	48.0	43.3	4.5	0	0	4	42	73	380	248	22	2	0	0	0
11:00	696	47.7	43.1	4.5	0	0	4	39	77	347	210	18	1	0	0	0
12:00	694	48.8	43.2	5.5	0	0	2	44	116	271	242	14	2	0	0	3
13:00	681	48.4	44.3	3.9	0	0	2	15	48	313	280	22	1	0	0	0
14:00	661	48.9	43.8	4.9	0	0	11	18	79	261	257	34	1	0	0	0
15:00	693	49.0	44.5	4.4	0	0	4	3	91	258	298	35	3	1	0	0
16:00	756	49.5	44.6	4.7	0	0	5	27	51	289	328	51	4	1	0	0
17:00	752	49.7	45.3	4.3	0	2	2	8	37	281	358	61	3	0	0	0
18:00	507	51.9	45.5	6.1	1	0	16	15	18	125	257	65	8	2	0	0
19:00	354	51.0	46.3	4.6	0	0	0	1	28	83	199	35	3	5	0	0
20:00	272	50.9	47.3	3.4	0	0	0	0	1	64	155	49	3	0	0	0
21:00	263	51.1	46.7	4.3	0	0	2	3	1	65	160	25	6	1	0	0
22:00	194	52.9	49.2	3.6	0	0	0	0	4	7	111	66	5	1	0	0
23:00	134	55.6	50.6	4.8	0	0	0	0	0	8	63	40	19	4	0	0
Total 2H(10-12)	1467	47.9	43.2	4.5	0	0	8	81	150	727	458	40	3	0	0	0
2H(14-16)	1354	49.0	44.1	4.7	0	0	15	21	170	519	555	69	4	1	0	0
12H(7-19)	9335	48.7	43.4	5.1	5	12	99	423	1152	3930	3299	380	27	4	1	3
24H(0-24)	12029	49.7	44.2	5.2	5	12	101	431	1253	4631	4631	830	104	26	1	4
AM Peak	07:00	03:00	03:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	08:00	06:00	03:00	06:00	07:00	06:00
	1235	55.5	51.2	5.8	3	10	31	124	323	573	346	58	13	5	1	1
PM Peak	16:00	23:00	23:00	18:00	18:00	17:00	18:00	12:00	12:00	13:00	17:00	22:00	23:00	19:00	12:00	12:00
	756	55.6	50.6	6.1	1	2	16	44	116	313	358	66	19	5	0	3

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	63	59.2	53.7	5.3	0	0	0	0	0	1	11	33	13	4	1	0
01:00	64	56.4	51.4	4.8	0	0	0	0	1	4	16	33	8	2	0	0
02:00	70	56.7	50.9	5.6	0	0	0	0	1	11	16	27	13	2	0	0
03:00	121	58.0	53.5	4.3	0	0	0	0	0	2	14	72	28	4	1	0
04:00	210	56.1	51.4	4.5	0	0	0	0	2	10	63	95	37	3	0	0
05:00	383	55.8	48.2	7.3	1	0	15	2	11	51	138	130	29	5	1	0
06:00	516	53.9	47.7	6.0	1	0	2	22	10	85	210	167	16	2	0	1
07:00	746	53.9	46.1	7.5	6	7	13	7	35	173	343	143	14	1	0	4
08:00	758	53.2	45.6	7.4	0	9	31	29	26	140	349	157	16	1	0	0
09:00	623	52.0	46.4	5.4	0	1	1	24	41	119	308	111	16	2	0	0
10:00	618	52.2	47.0	5.0	0	1	2	20	19	114	306	148	8	0	0	0
11:00	654	53.7	45.1	8.3	1	7	43	37	27	87	285	155	12	0	0	0
12:00	771	53.1	44.4	8.4	0	8	65	34	30	154	330	132	14	3	1	0
13:00	822	53.5	46.6	6.7	0	7	24	24	17	130	396	206	17	1	0	0
14:00	710	52.6	46.5	5.8	0	1	3	39	41	120	325	164	14	3	0	0
15:00	785	53.3	44.8	8.2	0	9	61	10	68	118	335	174	9	1	0	0
16:00	839	54.1	48.3	5.6	1	5	7	14	15	66	419	282	28	2	0	0
17:00	782	54.7	49.1	5.4	0	2	2	20	21	48	326	312	47	4	0	0
18:00	517	57.7	49.4	8.0	0	3	5	20	12	64	159	177	55	13	7	2
19:00	355	56.6	49.8	6.5	0	1	0	1	10	47	129	128	21	15	1	2
20:00	258	56.6	51.1	5.3	0	0	0	2	2	16	84	112	32	9	1	0
21:00	184	57.2	51.3	5.7	0	0	2	0	2	9	54	85	25	6	1	0
22:00	120	62.0	54.9	6.9	0	0	1	0	0	3	17	50	27	20	2	0
23:00	86	59.7	54.1	5.4	0	0	0	0	0	3	14	32	31	5	1	0
Total 2H(10-12)	1272	53.2	46.0	7.0	1	8	45	57	46	201	591	303	20	0	0	0
2H(14-16)	1495	53.1	45.6	7.2	0	10	64	49	109	238	660	338	23	4	0	0
12H(7-19)	8625	53.9	46.6	7.1	8	60	257	278	352	1333	3881	2161	250	31	8	6
24H(0-24)	11055	54.7	47.4	7.1	10	61	277	305	391	1575	4647	3125	530	108	17	9
AM Peak	08:00	00:00	00:00	11:00	07:00	08:00	11:00	11:00	09:00	07:00	08:00	06:00	04:00	05:00	00:00	07:00
	758	59.2	53.7	8.3	6	9	43	37	41	173	349	167	37	5	1	4
PM Peak	16:00	22:00	22:00	12:00	16:00	15:00	12:00	14:00	15:00	12:00	16:00	17:00	18:00	22:00	18:00	18:00
	839	62.0	54.9	8.4	1	9	65	39	68	154	419	312	55	20	7	2

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	128	56.5	50.4	5.8	0	0	0	0	0	20	48	37	17	5	1	0
01:00	118	55.9	51.1	4.6	0	0	0	0	1	6	40	53	15	3	0	0
02:00	156	54.6	49.6	4.8	0	0	0	0	2	22	61	53	16	2	0	0
03:00	208	57.1	52.5	4.4	0	0	0	0	0	2	55	103	41	6	1	0
04:00	371	55.0	50.1	4.7	0	0	0	0	6	38	132	150	41	4	0	0
05:00	688	53.8	47.5	6.1	1	0	15	4	16	143	299	171	32	6	1	0
06:00	1235	51.8	46.2	5.4	1	0	2	24	67	407	477	225	23	7	0	2
07:00	1981	49.8	42.4	7.1	9	17	44	131	358	746	496	160	14	1	1	4
08:00	1755	50.5	44.1	6.2	0	9	48	75	152	585	695	174	16	1	0	0
09:00	1515	50.0	44.7	5.2	1	1	2	66	154	506	630	135	18	2	0	0
10:00	1389	50.2	45.0	5.1	0	1	6	62	92	494	554	170	10	0	0	0
11:00	1350	51.0	44.0	6.7	1	7	47	76	104	434	495	173	13	0	0	0
12:00	1465	51.3	43.8	7.2	0	8	67	78	146	425	572	146	16	3	1	3
13:00	1503	51.5	45.6	5.7	0	7	26	39	65	443	676	228	18	1	0	0
14:00	1371	51.0	45.2	5.6	0	1	14	57	120	381	582	198	15	3	0	0
15:00	1478	51.6	44.6	6.7	0	9	65	13	159	376	633	209	12	2	0	0
16:00	1595	52.3	46.6	5.5	1	5	12	41	66	355	747	333	32	3	0	0
17:00	1534	52.6	47.2	5.2	0	4	4	28	58	329	684	373	50	4	0	0
18:00	1024	55.2	47.5	7.4	1	3	21	35	30	189	416	242	63	15	7	2
19:00	709	54.2	48.1	5.9	0	1	0	2	38	130	328	163	24	20	1	2
20:00	530	54.2	49.2	4.8	0	0	0	2	3	80	239	161	35	9	1	0
21:00	447	54.2	48.6	5.4	0	0	4	3	3	74	214	110	31	7	1	0
22:00	314	57.4	51.4	5.8	0	0	1	0	4	10	128	116	32	21	2	0
23:00	220	57.5	52.0	5.3	0	0	0	0	0	11	77	72	50	9	1	0
Total 2H(10-12)	2739	50.7	44.5	5.9	1	8	53	138	196	928	1049	343	23	0	0	0
2H(14-16)	2849	51.3	44.9	6.2	0	10	79	70	279	757	1215	407	27	5	0	0
12H(7-19)	17960	51.5	44.9	6.3	13	72	356	701	1504	5263	7180	2541	277	35	9	9
24H(0-24)	23084	52.4	45.7	6.4	15	73	378	736	1644	6206	9278	3955	634	134	18	13
AM Peak	07:00	03:00	03:00	07:00	07:00	07:00	08:00	07:00	07:00	07:00	08:00	06:00	03:00	06:00	00:00	07:00
	1981	57.1	52.5	7.1	9	17	48	131	358	746	695	225	41	7	1	4
PM Peak	16:00	23:00	23:00	18:00	16:00	15:00	12:00	12:00	15:00	13:00	16:00	17:00	18:00	22:00	18:00	12:00
	1595	57.5	52.0	7.4	1	9	67	78	159	443	747	373	63	21	7	3

360 TSL Ltd

East Heckington ATC, A17 (Eastern Site)

Direction: Eastbound

30/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	115	51.9	48.7	3.0	0	0	0	0	0	5	80	28	1	1	0	0
01:00	74	57.5	51.2	6.1	0	0	1	0	0	1	35	23	8	6	0	0
02:00	76	56.9	52.0	4.8	0	0	0	0	0	2	23	37	12	1	1	0
03:00	112	55.6	51.3	4.2	0	0	0	0	0	3	43	48	16	2	0	0
04:00	166	52.4	49.1	3.1	0	0	0	0	0	6	108	44	8	0	0	0
05:00	357	51.0	47.8	3.1	0	0	0	0	1	52	236	65	2	1	0	0
06:00	623	51.0	45.1	5.7	0	1	0	14	62	213	288	33	2	6	1	3
07:00	1056	48.3	42.4	5.7	0	5	32	63	141	443	355	17	0	0	0	0
08:00	942	48.6	43.8	4.7	2	0	9	14	135	355	406	21	0	0	0	0
09:00	856	47.9	43.0	4.8	0	0	6	33	148	390	250	22	4	3	0	0
10:00	768	48.2	44.3	3.8	0	0	0	16	56	350	327	17	2	0	0	0
11:00	751	47.1	42.7	4.3	0	0	2	19	165	342	204	19	0	0	0	0
12:00	771	47.2	41.2	5.7	0	0	40	59	126	364	175	6	1	0	0	0
13:00	699	47.8	43.7	3.9	0	0	1	18	70	344	251	15	0	0	0	0
14:00	785	47.4	42.7	4.6	0	0	6	53	102	380	233	11	0	0	0	0
15:00	716	48.5	43.7	4.6	0	0	10	21	64	336	253	32	0	0	0	0
16:00	817	49.9	44.7	5.0	0	0	1	6	78	357	341	26	1	2	0	5
17:00	740	49.9	44.8	4.9	0	6	0	11	67	250	361	39	5	1	0	0
18:00	588	50.9	46.4	4.3	0	0	0	0	22	161	353	43	3	1	5	0
19:00	394	49.2	45.7	3.4	0	0	0	0	8	163	187	35	1	0	0	0
20:00	276	50.3	46.5	3.7	0	0	0	0	2	96	142	31	4	1	0	0
21:00	253	50.8	47.5	3.2	0	0	0	0	2	44	164	40	3	0	0	0
22:00	172	56.5	50.9	5.4	0	0	0	0	2	9	76	56	18	11	0	0
23:00	140	51.8	48.3	3.4	0	0	0	1	0	9	101	25	3	1	0	0
Total 2H(10-12)	1519	47.8	43.5	4.1	0	0	2	35	221	692	531	36	2	0	0	0
2H(14-16)	1501	48.0	43.2	4.6	0	0	16	74	166	716	486	43	0	0	0	0
12H(7-19)	9489	48.6	43.5	4.9	2	11	107	313	1174	4072	3509	268	16	7	5	5
24H(0-24)	12247	49.7	44.4	5.1	2	12	108	328	1251	4675	4992	733	94	37	7	8
AM Peak	07:00	01:00	02:00	01:00	08:00	07:00	07:00	07:00	11:00	07:00	08:00	05:00	03:00	01:00	02:00	06:00
	1056	**57.5**	**52.0**	**6.1**	**2**	**5**	**32**	**63**	**165**	**443**	**406**	**65**	**16**	**6**	**1**	**3**
PM Peak	16:00	22:00	22:00	12:00	12:00	17:00	12:00	12:00	12:00	14:00	17:00	22:00	22:00	22:00	18:00	16:00
	817	**56.5**	**50.9**	**5.7**	**0**	**6**	**40**	**59**	**126**	**380**	**361**	**56**	**18**	**11**	**5**	**5**

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	78	60.2	53.8	6.1	0	0	0	0	0	1	20	30	19	6	2	0
01:00	96	59.0	54.6	4.3	0	0	0	0	0	1	7	50	31	7	0	0
02:00	107	58.2	53.7	4.3	0	0	0	0	1	1	14	53	34	4	0	0
03:00	162	58.1	53.8	4.2	0	0	0	0	1	4	12	90	49	6	0	0
04:00	289	57.7	53.1	4.5	0	0	0	0	1	5	46	166	59	10	2	0
05:00	355	56.5	51.3	5.0	0	0	0	0	2	27	94	185	33	12	2	0
06:00	580	55.8	48.4	7.1	0	5	4	26	14	57	232	195	26	21	0	0
07:00	802	54.2	46.5	7.4	2	3	26	40	49	89	318	256	14	5	0	0
08:00	726	52.9	44.2	8.4	1	11	43	37	95	72	316	138	13	0	0	0
09:00	662	52.2	46.5	5.5	0	1	9	20	17	155	314	129	16	1	0	0
10:00	636	53.0	45.8	6.9	0	2	27	25	36	92	307	135	11	1	0	0
11:00	726	51.9	45.4	6.2	1	2	23	14	56	151	353	122	4	0	0	0
12:00	715	50.6	45.1	5.3	0	1	11	14	57	238	304	80	10	0	0	0
13:00	803	51.7	45.5	6.0	2	2	12	17	50	265	298	143	13	1	0	0
14:00	809	51.0	46.7	4.2	0	0	0	0	24	263	364	148	5	5	0	0
15:00	744	53.4	46.5	6.6	0	5	15	16	46	128	351	158	21	0	4	0
16:00	829	52.6	46.6	5.8	0	0	22	8	35	188	367	190	17	2	0	0
17:00	862	52.2	46.9	5.2	1	1	0	10	59	193	380	191	26	1	0	0
18:00	513	55.6	49.6	5.8	0	3	1	1	12	45	212	194	33	9	3	0
19:00	300	55.6	48.9	6.4	0	1	5	6	7	32	106	113	27	3	0	0
20:00	227	55.4	49.9	5.3	0	0	1	0	9	14	89	87	24	2	1	0
21:00	153	56.9	50.6	6.1	0	1	1	0	1	4	62	70	8	4	2	0
22:00	112	59.5	52.5	6.7	0	0	0	0	0	12	27	42	20	10	0	1
23:00	66	57.5	51.3	6.0	0	0	1	0	1	2	18	35	7	1	1	0
Total 2H(10-12)	1362	52.4	45.6	6.6	1	4	50	39	92	243	660	257	15	1	0	0
2H(14-16)	1553	52.3	46.6	5.5	0	5	15	16	70	391	715	306	26	5	4	0
12H(7-19)	8827	52.7	46.2	6.3	7	31	189	202	536	1879	3884	1884	183	25	7	0
24H(0-24)	11352	54.0	47.3	6.6	7	38	201	234	573	2039	4611	3000	520	111	17	1
AM Peak	07:00	00:00	01:00	08:00	07:00	08:00	08:00	07:00	08:00	09:00	11:00	07:00	04:00	06:00	00:00	00:00
	802	**60.2**	**54.6**	**8.4**	**2**	**11**	**43**	**40**	**95**	**155**	**353**	**256**	**59**	**21**	**2**	**0**
PM Peak	17:00	22:00	22:00	22:00	13:00	15:00	16:00	13:00	17:00	13:00	17:00	18:00	18:00	22:00	15:00	22:00
	862	**59.5**	**52.5**	**6.7**	**2**	**5**	**22**	**17**	**59**	**265**	**380**	**194**	**33**	**10**	**4**	**1**

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	193	56.2	50.8	5.2	0	0	0	0	0	6	100	58	20	7	2	0
01:00	170	58.7	53.1	5.4	0	0	1	0	0	2	42	73	39	13	0	0
02:00	183	57.7	53.0	4.6	0	0	0	0	1	3	37	90	46	5	1	0
03:00	274	57.2	52.7	4.3	0	0	0	0	1	7	55	138	65	8	0	0
04:00	455	56.3	51.6	4.5	0	0	0	0	1	11	154	210	67	10	2	0
05:00	712	54.2	49.5	4.5	0	0	0	0	3	79	330	250	35	13	2	0
06:00	1203	53.6	46.7	6.6	0	6	4	40	76	270	520	228	28	27	1	3
07:00	1858	51.2	44.2	6.8	2	8	58	103	190	532	673	273	14	5	0	0
08:00	1668	50.8	44.0	6.6	3	11	52	51	230	427	722	159	13	0	0	0
09:00	1518	50.1	44.5	5.4	0	1	15	53	165	545	564	151	20	4	0	0
10:00	1404	50.7	45.0	5.5	0	2	27	41	92	442	634	152	13	1	0	0
11:00	1477	49.7	44.1	5.5	1	2	25	33	221	493	557	141	4	0	0	0
12:00	1486	49.1	43.1	5.8	0	1	51	73	183	602	479	86	11	0	0	0
13:00	1502	50.0	44.7	5.2	2	2	13	35	120	609	549	158	13	1	0	0
14:00	1594	49.7	44.7	4.8	0	0	6	53	126	643	597	159	5	5	0	0
15:00	1460	51.3	45.2	5.9	0	5	25	37	110	464	604	190	21	0	4	0
16:00	1646	51.3	45.6	5.5	0	0	23	14	113	545	708	216	18	4	0	5
17:00	1602	51.3	45.9	5.2	1	7	0	21	126	443	741	230	31	2	0	0
18:00	1101	53.4	47.9	5.3	0	3	1	1	34	206	565	237	36	10	8	0
19:00	694	52.5	47.1	5.2	0	1	5	6	15	195	293	148	28	3	0	0
20:00	503	53.0	48.0	4.8	0	0	1	0	11	110	231	118	28	3	1	0
21:00	406	53.6	48.6	4.7	0	1	1	0	3	48	226	110	11	4	2	0
22:00	284	57.8	51.5	6.0	0	0	0	0	2	21	103	98	38	21	0	1
23:00	206	54.0	49.2	4.6	0	0	1	1	1	11	119	60	10	2	1	0
Total 2H(10-12)	2881	50.2	44.5	5.5	1	4	52	74	313	935	1191	293	17	1	0	0
2H(14-16)	3054	50.5	44.9	5.4	0	5	31	90	236	1107	1201	349	26	5	4	0
12H(7-19)	18316	50.8	44.8	5.8	9	42	296	515	1710	5951	7393	2152	199	32	12	5
24H(0-24)	23599	52.0	45.8	6.0	9	50	309	562	1824	6714	9603	3733	614	148	24	9
AM Peak	07:00	01:00	01:00	07:00	08:00	08:00	07:00	07:00	08:00	09:00	08:00	07:00	04:00	06:00	00:00	06:00
	1858	**58.7**	**53.1**	**6.8**	**3**	**11**	**58**	**103**	**230**	**545**	**722**	**273**	**67**	**27**	**2**	**3**
PM Peak	16:00	22:00	22:00	22:00	13:00	17:00	12:00	12:00	12:00	14:00	17:00	18:00	22:00	22:00	18:00	16:00
	1646	**57.8**	**51.5**	**6.0**	**2**	**7**	**51**	**73**	**183**	**643**	**741**	**237**	**38**	**21**	**8**	**5**

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	86	78	73	66	58	32	77	66	67
01:00	47	73	46	43	31	34	60	49	48
02:00	64	65	50	0	34	44	52	52	44
03:00	74	55	55	37	45	54	71	60	56
04:00	103	147	72	43	87	112	114	113	97
05:00	229	292	134	58	247	231	281	256	210
06:00	590	629	244	117	603	613	513	590	473
07:00	1037	907	342	158	1046	1060	960	1002	787
08:00	939	826	497	211	967	896	892	904	747
09:00	760	707	635	405	740	762	731	740	677
10:00	656	758	665	512	804	692	683	719	681
11:00	701	725	619	619	745	575	660	681	663
12:00	639	767	684	698	770	661	651	698	696
13:00	639	794	602	594	672	642	634	676	654
14:00	813	829	536	602	687	624	704	731	685
15:00	722	880	552	553	662	664	681	722	673
16:00	825	734	513	622	726	704	779	754	700
17:00	655	698	498	578	667	722	673	683	642
18:00	614	598	498	571	523	467	544	549	545
19:00	326	410	289	401	283	343	327	338	340
20:00	271	289	247	318	213	211	235	244	255
21:00	220	191	211	245	179	197	201	198	206
22:00	157	175	128	103	153	163	142	158	146
23:00	112	90	100	79	91	91	103	97	95
Total									
12H(7-19)	9000	9223	6641	6123	9009	8469	8592	8859	8151
16H(6-22)	10407	10742	7632	7204	10287	9833	9868	10227	9425
18H(6-24)	10676	11007	7860	7386	10531	10087	10113	10483	9666
24H(0-24)	11279	11717	8290	7633	11033	10594	10768	11078	10188
AM Peak	07:00	07:00	10:00	11:00	07:00	07:00	07:00	07:00	07:00
	1037	907	665	619	1046	1060	960	1002	787
PM Peak	16:00	15:00	12:00	12:00	12:00	17:00	16:00	16:00	16:00
	825	880	684	698	770	722	779	754	700

360 TSL Ltd

Direction: Westbound

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	78	93	69	77	67	68	93	80	78
01:00	120	84	64	75	65	84	115	94	87
02:00	97	123	73	0	89	95	118	104	85
03:00	123	133	111	81	159	124	209	150	134
04:00	259	203	142	113	236	230	280	242	209
05:00	442	421	252	139	467	436	430	439	370
06:00	593	550	277	165	601	508	612	573	472
07:00	744	768	446	225	836	812	829	798	666
08:00	723	761	574	337	823	787	774	774	683
09:00	810	741	655	542	767	666	706	738	698
10:00	652	773	630	634	721	653	706	701	681
11:00	713	851	744	779	836	783	841	805	792
12:00	723	875	684	695	714	843	799	791	762
13:00	738	832	589	679	818	872	877	827	772
14:00	823	882	568	592	677	810	854	809	744
15:00	817	843	575	601	787	807	813	813	749
16:00	937	910	498	642	855	875	920	899	805
17:00	959	800	495	509	897	808	915	876	769
18:00	626	561	476	487	611	560	530	578	550
19:00	422	359	298	452	337	350	311	356	361
20:00	270	293	222	301	232	275	263	267	265
21:00	198	170	132	191	141	208	170	177	173
22:00	124	129	114	116	104	121	112	118	117
23:00	112	100	91	86	96	115	79	100	97
Total									
12H(7-19)	9265	9597	6934	6722	9342	9276	9564	9409	8671
16H(6-22)	10748	10969	7863	7831	10653	10617	10920	10781	9943
18H(6-24)	10984	11198	8068	8033	10853	10853	11111	11000	10157
24H(0-24)	12103	12255	8779	8518	11936	11890	12356	12108	11120
AM Peak	09:00	11:00	11:00	11:00	07:00	07:00	11:00	11:00	11:00
	810	851	744	779	836	812	841	805	792
PM Peak	17:00	16:00	12:00	12:00	17:00	16:00	16:00	16:00	16:00
	959	910	684	695	897	875	920	899	805

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	164	171	142	143	125	100	170	146	145
01:00	167	157	110	118	96	118	175	143	134
02:00	161	188	123	0	123	139	170	156	129
03:00	197	188	166	118	204	178	280	209	190
04:00	362	350	214	156	323	342	394	354	306
05:00	671	713	386	197	714	667	711	695	580
06:00	1183	1179	521	282	1204	1121	1125	1162	945
07:00	1781	1675	788	383	1882	1872	1789	1800	1453
08:00	1662	1587	1071	548	1790	1683	1666	1678	1430
09:00	1570	1448	1290	947	1507	1428	1437	1478	1375
10:00	1308	1531	1295	1146	1525	1345	1389	1420	1363
11:00	1414	1576	1363	1398	1581	1358	1501	1486	1456
12:00	1362	1642	1368	1393	1484	1504	1450	1488	1458
13:00	1377	1626	1191	1273	1490	1514	1511	1504	1426
14:00	1636	1711	1104	1194	1364	1434	1558	1541	1429
15:00	1539	1723	1127	1154	1449	1471	1494	1535	1422
16:00	1762	1644	1011	1264	1581	1579	1699	1653	1506
17:00	1614	1498	993	1087	1564	1530	1588	1559	1411
18:00	1240	1159	974	1058	1134	1027	1074	1127	1095
19:00	748	769	587	853	620	693	638	694	701
20:00	541	582	469	619	445	486	498	510	520
21:00	418	361	343	436	320	405	371	375	379
22:00	281	304	242	219	257	284	254	276	263
23:00	224	190	191	165	187	206	182	198	192
Total									
12H(7-19)	18265	18820	13575	12845	18351	17745	18156	18267	16822
16H(6-22)	21155	21711	15495	15035	20940	20450	20788	21009	19368
18H(6-24)	21660	22205	15928	15419	21384	20940	21224	21483	19823
24H(0-24)	23382	23972	17069	16151	22969	22484	23124	23186	21307
AM Peak	07:00	07:00	11:00	11:00	07:00	07:00	07:00	07:00	11:00
	1781	1675	1363	1398	1882	1872	1789	1800	1456
PM Peak	16:00	15:00	12:00	12:00	16:00	16:00	16:00	16:00	16:00
	1762	1723	1368	1393	1581	1579	1699	1653	1506

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East Heckington, A17 (Middle Site)

Direction: Eastbound

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	11279	8790	1726	646	117
Fri 25 Mar 2022	11717	9498	1543	576	100
Sat 26 Mar 2022	8290	7051	905	295	39
Sun 27 Mar 2022	7633	6668	703	233	29
Mon 28 Mar 2022	11033	8704	1628	585	116
Tue 29 Mar 2022	10594	8162	1662	665	105
Wed 30 Mar 2022	10768	8473	1578	614	103
5 Day Ave.	11078	8725	1627	617	108
7 Day Ave.	10188	8192	1392	516	87

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	77.9%	15.3%	5.7%	1.0%
Fri 25 Mar 2022	100.0%	81.1%	13.2%	4.9%	0.9%
Sat 26 Mar 2022	100.0%	85.1%	10.9%	3.6%	0.5%
Sun 27 Mar 2022	100.0%	87.4%	9.2%	3.1%	0.4%
Mon 28 Mar 2022	100.0%	78.9%	14.8%	5.3%	1.1%
Tue 29 Mar 2022	100.0%	77.0%	15.7%	6.3%	1.0%
Wed 30 Mar 2022	100.0%	78.7%	14.7%	5.7%	1.0%
5 Day Ave.	100.0%	78.8%	14.7%	5.6%	1.0%
7 Day Ave.	100.0%	80.4%	13.7%	5.1%	0.9%

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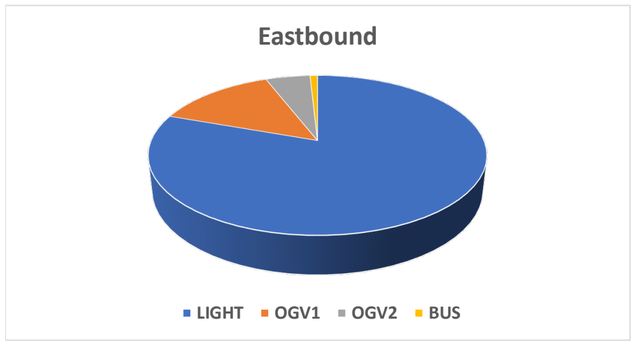

Direction: Westbound

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	12103	10168	1447	417	71
Fri 25 Mar 2022	12255	10476	1354	339	86
Sat 26 Mar 2022	8779	7823	781	152	23
Sun 27 Mar 2022	8518	7771	618	116	13
Mon 28 Mar 2022	11936	10188	1309	378	61
Tue 29 Mar 2022	11890	10256	1230	331	73
Wed 30 Mar 2022	12356	10715	1272	320	49
5 Day Ave.	12108	10361	1322	357	68
7 Day Ave.	11120	9628	1144	293	54

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	84.0%	12.0%	3.4%	0.6%
Fri 25 Mar 2022	100.0%	85.5%	11.0%	2.8%	0.7%
Sat 26 Mar 2022	100.0%	89.1%	8.9%	1.7%	0.3%
Sun 27 Mar 2022	100.0%	91.2%	7.3%	1.4%	0.2%
Mon 28 Mar 2022	100.0%	85.4%	11.0%	3.2%	0.5%
Tue 29 Mar 2022	100.0%	86.3%	10.3%	2.8%	0.6%
Wed 30 Mar 2022	100.0%	86.7%	10.3%	2.6%	0.4%
5 Day Ave.	100.0%	85.6%	10.9%	2.9%	0.6%
7 Day Ave.	100.0%	86.6%	10.3%	2.6%	0.5%

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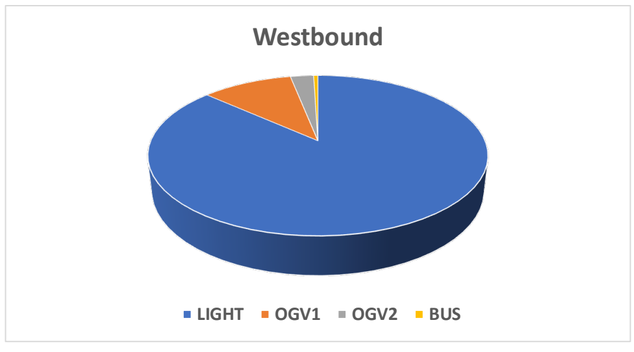

Direction: Total Flow

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	23382	18958	3173	1063	188
Fri 25 Mar 2022	23972	19974	2897	915	186
Sat 26 Mar 2022	17069	14874	1686	447	62
Sun 27 Mar 2022	16151	14439	1321	349	42
Mon 28 Mar 2022	22969	18892	2937	963	177
Tue 29 Mar 2022	22484	18418	2892	996	178
Wed 30 Mar 2022	23124	19188	2850	934	152
5 Day Ave.	23186	19086	2950	974	176
7 Day Ave.	21307	17820	2537	810	141

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	81.1%	13.6%	4.5%	0.8%
Fri 25 Mar 2022	100.0%	83.3%	12.1%	3.8%	0.8%
Sat 26 Mar 2022	100.0%	87.1%	9.9%	2.6%	0.4%
Sun 27 Mar 2022	100.0%	89.4%	8.2%	2.2%	0.3%
Mon 28 Mar 2022	100.0%	82.2%	12.8%	4.2%	0.8%
Tue 29 Mar 2022	100.0%	81.9%	12.9%	4.4%	0.8%
Wed 30 Mar 2022	100.0%	83.0%	12.3%	4.0%	0.7%
5 Day Ave.	100.0%	82.3%	12.7%	4.2%	0.8%
7 Day Ave.	100.0%	83.6%	11.9%	3.8%	0.7%

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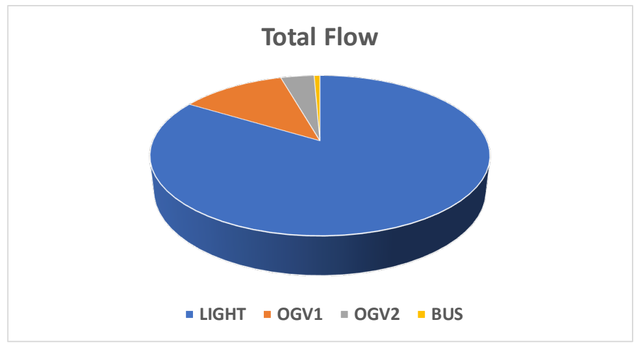

East Heckington, A17 (Middle Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	11279	52.7	45.8	6.7	1	46	336	431	543	2434	5273	1841	295	74	4	1
Fri 25 Mar 2022	11717	52.9	45.9	6.8	7	80	301	332	640	2572	5455	1959	263	86	17	5
Sat 26 Mar 2022	8290	53.3	47.2	5.9	0	14	110	124	244	1759	4002	1569	359	89	14	6
Sun 27 Mar 2022	7633	53.1	47.7	5.2	3	11	32	43	256	1375	4002	1521	293	80	12	5
Mon 28 Mar 2022	11033	52.8	45.1	7.5	24	141	323	471	668	2500	4904	1711	225	55	6	5
Tue 29 Mar 2022	10594	51.9	45.8	5.9	0	4	196	364	670	2650	4781	1653	203	68	3	2
Wed 30 Mar 2022	10768	52.0	45.5	6.3	3	53	204	307	727	2924	4805	1471	184	79	8	3
5 Day Ave.	11078	52.4	45.6	6.6	7	65	272	381	650	2616	5044	1727	234	72	8	3
7 Day Ave.	10188	52.7	46.1	6.3	5	50	215	296	535	2316	4746	1675	260	76	9	4

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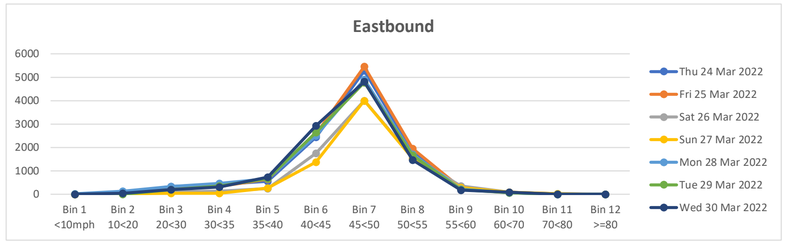

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	12103	52.3	45.5	6.5	7	26	296	532	706	2936	5362	1876	281	69	10	2
Fri 25 Mar 2022	12255	52.0	45.9	5.9	2	6	179	388	811	3118	5546	1846	257	84	15	3
Sat 26 Mar 2022	8779	52.8	47.3	5.3	1	2	48	84	320	1933	4271	1714	303	85	14	4
Sun 27 Mar 2022	8518	52.8	47.6	5.0	0	3	19	52	303	1630	4393	1713	307	81	12	5
Mon 28 Mar 2022	11936	52.2	45.5	6.5	7	30	257	528	820	2790	5376	1777	264	70	10	7
Tue 29 Mar 2022	11890	52.5	45.9	6.3	6	34	241	302	778	2721	5573	1840	298	68	24	5
Wed 30 Mar 2022	12356	51.8	45.3	6.3	28	45	183	319	1006	3548	5228	1676	237	74	8	4
5 Day Ave.	12108	52.2	45.6	6.3	10	28	231	414	824	3023	5417	1803	267	73	13	4
7 Day Ave.	11120	52.3	46.2	6.0	7	21	175	315	678	2668	5107	1777	278	76	13	4

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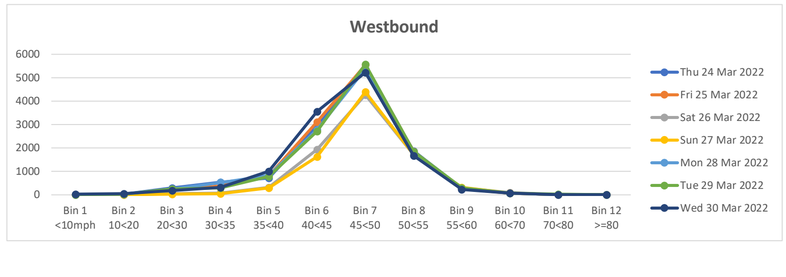

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	23382	52.5	45.6	6.6	8	72	632	963	1249	5370	10635	3717	576	143	14	3
Fri 25 Mar 2022	23972	52.4	45.9	6.4	9	86	480	720	1451	5690	11001	3805	520	170	32	8
Sat 26 Mar 2022	17069	53.0	47.3	5.6	1	16	158	208	564	3692	8273	3283	662	174	28	10
Sun 27 Mar 2022	16151	52.9	47.6	5.1	3	14	51	95	559	3005	8395	3234	600	161	24	10
Mon 28 Mar 2022	22969	52.5	45.3	7.0	31	171	580	999	1488	5290	10280	3488	489	125	16	12
Tue 29 Mar 2022	22484	52.2	45.9	6.1	6	38	437	666	1448	5371	10354	3493	501	136	27	7
Wed 30 Mar 2022	23124	51.9	45.4	6.3	31	98	387	626	1733	6472	10033	3147	421	153	16	7
5 Day Ave.	23186	52.3	45.6	6.5	17	93	503	795	1474	5639	10461	3530	501	145	21	7
7 Day Ave.	21307	52.5	46.1	6.1	13	71	389	611	1213	4984	9853	3452	538	152	22	8

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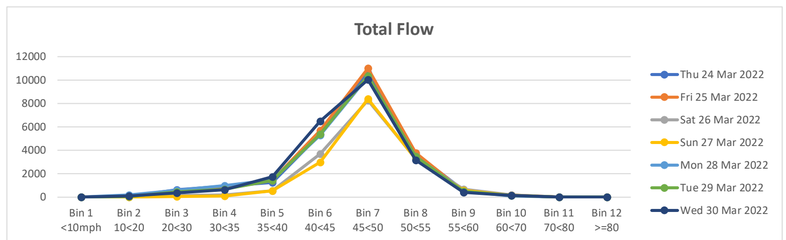

East Heckington, A17 (Middle Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1357	50.3	44.8	5.3	0	0	8	86	112	363	654	122	9	3	0	0
Fri 25 Mar 2022	1483	51.1	43.6	7.3	0	23	52	83	145	418	608	137	15	1	0	1
Sat 26 Mar 2022	1284	51.1	45.0	5.9	0	0	38	48	77	347	620	133	18	3	0	0
Sun 27 Mar 2022	1131	51.0	46.7	4.1	0	0	0	8	42	274	626	156	23	2	0	0
Mon 28 Mar 2022	1549	50.2	42.3	7.6	2	39	62	95	162	550	547	78	11	3	0	0
Tue 29 Mar 2022	1267	50.5	44.1	6.1	0	3	39	61	107	406	522	115	13	1	0	0
Wed 30 Mar 2022	1343	50.0	44.9	5.0	0	0	7	31	140	470	547	137	7	3	0	1
5 Day Ave.	1400	50.4	43.9	6.3	0	13	34	71	133	441	576	118	11	2	0	0
7 Day Ave.	1345	50.6	44.5	5.9	0	9	29	59	112	404	589	125	14	2	0	0

360 TSL Ltd

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1365	51.4	44.2	7.0	7	9	37	99	69	356	643	134	10	1	0	0
Fri 25 Mar 2022	1624	49.5	43.1	6.2	0	4	34	158	195	505	610	111	7	0	0	0
Sat 26 Mar 2022	1374	51.1	45.9	5.1	0	1	21	14	73	384	687	172	19	3	0	0
Sun 27 Mar 2022	1413	51.0	45.8	5.1	0	0	13	25	94	402	688	159	25	7	0	0
Mon 28 Mar 2022	1557	51.1	44.0	6.8	7	26	20	73	122	435	756	113	3	2	0	0
Tue 29 Mar 2022	1436	50.1	44.8	5.1	1	0	12	36	143	463	648	117	12	4	0	0
Wed 30 Mar 2022	1547	49.6	43.9	5.5	0	2	12	82	230	452	673	79	14	2	1	0
5 Day Ave.	1506	50.3	44.0	6.1	3	8	23	90	152	442	666	111	9	2	0	0
7 Day Ave.	1474	50.5	44.5	5.8	2	6	21	70	132	428	672	126	13	3	0	0

360 TSL Ltd

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	2722	50.9	44.5	6.2	7	9	45	185	181	719	1297	256	19	4	0	0
Fri 25 Mar 2022	3107	50.3	43.3	6.7	0	27	86	241	340	923	1218	248	22	1	0	1
Sat 26 Mar 2022	2658	51.1	45.5	5.5	0	1	59	62	150	731	1307	305	37	6	0	0
Sun 27 Mar 2022	2544	51.0	46.2	4.7	0	0	13	33	136	676	1314	315	48	9	0	0
Mon 28 Mar 2022	3106	50.7	43.2	7.3	9	65	82	168	284	985	1303	191	14	5	0	0
Tue 29 Mar 2022	2703	50.3	44.5	5.6	1	3	51	97	250	869	1170	232	25	5	0	0
Wed 30 Mar 2022	2890	49.8	44.4	5.3	0	2	19	113	370	922	1220	216	21	5	1	1
5 Day Ave.	2906	50.4	44.0	6.2	3	21	57	161	285	884	1242	229	20	4	0	0
7 Day Ave.	2819	50.6	44.5	5.9	2	15	51	128	244	832	1261	252	27	5	0	0

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1535	51.2	43.5	7.5	0	10	107	77	109	448	598	165	19	2	0	0
Fri 25 Mar 2022	1709	52.1	45.1	6.8	0	20	52	55	100	391	843	224	18	5	1	0
Sat 26 Mar 2022	1088	52.9	46.6	6.1	0	13	22	5	22	210	597	190	27	2	0	0
Sun 27 Mar 2022	1155	52.3	47.6	4.5	0	0	2	9	34	195	651	219	36	8	1	0
Mon 28 Mar 2022	1349	53.8	44.0	9.5	10	41	97	45	39	232	637	226	20	1	0	1
Tue 29 Mar 2022	1288	51.5	45.5	5.9	0	0	18	60	117	270	613	183	22	5	0	0
Wed 30 Mar 2022	1385	50.3	44.6	5.5	0	1	35	43	106	432	649	110	8	1	0	0
5 Day Ave.	1453	51.8	44.5	7.0	2	14	62	56	94	355	668	182	17	3	0	0
7 Day Ave.	1358	52.0	45.3	6.5	1	12	48	42	75	311	655	188	21	3	0	0

360 TSL Ltd

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1640	50.5	44.1	6.2	0	4	43	84	170	517	660	135	22	4	1	0
Fri 25 Mar 2022	1725	49.8	44.1	5.5	0	2	39	53	181	629	687	119	13	2	0	0
Sat 26 Mar 2022	1143	52.0	46.8	5.1	0	0	7	17	50	257	603	168	31	8	2	0
Sun 27 Mar 2022	1193	51.4	47.0	4.3	0	1	0	5	43	268	667	178	27	3	1	0
Mon 28 Mar 2022	1464	51.0	45.4	5.3	0	0	16	58	75	441	683	159	26	6	0	0
Tue 29 Mar 2022	1617	51.6	44.4	7.0	4	17	59	36	151	406	745	183	15	1	0	0
Wed 30 Mar 2022	1667	48.8	44.2	4.5	0	4	7	26	178	724	633	90	4	1	0	0
5 Day Ave.	1623	50.3	44.4	5.7	1	5	33	51	151	543	682	137	16	3	0	0
7 Day Ave.	1493	50.7	45.1	5.4	1	4	24	40	121	463	668	147	20	4	1	0

360 TSL Ltd

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	3175	50.9	43.8	6.9	0	14	150	161	279	965	1258	300	41	6	1	0
Fri 25 Mar 2022	3434	51.0	44.6	6.2	0	22	91	108	281	1020	1530	343	31	7	1	0
Sat 26 Mar 2022	2231	52.5	46.7	5.6	0	13	29	22	72	467	1200	358	58	10	2	0
Sun 27 Mar 2022	2348	51.8	47.3	4.4	0	1	2	14	77	463	1318	397	63	11	2	0
Mon 28 Mar 2022	2813	52.6	44.7	7.6	10	41	113	103	114	673	1320	385	46	7	0	1
Tue 29 Mar 2022	2905	51.6	44.9	6.5	4	17	77	96	268	676	1358	366	37	6	0	0
Wed 30 Mar 2022	3052	49.5	44.4	5.0	0	5	42	69	284	1156	1282	200	12	2	0	0
5 Day Ave.	3076	51.1	44.5	6.4	3	20	95	107	245	898	1350	319	33	6	0	0
7 Day Ave.	2851	51.4	45.2	6.0	2	16	72	82	196	774	1324	336	41	7	1	0

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

24/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	86	59	11	15	1
01:00	47	20	12	15	0
02:00	64	39	10	14	1
03:00	74	53	11	9	1
04:00	103	58	24	18	3
05:00	229	169	35	19	6
06:00	590	434	108	42	6
07:00	1037	805	187	32	13
08:00	939	731	164	42	2
09:00	760	589	124	36	11
10:00	656	494	114	38	10
11:00	701	516	121	53	11
12:00	639	480	107	45	7
13:00	639	522	74	34	9
14:00	813	655	104	46	8
15:00	722	564	113	35	10
16:00	825	672	124	26	3
17:00	655	535	92	22	6
18:00	614	524	64	20	6
19:00	326	267	36	22	1
20:00	271	221	34	16	0
21:00	220	178	25	17	0
22:00	157	119	18	19	1
23:00	112	86	14	11	1
Total					
12H(7-19)	9000	7087	1388	429	96
16H(6-22)	10407	8187	1591	526	103
18H(6-24)	10676	8392	1623	556	105
24H(0-24)	11279	8790	1726	646	117
AM Peak	07:00	07:00	07:00	11:00	07:00
	1037	**805**	**187**	**53**	**13**
PM Peak	16:00	16:00	16:00	14:00	15:00
	825	**672**	**124**	**46**	**10**

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	78	65	10	2	1
01:00	120	98	8	14	0
02:00	97	69	7	20	1
03:00	123	99	10	14	0
04:00	259	220	16	21	2
05:00	442	361	50	30	1
06:00	593	491	73	26	3
07:00	744	625	89	24	6
08:00	723	595	103	22	3
09:00	810	663	111	33	3
10:00	652	539	81	23	9
11:00	713	574	103	30	6
12:00	723	601	84	29	9
13:00	738	589	120	21	8
14:00	823	678	120	21	4
15:00	817	666	120	24	7
16:00	937	796	123	13	5
17:00	959	870	82	5	2
18:00	626	558	51	16	1
19:00	422	376	38	8	0
20:00	270	247	18	5	0
21:00	198	181	14	3	0
22:00	124	114	6	4	0
23:00	112	93	10	9	0
Total					
12H(7-19)	9265	7754	1187	261	63
16H(6-22)	10748	9049	1330	303	66
18H(6-24)	10984	9256	1346	316	66
24H(0-24)	12103	10168	1447	417	71
AM Peak	09:00	09:00	09:00	09:00	10:00
	810	**663**	**111**	**33**	**9**
PM Peak	17:00	17:00	16:00	12:00	12:00
	959	**870**	**123**	**29**	**9**

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	164	124	21	17	2
01:00	167	118	20	29	0
02:00	161	108	17	34	2
03:00	197	152	21	23	1
04:00	362	278	40	39	5
05:00	671	530	85	49	7
06:00	1183	925	181	68	9
07:00	1781	1430	276	56	19
08:00	1662	1326	267	64	5
09:00	1570	1252	235	69	14
10:00	1308	1033	195	61	19
11:00	1414	1090	224	83	17
12:00	1362	1081	191	74	16
13:00	1377	1111	194	55	17
14:00	1636	1333	224	67	12
15:00	1539	1230	233	59	17
16:00	1762	1468	247	39	8
17:00	1614	1405	174	27	8
18:00	1240	1082	115	36	7
19:00	748	643	74	30	1
20:00	541	468	52	21	0
21:00	418	359	39	20	0
22:00	281	233	24	23	1
23:00	224	179	24	20	1
Total					
12H(7-19)	18265	14841	2575	690	159
16H(6-22)	21155	17236	2921	829	169
18H(6-24)	21660	17648	2969	872	171
24H(0-24)	23382	18958	3173	1063	188
AM Peak	07:00	07:00	07:00	11:00	07:00
	1781	**1430**	**276**	**83**	**19**
PM Peak	16:00	16:00	16:00	12:00	13:00
	1762	**1468**	**247**	**74**	**17**

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

25/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	78	51	8	18	1
01:00	73	55	11	5	2
02:00	65	45	9	10	1
03:00	55	34	13	7	1
04:00	147	113	17	12	5
05:00	292	223	45	15	9
06:00	629	486	103	33	7
07:00	907	711	150	37	9
08:00	826	646	140	34	6
09:00	707	546	101	49	11
10:00	758	616	91	45	6
11:00	725	595	93	31	6
12:00	767	616	104	38	9
13:00	794	662	92	34	6
14:00	829	682	103	38	6
15:00	880	733	111	32	4
16:00	734	625	89	17	3
17:00	698	590	85	22	1
18:00	598	516	50	26	6
19:00	410	328	56	26	0
20:00	289	250	26	13	0
21:00	191	150	21	19	1
22:00	175	151	16	8	0
23:00	90	74	9	7	0
Total 12H(7-19)	9223	7538	1209	403	73
16H(6-22)	10742	8752	1415	494	81
18H(6-24)	11007	8977	1440	509	81
24H(0-24)	11717	9498	1543	576	100
AM Peak	07:00	07:00	07:00	09:00	09:00
	907	711	150	49	11
PM Peak	15:00	15:00	15:00	12:00	12:00
	880	733	111	38	9

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	93	78	7	8	0
01:00	84	66	5	10	3
02:00	123	103	8	12	0
03:00	133	110	17	6	0
04:00	203	163	25	15	0
05:00	421	375	25	17	4
06:00	550	473	63	10	4
07:00	768	684	66	17	1
08:00	761	660	77	19	5
09:00	741	628	87	22	4
10:00	773	649	88	25	11
11:00	851	714	105	21	11
12:00	875	721	118	28	8
13:00	832	690	116	21	5
14:00	882	724	119	32	7
15:00	843	689	124	25	5
16:00	910	787	104	12	7
17:00	800	721	70	5	4
18:00	561	512	45	2	2
19:00	359	322	30	4	3
20:00	293	258	27	6	2
21:00	170	157	7	6	0
22:00	129	114	9	6	0
23:00	100	78	12	10	0
Total 12H(7-19)	9597	8179	1119	229	70
16H(6-22)	10969	9389	1246	255	79
18H(6-24)	11198	9581	1267	271	79
24H(0-24)	12255	10476	1354	339	86
AM Peak	11:00	11:00	11:00	10:00	10:00
	851	714	105	25	11
PM Peak	16:00	16:00	15:00	14:00	12:00
	910	787	124	32	8

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	171	129	15	26	1
01:00	157	121	16	15	5
02:00	188	148	17	22	1
03:00	188	144	30	13	1
04:00	350	276	42	27	5
05:00	713	598	70	32	13
06:00	1179	959	166	43	11
07:00	1675	1395	216	54	10
08:00	1587	1306	217	53	11
09:00	1448	1174	188	71	15
10:00	1531	1265	179	70	17
11:00	1576	1309	198	52	17
12:00	1642	1337	222	66	17
13:00	1626	1352	208	55	11
14:00	1711	1406	222	70	13
15:00	1723	1422	235	57	9
16:00	1644	1412	193	29	10
17:00	1498	1311	155	27	5
18:00	1159	1028	95	28	8
19:00	769	650	86	30	3
20:00	582	508	53	19	2
21:00	361	307	28	25	1
22:00	304	265	25	14	0
23:00	190	152	21	17	0
Total 12H(7-19)	18820	15717	2328	632	143
16H(6-22)	21711	18141	2661	749	160
18H(6-24)	22205	18558	2707	780	160
24H(0-24)	23972	19974	2897	915	186
AM Peak	07:00	07:00	08:00	09:00	10:00
	1675	1395	217	71	17
PM Peak	15:00	15:00	15:00	14:00	12:00
	1723	1422	235	70	17

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

26/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	73	56	10	6	1
01:00	46	28	7	11	0
02:00	50	28	13	7	2
03:00	55	33	11	11	0
04:00	72	39	19	13	1
05:00	134	104	22	6	2
06:00	244	194	26	21	3
07:00	342	265	55	15	7
08:00	497	416	67	11	3
09:00	635	542	72	19	2
10:00	665	599	50	12	4
11:00	619	534	69	16	0
12:00	684	590	72	20	2
13:00	602	537	49	14	2
14:00	536	478	42	14	2
15:00	552	470	66	14	2
16:00	513	448	54	11	0
17:00	498	423	54	16	5
18:00	498	443	43	12	0
19:00	289	243	33	13	0
20:00	247	211	24	12	0
21:00	211	174	28	9	0
22:00	128	116	7	4	1
23:00	100	80	12	8	0
Total					
12H(7-19)	6641	5745	693	174	29
16H(6-22)	7632	6567	804	229	32
18H(6-24)	7860	6763	823	241	33
24H(0-24)	8290	7051	905	295	39
AM Peak	10:00	10:00	09:00	06:00	07:00
	665	599	72	21	7
PM Peak	12:00	12:00	12:00	12:00	17:00
	684	590	72	20	5

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	69	56	7	6	0
01:00	64	52	2	9	1
02:00	73	59	6	8	0
03:00	111	89	13	6	3
04:00	142	118	14	9	1
05:00	252	216	27	7	2
06:00	277	227	37	10	3
07:00	446	387	51	7	1
08:00	574	527	42	5	0
09:00	655	593	51	10	1
10:00	630	567	48	13	2
11:00	744	678	59	6	1
12:00	684	616	59	8	1
13:00	589	506	67	13	3
14:00	568	504	61	3	0
15:00	575	519	49	6	1
16:00	498	445	49	4	0
17:00	495	453	36	6	0
18:00	476	442	31	1	2
19:00	298	271	22	4	1
20:00	222	200	20	2	0
21:00	132	113	16	3	0
22:00	114	98	12	4	0
23:00	91	87	2	2	0
Total					
12H(7-19)	6934	6237	603	82	12
16H(6-22)	7863	7048	698	101	16
18H(6-24)	8068	7233	712	107	16
24H(0-24)	8779	7823	781	152	23
AM Peak	11:00	11:00	11:00	10:00	03:00
	744	678	59	13	3
PM Peak	12:00	12:00	13:00	13:00	13:00
	684	616	67	13	3

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	142	112	17	12	1
01:00	110	80	9	20	1
02:00	123	87	19	15	2
03:00	166	122	24	17	3
04:00	214	157	33	22	2
05:00	386	320	49	13	4
06:00	521	421	63	31	6
07:00	788	652	106	22	8
08:00	1071	943	109	16	3
09:00	1290	1135	123	29	3
10:00	1295	1166	98	25	6
11:00	1363	1212	128	22	1
12:00	1368	1206	131	28	3
13:00	1191	1043	116	27	5
14:00	1104	982	103	17	2
15:00	1127	989	115	20	3
16:00	1011	893	103	15	0
17:00	993	876	90	22	5
18:00	974	885	74	13	2
19:00	587	514	55	17	1
20:00	469	411	44	14	0
21:00	343	287	44	12	0
22:00	242	214	19	8	1
23:00	191	167	14	10	0
Total					
12H(7-19)	13575	11982	1296	256	41
16H(6-22)	15495	13615	1502	330	48
18H(6-24)	15928	13996	1535	348	49
24H(0-24)	17069	14874	1686	447	62
AM Peak	11:00	11:00	11:00	06:00	07:00
	1363	1212	128	31	8
PM Peak	12:00	12:00	12:00	12:00	13:00
	1368	1206	131	28	5

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

27/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	66	55	5	6	0
01:00	43	30	7	6	0
02:00	0	0	0	0	0
03:00	37	23	7	5	2
04:00	43	35	4	4	0
05:00	58	42	9	7	0
06:00	117	94	18	4	1
07:00	158	119	29	9	1
08:00	211	167	33	11	0
09:00	405	352	44	9	0
10:00	512	445	53	12	2
11:00	619	561	49	9	0
12:00	698	617	68	10	3
13:00	594	531	49	13	1
14:00	602	545	44	9	4
15:00	553	496	38	16	3
16:00	622	560	43	17	2
17:00	578	518	44	11	5
18:00	571	512	37	20	2
19:00	401	349	37	15	0
20:00	318	276	33	9	0
21:00	245	196	36	12	1
22:00	103	79	14	9	1
23:00	79	66	2	10	1
Total 12H(7-19)	6123	5423	531	146	23
16H(6-22)	7204	6338	655	186	25
18H(6-24)	7386	6483	671	205	27
24H(0-24)	7633	6668	703	233	29
AM Peak	11:00	11:00	10:00	10:00	03:00
	619	561	53	12	2
PM Peak	12:00	12:00	12:00	18:00	17:00
	698	617	68	20	5

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	77	66	9	2	0
01:00	75	68	4	2	1
02:00	0	0	0	0	0
03:00	81	66	7	8	0
04:00	113	102	2	8	1
05:00	139	115	15	8	1
06:00	165	127	31	6	1
07:00	225	191	26	8	0
08:00	337	282	48	7	0
09:00	542	500	36	6	0
10:00	634	584	45	5	0
11:00	779	728	44	6	1
12:00	695	658	31	4	2
13:00	679	626	46	6	1
14:00	592	552	32	6	2
15:00	601	552	42	6	1
16:00	642	610	30	2	0
17:00	509	477	30	1	1
18:00	487	445	36	6	0
19:00	452	407	44	1	0
20:00	301	269	29	2	1
21:00	191	172	15	4	0
22:00	116	108	6	2	0
23:00	86	66	10	10	0
Total 12H(7-19)	6722	6205	446	63	8
16H(6-22)	7831	7180	565	76	10
18H(6-24)	8033	7354	581	88	10
24H(0-24)	8518	7771	618	116	13
AM Peak	11:00	11:00	08:00	03:00	01:00
	779	728	48	8	1
PM Peak	12:00	12:00	13:00	23:00	12:00
	695	658	46	10	2

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	143	121	14	8	0
01:00	118	98	11	8	1
02:00	0	0	0	0	0
03:00	118	89	14	13	2
04:00	156	137	6	12	1
05:00	197	157	24	15	1
06:00	282	221	49	10	2
07:00	383	310	55	17	1
08:00	548	449	81	18	0
09:00	947	852	80	15	0
10:00	1146	1029	98	17	2
11:00	1398	1289	93	15	1
12:00	1393	1275	99	14	5
13:00	1273	1157	95	19	2
14:00	1194	1097	76	15	6
15:00	1154	1048	80	22	4
16:00	1264	1170	73	19	2
17:00	1087	995	74	12	6
18:00	1058	957	73	26	2
19:00	853	756	81	16	0
20:00	619	545	62	11	1
21:00	436	368	51	16	1
22:00	219	187	20	11	1
23:00	165	132	12	20	1
Total 12H(7-19)	12845	11628	977	209	31
16H(6-22)	15035	13518	1220	262	35
18H(6-24)	15419	13837	1252	293	37
24H(0-24)	16151	14439	1321	349	42
AM Peak	11:00	11:00	10:00	08:00	03:00
	1398	1289	98	18	2
PM Peak	12:00	12:00	12:00	18:00	14:00
	1393	1275	99	26	6

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

28/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	58	39	9	10	0
01:00	31	20	4	7	0
02:00	34	15	12	7	0
03:00	45	24	10	11	0
04:00	87	59	11	16	1
05:00	247	182	45	16	4
06:00	603	465	95	30	13
07:00	1046	857	154	25	10
08:00	967	754	173	30	10
09:00	740	551	135	42	12
10:00	804	628	127	39	10
11:00	745	578	115	41	11
12:00	770	602	104	59	5
13:00	672	554	76	33	9
14:00	687	547	97	38	5
15:00	662	528	98	31	5
16:00	726	592	106	21	7
17:00	667	536	98	31	2
18:00	523	447	48	24	4
19:00	283	221	39	19	4
20:00	213	174	23	15	1
21:00	179	132	28	17	2
22:00	153	127	13	13	0
23:00	91	72	8	10	1
Total					
12H(7-19)	9009	7174	1331	414	90
16H(6-22)	10287	8166	1516	495	110
18H(6-24)	10531	8365	1537	518	111
24H(0-24)	11033	8704	1628	585	116
AM Peak	07:00	07:00	08:00	09:00	06:00
	1046	857	173	42	13
PM Peak	12:00	12:00	16:00	12:00	13:00
	770	602	106	59	9

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	67	56	3	8	0
01:00	65	56	6	2	1
02:00	89	63	7	19	0
03:00	159	122	14	23	0
04:00	236	199	16	19	2
05:00	467	417	38	10	2
06:00	601	531	61	8	1
07:00	836	747	76	9	4
08:00	823	736	75	12	0
09:00	767	673	74	18	2
10:00	721	621	78	19	3
11:00	836	717	84	27	8
12:00	714	604	84	18	8
13:00	818	673	101	36	8
14:00	677	546	101	25	5
15:00	787	618	133	30	6
16:00	855	702	128	22	3
17:00	897	786	88	20	3
18:00	611	544	55	10	2
19:00	337	297	27	11	2
20:00	232	200	22	10	0
21:00	141	116	21	4	0
22:00	104	84	14	6	0
23:00	96	80	3	12	1
Total					
12H(7-19)	9342	7967	1077	246	52
16H(6-22)	10653	9111	1208	279	55
18H(6-24)	10853	9275	1225	297	56
24H(0-24)	11936	10188	1309	378	61
AM Peak	07:00	07:00	11:00	11:00	11:00
	836	747	84	27	8
PM Peak	17:00	17:00	15:00	13:00	12:00
	897	786	133	36	8

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	125	95	12	18	0
01:00	96	76	10	9	1
02:00	123	78	19	26	0
03:00	204	146	24	34	0
04:00	323	258	27	35	3
05:00	714	599	83	26	6
06:00	1204	996	156	38	14
07:00	1882	1604	230	34	14
08:00	1790	1490	248	42	10
09:00	1507	1224	209	60	14
10:00	1525	1249	205	58	13
11:00	1581	1295	199	68	19
12:00	1484	1206	188	77	13
13:00	1490	1227	177	69	17
14:00	1364	1093	198	63	10
15:00	1449	1146	231	61	11
16:00	1581	1294	234	43	10
17:00	1564	1322	186	51	5
18:00	1134	991	103	34	6
19:00	620	518	66	30	6
20:00	445	374	45	25	1
21:00	320	248	49	21	2
22:00	257	211	27	19	0
23:00	187	152	11	22	2
Total					
12H(7-19)	18351	15141	2408	660	142
16H(6-22)	20940	17277	2724	774	165
18H(6-24)	21384	17640	2762	815	167
24H(0-24)	22969	18892	2937	963	177
AM Peak	07:00	07:00	08:00	11:00	11:00
	1882	1604	248	68	19
PM Peak	16:00	17:00	16:00	12:00	13:00
	1581	1322	234	77	17

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

29/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	32	21	2	9	0
01:00	34	15	8	9	2
02:00	44	22	8	13	1
03:00	54	30	16	8	0
04:00	112	73	18	21	0
05:00	231	175	31	20	5
06:00	613	476	94	39	4
07:00	1060	827	188	37	8
08:00	896	681	166	34	15
09:00	762	560	150	44	8
10:00	692	510	125	46	11
11:00	575	416	115	37	7
12:00	661	508	87	60	6
13:00	642	495	95	40	12
14:00	624	502	86	32	4
15:00	664	538	83	40	3
16:00	704	564	106	24	10
17:00	722	581	100	38	3
18:00	467	367	68	30	2
19:00	343	281	41	21	0
20:00	211	171	27	10	3
21:00	197	151	25	20	1
22:00	163	129	15	19	0
23:00	91	69	8	14	0
Total 12H(7-19)	8469	6549	1369	462	89
16H(6-22)	9833	7628	1556	552	97
18H(6-24)	10087	7826	1579	585	97
24H(0-24)	10594	8162	1662	665	105
AM Peak	07:00	07:00	07:00	10:00	08:00
	1060	827	188	46	15
PM Peak	17:00	17:00	16:00	12:00	13:00
	722	581	106	60	12

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	68	48	7	11	2
01:00	84	65	6	12	1
02:00	95	84	1	9	1
03:00	124	92	16	14	2
04:00	230	186	20	24	0
05:00	436	388	36	12	0
06:00	508	423	64	18	3
07:00	812	713	80	18	1
08:00	787	697	68	18	4
09:00	666	581	60	19	6
10:00	653	559	60	24	10
11:00	783	667	91	19	6
12:00	843	726	100	10	7
13:00	872	744	95	24	9
14:00	810	678	106	21	5
15:00	807	667	118	18	4
16:00	875	752	106	12	5
17:00	808	722	77	8	1
18:00	560	506	46	7	1
19:00	350	313	31	3	3
20:00	275	245	20	10	0
21:00	208	193	9	5	1
22:00	121	102	10	8	1
23:00	115	105	3	7	0
Total 12H(7-19)	9276	8012	1007	198	59
16H(6-22)	10617	9186	1131	234	66
18H(6-24)	10853	9393	1144	249	67
24H(0-24)	11890	10256	1230	331	73
AM Peak	07:00	07:00	11:00	04:00	10:00
	812	713	91	24	10
PM Peak	16:00	16:00	15:00	13:00	13:00
	875	752	118	24	9

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	100	69	9	20	2
01:00	118	80	14	21	3
02:00	139	106	9	22	2
03:00	178	122	32	22	2
04:00	342	259	38	45	0
05:00	667	563	67	32	5
06:00	1121	899	158	57	7
07:00	1872	1540	268	55	9
08:00	1683	1378	234	52	19
09:00	1428	1141	210	63	14
10:00	1345	1069	185	70	21
11:00	1358	1083	206	56	13
12:00	1504	1234	187	70	13
13:00	1514	1239	190	64	21
14:00	1434	1180	192	53	9
15:00	1471	1205	201	58	7
16:00	1579	1316	212	36	15
17:00	1530	1303	177	46	4
18:00	1027	873	114	37	3
19:00	693	594	72	24	3
20:00	486	416	47	20	3
21:00	405	344	34	25	2
22:00	284	231	25	27	1
23:00	206	174	11	21	0
Total 12H(7-19)	17745	14561	2376	660	148
16H(6-22)	20450	16814	2687	786	163
18H(6-24)	20940	17219	2723	834	164
24H(0-24)	22484	18418	2892	996	178
AM Peak	07:00	07:00	07:00	10:00	10:00
	1872	1540	268	70	21
PM Peak	16:00	16:00	16:00	12:00	13:00
	1579	1316	212	70	21

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

30/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	77	55	9	12	1
01:00	60	44	7	9	0
02:00	52	37	7	7	1
03:00	71	43	14	13	1
04:00	114	78	19	16	1
05:00	281	214	44	19	4
06:00	513	392	81	34	6
07:00	960	758	148	40	14
08:00	892	667	175	36	14
09:00	731	512	156	57	6
10:00	683	519	107	49	8
11:00	660	503	107	41	9
12:00	651	519	85	40	7
13:00	634	521	85	24	4
14:00	704	545	108	45	6
15:00	681	568	81	28	4
16:00	779	646	97	30	6
17:00	673	569	74	29	1
18:00	544	463	53	25	3
19:00	327	261	47	18	1
20:00	235	192	29	12	2
21:00	201	161	26	11	3
22:00	142	124	8	10	0
23:00	103	82	11	9	1
Total 12H(7-19)	8592	6790	1276	444	82
16H(6-22)	9868	7796	1459	519	94
18H(6-24)	10113	8002	1478	538	95
24H(0-24)	10768	8473	1578	614	103
AM Peak	07:00	07:00	08:00	09:00	07:00
	960	758	175	57	14
PM Peak	16:00	16:00	14:00	14:00	12:00
	779	646	108	45	7

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	93	82	9	2	0
01:00	115	102	7	5	1
02:00	118	96	9	12	1
03:00	209	173	23	10	3
04:00	280	249	19	12	0
05:00	430	380	25	21	4
06:00	612	518	75	19	0
07:00	829	723	90	16	0
08:00	774	682	74	16	2
09:00	706	596	94	12	4
10:00	706	603	78	21	4
11:00	841	731	83	22	5
12:00	799	696	82	17	4
13:00	877	738	104	25	10
14:00	854	728	98	27	1
15:00	813	681	107	18	7
16:00	920	808	101	10	1
17:00	915	834	68	12	1
18:00	530	470	46	13	1
19:00	311	271	28	12	0
20:00	263	231	25	7	0
21:00	170	159	10	1	0
22:00	112	100	8	4	0
23:00	79	64	9	6	0
Total 12H(7-19)	9564	8290	1025	209	40
16H(6-22)	10920	9469	1163	248	40
18H(6-24)	11111	9633	1180	258	40
24H(0-24)	12356	10715	1272	320	49
AM Peak	11:00	11:00	09:00	11:00	11:00
	841	731	94	22	5
PM Peak	16:00	17:00	15:00	14:00	13:00
	920	834	107	27	10

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	170	137	18	14	1
01:00	175	146	14	14	1
02:00	170	133	16	19	2
03:00	280	216	37	23	4
04:00	394	327	38	28	1
05:00	711	594	69	40	8
06:00	1125	910	156	53	6
07:00	1789	1481	238	56	14
08:00	1666	1349	249	52	16
09:00	1437	1108	250	69	10
10:00	1389	1122	185	70	12
11:00	1501	1234	190	63	14
12:00	1450	1215	167	57	11
13:00	1511	1259	189	49	14
14:00	1558	1273	206	72	7
15:00	1494	1249	188	46	11
16:00	1699	1454	198	40	7
17:00	1588	1403	142	41	2
18:00	1074	933	99	38	4
19:00	638	532	75	30	1
20:00	498	423	54	19	2
21:00	371	320	36	12	3
22:00	254	224	16	14	0
23:00	182	146	20	15	1
Total 12H(7-19)	18156	15080	2301	653	122
16H(6-22)	20788	17265	2622	767	134
18H(6-24)	21224	17635	2658	796	135
24H(0-24)	23124	19188	2850	934	152
AM Peak	07:00	07:00	09:00	10:00	08:00
	1789	1481	250	70	16
PM Peak	16:00	16:00	14:00	14:00	13:00
	1699	1454	206	72	14

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

24/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	86	59.4	52.7	6.4	0	0	0	0	1	6	21	36	10	12	0	0
01:00	47	57.7	51.5	6.0	0	0	0	0	0	2	21	15	6	2	1	0
02:00	64	55.7	51.3	4.3	0	0	0	0	0	2	24	29	7	2	0	0
03:00	74	57.9	52.8	5.0	0	0	0	0	0	2	21	28	19	4	0	0
04:00	103	56.8	52.1	4.5	0	0	0	0	0	3	29	50	17	4	0	0
05:00	229	55.9	50.7	5.0	0	0	0	0	0	14	96	92	21	4	1	1
06:00	590	52.6	47.3	5.1	0	0	0	23	18	84	325	118	18	4	0	0
07:00	1037	50.7	46.1	4.4	0	0	3	6	57	324	489	137	20	1	0	0
08:00	939	50.4	43.2	6.9	1	2	43	84	98	223	414	66	8	0	0	0
09:00	760	51.1	43.7	7.2	0	0	55	47	39	199	345	71	2	1	1	0
10:00	656	50.4	45.0	5.3	0	0	2	39	57	176	311	62	8	1	0	0
11:00	701	50.3	44.7	5.4	0	0	6	47	55	187	343	60	1	2	0	0
12:00	639	52.1	44.5	7.4	0	5	34	39	29	126	323	69	14	0	0	0
13:00	639	53.1	43.7	9.1	0	20	54	19	16	136	302	78	11	3	0	0
14:00	813	51.0	42.1	8.6	0	10	97	32	66	255	257	86	9	1	0	0
15:00	722	50.9	45.0	5.7	0	0	10	45	43	193	341	79	10	1	0	0
16:00	825	52.4	45.2	6.9	0	9	29	39	21	176	415	127	7	2	0	0
17:00	655	52.5	48.5	3.8	0	0	1	0	2	92	356	181	21	2	0	0
18:00	614	51.4	46.5	4.8	0	0	1	11	32	152	304	98	14	2	0	0
19:00	326	53.1	48.8	4.2	0	0	0	0	7	37	171	91	18	2	0	0
20:00	271	54.1	49.3	4.7	0	0	0	0	2	28	149	67	19	5	1	0
21:00	220	55.7	50.7	4.8	0	0	1	0	0	7	101	82	21	8	0	0
22:00	157	54.7	50.5	4.1	0	0	0	0	0	6	68	73	5	5	0	0
23:00	112	56.1	51.1	4.8	0	0	0	0	0	4	47	46	9	6	0	0
Total 2H(10-12)	1357	50.3	44.8	5.3	0	0	8	86	112	363	654	122	9	3	0	0
2H(14-16)	1535	51.2	43.5	7.5	0	10	107	77	109	448	598	165	19	2	0	0
12H(7-19)	9000	51.7	44.8	6.7	1	46	335	408	515	2239	4200	1114	125	16	1	0
24H(0-24)	11279	52.7	45.8	6.7	1	46	336	431	543	2434	5273	1841	295	74	4	1
AM Peak	07:00	00:00	03:00	09:00	08:00	08:00	09:00	08:00	08:00	07:00	07:00	07:00	05:00	00:00	01:00	05:00
	1037	59.4	52.8	7.2	1	2	55	84	98	324	489	137	21	12	1	1
PM Peak	16:00	23:00	23:00	13:00	12:00	13:00	14:00	15:00	14:00	14:00	16:00	17:00	17:00	21:00	20:00	12:00
	825	56.1	51.1	9.1	0	20	97	45	66	255	415	181	21	8	1	0

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	78	57.3	52.4	4.8	0	0	0	0	0	3	20	37	14	4	0	0
01:00	120	55.8	51.4	4.2	0	0	0	0	0	2	44	55	18	0	1	0
02:00	97	56.2	51.1	4.9	0	0	0	0	0	6	35	43	10	2	1	0
03:00	123	54.0	49.9	4.0	0	0	0	0	2	7	53	54	6	1	0	0
04:00	259	55.6	51.0	4.5	0	0	0	0	0	15	97	109	31	7	0	0
05:00	442	54.1	44.4	9.4	0	0	57	28	11	51	187	90	12	5	1	0
06:00	593	52.6	46.5	5.9	0	0	3	50	18	73	312	126	8	3	0	0
07:00	744	52.0	46.3	5.5	0	0	9	17	47	170	342	137	21	1	0	0
08:00	723	50.4	45.1	5.0	0	1	9	23	24	269	307	87	3	0	0	0
09:00	810	51.5	45.4	5.9	0	0	19	32	37	221	390	89	20	1	1	0
10:00	652	52.3	44.5	7.4	5	9	21	26	12	168	343	60	7	1	0	0
11:00	713	50.6	43.8	6.5	2	0	16	73	57	188	300	74	3	0	0	0
12:00	723	50.8	43.3	7.2	0	1	54	47	48	202	298	71	2	0	0	0
13:00	738	51.5	44.9	6.3	0	2	15	46	47	176	365	72	10	4	1	0
14:00	823	50.4	43.4	6.8	0	4	38	45	70	297	294	67	5	2	1	0
15:00	817	50.4	44.7	5.5	0	0	5	39	100	220	366	68	17	2	0	0
16:00	937	50.2	43.2	6.7	0	9	26	79	83	303	372	53	9	3	0	0
17:00	959	51.4	45.4	5.8	0	0	23	19	82	229	479	111	10	5	1	0
18:00	626	50.8	46.2	4.4	0	0	0	2	41	188	292	94	7	1	1	0
19:00	422	52.5	47.6	4.7	0	0	1	2	19	88	174	127	11	0	0	0
20:00	270	54.8	49.6	5.0	0	0	0	1	2	26	131	87	17	5	0	1
21:00	198	57.6	50.4	7.0	0	0	0	3	5	15	92	51	16	13	2	1
22:00	124	56.8	51.8	4.9	0	0	0	0	1	7	30	66	14	6	0	0
23:00	112	55.3	50.5	4.7	0	0	0	0	0	12	39	48	10	3	0	0
Total 2H(10-12)	1365	51.4	44.2	7.0	7	9	37	99	69	356	643	134	10	1	0	0
2H(14-16)	1640	50.5	44.1	6.2	0	4	43	84	170	517	660	135	22	4	1	0
12H(7-19)	9265	51.1	44.7	6.2	7	26	235	448	648	2631	4148	983	114	20	5	0
24H(0-24)	12103	52.3	45.5	6.5	7	26	296	532	706	2936	5362	1876	281	69	10	2
AM Peak	09:00	00:00	00:00	05:00	10:00	10:00	05:00	11:00	11:00	08:00	09:00	07:00	04:00	04:00	01:00	00:00
	810	57.3	52.4	9.4	5	9	57	73	57	269	390	137	31	7	1	0
PM Peak	17:00	21:00	22:00	12:00	12:00	16:00	12:00	16:00	15:00	16:00	17:00	19:00	15:00	21:00	21:00	20:00
	959	57.6	51.8	7.2	0	9	54	79	100	303	479	127	17	13	2	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	164	58.4	52.6	5.7	0	0	0	0	1	9	41	73	24	16	0	0
01:00	167	56.4	51.5	4.8	0	0	0	0	0	4	65	70	24	2	2	0
02:00	161	56.0	51.1	4.7	0	0	0	0	0	8	59	72	17	4	1	0
03:00	197	55.7	51.0	4.6	0	0	0	0	2	9	74	82	25	5	0	0
04:00	362	56.0	51.3	4.5	0	0	0	0	0	18	126	159	48	11	0	0
05:00	671	55.6	46.5	8.7	0	0	57	28	11	65	283	182	33	9	2	1
06:00	1183	52.6	46.9	5.5	0	0	3	73	36	157	637	244	26	7	0	0
07:00	1781	51.3	46.2	4.9	0	0	12	23	104	494	831	274	41	2	0	0
08:00	1662	50.5	44.1	6.3	1	3	52	107	122	492	721	153	11	0	0	0
09:00	1570	51.4	44.6	6.6	0	0	74	79	76	420	735	160	22	2	2	0
10:00	1308	51.4	44.7	6.4	5	9	23	65	69	344	654	122	15	2	0	0
11:00	1414	50.5	44.2	6.0	2	0	22	120	112	375	643	134	4	2	0	0
12:00	1362	51.4	43.8	7.3	0	6	88	86	77	328	621	140	16	0	0	0
13:00	1377	52.4	44.4	7.7	0	22	69	65	63	312	667	150	21	7	1	0
14:00	1636	50.8	42.7	7.7	0	14	135	77	136	552	551	153	14	3	1	0
15:00	1539	50.7	44.9	5.6	0	0	15	84	143	413	707	147	27	3	0	0
16:00	1762	51.3	44.2	6.9	0	18	55	118	104	479	787	180	16	5	0	0
17:00	1614	52.1	46.7	5.3	0	0	24	19	84	321	835	292	31	7	1	0
18:00	1240	51.1	46.4	4.6	0	0	1	13	73	340	596	192	21	3	1	0
19:00	748	52.8	48.1	4.5	0	0	1	2	26	125	345	218	29	2	0	0
20:00	541	54.4	49.4	4.8	0	0	0	1	4	54	280	154	36	10	1	1
21:00	418	56.7	50.5	5.9	0	0	1	3	5	22	193	133	37	21	2	1
22:00	281	55.7	51.1	4.5	0	0	0	0	1	13	98	139	19	11	0	0
23:00	224	55.7	50.8	4.7	0	0	0	0	0	16	86	94	19	9	0	0
Total 2H(10-12)	2722	50.9	44.5	6.2	7	9	45	185	181	719	1297	256	19	4	0	0
2H(14-16)	3175	50.9	43.8	6.9	0	14	150	161	279	965	1258	300	41	6	1	0
12H(7-19)	18265	51.4	44.7	6.4	8	72	570	856	1163	4870	8348	2097	239	36	6	0
24H(0-24)	23382	52.5	45.6	6.6	8	72	632	963	1249	5370	10635	3717	576	143	14	3
AM Peak	07:00	00:00	00:00	05:00	10:00	10:00	09:00	11:00	08:00	07:00	07:00	07:00	04:00	00:00	01:00	05:00
	1781	58.4	52.6	8.7	5	9	74	120	122	494	831	274	48	16	2	1
PM Peak	16:00	21:00	22:00	14:00	12:00	13:00	14:00	16:00	15:00	14:00	17:00	17:00	21:00	21:00	21:00	20:00
	1762	56.7	51.1	7.7	0	22	135	118	143	552	835	292	37	21	2	1

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

25/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	78	56.8	49.8	6.7	0	0	0	0	3	16	19	31	6	1	2	0
01:00	73	57.9	51.1	6.6	0	0	0	0	2	2	29	34	2	2	1	1
02:00	65	59.0	52.6	6.2	0	0	0	0	0	2	23	24	9	6	1	0
03:00	55	56.3	50.8	5.3	0	0	0	0	1	4	19	24	4	3	0	0
04:00	147	59.3	52.5	6.6	0	0	1	0	3	2	43	62	22	13	0	1
05:00	292	54.8	49.6	5.0	0	0	0	0	0	45	127	86	25	9	0	0
06:00	629	53.7	47.9	5.5	0	6	5	0	2	94	346	148	21	7	0	0
07:00	907	51.8	45.1	6.5	0	0	49	20	35	230	446	117	7	2	1	0
08:00	826	51.4	45.7	5.5	0	1	15	44	17	181	459	103	5	1	0	0
09:00	707	51.4	45.9	5.3	0	0	15	14	12	201	367	91	5	0	2	0
10:00	758	49.9	44.5	5.3	0	1	10	20	89	248	316	71	2	1	0	0
11:00	725	51.7	42.6	8.8	0	22	42	63	56	170	292	66	13	0	0	1
12:00	767	49.9	43.4	6.2	0	8	21	15	109	274	288	45	6	1	0	0
13:00	794	51.4	41.5	9.6	7	21	82	38	92	192	274	81	6	0	0	1
14:00	829	52.4	45.2	6.9	0	11	30	9	42	203	416	100	13	5	0	0
15:00	880	51.9	44.9	6.7	0	9	22	46	58	188	427	124	5	0	1	0
16:00	734	51.7	46.6	5.0	0	1	0	12	44	173	360	124	15	5	0	0
17:00	698	52.6	46.4	6.0	0	0	9	36	44	119	317	153	18	2	0	0
18:00	598	51.7	47.8	3.7	0	0	0	1	9	93	350	138	6	0	1	0
19:00	410	53.4	47.7	5.5	0	0	0	13	22	58	193	102	16	6	0	0
20:00	289	53.8	48.8	4.7	0	0	0	0	0	46	151	73	13	4	2	0
21:00	191	54.1	49.6	4.4	0	0	0	1	0	16	97	62	11	4	0	0
22:00	175	57.1	51.4	5.4	0	0	0	0	0	7	67	78	13	7	3	0
23:00	90	61.5	53.2	8.0	0	0	0	0	0	8	29	22	20	7	3	1
Total 2H(10-12)	1483	51.1	43.6	7.3	0	23	52	83	145	418	608	137	15	1	0	1
2H(14-16)	1709	52.1	45.1	6.8	0	20	52	55	100	391	843	224	18	5	1	0
12H(7-19)	9223	51.9	44.9	6.7	7	74	295	318	607	2272	4312	1213	101	17	5	2
24H(0-24)	11717	52.9	45.9	6.8	7	80	301	332	640	2572	5455	1959	263	86	17	5
AM Peak	07:00	04:00	02:00	11:00	00:00	11:00	07:00	11:00	10:00	10:00	08:00	06:00	05:00	04:00	00:00	01:00
	907	59.3	52.6	8.8	0	22	49	63	89	248	459	148	25	13	2	1
PM Peak	15:00	23:00	23:00	13:00	13:00	13:00	13:00	15:00	12:00	12:00	15:00	17:00	23:00	22:00	22:00	13:00
	880	61.5	53.2	9.6	7	21	82	46	109	274	427	153	20	7	3	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	93	57.0	51.8	5.1	0	0	0	0	0	4	28	48	8	4	1	0
01:00	84	55.4	51.8	3.5	0	0	0	0	1	1	17	57	7	1	0	0
02:00	123	56.4	51.0	5.2	0	0	0	0	2	13	35	48	22	3	0	0
03:00	133	55.6	50.8	4.6	0	0	0	0	0	6	56	54	14	2	1	0
04:00	203	56.0	50.3	5.5	1	0	0	0	2	12	84	79	19	6	0	0
05:00	421	57.5	49.1	8.1	0	0	9	19	3	50	156	130	32	14	6	2
06:00	550	52.4	47.5	4.8	0	0	0	7	35	73	299	120	11	5	0	0
07:00	768	51.6	46.9	4.5	0	0	3	11	24	161	421	135	10	3	0	0
08:00	761	50.8	46.2	4.4	0	0	1	16	40	179	411	109	4	1	0	0
09:00	741	51.4	44.8	6.3	0	0	28	35	19	255	304	75	23	2	0	0
10:00	773	49.6	43.3	6.1	0	1	26	48	88	261	291	55	3	0	0	0
11:00	851	49.4	42.9	6.2	0	3	8	110	107	244	319	56	4	0	0	0
12:00	875	49.2	43.7	5.4	0	0	12	37	125	326	321	48	2	3	1	0
13:00	832	50.5	44.8	5.5	0	0	21	30	54	252	392	78	4	1	0	0
14:00	882	49.0	43.8	5.1	0	0	13	30	113	345	328	45	8	0	0	0
15:00	843	50.5	44.4	5.9	0	2	26	23	68	284	359	74	5	2	0	0
16:00	910	51.3	45.4	5.7	0	0	32	9	47	246	465	100	7	4	0	0
17:00	800	50.8	46.7	4.0	0	0	0	3	42	166	468	109	11	1	0	0
18:00	561	51.7	47.5	4.1	0	0	0	4	10	107	320	109	8	2	1	0
19:00	359	52.8	47.3	5.4	0	0	0	5	21	72	173	73	11	3	0	1
20:00	293	54.5	48.9	5.3	1	0	0	1	6	28	154	82	15	5	1	0
21:00	170	56.1	50.2	5.7	0	0	0	0	4	23	57	65	11	10	0	0
22:00	129	57.8	51.5	6.1	0	0	0	0	0	8	49	54	8	7	3	0
23:00	100	57.1	51.7	5.2	0	0	0	0	0	2	39	43	10	5	1	0
Total 2H(10-12)	1624	49.5	43.1	6.2	0	4	34	158	195	505	610	111	7	0	0	0
2H(14-16)	1725	49.8	44.1	5.5	0	2	39	53	181	629	687	119	13	2	0	0
12H(7-19)	9597	50.7	44.9	5.5	0	6	170	356	737	2826	4399	993	89	19	2	0
24H(0-24)	12255	52.0	45.9	5.9	2	6	179	388	811	3118	5546	1846	257	84	15	3
AM Peak	11:00	05:00	00:00	05:00	04:00	11:00	09:00	11:00	11:00	10:00	07:00	07:00	05:00	05:00	05:00	05:00
	851	57.5	51.8	8.1	1	3	28	110	107	261	421	135	32	14	6	2
PM Peak	16:00	22:00	23:00	22:00	20:00	15:00	16:00	12:00	12:00	14:00	17:00	17:00	20:00	21:00	22:00	19:00
	910	57.8	51.7	6.1	1	2	32	37	125	345	468	109	15	10	3	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	171	57.0	50.9	6.0	0	0	0	0	3	20	47	79	14	5	3	0
01:00	157	56.8	51.4	5.2	0	0	0	0	3	3	46	91	9	3	1	1
02:00	188	57.4	51.5	5.6	0	0	0	0	2	15	58	72	31	9	1	0
03:00	188	55.8	50.8	4.8	0	0	0	0	1	10	75	78	18	5	1	0
04:00	350	57.5	51.2	6.1	1	0	1	0	5	14	127	141	41	19	0	1
05:00	713	56.6	49.3	7.0	0	0	9	19	3	95	283	216	57	23	6	2
06:00	1179	53.1	47.7	5.2	0	6	5	7	37	167	645	268	32	12	0	0
07:00	1675	51.9	45.9	5.7	0	0	52	31	59	391	867	252	17	5	1	0
08:00	1587	51.2	45.9	5.0	0	1	16	60	57	360	870	212	9	2	0	0
09:00	1448	51.4	45.4	5.9	0	0	43	49	31	456	671	166	28	2	2	0
10:00	1531	49.8	43.9	5.7	0	2	36	68	177	509	607	126	5	1	0	0
11:00	1576	50.6	42.8	7.5	0	25	50	173	163	414	611	122	17	0	0	1
12:00	1642	49.5	43.6	5.8	0	8	33	52	234	600	609	93	8	4	1	0
13:00	1626	51.4	43.2	7.9	7	21	103	68	146	444	666	159	10	1	0	1
14:00	1711	50.8	44.5	6.1	0	11	43	39	155	548	744	145	21	5	0	0
15:00	1723	51.2	44.6	6.3	0	11	48	69	126	472	786	198	10	2	1	0
16:00	1644	51.5	45.9	5.4	0	1	32	21	91	419	825	224	22	9	0	0
17:00	1498	51.8	46.6	5.0	0	0	9	39	86	285	785	262	29	3	0	0
18:00	1159	51.7	47.7	3.9	0	0	0	5	19	200	670	247	14	2	2	0
19:00	769	53.1	47.5	5.5	0	0	0	18	43	130	366	175	27	9	0	1
20:00	582	54.1	48.9	5.0	1	0	0	1	6	74	305	155	28	9	3	0
21:00	361	55.1	49.9	5.1	0	0	0	1	4	39	154	127	22	14	0	0
22:00	304	57.4	51.5	5.7	0	0	0	0	0	15	116	132	21	14	6	0
23:00	190	59.3	52.4	6.7	0	0	0	0	0	10	68	65	30	12	4	1
Total 2H(10-12)	3107	50.3	43.3	6.7	0	27	86	241	340	923	1218	248	22	1	0	1
2H(14-16)	3434	51.0	44.6	6.2	0	22	91	108	281	1020	1530	343	31	7	1	0
12H(7-19)	18820	51.3	44.9	6.2	7	80	465	674	1344	5098	8711	2206	190	36	7	2
24H(0-24)	23972	52.4	45.9	6.4	9	86	480	720	1451	5690	11001	3805	520	170	32	8
AM Peak	07:00	04:00	02:00	11:00	04:00	11:00	07:00	11:00	10:00	10:00	08:00	06:00	05:00	05:00	05:00	05:00
	1675	57.5	51.5	7.5	1	25	52	173	177	509	870	268	57	23	6	2
PM Peak	15:00	23:00	23:00	13:00	13:00	13:00	13:00	15:00	12:00	12:00	16:00	17:00	23:00	21:00	22:00	13:00
	1723	59.3	52.4	7.9	7	21	103	69	234	600	825	262	30	14	6	1

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

26/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	73	58.2	52.5	5.4	0	0	0	0	0	2	21	34	11	4	1	0
01:00	46	56.7	51.6	4.9	0	0	0	0	0	2	15	23	3	3	0	0
02:00	50	65.1	55.2	9.6	0	0	0	0	0	3	9	19	13	2	1	3
03:00	55	59.0	53.3	5.5	0	0	0	0	0	3	9	26	14	2	1	0
04:00	72	58.2	53.0	5.1	0	0	0	0	0	2	18	31	16	5	0	0
05:00	134	55.2	50.0	5.0	0	0	0	0	2	8	68	39	14	2	1	0
06:00	244	56.3	50.0	6.1	0	1	0	2	2	19	119	64	28	8	0	1
07:00	342	53.7	47.4	6.0	0	0	1	17	7	70	146	81	12	8	0	0
08:00	497	51.7	47.3	4.3	0	0	0	1	6	135	255	76	21	3	0	0
09:00	635	50.8	45.2	5.4	0	0	9	27	42	174	304	72	7	0	0	0
10:00	665	50.7	45.2	5.2	0	0	8	26	46	175	339	62	8	1	0	0
11:00	619	51.5	44.8	6.5	0	0	30	22	31	172	281	71	10	2	0	0
12:00	684	51.6	45.8	5.6	0	0	26	0	20	191	344	91	11	1	0	0
13:00	602	51.7	46.0	5.4	0	0	12	14	18	165	292	85	15	1	0	0
14:00	536	51.7	47.7	3.8	0	0	0	1	7	96	310	109	11	2	0	0
15:00	552	53.3	45.4	7.6	0	13	22	4	15	114	287	81	16	0	0	0
16:00	513	52.6	47.9	4.6	0	0	0	3	15	96	264	103	29	3	0	0
17:00	498	52.2	47.1	4.9	0	0	0	6	13	139	230	90	14	5	1	0
18:00	498	52.4	47.8	4.4	0	0	0	0	12	106	255	99	22	4	0	0
19:00	289	53.7	48.8	4.7	0	0	0	0	3	41	147	81	13	2	2	0
20:00	247	57.1	50.7	6.2	0	0	2	1	0	11	122	70	27	10	4	0
21:00	211	55.4	50.2	5.0	0	0	0	0	5	15	82	87	17	4	1	0
22:00	128	57.2	51.1	5.9	0	0	0	0	0	12	49	46	13	6	2	0
23:00	100	60.6	52.6	7.7	0	0	0	0	0	8	36	29	14	11	0	2
Total 2H(10-12)	1284	51.1	45.0	5.9	0	0	38	48	77	347	620	133	18	3	0	0
2H(14-16)	1088	52.9	46.6	6.1	0	13	22	5	22	210	597	190	27	2	0	0
12H(7-19)	6641	52.1	46.3	5.5	0	13	108	121	232	1633	3307	1020	176	30	1	0
24H(0-24)	8290	53.3	47.2	5.9	0	14	110	124	244	1759	4002	1569	359	89	14	6
AM Peak	10:00	02:00	02:00	02:00	00:00	06:00	11:00	09:00	10:00	10:00	10:00	07:00	06:00	06:00	00:00	02:00
	665	65.1	55.2	9.6	0	1	30	27	46	175	339	81	28	8	1	3
PM Peak	12:00	23:00	23:00	23:00	12:00	15:00	12:00	13:00	12:00	12:00	12:00	14:00	16:00	23:00	20:00	23:00
	684	60.6	52.6	7.7	0	13	26	14	20	191	344	109	29	11	4	2

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	69	56.8	49.1	7.4	0	0	1	0	5	8	33	7	10	5	0	0
01:00	64	53.3	49.8	3.4	0	0	0	0	1	2	30	29	2	0	0	0
02:00	73	57.1	51.8	5.2	0	0	0	0	0	5	20	36	7	5	0	0
03:00	111	57.1	51.4	5.6	0	0	0	1	3	7	27	50	19	4	0	0
04:00	142	58.1	52.0	5.9	0	0	0	0	1	10	37	64	24	4	1	1
05:00	252	56.4	49.1	7.1	0	0	9	5	1	17	108	82	25	3	2	0
06:00	277	55.0	49.0	5.8	0	0	0	7	2	27	143	80	10	5	2	1
07:00	446	54.8	49.1	5.4	0	0	0	6	5	46	227	133	17	9	1	2
08:00	574	51.9	47.7	4.0	0	0	0	1	13	107	306	134	11	2	0	0
09:00	655	52.1	46.5	5.5	0	0	7	20	32	140	322	115	15	4	0	0
10:00	630	51.6	45.3	6.1	0	1	21	14	43	155	307	76	12	1	0	0
11:00	744	50.4	46.3	3.9	0	0	0	0	30	229	380	96	7	2	0	0
12:00	684	50.3	45.3	4.9	1	1	1	5	59	257	268	81	11	0	0	0
13:00	589	51.1	46.4	4.5	0	0	0	5	18	191	288	70	10	7	0	0
14:00	568	53.0	47.0	5.8	0	0	7	11	22	117	285	94	23	8	1	0
15:00	575	50.9	46.5	4.3	0	0	0	6	28	140	318	74	8	0	1	0
16:00	498	51.6	46.8	4.6	0	0	0	2	18	151	233	75	14	5	0	0
17:00	495	51.4	47.2	4.0	0	0	0	0	15	112	274	83	8	3	0	0
18:00	476	51.9	47.3	4.4	0	0	2	1	7	100	278	73	11	3	1	0
19:00	298	52.7	47.8	4.8	0	0	0	0	11	63	142	69	8	5	0	0
20:00	222	53.6	49.3	4.2	0	0	0	0	1	23	112	74	10	1	1	0
21:00	132	56.1	50.9	4.9	0	0	0	0	2	6	53	47	20	4	0	0
22:00	114	56.2	50.8	5.3	0	0	0	0	2	9	39	47	14	2	1	0
23:00	91	57.4	50.4	6.8	0	0	0	0	1	11	41	25	7	3	3	0
Total 2H(10-12)	1374	51.1	45.9	5.1	0	1	21	14	73	384	687	172	19	3	0	0
2H(14-16)	1143	52.0	46.8	5.1	0	0	7	17	50	257	603	168	31	8	2	0
12H(7-19)	6934	51.8	46.7	4.9	1	2	38	71	290	1745	3486	1104	147	44	4	2
24H(0-24)	8779	52.8	47.3	5.3	1	2	48	84	320	1933	4271	1714	303	85	14	4
AM Peak	11:00	04:00	04:00	00:00	00:00	10:00	10:00	09:00	10:00	11:00	11:00	08:00	05:00	07:00	05:00	07:00
	744	58.1	52.0	7.4	0	1	21	20	43	229	380	134	25	9	2	2
PM Peak	12:00	23:00	21:00	23:00	12:00	12:00	14:00	14:00	12:00	12:00	15:00	14:00	14:00	14:00	23:00	12:00
	684	57.4	50.9	6.8	1	1	7	11	59	257	318	94	23	8	3	0

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	142	57.8	50.9	6.7	0	0	1	0	5	10	54	41	21	9	1	0
01:00	110	54.9	50.5	4.2	0	0	0	0	1	4	45	52	5	3	0	0
02:00	123	60.9	53.2	7.4	0	0	0	0	0	8	29	55	20	7	1	3
03:00	166	57.8	52.0	5.6	0	0	0	1	3	10	36	76	33	6	1	0
04:00	214	58.1	52.3	5.6	0	0	0	0	1	12	55	95	40	9	1	1
05:00	386	56.1	49.4	6.4	0	0	9	5	3	25	176	121	39	5	3	0
06:00	521	55.6	49.5	5.9	0	1	0	9	4	46	262	144	38	13	2	2
07:00	788	54.4	48.4	5.8	0	0	1	23	12	116	373	214	29	17	1	2
08:00	1071	51.8	47.5	4.1	0	0	0	2	19	242	561	210	32	5	0	0
09:00	1290	51.5	45.8	5.5	0	0	16	47	74	314	626	187	22	4	0	0
10:00	1295	51.1	45.3	5.7	0	1	29	40	89	330	646	138	20	2	0	0
11:00	1363	51.2	45.6	5.3	0	0	30	22	61	401	661	167	17	4	0	0
12:00	1368	51.0	45.5	5.3	1	1	27	5	79	448	612	172	22	1	0	0
13:00	1191	51.4	46.2	5.0	0	0	12	19	36	356	580	155	25	8	0	0
14:00	1104	52.5	47.4	4.9	0	0	7	12	29	213	595	203	34	10	1	0
15:00	1127	52.3	46.0	6.1	0	13	22	10	43	254	605	155	24	0	1	0
16:00	1011	52.1	47.3	4.6	0	0	0	5	33	247	497	178	43	8	0	0
17:00	993	51.8	47.1	4.5	0	0	0	6	28	251	504	173	22	8	1	0
18:00	974	52.1	47.6	4.4	0	0	2	1	19	206	533	172	33	7	1	0
19:00	587	53.2	48.3	4.7	0	0	0	0	14	104	289	150	21	7	2	0
20:00	469	55.6	50.0	5.4	0	0	2	1	1	34	234	144	37	11	5	0
21:00	343	55.6	50.5	4.9	0	0	0	0	7	21	135	134	37	8	1	0
22:00	242	56.8	50.9	5.6	0	0	0	0	2	21	88	93	27	8	3	0
23:00	191	59.2	51.6	7.3	0	0	0	0	1	19	77	54	21	14	3	2
Total 2H(10-12)	2658	51.1	45.5	5.5	0	1	59	62	150	731	1307	305	37	6	0	0
2H(14-16)	2231	52.5	46.7	5.6	0	13	29	22	72	467	1200	358	58	10	2	0
12H(7-19)	13575	51.9	46.5	5.2	1	15	146	192	522	3378	6793	2124	323	74	5	2
24H(0-24)	17069	53.0	47.3	5.6	1	16	158	208	564	3692	8273	3283	662	174	28	10
AM Peak	11:00	02:00	02:00	02:00	00:00	06:00	11:00	09:00	10:00	11:00	11:00	07:00	04:00	07:00	05:00	02:00
	1363	60.9	53.2	7.4	0	1	30	47	89	401	661	214	40	17	3	3
PM Peak	12:00	23:00	23:00	23:00	12:00	15:00	12:00	13:00	12:00	12:00	12:00	14:00	16:00	23:00	20:00	23:00
	1368	59.2	51.6	7.3	1	13	27	19	79	448	612	203	43	14	5	2

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

27/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	66	57.4	50.8	6.4	0	0	0	0	3	3	26	25	4	4	1	0
01:00	43	60.6	52.0	8.3	0	0	0	0	0	2	23	9	4	3	1	1
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	37	61.2	52.8	8.1	0	0	0	0	0	4	9	17	3	1	3	0
04:00	43	57.3	51.6	5.5	0	0	0	0	1	3	9	24	3	3	0	0
05:00	58	58.6	53.1	5.3	0	0	0	0	0	1	15	27	9	6	0	0
06:00	117	56.7	50.4	6.1	0	0	0	0	2	7	61	29	12	5	0	1
07:00	158	55.9	50.6	5.1	0	0	0	0	0	8	80	49	11	10	0	0
08:00	211	55.8	50.3	5.3	0	0	0	0	0	18	108	50	24	11	0	0
09:00	405	52.7	47.5	5.0	0	0	4	7	9	61	231	70	22	1	0	0
10:00	512	51.2	47.2	3.9	0	0	0	0	13	112	297	76	12	2	0	0
11:00	619	50.7	46.4	4.2	0	0	0	8	29	162	329	80	11	0	0	0
12:00	698	52.3	44.8	7.2	3	11	25	9	29	190	346	71	14	0	0	0
13:00	594	51.5	46.4	4.9	0	0	0	3	51	154	269	104	12	0	0	1
14:00	602	51.8	46.9	4.8	0	0	2	8	31	110	352	79	15	4	1	0
15:00	553	52.6	48.4	4.0	0	0	0	1	3	85	299	140	21	4	0	0
16:00	622	51.4	47.5	3.8	0	0	0	0	11	121	366	108	14	2	0	0
17:00	578	52.2	47.1	4.9	0	0	0	2	40	128	271	114	19	3	1	0
18:00	571	52.6	47.7	4.7	0	0	1	5	28	76	310	130	16	5	0	0
19:00	401	51.6	47.7	3.8	0	0	0	0	4	83	222	83	7	2	0	0
20:00	318	53.2	49.0	4.0	0	0	0	0	0	32	186	75	22	3	0	0
21:00	245	56.3	50.7	5.4	0	0	0	0	1	10	114	92	20	4	3	1
22:00	103	56.7	51.0	5.5	0	0	0	0	1	3	49	34	10	5	1	0
23:00	79	58.3	51.9	6.2	0	0	0	0	0	2	30	35	8	2	1	1
Total 2H(10-12)	1131	51.0	46.7	4.1	0	0	0	8	42	274	626	156	23	2	0	0
2H(14-16)	1155	52.3	47.6	4.5	0	0	2	9	34	195	651	219	36	8	1	0
12H(7-19)	6123	52.4	47.1	5.1	3	11	32	43	244	1225	3258	1071	191	42	2	1
24H(0-24)	7633	53.1	47.7	5.2	3	11	32	43	256	1375	4002	1521	293	80	12	5
AM Peak	11:00	03:00	05:00	01:00	00:00	00:00	09:00	11:00	11:00	11:00	11:00	11:00	08:00	08:00	03:00	01:00
	619	61.2	53.1	8.3	0	0	4	8	29	162	329	80	24	11	3	1
PM Peak	12:00	23:00	23:00	12:00	12:00	12:00	12:00	12:00	13:00	12:00	16:00	15:00	20:00	18:00	21:00	13:00
	698	58.3	51.9	7.2	3	11	25	9	51	190	366	140	22	5	3	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	77	55.8	51.5	4.2	0	0	0	0	0	4	21	42	8	2	0	0
01:00	75	56.9	50.4	6.3	0	0	0	2	0	12	22	20	17	2	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	81	57.2	51.7	5.3	0	0	0	0	3	6	15	36	20	1	0	0
04:00	113	61.7	53.7	7.7	0	0	0	0	0	8	22	57	9	11	5	1
05:00	139	57.6	51.0	6.4	0	0	0	0	6	13	40	53	20	5	2	0
06:00	165	54.9	49.9	4.8	0	0	0	0	3	18	65	60	16	3	0	0
07:00	225	54.3	49.1	5.0	0	0	0	1	0	25	132	49	9	8	1	0
08:00	337	52.8	48.7	3.9	0	0	0	0	8	20	213	77	16	3	0	0
09:00	542	52.1	47.5	4.4	0	1	0	0	14	102	313	93	15	3	1	0
10:00	634	52.0	45.8	5.9	0	0	11	18	55	132	317	79	15	7	0	0
11:00	779	50.1	45.7	4.2	0	0	2	7	39	270	371	80	10	0	0	0
12:00	695	50.9	47.0	3.8	0	0	0	2	21	153	405	102	11	1	0	0
13:00	679	51.4	47.4	3.9	0	0	0	1	11	148	378	129	9	3	0	0
14:00	592	51.3	46.8	4.3	0	1	0	1	23	146	324	80	15	2	0	0
15:00	601	51.5	47.1	4.2	0	0	0	4	20	122	343	98	12	1	1	0
16:00	642	51.2	46.6	4.5	0	0	0	2	40	165	315	106	11	3	0	0
17:00	509	52.5	48.0	4.4	0	0	0	5	16	61	298	109	17	2	1	0
18:00	487	52.2	47.5	4.5	0	0	3	0	15	97	244	114	13	1	0	0
19:00	452	53.2	47.6	5.4	0	1	1	8	26	61	225	110	16	4	0	0
20:00	301	54.1	49.3	4.6	0	0	0	0	2	31	157	92	11	7	1	0
21:00	191	55.2	50.2	4.9	0	0	1	0	1	14	81	71	19	4	0	0
22:00	116	58.8	50.2	8.3	0	0	1	0	0	13	60	32	2	4	0	4
23:00	86	56.9	50.9	5.8	0	0	0	1	0	9	32	24	16	4	0	0
Total 2H(10-12)	1413	51.0	45.8	5.1	0	0	13	25	94	402	688	159	25	7	0	0
2H(14-16)	1193	51.4	47.0	4.3	0	1	0	5	43	268	667	178	27	3	1	0
12H(7-19)	6722	51.7	47.0	4.5	0	2	16	41	262	1441	3653	1116	153	34	4	0
24H(0-24)	8518	52.8	47.6	5.0	0	3	19	52	303	1630	4393	1713	307	81	12	5
AM Peak	11:00	04:00	04:00	04:00	00:00	09:00	10:00	10:00	10:00	11:00	11:00	09:00	03:00	04:00	04:00	04:00
	779	61.7	53.7	7.7	0	1	11	18	55	270	371	93	20	11	5	1
PM Peak	12:00	22:00	23:00	22:00	12:00	14:00	18:00	19:00	16:00	16:00	12:00	13:00	21:00	20:00	15:00	22:00
	695	58.8	50.9	8.3	0	1	3	8	40	165	405	129	19	7	1	4

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	143	56.7	51.2	5.3	0	0	0	0	3	7	47	67	12	6	1	0
01:00	118	58.3	51.0	7.1	0	0	0	2	0	14	45	29	21	5	1	1
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	118	58.5	52.0	6.3	0	0	0	0	3	10	24	53	23	2	3	0
04:00	156	60.6	53.1	7.2	0	0	0	0	1	11	31	81	12	14	5	1
05:00	197	58.0	51.6	6.2	0	0	0	0	6	14	55	80	29	11	2	0
06:00	282	55.7	50.1	5.4	0	0	0	0	5	25	126	89	28	8	0	1
07:00	383	55.0	49.7	5.1	0	0	0	1	0	33	212	98	20	18	1	0
08:00	548	54.1	49.3	4.6	0	0	0	0	8	38	321	127	40	14	0	0
09:00	947	52.4	47.5	4.7	0	1	4	7	23	163	544	163	37	4	1	0
10:00	1146	51.8	46.4	5.2	0	0	11	18	68	244	614	155	27	9	0	0
11:00	1398	50.4	46.0	4.2	0	0	2	15	68	432	700	160	21	0	0	0
12:00	1393	52.0	45.9	5.9	3	11	25	11	50	343	751	173	25	1	0	0
13:00	1273	51.5	46.9	4.4	0	0	0	4	62	302	647	233	21	3	0	1
14:00	1194	51.6	46.8	4.6	0	1	2	9	54	256	676	159	30	6	1	0
15:00	1154	52.1	47.8	4.2	0	0	0	5	23	207	642	238	33	5	1	0
16:00	1264	51.4	47.1	4.2	0	0	0	2	51	286	681	214	25	5	0	0
17:00	1087	52.4	47.5	4.7	0	0	0	7	56	189	569	223	36	5	2	0
18:00	1058	52.4	47.6	4.6	0	0	4	5	43	173	554	244	29	6	0	0
19:00	853	52.5	47.6	4.7	0	1	1	8	30	144	447	193	23	6	0	0
20:00	619	53.6	49.2	4.3	0	0	0	0	2	63	343	167	33	10	1	0
21:00	436	55.8	50.5	5.1	0	0	1	0	2	24	195	163	39	8	3	1
22:00	219	57.9	50.6	7.1	0	0	1	0	1	16	109	66	12	9	1	4
23:00	165	57.6	51.3	6.0	0	0	0	1	0	11	62	59	24	6	1	1
Total 2H(10-12)	2544	51.0	46.2	4.7	0	0	13	33	136	676	1314	315	48	9	0	0
2H(14-16)	2348	51.8	47.3	4.4	0	1	2	14	77	463	1318	397	63	11	2	0
12H(7-19)	12845	52.0	47.1	4.8	3	13	48	84	506	2666	6911	2187	344	76	6	1
24H(0-24)	16151	52.9	47.6	5.1	3	14	51	95	559	3005	8395	3234	600	161	24	10
AM Peak	11:00	04:00	04:00	04:00	00:00	09:00	10:00	10:00	10:00	11:00	11:00	09:00	08:00	07:00	04:00	01:00
	1398	60.6	53.1	7.2	0	1	11	18	68	432	700	163	40	18	5	1
PM Peak	12:00	22:00	23:00	22:00	12:00	12:00	12:00	12:00	13:00	12:00	12:00	18:00	21:00	20:00	21:00	22:00
	1393	57.9	51.3	7.1	3	11	25	11	62	343	751	244	39	10	3	4

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

28/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	58	56.8	50.0	6.6	0	0	0	0	2	4	27	20	3	1	0	1
01:00	31	56.7	49.6	6.9	0	0	0	0	2	5	12	5	5	2	0	0
02:00	34	57.7	50.6	6.8	0	0	0	0	2	2	12	14	2	1	1	0
03:00	45	59.8	53.0	6.6	0	0	0	0	0	3	12	17	8	4	1	0
04:00	87	56.1	51.8	4.2	0	0	0	0	0	3	24	45	13	2	0	0
05:00	247	55.7	50.9	4.6	0	0	0	0	0	9	112	89	30	6	1	0
06:00	603	51.3	47.2	4.0	0	0	0	0	25	125	324	123	4	2	0	0
07:00	1046	51.9	43.8	7.8	11	11	30	67	85	248	455	132	7	0	0	0
08:00	967	51.0	44.6	6.2	0	0	27	67	62	260	420	125	6	0	0	0
09:00	740	50.0	44.1	5.7	0	1	13	49	53	253	305	63	3	0	0	0
10:00	804	50.7	42.3	8.0	1	32	25	37	79	287	299	36	7	1	0	0
11:00	745	49.8	42.4	7.1	1	7	37	58	83	263	248	42	4	2	0	0
12:00	770	50.0	40.4	9.3	1	38	64	63	104	204	250	44	2	0	0	0
13:00	672	51.2	44.2	6.8	0	10	15	32	68	163	308	71	5	0	0	0
14:00	687	53.3	41.6	11.3	10	41	72	31	22	117	288	99	6	1	0	0
15:00	662	52.9	46.4	6.2	0	0	25	14	17	115	349	127	14	0	0	1
16:00	726	52.4	46.9	5.3	0	0	1	18	31	152	381	125	13	2	0	3
17:00	667	52.7	46.7	5.8	0	0	12	33	17	98	347	144	15	1	0	0
18:00	523	52.8	48.4	4.3	0	0	0	1	5	75	304	103	29	6	0	0
19:00	283	53.1	48.2	4.7	0	0	2	0	6	42	143	82	4	4	0	0
20:00	213	52.6	48.4	4.0	0	0	0	1	0	30	123	49	8	2	0	0
21:00	179	55.3	50.1	5.0	0	1	0	0	0	9	84	68	12	5	0	0
22:00	153	56.5	51.5	4.9	0	0	0	0	0	7	55	63	23	4	1	0
23:00	91	57.8	49.5	8.1	0	0	0	0	5	26	22	25	2	9	2	0
Total 2H(10-12)	1549	50.2	42.3	7.6	2	39	62	95	162	550	547	78	11	3	0	0
2H(14-16)	1349	53.8	44.0	9.5	10	41	97	45	39	232	637	226	20	1	0	1
12H(7-19)	9009	52.0	44.2	7.6	24	140	321	470	626	2235	3954	1111	111	13	0	4
24H(0-24)	11033	52.8	45.1	7.5	24	141	323	471	668	2500	4904	1711	225	55	6	5
AM Peak	07:00	03:00	03:00	10:00	07:00	10:00	11:00	07:00	07:00	10:00	07:00	07:00	05:00	05:00	02:00	00:00
	1046	59.8	53.0	8.0	11	32	37	67	85	287	455	132	30	6	1	1
PM Peak	12:00	23:00	22:00	14:00	14:00	14:00	14:00	12:00	12:00	12:00	16:00	17:00	18:00	23:00	23:00	16:00
	770	57.8	51.5	11.3	10	41	72	63	104	204	381	144	29	9	2	3

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	67	55.6	50.9	4.6	0	0	0	0	0	4	27	26	8	2	0	0
01:00	65	55.1	50.7	4.2	0	0	0	0	1	2	25	30	6	1	0	0
02:00	89	54.8	51.2	3.5	0	0	0	0	0	3	25	55	5	1	0	0
03:00	159	55.7	50.5	5.1	0	0	0	0	2	8	74	55	14	5	1	0
04:00	236	57.0	51.3	5.5	0	0	0	1	6	3	87	101	27	9	2	0
05:00	467	55.7	47.3	8.1	0	0	34	6	15	42	189	156	18	5	1	1
06:00	601	53.3	46.1	7.0	0	0	10	23	51	115	299	86	5	6	1	5
07:00	836	50.5	42.3	8.0	0	0	89	70	76	200	326	66	8	1	0	0
08:00	823	51.1	45.5	5.4	0	1	13	42	21	203	444	89	10	0	0	0
09:00	767	49.5	43.1	6.1	0	0	9	103	91	200	308	51	5	0	0	0
10:00	721	51.7	43.4	8.1	6	24	10	37	43	203	347	49	1	1	0	0
11:00	836	50.3	44.6	5.5	1	2	10	36	79	232	409	64	2	1	0	0
12:00	714	49.5	44.0	5.3	0	0	4	32	116	220	291	44	5	1	1	0
13:00	818	50.1	43.3	6.6	0	0	51	41	70	260	342	49	4	1	0	0
14:00	677	51.2	45.9	5.1	0	0	3	25	30	198	311	96	12	2	0	0
15:00	787	50.8	45.1	5.5	0	0	13	33	45	243	372	63	14	4	0	0
16:00	855	50.9	44.9	5.8	0	0	4	55	93	206	381	99	15	1	1	0
17:00	897	51.8	46.2	5.4	0	3	6	18	50	235	403	167	12	2	1	0
18:00	611	52.4	47.9	4.4	0	0	1	5	13	100	316	157	17	2	0	0
19:00	337	52.8	48.4	4.3	0	0	0	0	4	53	183	80	12	5	0	0
20:00	232	53.9	48.8	5.0	0	0	0	0	7	35	109	62	14	5	0	0
21:00	141	57.4	51.4	5.8	0	0	0	0	2	10	51	44	27	6	1	0
22:00	104	58.6	51.2	7.1	0	0	0	1	1	9	42	29	14	6	1	1
23:00	96	56.6	51.3	5.1	0	0	0	0	4	6	15	59	9	3	0	0
Total 2H(10-12)	1557	51.1	44.0	6.8	7	26	20	73	122	435	756	113	3	2	0	0
2H(14-16)	1464	51.0	45.4	5.3	0	0	16	58	75	441	683	159	26	6	0	0
12H(7-19)	9342	51.1	44.6	6.2	7	30	213	497	727	2500	4250	994	105	16	3	0
24H(0-24)	11936	52.2	45.5	6.5	7	30	257	528	820	2790	5376	1777	264	70	10	7
AM Peak	07:00	04:00	04:00	05:00	10:00	10:00	07:00	09:00	09:00	11:00	08:00	05:00	04:00	04:00	04:00	06:00
	836	57.0	51.3	8.1	6	24	89	103	91	232	444	156	27	9	2	5
PM Peak	17:00	22:00	21:00	22:00	12:00	17:00	13:00	16:00	12:00	13:00	17:00	17:00	21:00	21:00	12:00	22:00
	897	58.6	51.4	7.1	0	3	51	55	116	260	403	167	27	6	1	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	125	56.3	50.5	5.6	0	0	0	0	2	8	54	46	11	3	0	1
01:00	96	55.8	50.3	5.2	0	0	0	0	3	7	37	35	11	3	0	0
02:00	123	55.8	51.0	4.6	0	0	0	0	2	5	37	69	7	2	1	0
03:00	204	56.8	51.0	5.5	0	0	0	0	2	11	86	72	22	9	2	0
04:00	323	56.8	51.4	5.1	0	0	0	1	6	6	111	146	40	11	2	0
05:00	714	56.1	48.5	7.3	0	0	34	6	15	51	301	245	48	11	2	1
06:00	1204	52.6	46.6	5.7	0	0	10	23	76	240	623	209	9	8	1	5
07:00	1882	51.3	43.1	7.9	11	11	119	137	161	448	781	198	15	1	0	0
08:00	1790	51.1	45.0	5.9	0	1	40	109	83	463	864	214	16	0	0	0
09:00	1507	49.8	43.6	5.9	0	1	22	152	144	453	613	114	8	0	0	0
10:00	1525	51.2	42.8	8.1	7	56	35	74	122	490	646	85	8	2	0	0
11:00	1581	50.2	43.5	6.4	2	9	47	94	162	495	657	106	6	3	0	0
12:00	1484	50.2	42.1	7.8	1	38	68	95	220	424	541	88	7	1	1	0
13:00	1490	50.6	43.7	6.7	0	10	66	73	138	423	650	120	9	1	0	0
14:00	1364	53.1	43.7	9.0	10	41	75	56	52	315	599	195	18	3	0	0
15:00	1449	51.8	45.7	5.9	0	0	38	47	62	358	721	190	28	4	0	1
16:00	1581	51.7	45.8	5.6	0	0	5	73	124	358	762	224	28	3	1	3
17:00	1564	52.2	46.4	5.6	0	3	18	51	67	333	750	311	27	3	1	0
18:00	1134	52.6	48.1	4.3	0	0	1	6	18	175	620	260	46	8	0	0
19:00	620	53.0	48.3	4.5	0	0	2	0	10	95	326	162	16	9	0	0
20:00	445	53.3	48.6	4.5	0	0	0	1	7	65	232	111	22	7	0	0
21:00	320	56.3	50.7	5.4	0	1	0	0	2	19	135	112	39	11	1	0
22:00	257	57.5	51.4	5.9	0	0	0	1	1	16	97	92	37	10	2	1
23:00	187	57.4	50.4	6.8	0	0	0	0	9	32	37	84	11	12	2	0
Total 2H(10-12)	3106	50.7	43.2	7.3	9	65	82	168	284	985	1303	191	14	5	0	0
2H(14-16)	2813	52.6	44.7	7.6	10	41	113	103	114	673	1320	385	46	7	0	1
12H(7-19)	18351	51.6	44.4	6.9	31	170	534	967	1353	4735	8204	2105	216	29	3	4
24H(0-24)	22969	52.5	45.3	7.0	31	171	580	999	1488	5290	10280	3488	489	125	16	12
AM Peak	07:00	04:00	04:00	10:00	07:00	10:00	07:00	09:00	11:00	11:00	08:00	05:00	05:00	04:00	03:00	06:00
	1882	56.8	51.4	8.1	11	56	119	152	162	495	864	245	48	11	2	5
PM Peak	16:00	22:00	22:00	14:00	14:00	14:00	14:00	12:00	12:00	12:00	16:00	17:00	18:00	23:00	22:00	16:00
	1581	57.5	51.4	9.0	10	41	75	95	220	424	762	311	46	12	2	3

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

29/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	32	55.1	49.6	5.3	0	0	0	0	1	4	12	12	2	1	0	0
01:00	34	56.6	51.6	4.8	0	0	0	0	0	1	12	16	3	2	0	0
02:00	44	55.7	51.5	4.1	0	0	0	0	1	0	14	21	8	0	0	0
03:00	54	59.8	52.6	7.0	0	0	0	1	0	1	12	30	8	0	1	1
04:00	112	55.9	51.0	4.7	0	0	0	0	0	12	31	53	13	3	0	0
05:00	231	53.7	49.4	4.1	0	0	0	0	6	19	98	97	10	1	0	0
06:00	613	51.6	47.2	4.2	0	0	0	0	26	142	306	126	11	2	0	0
07:00	1060	48.8	41.7	6.8	0	1	73	87	163	373	306	52	4	1	0	0
08:00	896	49.6	43.6	5.8	0	0	29	54	61	337	362	49	3	1	0	0
09:00	762	49.9	45.1	4.6	0	0	6	26	28	262	389	42	8	1	0	0
10:00	692	50.6	44.3	6.1	0	2	24	22	53	240	278	64	8	1	0	0
11:00	575	50.4	44.0	6.1	0	1	15	39	54	166	244	51	5	0	0	0
12:00	661	50.4	44.8	5.3	0	0	13	30	33	199	328	54	4	0	0	0
13:00	642	50.6	46.1	4.3	0	0	0	6	42	180	319	89	5	1	0	0
14:00	624	51.9	44.9	6.7	0	0	18	45	64	103	281	99	14	0	0	0
15:00	664	51.0	46.0	4.9	0	0	0	15	53	167	332	84	8	5	0	0
16:00	704	51.7	46.6	4.9	0	0	7	11	32	147	371	126	7	3	0	0
17:00	722	51.7	46.8	4.7	0	0	7	8	35	135	386	146	5	0	0	0
18:00	467	54.3	48.0	6.0	0	0	4	20	7	54	238	111	21	12	0	0
19:00	343	54.1	48.8	5.1	0	0	0	0	9	46	181	87	6	13	1	0
20:00	211	53.8	49.4	4.3	0	0	0	0	1	22	105	66	14	3	0	0
21:00	197	54.4	49.7	4.5	0	0	0	0	1	20	89	71	11	5	0	0
22:00	163	56.2	50.9	5.1	0	0	0	0	0	16	56	67	16	8	0	0
23:00	91	58.8	52.1	6.4	0	0	0	0	0	4	31	40	9	5	1	1
Total 2H(10-12)	1267	50.5	44.1	6.1	0	3	39	61	107	406	522	115	13	1	0	0
2H(14-16)	1288	51.5	45.5	5.9	0	0	18	60	117	270	613	183	22	5	0	0
12H(7-19)	8469	51.0	44.9	5.9	0	4	196	363	625	2363	3834	967	92	25	0	0
24H(0-24)	10594	51.9	45.8	5.9	0	4	196	364	670	2650	4781	1653	203	68	3	2
AM Peak	07:00	03:00	03:00	03:00	00:00	10:00	07:00	07:00	07:00	07:00	09:00	06:00	04:00	04:00	03:00	03:00
	1060	59.8	52.6	7.0	0	2	73	87	163	373	389	126	13	3	1	1
PM Peak	17:00	23:00	23:00	14:00	12:00	12:00	14:00	14:00	14:00	12:00	17:00	17:00	18:00	19:00	19:00	23:00
	722	58.8	52.1	6.7	0	0	18	45	64	199	386	146	21	13	1	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	68	56.6	50.8	5.7	0	0	0	1	2	1	28	24	9	3	0	0
01:00	84	55.0	50.1	4.7	0	0	0	0	6	1	27	43	7	0	0	0
02:00	95	55.1	50.8	4.1	0	0	0	0	0	6	34	43	11	1	0	0
03:00	124	57.3	51.8	5.4	0	0	0	0	2	2	41	62	8	8	1	0
04:00	230	59.1	51.3	7.5	0	0	0	1	7	22	72	91	15	14	7	1
05:00	436	53.6	46.5	6.8	0	0	15	10	25	78	199	84	22	1	2	0
06:00	508	51.4	45.1	6.1	0	0	12	25	47	112	226	81	5	0	0	0
07:00	812	50.8	45.7	4.9	0	0	0	22	68	216	408	88	6	1	3	0
08:00	787	51.1	43.1	7.7	0	0	76	57	35	187	370	52	8	2	0	0
09:00	666	51.8	45.1	6.5	1	5	4	26	43	216	294	65	5	0	7	0
10:00	653	50.1	45.4	4.6	0	0	0	13	67	178	322	67	6	0	0	0
11:00	783	50.0	44.4	5.4	1	0	12	23	76	285	326	50	6	4	0	0
12:00	843	50.6	43.4	6.9	0	10	40	22	81	290	330	62	7	1	0	0
13:00	872	50.0	45.3	4.5	0	0	0	22	77	261	418	86	8	0	0	0
14:00	810	50.3	45.4	4.8	0	0	0	23	85	217	385	90	10	0	0	0
15:00	807	52.2	43.4	8.5	4	17	59	13	66	189	360	93	5	1	0	0
16:00	875	52.2	46.8	5.2	0	0	7	8	29	199	488	125	13	2	0	4
17:00	808	52.2	46.8	5.2	0	2	11	18	28	121	467	150	10	1	0	0
18:00	560	54.6	48.2	6.1	0	0	5	13	27	69	245	152	40	7	2	0
19:00	350	52.7	48.8	3.8	0	0	0	0	2	41	191	103	10	3	0	0
20:00	275	54.5	49.6	4.8	0	0	0	1	3	16	159	66	23	6	1	0
21:00	208	55.4	50.0	5.3	0	0	0	4	1	7	112	56	22	5	1	0
22:00	121	56.6	51.7	4.7	0	0	0	0	1	5	32	66	11	6	0	0
23:00	115	56.8	52.2	4.4	0	0	0	0	0	2	39	41	31	2	0	0
Total 2H(10-12)	1436	50.1	44.8	5.1	1	0	12	36	143	463	648	117	12	4	0	0
2H(14-16)	1617	51.6	44.4	7.0	4	17	59	36	151	406	745	183	15	1	0	0
12H(7-19)	9276	51.5	45.2	6.1	6	34	214	260	682	2428	4413	1080	124	19	12	4
24H(0-24)	11890	52.5	45.9	6.3	6	34	241	302	778	2721	5573	1840	298	68	24	5
AM Peak	07:00	04:00	03:00	08:00	09:00	09:00	08:00	08:00	11:00	11:00	07:00	04:00	05:00	04:00	04:00	04:00
	812	59.1	51.8	7.7	1	5	76	57	76	285	408	91	22	14	7	1
PM Peak	16:00	23:00	23:00	15:00	15:00	15:00	15:00	14:00	14:00	12:00	16:00	18:00	18:00	18:00	18:00	16:00
	875	56.8	52.2	8.5	4	17	59	23	85	290	488	152	40	7	2	4

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	100	56.1	50.4	5.5	0	0	0	1	3	5	40	36	11	4	0	0
01:00	118	55.5	50.6	4.7	0	0	0	0	6	2	39	59	10	2	0	0
02:00	139	55.3	51.0	4.1	0	0	0	0	1	6	48	64	19	1	0	0
03:00	178	58.1	52.0	5.9	0	0	0	1	2	3	53	92	16	8	2	1
04:00	342	58.2	51.2	6.7	0	0	0	1	7	34	103	144	28	17	7	1
05:00	667	53.9	47.5	6.2	0	0	15	10	31	97	297	181	32	2	2	0
06:00	1121	51.7	46.2	5.3	0	0	12	25	73	254	532	207	16	2	0	0
07:00	1872	50.0	43.4	6.4	0	1	73	109	231	589	714	140	10	2	3	0
08:00	1683	50.4	43.4	6.8	0	0	105	111	96	524	732	101	11	3	0	0
09:00	1428	50.9	45.1	5.6	1	5	10	52	71	478	683	107	13	1	7	0
10:00	1345	50.5	44.8	5.4	0	2	24	35	120	418	600	131	14	1	0	0
11:00	1358	50.1	44.2	5.7	1	1	27	62	130	451	570	101	11	4	0	0
12:00	1504	50.6	44.1	6.3	0	10	53	52	114	489	658	116	11	1	0	0
13:00	1514	50.3	45.7	4.5	0	0	0	28	119	441	737	175	13	1	0	0
14:00	1434	51.1	45.2	5.7	0	0	18	68	149	320	666	189	24	0	0	0
15:00	1471	52.0	44.6	7.2	4	17	59	28	119	356	692	177	13	6	0	0
16:00	1579	52.0	46.7	5.1	0	0	14	19	61	346	859	251	20	5	0	4
17:00	1530	51.9	46.8	5.0	0	2	18	26	63	256	853	296	15	1	0	0
18:00	1027	54.5	48.1	6.1	0	0	9	33	34	123	483	263	61	19	2	0
19:00	693	53.5	48.8	4.5	0	0	0	0	11	87	372	190	16	16	1	0
20:00	486	54.2	49.5	4.6	0	0	0	1	4	38	264	132	37	9	1	0
21:00	405	55.0	49.9	4.9	0	0	0	4	2	27	201	127	33	10	1	0
22:00	284	56.4	51.3	5.0	0	0	0	0	1	21	88	133	27	14	0	0
23:00	206	57.8	52.2	5.4	0	0	0	0	0	6	70	81	40	7	1	1
Total 2H(10-12)	2703	50.3	44.5	5.6	1	3	51	97	250	869	1170	232	25	5	0	0
2H(14-16)	2905	51.6	44.9	6.5	4	17	77	96	268	676	1358	366	37	6	0	0
12H(7-19)	17745	51.3	45.1	6.0	6	38	410	623	1307	4791	8247	2047	216	44	12	4
24H(0-24)	22484	52.2	45.9	6.1	6	38	437	666	1448	5371	10354	3493	501	136	27	7
AM Peak	07:00	04:00	03:00	08:00	09:00	09:00	08:00	08:00	07:00	07:00	08:00	06:00	05:00	04:00	04:00	03:00
	1872	58.2	52.0	6.8	1	5	105	111	231	589	732	207	32	17	7	1
PM Peak	16:00	23:00	23:00	15:00	15:00	15:00	15:00	14:00	14:00	12:00	16:00	17:00	18:00	18:00	18:00	16:00
	1579	57.8	52.2	7.2	4	17	59	68	149	489	859	296	61	19	2	4

360 TSL Ltd

East Heckington, A17 (Middle Site)

Direction: Eastbound

30/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	77	55.8	51.5	4.1	0	0	0	0	0	1	28	36	10	2	0	0
01:00	60	60.3	54.0	6.1	0	0	0	0	0	2	9	34	6	8	1	0
02:00	52	59.8	54.1	5.5	0	0	0	0	0	0	4	36	9	2	0	1
03:00	71	57.9	52.7	5.0	0	0	0	0	0	2	17	37	9	6	0	0
04:00	114	54.5	51.2	3.2	0	0	0	0	0	3	33	69	9	0	0	0
05:00	281	53.3	49.5	3.6	0	0	0	0	1	15	150	103	9	3	0	0
06:00	513	51.7	47.2	4.3	0	0	0	1	14	124	273	84	12	5	0	0
07:00	960	51.1	42.9	7.9	1	22	55	44	66	301	385	83	3	0	0	0
08:00	892	49.6	44.2	5.3	0	0	10	47	103	274	393	62	2	1	0	0
09:00	731	49.4	43.1	6.1	0	0	32	46	71	265	281	31	5	0	0	0
10:00	683	50.1	45.5	4.5	0	0	1	16	27	254	306	73	3	3	0	0
11:00	660	49.8	44.2	5.4	0	0	6	15	113	216	241	64	4	0	0	1
12:00	651	49.5	42.5	6.8	0	2	34	60	61	233	219	39	1	2	0	0
13:00	634	50.2	44.6	5.4	0	0	10	22	53	215	279	50	3	0	2	0
14:00	704	50.6	44.0	6.4	0	1	35	33	42	208	333	49	2	1	0	0
15:00	681	49.7	45.2	4.4	0	0	0	10	64	224	316	61	6	0	0	0
16:00	779	50.1	45.2	4.8	0	0	11	8	63	248	372	71	6	0	0	0
17:00	673	53.8	45.5	7.9	2	28	6	1	14	126	400	84	6	6	0	0
18:00	544	52.4	47.1	5.1	0	0	4	3	26	106	294	96	8	6	0	1
19:00	327	52.7	48.2	4.3	0	0	0	1	5	48	186	71	12	4	0	0
20:00	235	54.9	49.4	5.4	0	0	0	0	0	41	106	64	14	9	1	0
21:00	201	54.9	50.3	4.5	0	0	0	0	2	9	88	87	10	4	1	0
22:00	142	59.9	53.3	6.3	0	0	0	0	0	4	44	49	29	13	3	0
23:00	103	55.2	50.2	4.8	0	0	0	0	2	5	48	38	6	4	0	0
Total 2H(10-12)	1343	50.0	44.9	5.0	0	0	7	31	140	470	547	137	7	3	0	1
2H(14-16)	1385	50.3	44.6	5.5	0	1	35	43	106	432	649	110	8	1	0	0
12H(7-19)	8592	50.7	44.4	6.1	3	53	204	305	703	2670	3819	763	49	19	2	2
24H(0-24)	10768	52.0	45.5	6.3	3	53	204	307	727	2924	4805	1471	184	79	8	3
AM Peak	07:00	01:00	02:00	07:00	07:00	07:00	07:00	08:00	11:00	07:00	08:00	05:00	06:00	01:00	01:00	02:00
	960	60.3	54.1	7.9	1	22	55	47	113	301	393	103	12	8	1	1
PM Peak	16:00	22:00	22:00	17:00	17:00	17:00	14:00	12:00	15:00	16:00	17:00	18:00	22:00	22:00	22:00	18:00
	779	59.9	53.3	7.9	2	28	35	60	64	248	400	96	29	13	3	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	93	55.9	51.2	4.5	0	0	0	1	0	1	34	45	9	3	0	0
01:00	115	59.0	54.4	4.4	0	0	0	0	0	0	8	71	27	8	1	0
02:00	118	57.5	52.0	5.3	0	0	0	0	0	11	28	49	24	6	0	0
03:00	209	55.8	51.6	4.0	0	0	0	0	0	12	47	123	23	4	0	0
04:00	280	56.6	51.1	5.3	0	0	0	0	5	16	99	119	26	14	1	0
05:00	430	55.4	49.8	5.4	2	0	0	0	7	26	194	170	20	9	2	0
06:00	612	52.2	46.7	5.3	0	0	3	26	28	105	311	127	10	2	0	0
07:00	829	51.2	45.1	5.9	0	0	31	17	59	188	437	90	7	0	0	0
08:00	774	49.9	43.4	6.3	0	0	30	55	96	195	346	49	3	0	0	0
09:00	706	50.5	44.8	5.5	0	3	4	33	48	227	322	62	2	5	0	0
10:00	706	50.2	44.1	6.0	0	2	11	40	99	176	320	48	9	1	0	0
11:00	841	49.0	43.8	5.0	0	0	1	42	131	276	353	31	5	1	1	0
12:00	799	47.8	43.2	4.4	0	0	0	35	130	345	266	21	2	0	0	0
13:00	877	50.0	42.8	7.0	3	7	41	19	88	419	253	40	1	3	0	3
14:00	854	48.1	43.8	4.1	0	0	0	21	103	408	283	38	0	1	0	0
15:00	813	49.6	44.6	4.8	0	4	7	5	75	316	350	52	4	0	0	0
16:00	920	52.0	41.9	9.8	23	29	55	18	76	287	353	72	6	1	0	0
17:00	915	49.7	45.8	3.8	0	0	0	1	42	333	443	87	9	0	0	0
18:00	530	52.2	48.0	4.0	0	0	0	0	6	87	314	100	20	2	1	0
19:00	311	52.8	48.0	4.7	0	0	0	2	8	46	172	77	2	3	0	1
20:00	263	53.5	48.6	4.7	0	0	0	4	5	32	127	83	9	3	0	0
21:00	170	54.9	50.0	4.8	0	0	0	0	0	12	88	57	6	6	1	0
22:00	112	54.5	49.7	4.6	0	0	0	0	0	17	42	43	8	2	0	0
23:00	79	54.2	49.1	5.0	0	0	0	0	0	13	38	22	5	0	1	0
Total 2H(10-12)	1547	49.6	43.9	5.5	0	2	12	82	230	452	673	79	14	2	1	0
2H(14-16)	1667	48.8	44.2	4.5	0	4	7	26	178	724	633	90	4	1	0	0
12H(7-19)	9564	50.4	44.1	6.0	26	45	180	286	953	3257	4040	690	68	14	2	3
24H(0-24)	12356	51.8	45.3	6.3	28	45	183	319	1006	3548	5228	1676	237	74	8	4
AM Peak	11:00	01:00	01:00	08:00	05:00	09:00	07:00	08:00	11:00	11:00	07:00	05:00	01:00	04:00	05:00	00:00
	841	59.0	54.4	6.3	2	3	31	55	131	276	437	170	27	14	2	0
PM Peak	16:00	21:00	21:00	16:00	16:00	16:00	16:00	12:00	12:00	13:00	17:00	18:00	18:00	21:00	18:00	13:00
	920	54.9	50.0	9.8	23	29	55	35	130	419	443	100	20	6	1	3

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	170	55.9	51.4	4.3	0	0	0	1	0	2	62	81	19	5	0	0
01:00	175	59.5	54.2	5.0	0	0	0	0	0	2	17	105	33	16	2	0
02:00	170	58.3	52.7	5.5	0	0	0	0	0	11	32	85	33	8	0	1
03:00	280	56.4	51.9	4.3	0	0	0	0	0	14	64	160	32	10	0	0
04:00	394	56.1	51.1	4.8	0	0	0	0	5	19	132	188	35	14	1	0
05:00	711	54.7	49.7	4.8	2	0	0	0	8	41	344	273	29	12	2	0
06:00	1125	52.0	46.9	4.9	0	0	3	27	42	229	584	211	22	7	0	0
07:00	1789	51.3	44.0	7.1	1	22	86	61	125	489	822	173	10	0	0	0
08:00	1666	49.8	43.8	5.8	0	0	40	102	199	469	739	111	5	1	0	0
09:00	1437	50.0	43.9	5.9	0	3	36	79	119	492	603	93	7	5	0	0
10:00	1389	50.3	44.8	5.3	0	2	12	56	126	430	626	121	12	4	0	0
11:00	1501	49.4	44.0	5.2	0	0	7	57	244	492	594	95	9	1	1	1
12:00	1450	48.7	42.9	5.6	0	2	34	95	191	578	485	60	3	2	0	0
13:00	1511	50.2	43.5	6.4	3	7	51	41	141	634	532	90	4	3	2	3
14:00	1558	49.3	43.9	5.3	0	1	35	54	145	616	616	87	2	2	0	0
15:00	1494	49.7	44.9	4.6	0	4	7	15	139	540	666	113	10	0	0	0
16:00	1699	51.8	43.4	8.0	23	29	66	26	139	535	725	143	12	1	0	0
17:00	1588	51.8	45.7	5.9	2	28	6	2	56	459	843	171	15	6	0	0
18:00	1074	52.3	47.5	4.6	0	0	4	3	32	193	608	196	28	8	1	1
19:00	638	52.8	48.1	4.5	0	0	0	3	13	94	358	148	14	7	0	1
20:00	498	54.2	49.0	5.0	0	0	0	4	5	73	233	147	23	12	1	0
21:00	371	54.9	50.2	4.6	0	0	0	0	2	21	176	144	16	10	2	0
22:00	254	57.9	51.7	5.9	0	0	0	0	0	21	86	92	37	15	3	0
23:00	182	54.8	49.7	4.9	0	0	0	0	2	18	86	60	11	4	1	0
Total 2H(10-12)	2890	49.8	44.4	5.3	0	2	19	113	370	922	1220	216	21	5	1	1
2H(14-16)	3052	49.5	44.4	5.0	0	5	42	69	284	1156	1282	200	12	2	0	0
12H(7-19)	18156	50.6	44.3	6.1	29	98	384	591	1656	5927	7859	1453	117	33	4	5
24H(0-24)	23124	51.9	45.4	6.3	31	98	387	626	1733	6472	10033	3147	421	153	16	7
AM Peak	07:00	01:00	01:00	07:00	05:00	07:00	07:00	08:00	11:00	09:00	07:00	05:00	04:00	01:00	01:00	02:00
	1789	59.5	54.2	7.1	2	22	86	102	244	492	822	273	35	16	2	1
PM Peak	16:00	22:00	22:00	16:00	16:00	16:00	16:00	12:00	12:00	13:00	17:00	18:00	22:00	22:00	22:00	13:00
	1699	57.9	51.7	8.0	23	29	66	95	191	634	843	196	37	15	3	3

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	75	63	62	61	58	32	66	59	60
01:00	47	52	39	44	26	36	44	41	41
02:00	51	53	47	0	35	45	40	45	39
03:00	60	50	47	34	48	48	60	53	50
04:00	112	106	67	33	80	101	98	99	85
05:00	218	233	120	56	221	222	221	223	184
06:00	535	550	226	107	556	507	480	526	423
07:00	981	870	326	143	1052	1047	915	973	762
08:00	816	727	458	209	877	854	877	830	688
09:00	735	665	613	397	698	734	691	705	648
10:00	596	707	650	489	769	647	643	672	643
11:00	667	673	635	614	744	569	617	654	646
12:00	608	739	658	676	682	652	598	656	659
13:00	561	735	590	581	630	604	586	623	612
14:00	730	755	549	576	633	591	656	673	641
15:00	690	781	552	542	619	619	633	668	634
16:00	762	740	487	601	703	703	709	723	672
17:00	627	681	522	561	648	696	622	655	622
18:00	570	599	469	559	492	460	505	525	522
19:00	308	375	287	397	262	293	302	308	318
20:00	237	291	237	303	188	203	202	224	237
21:00	195	180	209	234	155	189	170	178	190
22:00	141	157	121	108	152	152	114	143	135
23:00	99	83	99	75	72	80	80	83	84
Total									
12H(7-19)	8343	8672	6509	5948	8547	8176	8052	8358	7750
16H(6-22)	9618	10068	7468	6989	9708	9368	9206	9594	8918
18H(6-24)	9858	10308	7688	7172	9932	9600	9400	9820	9137
24H(0-24)	10421	10865	8070	7400	10400	10084	9929	10340	9596
AM Peak	07:00	07:00	10:00	11:00	07:00	07:00	07:00	07:00	07:00
	981	870	650	614	1052	1047	915	973	762
PM Peak	16:00	15:00	12:00	12:00	16:00	16:00	16:00	16:00	16:00
	762	781	658	676	703	703	709	723	672

360 TSL Ltd

Direction: Westbound

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	68	75	60	56	54	79	86	72	68
01:00	92	80	54	54	42	77	94	77	70
02:00	108	118	69	0	87	90	114	103	84
03:00	120	118	91	47	146	127	177	138	118
04:00	239	222	142	108	231	221	253	233	202
05:00	509	425	238	132	472	418	385	442	368
06:00	625	546	266	169	555	524	567	563	465
07:00	764	754	452	220	856	822	808	801	668
08:00	775	803	540	328	777	838	712	781	682
09:00	784	716	621	559	714	630	656	700	669
10:00	662	743	638	608	658	627	675	673	659
11:00	689	764	714	786	787	691	751	736	740
12:00	652	822	650	661	680	681	771	721	702
13:00	721	847	580	662	745	782	893	798	747
14:00	796	902	551	592	667	747	869	796	732
15:00	783	884	544	588	756	787	796	801	734
16:00	902	869	501	632	822	836	944	875	787
17:00	903	779	475	497	870	796	931	856	750
18:00	623	556	462	496	568	541	584	574	547
19:00	390	328	297	441	356	340	318	346	353
20:00	263	275	217	305	248	275	271	266	265
21:00	179	164	120	174	150	215	165	175	167
22:00	136	124	110	100	97	131	106	119	115
23:00	106	83	73	68	86	90	92	91	85
Total									
12H(7-19)	9054	9439	6728	6629	8900	8778	9390	9112	8417
16H(6-22)	10511	10752	7628	7718	10209	10132	10711	10463	9666
18H(6-24)	10753	10959	7811	7886	10392	10353	10909	10673	9866
24H(0-24)	11889	11997	8465	8283	11424	11365	12018	11739	10777
AM Peak	09:00	08:00	11:00	11:00	07:00	08:00	07:00	07:00	11:00
	784	803	714	786	856	838	808	801	740
PM Peak	17:00	14:00	12:00	13:00	17:00	16:00	16:00	16:00	16:00
	903	902	650	662	870	836	944	875	787

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Direction: Total Flow

Hour Beginning	Thu 24/03/2022	Fri 25/03/2022	Sat 26/03/2022	Sun 27/03/2022	Mon 28/03/2022	Tue 29/03/2022	Wed 30/03/2022	5-Day Ave.	7-Day Ave.
00:00	143	138	122	117	112	111	152	131	128
01:00	139	132	93	98	68	113	138	118	112
02:00	159	171	116	0	122	135	154	148	122
03:00	180	168	138	81	194	175	237	191	168
04:00	351	328	209	141	311	322	351	333	288
05:00	727	658	358	188	693	640	606	665	553
06:00	1160	1096	492	276	1111	1031	1047	1089	888
07:00	1745	1624	778	363	1908	1869	1723	1774	1430
08:00	1591	1530	998	537	1654	1692	1589	1611	1370
09:00	1519	1381	1234	956	1412	1364	1347	1405	1316
10:00	1258	1450	1288	1097	1427	1274	1318	1345	1302
11:00	1356	1437	1349	1400	1531	1260	1368	1390	1386
12:00	1260	1561	1308	1337	1362	1333	1369	1377	1361
13:00	1282	1582	1170	1243	1375	1386	1479	1421	1360
14:00	1526	1657	1100	1168	1300	1338	1525	1469	1373
15:00	1473	1665	1096	1130	1375	1406	1429	1470	1368
16:00	1664	1609	988	1233	1525	1539	1653	1598	1459
17:00	1530	1460	997	1058	1518	1492	1553	1511	1373
18:00	1193	1155	931	1055	1060	1001	1089	1100	1069
19:00	698	703	584	838	618	633	620	654	671
20:00	500	566	454	608	436	478	473	491	502
21:00	374	344	329	408	305	404	335	352	357
22:00	277	281	231	208	249	283	220	262	250
23:00	205	166	172	143	158	170	172	174	169
Total									
12H(7-19)	17397	18111	13237	12577	17447	16954	17442	17470	16166
16H(6-22)	20129	20820	15096	14707	19917	19500	19917	20057	18584
18H(6-24)	20611	21267	15499	15058	20324	19953	20309	20493	19003
24H(0-24)	22310	22862	16535	15683	21824	21449	21947	22078	20373
AM Peak	07:00	07:00	11:00	11:00	07:00	07:00	07:00	07:00	07:00
	1745	1624	1349	1400	1908	1869	1723	1774	1430
PM Peak	16:00	15:00	12:00	12:00	16:00	16:00	16:00	16:00	16:00
	1664	1665	1308	1337	1525	1539	1653	1598	1459

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	10421	7137	2026	1099	159
Fri 25 Mar 2022	10865	7903	1842	977	143
Sat 26 Mar 2022	8070	6463	1110	456	41
Sun 27 Mar 2022	7400	6141	881	348	30
Mon 28 Mar 2022	10400	7379	1940	940	141
Tue 29 Mar 2022	10084	6932	2021	989	142
Wed 30 Mar 2022	9929	6859	1922	1000	148
5 Day Ave.	10340	7242	1950	1001	147
7 Day Ave.	9596	6973	1677	830	115

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	68.5%	19.4%	10.5%	1.5%
Fri 25 Mar 2022	100.0%	72.7%	17.0%	9.0%	1.3%
Sat 26 Mar 2022	100.0%	80.1%	13.8%	5.7%	0.5%
Sun 27 Mar 2022	100.0%	83.0%	11.9%	4.7%	0.4%
Mon 28 Mar 2022	100.0%	71.0%	18.7%	9.0%	1.4%
Tue 29 Mar 2022	100.0%	68.7%	20.0%	9.8%	1.4%
Wed 30 Mar 2022	100.0%	69.1%	19.4%	10.1%	1.5%
5 Day Ave.	100.0%	70.0%	18.9%	9.7%	1.4%
7 Day Ave.	100.0%	72.7%	17.5%	8.6%	1.2%

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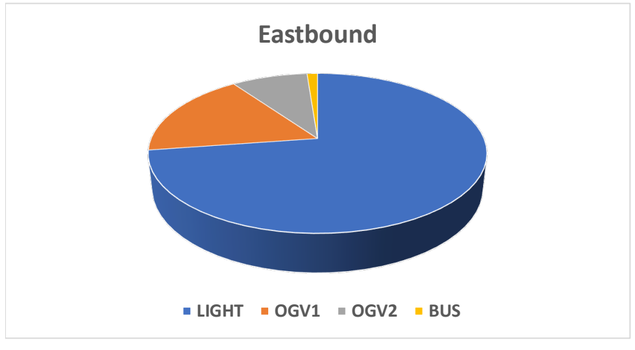

Direction: Westbound

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	11889	9759	1561	472	97
Fri 25 Mar 2022	11997	9943	1535	428	91
Sat 26 Mar 2022	8465	7266	946	230	23
Sun 27 Mar 2022	8283	7268	814	182	19
Mon 28 Mar 2022	11424	9375	1528	450	71
Tue 29 Mar 2022	11365	9433	1427	425	80
Wed 30 Mar 2022	12018	10301	1273	372	72
5 Day Ave.	11739	9762	1465	429	82
7 Day Ave.	10777	9049	1298	366	65

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	82.1%	13.1%	4.0%	0.8%
Fri 25 Mar 2022	100.0%	82.9%	12.8%	3.6%	0.8%
Sat 26 Mar 2022	100.0%	85.8%	11.2%	2.7%	0.3%
Sun 27 Mar 2022	100.0%	87.7%	9.8%	2.2%	0.2%
Mon 28 Mar 2022	100.0%	82.1%	13.4%	3.9%	0.6%
Tue 29 Mar 2022	100.0%	83.0%	12.6%	3.7%	0.7%
Wed 30 Mar 2022	100.0%	85.7%	10.6%	3.1%	0.6%
5 Day Ave.	100.0%	83.2%	12.5%	3.7%	0.7%
7 Day Ave.	100.0%	84.0%	12.0%	3.4%	0.6%

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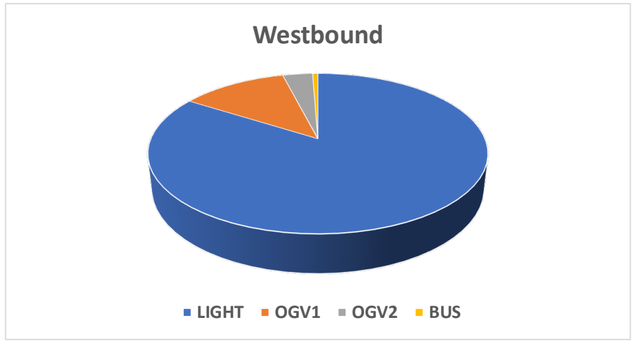

Direction: Total Flow

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	22310	16896	3587	1571	256
Fri 25 Mar 2022	22862	17846	3377	1405	234
Sat 26 Mar 2022	16535	13729	2056	686	64
Sun 27 Mar 2022	15683	13409	1695	530	49
Mon 28 Mar 2022	21824	16754	3468	1390	212
Tue 29 Mar 2022	21449	16365	3448	1414	222
Wed 30 Mar 2022	21947	17160	3195	1372	220
5 Day Ave.	22078	17004	3415	1430	229
7 Day Ave.	20373	16023	2975	1195	180

	Total Volume	LIGHT	OGV1	OGV2	BUS
Thu 24 Mar 2022	100.0%	75.7%	16.1%	7.0%	1.1%
Fri 25 Mar 2022	100.0%	78.1%	14.8%	6.1%	1.0%
Sat 26 Mar 2022	100.0%	83.0%	12.4%	4.1%	0.4%
Sun 27 Mar 2022	100.0%	85.5%	10.8%	3.4%	0.3%
Mon 28 Mar 2022	100.0%	76.8%	15.9%	6.4%	1.0%
Tue 29 Mar 2022	100.0%	76.3%	16.1%	6.6%	1.0%
Wed 30 Mar 2022	100.0%	78.2%	14.6%	6.3%	1.0%
5 Day Ave.	100.0%	77.0%	15.5%	6.5%	1.0%
7 Day Ave.	100.0%	78.6%	14.6%	5.9%	0.9%

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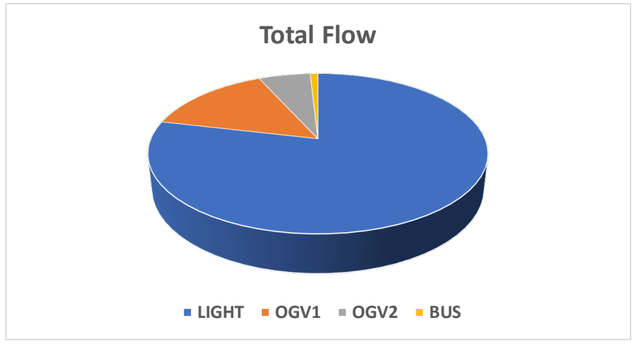

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	10421	53.6	45.5	7.8	2	44	554	388	630	2142	4171	1996	386	90	8	10
Fri 25 Mar 2022	10865	53.5	45.5	7.7	6	60	524	440	669	2254	4338	2089	383	81	17	4
Sat 26 Mar 2022	8070	54.6	46.5	7.8	0	19	394	250	255	1569	3318	1670	448	109	26	12
Sun 27 Mar 2022	7400	54.3	46.9	7.1	2	11	281	143	319	1273	3286	1603	354	109	13	6
Mon 28 Mar 2022	10400	53.1	44.7	8.1	33	61	523	649	703	2136	4139	1785	280	77	11	3
Tue 29 Mar 2022	10084	52.5	45.0	7.3	0	19	488	415	699	2591	3913	1567	309	74	8	1
Wed 30 Mar 2022	9929	52.4	44.9	7.3	1	36	492	391	676	2521	3975	1527	247	55	8	0
5 Day Ave.	10340	53.0	45.1	7.6	8	44	516	457	675	2329	4107	1793	321	75	10	4
7 Day Ave.	9596	53.4	45.6	7.6	6	36	465	382	564	2069	3877	1748	344	85	13	5

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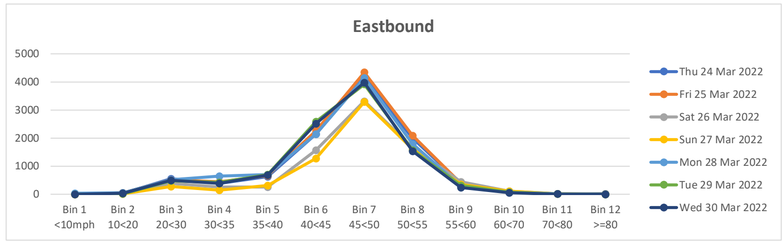

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	11889	53.8	45.5	8.0	2	53	579	828	829	1580	4722	2811	397	78	7	3
Fri 25 Mar 2022	11997	54.0	45.9	7.8	3	93	487	610	800	1593	5012	2889	414	78	14	4
Sat 26 Mar 2022	8465	55.4	48.2	7.0	0	5	185	317	339	846	3382	2649	578	138	20	6
Sun 27 Mar 2022	8283	55.3	48.9	6.2	0	3	100	201	269	733	3396	2832	568	168	10	3
Mon 28 Mar 2022	11424	53.9	46.3	7.4	0	12	332	807	817	1435	4467	2963	493	87	10	1
Tue 29 Mar 2022	11365	53.9	46.6	7.1	0	10	296	644	731	1646	4495	2959	486	84	11	3
Wed 30 Mar 2022	12018	53.3	45.7	7.3	3	53	380	630	955	1974	5030	2512	397	76	8	0
5 Day Ave.	11739	53.8	46.0	7.5	2	44	415	704	826	1646	4745	2827	437	81	10	2
7 Day Ave.	10777	54.2	46.7	7.2	1	33	337	577	677	1401	4358	2802	476	101	11	3

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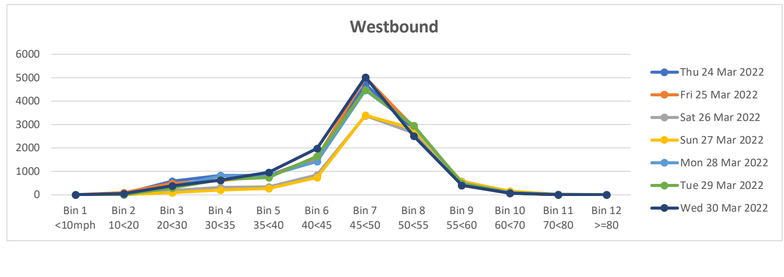

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	22310	53.7	45.5	7.9	4	97	1133	1216	1459	3722	8893	4807	783	168	15	13
Fri 25 Mar 2022	22862	53.8	45.7	7.8	9	153	1011	1050	1469	3847	9350	4978	797	159	31	8
Sat 26 Mar 2022	16535	55.1	47.4	7.4	0	24	579	567	594	2415	6700	4319	1026	247	46	18
Sun 27 Mar 2022	15683	54.9	47.9	6.7	2	14	381	344	588	2006	6682	4435	922	277	23	9
Mon 28 Mar 2022	21824	53.6	45.5	7.8	33	73	855	1456	1520	3571	8606	4748	773	164	21	4
Tue 29 Mar 2022	21449	53.3	45.8	7.2	0	29	784	1059	1430	4237	8408	4526	795	158	19	4
Wed 30 Mar 2022	21947	52.9	45.3	7.3	4	89	872	1021	1631	4495	9005	4039	644	131	16	0
5 Day Ave.	22078	53.4	45.6	7.6	10	88	931	1160	1502	3974	8852	4620	758	156	20	6
7 Day Ave.	20373	53.9	46.2	7.4	7	68	802	959	1242	3470	8235	4550	820	186	24	8

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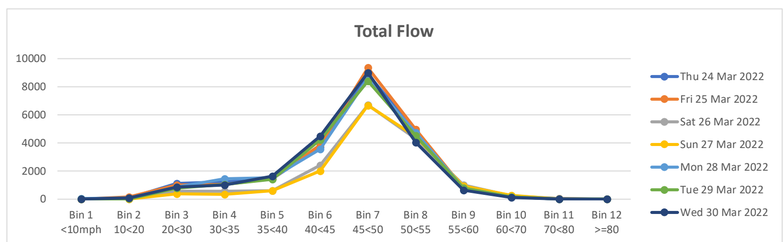

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1263	52.8	45.0	7.4	0	9	67	35	65	293	576	193	16	6	0	3
Fri 25 Mar 2022	1380	51.9	44.4	7.3	0	4	77	67	124	322	532	230	24	0	0	0
Sat 26 Mar 2022	1285	52.3	44.7	7.3	0	1	66	76	72	352	460	207	46	5	0	0
Sun 27 Mar 2022	1103	52.7	45.9	6.5	0	1	39	27	70	218	509	210	22	7	0	0
Mon 28 Mar 2022	1513	51.4	41.8	9.3	30	27	89	120	156	423	510	146	9	3	0	0
Tue 29 Mar 2022	1216	51.2	44.0	7.0	0	2	67	59	99	360	466	143	17	3	0	0
Wed 30 Mar 2022	1260	51.9	44.4	7.2	0	7	79	37	68	347	529	177	14	2	0	0
5 Day Ave.	1326	51.8	43.9	7.6	6	10	76	64	102	349	523	178	16	3	0	1
7 Day Ave.	1289	52.0	44.3	7.4	4	7	69	60	93	331	512	187	21	4	0	0

360 TSL Ltd

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1351	52.4	44.8	7.3	0	5	46	150	74	182	632	239	22	1	0	0
Fri 25 Mar 2022	1507	52.6	44.4	7.9	0	15	75	127	102	240	643	288	15	2	0	0
Sat 26 Mar 2022	1352	54.2	47.1	6.9	0	0	51	51	53	118	664	356	48	10	0	1
Sun 27 Mar 2022	1394	53.9	47.1	6.6	0	0	42	55	60	170	628	374	55	10	0	0
Mon 28 Mar 2022	1445	52.6	45.5	6.9	0	6	39	99	109	209	651	312	19	1	0	0
Tue 29 Mar 2022	1318	52.9	45.7	6.9	0	0	37	85	112	208	534	299	39	4	0	0
Wed 30 Mar 2022	1426	51.9	43.8	7.8	1	10	97	82	137	251	632	203	11	2	0	0
5 Day Ave.	1409	52.5	44.8	7.4	0	7	59	109	107	218	618	268	21	2	0	0
7 Day Ave.	1399	52.9	45.5	7.2	0	5	55	93	92	197	626	296	30	4	0	0

360 TSL Ltd

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	2614	52.6	44.9	7.4	0	14	113	185	139	475	1208	432	38	7	0	3
Fri 25 Mar 2022	2887	52.3	44.4	7.6	0	19	152	194	226	562	1175	518	39	2	0	0
Sat 26 Mar 2022	2637	53.4	45.9	7.2	0	1	117	127	125	470	1124	563	94	15	0	1
Sun 27 Mar 2022	2497	53.4	46.6	6.6	0	1	81	82	130	388	1137	584	77	17	0	0
Mon 28 Mar 2022	2958	52.3	43.6	8.4	30	33	128	219	265	632	1161	458	28	4	0	0
Tue 29 Mar 2022	2534	52.1	44.9	7.0	0	2	104	144	211	568	1000	442	56	7	0	0
Wed 30 Mar 2022	2686	51.9	44.1	7.5	1	17	176	119	205	598	1161	380	25	4	0	0
5 Day Ave.	2736	52.2	44.4	7.6	6	17	135	172	209	567	1141	446	37	5	0	1
7 Day Ave.	2688	52.6	44.9	7.4	4	12	124	153	186	528	1138	482	51	8	0	1

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1420	52.0	43.6	8.2	0	4	122	59	163	359	456	209	40	7	1	0
Fri 25 Mar 2022	1536	52.9	44.8	7.8	0	18	76	71	82	354	635	249	40	10	1	0
Sat 26 Mar 2022	1101	53.4	45.5	7.7	0	7	69	26	48	214	498	194	38	6	1	0
Sun 27 Mar 2022	1118	54.2	46.7	7.2	2	0	55	19	38	170	517	258	48	10	1	0
Mon 28 Mar 2022	1252	53.0	45.3	7.5	0	2	66	70	84	201	544	248	31	5	1	0
Tue 29 Mar 2022	1210	52.7	44.6	7.8	0	5	64	86	84	260	450	218	37	6	0	0
Wed 30 Mar 2022	1289	50.9	43.5	7.1	0	5	80	69	107	370	518	124	16	0	0	0
5 Day Ave.	1341	52.3	44.4	7.7	0	7	82	71	104	309	521	210	33	6	1	0
7 Day Ave.	1275	52.7	44.9	7.6	0	6	76	57	87	275	517	214	36	6	1	0

360 TSL Ltd

Direction: Westbound

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	1579	52.0	44.1	7.7	2	9	67	140	145	312	612	266	21	5	0	0
Fri 25 Mar 2022	1786	52.3	44.1	7.9	1	9	125	110	153	304	783	274	22	4	0	1
Sat 26 Mar 2022	1095	54.9	47.6	7.0	0	1	27	49	51	114	446	317	77	12	1	0
Sun 27 Mar 2022	1180	55.1	48.8	6.1	0	0	16	28	31	118	469	430	63	24	1	0
Mon 28 Mar 2022	1423	53.2	47.1	5.8	0	1	13	60	72	192	658	375	51	1	0	0
Tue 29 Mar 2022	1534	52.8	44.9	7.6	0	9	69	116	113	233	648	317	27	2	0	0
Wed 30 Mar 2022	1665	51.5	45.4	5.9	0	1	25	80	144	348	786	250	31	0	0	0
5 Day Ave.	1597	52.4	45.1	7.0	1	6	60	101	125	278	697	296	30	2	0	0
7 Day Ave.	1466	53.1	46.0	6.8	0	4	49	83	101	232	629	318	42	7	0	0

360 TSL Ltd

Direction: Total Flow

	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
Thu 24 Mar 2022	2999	52.0	43.8	7.9	2	13	189	199	308	671	1068	475	61	12	1	0
Fri 25 Mar 2022	3322	52.6	44.4	7.9	1	27	201	181	235	658	1418	523	62	14	1	1
Sat 26 Mar 2022	2196	54.2	46.5	7.4	0	8	96	75	99	328	944	511	115	18	2	0
Sun 27 Mar 2022	2298	54.8	47.8	6.7	2	0	71	47	69	288	986	688	111	34	2	0
Mon 28 Mar 2022	2675	53.2	46.3	6.7	0	3	79	130	156	393	1202	623	82	6	1	0
Tue 29 Mar 2022	2744	52.7	44.8	7.7	0	14	133	202	197	493	1098	535	64	8	0	0
Wed 30 Mar 2022	2954	51.4	44.6	6.5	0	6	105	149	251	718	1304	374	47	0	0	0
5 Day Ave.	2939	52.4	44.8	7.3	1	13	141	172	229	587	1218	506	63	8	1	0
7 Day Ave.	2741	53.0	45.5	7.3	1	10	125	140	188	507	1146	533	77	13	1	0

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

24/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	75	36	14	23	2
01:00	47	14	13	20	0
02:00	51	16	10	24	1
03:00	60	30	13	16	1
04:00	112	49	29	29	5
05:00	218	122	44	43	9
06:00	535	332	121	72	10
07:00	981	671	224	71	15
08:00	816	556	194	60	6
09:00	735	505	153	59	18
10:00	596	397	130	56	13
11:00	667	432	136	85	14
12:00	608	415	123	60	10
13:00	561	398	92	60	11
14:00	730	528	118	77	7
15:00	690	500	124	57	9
16:00	762	563	148	45	6
17:00	627	476	110	35	6
18:00	570	440	75	47	8
19:00	308	219	45	41	3
20:00	237	159	45	32	1
21:00	195	134	26	35	0
22:00	141	87	21	30	3
23:00	99	58	18	22	1
Total 12H(7-19)	8343	5881	1627	712	123
16H(6-22)	9618	6725	1864	892	137
18H(6-24)	9858	6870	1903	944	141
24H(0-24)	10421	7137	2026	1099	159
AM Peak	07:00	07:00	07:00	11:00	09:00
	981	671	224	85	18
PM Peak	16:00	16:00	16:00	14:00	13:00
	762	563	148	77	11

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	68	41	10	16	1
01:00	92	56	8	27	1
02:00	108	77	7	22	2
03:00	120	87	9	23	1
04:00	239	189	16	29	5
05:00	509	439	40	29	1
06:00	625	528	69	26	2
07:00	764	656	89	15	4
08:00	775	656	96	18	5
09:00	784	640	113	25	6
10:00	662	532	97	25	8
11:00	689	520	117	41	11
12:00	652	507	103	35	7
13:00	721	556	130	20	15
14:00	796	631	142	16	7
15:00	783	632	127	19	5
16:00	902	740	140	14	8
17:00	903	798	94	10	1
18:00	623	560	51	11	1
19:00	390	338	39	12	1
20:00	263	226	25	11	1
21:00	179	146	18	11	4
22:00	136	119	10	7	0
23:00	106	85	11	10	0
Total 12H(7-19)	9054	7428	1299	249	78
16H(6-22)	10511	8666	1450	309	86
18H(6-24)	10753	8870	1471	326	86
24H(0-24)	11889	9759	1561	472	97
AM Peak	09:00	07:00	11:00	11:00	11:00
	784	656	117	41	11
PM Peak	17:00	17:00	14:00	12:00	13:00
	903	798	142	35	15

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	143	77	24	39	3
01:00	139	70	21	47	1
02:00	159	93	17	46	3
03:00	180	117	22	39	2
04:00	351	238	45	58	10
05:00	727	561	84	72	10
06:00	1160	860	190	98	12
07:00	1745	1327	313	86	19
08:00	1591	1212	290	78	11
09:00	1519	1145	266	84	24
10:00	1258	929	227	81	21
11:00	1356	952	253	126	25
12:00	1260	922	226	95	17
13:00	1282	954	222	80	26
14:00	1526	1159	260	93	14
15:00	1473	1132	251	76	14
16:00	1664	1303	288	59	14
17:00	1530	1274	204	45	7
18:00	1193	1000	126	58	9
19:00	698	557	84	53	4
20:00	500	385	70	43	2
21:00	374	280	44	46	4
22:00	277	206	31	37	3
23:00	205	143	29	32	1
Total 12H(7-19)	17397	13309	2926	961	201
16H(6-22)	20129	15391	3314	1201	223
18H(6-24)	20611	15740	3374	1270	227
24H(0-24)	22310	16896	3587	1571	256
AM Peak	07:00	07:00	07:00	11:00	11:00
	1745	1327	313	126	25
PM Peak	16:00	16:00	16:00	12:00	13:00
	1664	1303	288	95	26

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

25/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	63	23	11	28	1
01:00	52	18	11	21	2
02:00	53	23	11	16	3
03:00	50	24	15	9	2
04:00	106	41	22	38	5
05:00	233	126	51	46	10
06:00	550	348	120	74	8
07:00	870	608	182	63	17
08:00	727	484	170	59	14
09:00	665	449	129	72	15
10:00	707	519	114	65	9
11:00	673	499	112	55	7
12:00	739	544	124	59	12
13:00	735	560	117	49	9
14:00	755	565	131	53	6
15:00	781	597	124	57	3
16:00	740	607	99	27	7
17:00	681	552	90	35	4
18:00	599	496	63	36	4
19:00	375	290	52	32	1
20:00	291	236	36	18	1
21:00	180	124	25	29	2
22:00	157	119	18	19	1
23:00	83	51	15	17	0
Total 12H(7-19)	8672	6480	1455	630	107
16H(6-22)	10068	7478	1688	783	119
18H(6-24)	10308	7648	1721	819	120
24H(0-24)	10865	7903	1842	977	143
AM Peak	07:00	07:00	07:00	06:00	07:00
	870	608	182	74	17
PM Peak	15:00	16:00	14:00	12:00	12:00
	781	607	131	59	12

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	75	41	11	20	3
01:00	80	54	7	16	3
02:00	118	85	12	21	0
03:00	118	84	16	16	2
04:00	222	172	22	25	3
05:00	425	370	32	21	2
06:00	546	451	73	20	2
07:00	754	657	81	13	3
08:00	803	679	99	18	7
09:00	716	578	102	27	9
10:00	743	605	97	29	12
11:00	764	613	110	32	9
12:00	822	651	130	35	6
13:00	847	697	122	23	5
14:00	902	757	124	15	6
15:00	884	726	133	20	5
16:00	869	731	120	12	6
17:00	779	687	79	11	2
18:00	556	497	54	4	1
19:00	328	275	43	7	3
20:00	275	234	31	9	1
21:00	164	140	12	12	0
22:00	124	103	10	10	1
23:00	83	56	15	12	0
Total 12H(7-19)	9439	7878	1251	239	71
16H(6-22)	10752	8978	1410	287	77
18H(6-24)	10959	9137	1435	309	78
24H(0-24)	11997	9943	1535	428	91
AM Peak	08:00	08:00	11:00	11:00	10:00
	803	679	110	32	12
PM Peak	14:00	14:00	15:00	12:00	12:00
	902	757	133	35	6

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	138	64	22	48	4
01:00	132	72	18	37	5
02:00	171	108	23	37	3
03:00	168	108	31	25	4
04:00	328	213	44	63	8
05:00	658	496	83	67	12
06:00	1096	799	193	94	10
07:00	1624	1265	263	76	20
08:00	1530	1163	269	77	21
09:00	1381	1027	231	99	24
10:00	1450	1124	211	94	21
11:00	1437	1112	222	87	16
12:00	1561	1195	254	94	18
13:00	1582	1257	239	72	14
14:00	1657	1322	255	68	12
15:00	1665	1323	257	77	8
16:00	1609	1338	219	39	13
17:00	1460	1239	169	46	6
18:00	1155	993	117	40	5
19:00	703	565	95	39	4
20:00	566	470	67	27	2
21:00	344	264	37	41	2
22:00	281	222	28	29	2
23:00	166	107	30	29	0
Total 12H(7-19)	18111	14358	2706	869	178
16H(6-22)	20820	16456	3098	1070	196
18H(6-24)	21267	16785	3156	1128	198
24H(0-24)	22862	17846	3377	1405	234
AM Peak	07:00	07:00	08:00	09:00	09:00
	1624	1265	269	99	24
PM Peak	15:00	16:00	15:00	12:00	12:00
	1665	1338	257	94	18

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

26/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	62	37	10	14	1
01:00	39	14	7	18	0
02:00	47	20	14	11	2
03:00	47	19	13	15	0
04:00	67	28	19	18	2
05:00	120	69	30	18	3
06:00	226	149	36	37	4
07:00	326	232	73	16	5
08:00	458	350	82	23	3
09:00	613	497	87	25	4
10:00	650	565	66	17	2
11:00	635	524	89	22	0
12:00	658	544	81	31	2
13:00	590	506	63	21	0
14:00	549	474	54	19	2
15:00	552	453	74	22	3
16:00	487	411	58	17	1
17:00	522	425	73	20	4
18:00	469	395	54	20	0
19:00	287	232	37	17	1
20:00	237	189	32	16	0
21:00	209	154	34	21	0
22:00	121	103	10	7	1
23:00	99	73	14	11	1
Total					
12H(7-19)	6509	5376	854	253	26
16H(6-22)	7468	6100	993	344	31
18H(6-24)	7688	6276	1017	362	33
24H(0-24)	8070	6463	1110	456	41
AM Peak	10:00	10:00	11:00	06:00	07:00
	650	565	89	37	5
PM Peak	12:00	12:00	12:00	12:00	17:00
	658	544	81	31	4

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	60	38	9	13	0
01:00	54	36	4	13	1
02:00	69	47	8	14	0
03:00	91	59	12	18	2
04:00	142	114	17	9	2
05:00	238	193	27	16	2
06:00	266	211	43	11	1
07:00	452	380	57	14	1
08:00	540	473	54	12	1
09:00	621	539	63	17	2
10:00	638	564	59	12	3
11:00	714	635	69	9	1
12:00	650	569	69	11	1
13:00	580	489	82	7	2
14:00	551	481	60	10	0
15:00	544	487	54	3	0
16:00	501	428	70	3	0
17:00	475	423	45	5	2
18:00	462	411	46	4	1
19:00	297	262	32	2	1
20:00	217	180	31	6	0
21:00	120	93	22	5	0
22:00	110	91	11	8	0
23:00	73	63	2	8	0
Total					
12H(7-19)	6728	5879	728	107	14
16H(6-22)	7628	6625	856	131	16
18H(6-24)	7811	6779	869	147	16
24H(0-24)	8465	7266	946	230	23
AM Peak	11:00	11:00	11:00	03:00	10:00
	714	635	69	18	3
PM Peak	12:00	12:00	13:00	12:00	13:00
	650	569	82	11	2

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	122	75	19	27	1
01:00	93	50	11	31	1
02:00	116	67	22	25	2
03:00	138	78	25	33	2
04:00	209	142	36	27	4
05:00	358	262	57	34	5
06:00	492	360	79	48	5
07:00	778	612	130	30	6
08:00	998	823	136	35	4
09:00	1234	1036	150	42	6
10:00	1288	1129	125	29	5
11:00	1349	1159	158	31	1
12:00	1308	1113	150	42	3
13:00	1170	995	145	28	2
14:00	1100	955	114	29	2
15:00	1096	940	128	25	3
16:00	988	839	128	20	1
17:00	997	848	118	25	6
18:00	931	806	100	24	1
19:00	584	494	69	19	2
20:00	454	369	63	22	0
21:00	329	247	56	26	0
22:00	231	194	21	15	1
23:00	172	136	16	19	1
Total					
12H(7-19)	13237	11255	1582	360	40
16H(6-22)	15096	12725	1849	475	47
18H(6-24)	15499	13055	1886	509	49
24H(0-24)	16535	13729	2056	686	64
AM Peak	11:00	11:00	11:00	06:00	07:00
	1349	1159	158	48	6
PM Peak	12:00	12:00	12:00	12:00	17:00
	1308	1113	150	42	6

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

27/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	61	47	7	7	0
01:00	44	23	12	9	0
02:00	0	0	0	0	0
03:00	34	16	9	7	2
04:00	33	21	5	7	0
05:00	56	28	14	14	0
06:00	107	82	15	9	1
07:00	143	90	36	15	2
08:00	209	155	36	18	0
09:00	397	322	62	13	0
10:00	489	411	61	14	3
11:00	614	538	63	13	0
12:00	676	573	81	18	4
13:00	581	493	63	22	3
14:00	576	508	51	14	3
15:00	542	476	46	16	4
16:00	601	519	60	20	2
17:00	561	473	66	21	1
18:00	559	485	48	24	2
19:00	397	331	45	21	0
20:00	303	242	37	24	0
21:00	234	172	45	16	1
22:00	108	80	15	12	1
23:00	75	56	4	14	1
Total					
12H(7-19)	5948	5043	673	208	24
16H(6-22)	6989	5870	815	278	26
18H(6-24)	7172	6006	834	304	28
24H(0-24)	7400	6141	881	348	30
AM Peak	11:00	11:00	11:00	08:00	10:00
	614	538	63	18	3
PM Peak	12:00	12:00	12:00	18:00	12:00
	676	573	81	24	4

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	56	31	15	10	0
01:00	54	35	4	14	1
02:00	0	0	0	0	0
03:00	47	20	8	19	0
04:00	108	91	4	12	1
05:00	132	103	19	10	0
06:00	169	131	29	8	1
07:00	220	178	31	11	0
08:00	328	272	48	6	2
09:00	559	495	59	5	0
10:00	608	542	59	7	0
11:00	786	715	64	6	1
12:00	661	606	47	6	2
13:00	662	591	61	10	0
14:00	592	533	54	4	1
15:00	588	519	59	8	2
16:00	632	587	37	6	2
17:00	497	448	46	1	2
18:00	496	451	41	2	2
19:00	441	386	53	2	0
20:00	305	262	35	7	1
21:00	174	149	16	9	0
22:00	100	82	13	5	0
23:00	68	41	12	14	1
Total					
12H(7-19)	6629	5937	606	72	14
16H(6-22)	7718	6865	739	98	16
18H(6-24)	7886	6988	764	117	17
24H(0-24)	8283	7268	814	182	19
AM Peak	11:00	11:00	11:00	03:00	08:00
	786	715	64	19	2
PM Peak	13:00	12:00	13:00	23:00	12:00
	662	606	61	14	2

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	117	78	22	17	0
01:00	98	58	16	23	1
02:00	0	0	0	0	0
03:00	81	36	17	26	2
04:00	141	112	9	19	1
05:00	188	131	33	24	0
06:00	276	213	44	17	2
07:00	363	268	67	26	2
08:00	537	427	84	24	2
09:00	956	817	121	18	0
10:00	1097	953	120	21	3
11:00	1400	1253	127	19	1
12:00	1337	1179	128	24	6
13:00	1243	1084	124	32	3
14:00	1168	1041	105	18	4
15:00	1130	995	105	24	6
16:00	1233	1106	97	26	4
17:00	1058	921	112	22	3
18:00	1055	936	89	26	4
19:00	838	717	98	23	0
20:00	608	504	72	31	1
21:00	408	321	61	25	1
22:00	208	162	28	17	1
23:00	143	97	16	28	2
Total					
12H(7-19)	12577	10980	1279	280	38
16H(6-22)	14707	12735	1554	376	42
18H(6-24)	15058	12994	1598	421	45
24H(0-24)	15683	13409	1695	530	49
AM Peak	11:00	11:00	11:00	03:00	10:00
	1400	1253	127	26	3
PM Peak	12:00	12:00	12:00	13:00	12:00
	1337	1179	128	32	6

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

28/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	58	30	10	17	1
01:00	26	11	4	11	0
02:00	35	14	13	8	0
03:00	48	24	12	11	1
04:00	80	47	13	18	2
05:00	221	149	46	21	5
06:00	556	370	120	53	13
07:00	1052	786	214	36	16
08:00	877	595	205	63	14
09:00	698	455	163	62	18
10:00	769	543	149	67	10
11:00	744	541	126	64	13
12:00	682	474	118	81	9
13:00	630	479	93	54	4
14:00	633	450	109	66	8
15:00	619	452	110	49	8
16:00	703	518	126	53	6
17:00	648	502	111	33	2
18:00	492	370	65	54	3
19:00	262	183	47	28	4
20:00	188	128	30	29	1
21:00	155	103	27	24	1
22:00	152	109	20	21	2
23:00	72	46	9	17	0
Total					
12H(7-19)	8547	6165	1589	682	111
16H(6-22)	9708	6949	1813	816	130
18H(6-24)	9932	7104	1842	854	132
24H(0-24)	10400	7379	1940	940	141
AM Peak	07:00	07:00	07:00	10:00	09:00
	1052	786	214	67	18
PM Peak	16:00	16:00	16:00	12:00	12:00
	703	518	126	81	9

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	54	41	3	10	0
01:00	42	22	8	11	1
02:00	87	59	6	22	0
03:00	146	105	18	23	0
04:00	231	189	19	21	2
05:00	472	411	43	17	1
06:00	555	467	63	21	4
07:00	856	771	80	2	3
08:00	777	692	77	5	3
09:00	714	607	84	21	2
10:00	658	545	87	24	2
11:00	787	632	115	32	8
12:00	680	544	100	27	9
13:00	745	573	124	37	11
14:00	667	501	127	36	3
15:00	756	576	142	31	7
16:00	822	651	147	20	4
17:00	870	726	110	30	4
18:00	568	483	69	13	3
19:00	356	307	38	9	2
20:00	248	213	26	8	1
21:00	150	121	22	7	0
22:00	97	75	15	7	0
23:00	86	64	5	16	1
Total					
12H(7-19)	8900	7301	1262	278	59
16H(6-22)	10209	8409	1411	323	66
18H(6-24)	10392	8548	1431	346	67
24H(0-24)	11424	9375	1528	450	71
AM Peak	07:00	07:00	11:00	11:00	11:00
	856	771	115	32	8
PM Peak	17:00	17:00	16:00	13:00	13:00
	870	726	147	37	11

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	112	71	13	27	1
01:00	68	33	12	22	1
02:00	122	73	19	30	0
03:00	194	129	30	34	1
04:00	311	236	32	39	4
05:00	693	560	89	38	6
06:00	1111	837	183	74	17
07:00	1908	1557	294	38	19
08:00	1654	1287	282	68	17
09:00	1412	1062	247	83	20
10:00	1427	1088	236	91	12
11:00	1531	1173	241	96	21
12:00	1362	1018	218	108	18
13:00	1375	1052	217	91	15
14:00	1300	951	236	102	11
15:00	1375	1028	252	80	15
16:00	1525	1169	273	73	10
17:00	1518	1228	221	63	6
18:00	1060	853	134	67	6
19:00	618	490	85	37	6
20:00	436	341	56	37	2
21:00	305	224	49	31	1
22:00	249	184	35	28	2
23:00	158	110	14	33	1
Total					
12H(7-19)	17447	13466	2851	960	170
16H(6-22)	19917	15358	3224	1139	196
18H(6-24)	20324	15652	3273	1200	199
24H(0-24)	21824	16754	3468	1390	212
AM Peak	07:00	07:00	07:00	11:00	11:00
	1908	1557	294	96	21
PM Peak	16:00	17:00	16:00	12:00	12:00
	1525	1228	273	108	18

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

29/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	32	16	3	13	0
01:00	36	12	10	11	3
02:00	45	15	12	16	2
03:00	48	16	22	10	0
04:00	101	51	18	29	3
05:00	222	130	48	36	8
06:00	507	320	102	76	9
07:00	1047	767	218	52	10
08:00	854	588	199	52	15
09:00	734	463	184	70	17
10:00	647	426	149	59	13
11:00	569	379	131	52	7
12:00	652	440	121	84	7
13:00	604	424	108	60	12
14:00	591	415	114	53	9
15:00	619	444	109	65	1
16:00	703	522	129	39	13
17:00	696	535	117	41	3
18:00	460	349	78	30	3
19:00	293	194	55	43	1
20:00	203	149	31	22	1
21:00	189	127	28	31	3
22:00	152	103	23	25	1
23:00	80	47	12	20	1
Total					
12H(7-19)	8176	5752	1657	657	110
16H(6-22)	9368	6542	1873	829	124
18H(6-24)	9600	6692	1908	874	126
24H(0-24)	10084	6932	2021	989	142
AM Peak	07:00	07:00	07:00	06:00	09:00
	1047	767	218	76	17
PM Peak	16:00	17:00	16:00	12:00	16:00
	703	535	129	84	13

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	79	60	9	9	1
01:00	77	55	6	16	0
02:00	90	69	5	15	1
03:00	127	84	18	24	1
04:00	221	167	19	31	4
05:00	418	354	39	22	3
06:00	524	435	70	14	5
07:00	822	728	79	9	6
08:00	838	735	93	8	2
09:00	630	537	71	21	1
10:00	627	528	62	32	5
11:00	691	550	109	27	5
12:00	681	543	103	25	10
13:00	782	620	115	40	7
14:00	747	577	127	32	11
15:00	787	623	134	23	7
16:00	836	669	139	20	8
17:00	796	696	90	9	1
18:00	541	492	44	5	0
19:00	340	292	36	11	1
20:00	275	248	20	6	1
21:00	215	196	16	3	0
22:00	131	109	14	8	0
23:00	90	66	9	15	0
Total					
12H(7-19)	8778	7298	1166	251	63
16H(6-22)	10132	8469	1308	285	70
18H(6-24)	10353	8644	1331	308	70
24H(0-24)	11365	9433	1427	425	80
AM Peak	08:00	08:00	11:00	10:00	07:00
	838	735	109	32	6
PM Peak	16:00	17:00	16:00	13:00	14:00
	836	696	139	40	11

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	111	76	12	22	1
01:00	113	67	16	27	3
02:00	135	84	17	31	3
03:00	175	100	40	34	1
04:00	322	218	37	60	7
05:00	640	484	87	58	11
06:00	1031	755	172	90	14
07:00	1869	1495	297	61	16
08:00	1692	1323	292	60	17
09:00	1364	1000	255	91	18
10:00	1274	954	211	91	18
11:00	1260	929	240	79	12
12:00	1333	983	224	109	17
13:00	1386	1044	223	100	19
14:00	1338	992	241	85	20
15:00	1406	1067	243	88	8
16:00	1539	1191	268	59	21
17:00	1492	1231	207	50	4
18:00	1001	841	122	35	3
19:00	633	486	91	54	2
20:00	478	397	51	28	2
21:00	404	323	44	34	3
22:00	283	212	37	33	1
23:00	170	113	21	35	1
Total					
12H(7-19)	16954	13050	2823	908	173
16H(6-22)	19500	15011	3181	1114	194
18H(6-24)	19953	15336	3239	1182	196
24H(0-24)	21449	16365	3448	1414	222
AM Peak	07:00	07:00	07:00	09:00	09:00
	1869	1495	297	91	18
PM Peak	16:00	17:00	16:00	12:00	16:00
	1539	1231	268	109	21

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

30/03/2022

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	66	33	12	20	1
01:00	44	16	10	18	0
02:00	40	19	6	14	1
03:00	60	22	15	21	2
04:00	98	46	23	26	3
05:00	221	120	47	47	7
06:00	480	313	102	54	11
07:00	915	659	187	55	14
08:00	877	600	204	54	19
09:00	691	445	169	66	11
10:00	643	435	134	63	11
11:00	617	419	122	67	9
12:00	598	422	108	60	8
13:00	586	408	114	55	9
14:00	656	464	124	56	12
15:00	633	475	99	54	5
16:00	709	521	122	56	10
17:00	622	488	96	34	4
18:00	505	396	70	35	4
19:00	302	205	62	34	1
20:00	202	137	35	28	2
21:00	170	104	33	31	2
22:00	114	74	14	26	0
23:00	80	38	14	26	2
Total					
12H(7-19)	8052	5732	1549	655	116
16H(6-22)	9206	6491	1781	802	132
18H(6-24)	9400	6603	1809	854	134
24H(0-24)	9929	6859	1922	1000	148
AM Peak	07:00	07:00	08:00	11:00	08:00
	915	659	204	67	19
PM Peak	16:00	16:00	14:00	12:00	14:00
	709	521	124	60	12

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	86	72	10	4	0
01:00	94	66	6	21	1
02:00	114	89	6	19	0
03:00	177	128	28	18	3
04:00	253	196	28	29	0
05:00	385	323	31	29	2
06:00	567	456	89	17	5
07:00	808	691	94	20	3
08:00	712	604	84	22	2
09:00	656	535	85	28	8
10:00	675	549	86	30	10
11:00	751	620	94	32	5
12:00	771	671	82	14	4
13:00	893	767	100	15	11
14:00	869	773	77	14	5
15:00	796	676	107	8	5
16:00	944	844	86	11	3
17:00	931	857	66	6	2
18:00	584	537	44	2	1
19:00	318	284	29	5	0
20:00	271	244	13	13	1
21:00	165	147	12	6	0
22:00	106	94	8	3	1
23:00	92	78	8	6	0
Total					
12H(7-19)	9390	8124	1005	202	59
16H(6-22)	10711	9255	1148	243	65
18H(6-24)	10909	9427	1164	252	66
24H(0-24)	12018	10301	1273	372	72
AM Peak	07:00	07:00	07:00	11:00	10:00
	808	691	94	32	10
PM Peak	16:00	17:00	15:00	13:00	13:00
	944	857	107	15	11

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	LIGHT	OGV1	OGV2	BUS
00:00	152	105	22	24	1
01:00	138	82	16	39	1
02:00	154	108	12	33	1
03:00	237	150	43	39	5
04:00	351	242	51	55	3
05:00	606	443	78	76	9
06:00	1047	769	191	71	16
07:00	1723	1350	281	75	17
08:00	1589	1204	288	76	21
09:00	1347	980	254	94	19
10:00	1318	984	220	93	21
11:00	1368	1039	216	99	14
12:00	1369	1093	190	74	12
13:00	1479	1175	214	70	20
14:00	1525	1237	201	70	17
15:00	1429	1151	206	62	10
16:00	1653	1365	208	67	13
17:00	1553	1345	162	40	6
18:00	1089	933	114	37	5
19:00	620	489	91	39	1
20:00	473	381	48	41	3
21:00	335	251	45	37	2
22:00	220	168	22	29	1
23:00	172	116	22	32	2
Total					
12H(7-19)	17442	13856	2554	857	175
16H(6-22)	19917	15746	2929	1045	197
18H(6-24)	20309	16030	2973	1106	200
24H(0-24)	21947	17160	3195	1372	220
AM Peak	07:00	07:00	08:00	11:00	08:00
	1723	1350	288	99	21
PM Peak	16:00	16:00	13:00	12:00	13:00
	1653	1365	214	74	20

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

24/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	75	59.2	51.3	7.5	0	0	2	0	1	7	17	30	13	4	1	0
01:00	47	60.4	52.5	7.6	0	0	1	1	0	2	8	20	12	2	1	0
02:00	51	58.3	47.6	10.3	0	1	4	1	1	3	22	9	7	3	0	0
03:00	60	59.8	51.5	8.0	0	0	2	2	1	1	12	22	17	3	0	0
04:00	112	59.6	50.9	8.4	0	1	3	2	0	10	25	45	16	10	0	0
05:00	218	60.1	49.7	10.0	0	0	10	7	4	19	65	84	16	5	2	6
06:00	535	54.9	46.3	8.2	0	5	27	33	10	61	230	135	29	5	0	0
07:00	981	51.6	44.0	7.4	1	1	51	73	79	247	369	138	20	2	0	0
08:00	816	51.2	44.3	6.6	0	4	30	31	76	237	328	96	13	1	0	0
09:00	735	52.3	44.0	8.0	0	10	52	24	52	167	311	110	8	1	0	0
10:00	596	52.6	45.2	7.2	0	2	32	16	36	136	257	101	12	4	0	0
11:00	667	52.9	44.9	7.7	0	7	35	19	29	157	319	92	4	2	0	3
12:00	608	52.9	45.0	7.6	0	1	43	23	32	116	258	121	14	0	0	0
13:00	561	53.0	44.7	8.0	0	4	37	21	34	132	222	87	18	6	0	0
14:00	730	50.9	42.0	8.6	0	3	79	47	117	198	180	86	13	6	1	0
15:00	690	52.8	45.3	7.3	0	1	43	12	46	161	276	123	27	1	0	0
16:00	762	52.9	45.4	7.2	1	2	33	37	51	134	336	148	18	2	0	0
17:00	627	53.8	46.8	6.7	0	1	19	19	28	105	268	158	24	4	1	0
18:00	570	53.9	46.3	7.3	0	0	33	9	20	105	261	111	27	3	0	1
19:00	308	53.4	47.4	5.8	0	0	6	3	9	61	141	71	14	3	0	0
20:00	237	55.4	49.0	6.2	0	0	5	2	0	29	111	66	17	6	1	0
21:00	195	55.9	49.4	6.3	0	0	3	2	2	28	70	64	20	6	0	0
22:00	141	56.6	49.1	7.3	0	1	3	3	2	11	55	51	9	6	0	0
23:00	99	58.0	50.8	7.0	0	0	1	1	0	15	30	28	18	5	1	0
Total 2H(10-12)	1263	52.8	45.0	7.4	0	9	67	35	65	293	576	193	16	6	0	3
2H(14-16)	1420	52.0	43.6	8.2	0	4	122	59	163	359	456	209	40	7	1	0
12H(7-19)	8343	52.6	44.7	7.6	2	36	487	331	600	1895	3385	1371	198	32	2	4
24H(0-24)	10421	53.6	45.5	7.8	2	44	554	388	630	2142	4171	1996	386	90	8	10
AM Peak	07:00	01:00	01:00	02:00	07:00	09:00	09:00	07:00	07:00	07:00	07:00	07:00	06:00	04:00	05:00	05:00
	981	60.4	52.5	10.3	1	10	52	73	79	247	369	138	29	10	2	6
PM Peak	16:00	23:00	23:00	14:00	16:00	13:00	14:00	14:00	14:00	14:00	16:00	17:00	15:00	13:00	14:00	18:00
	762	58.0	50.8	8.6	1	4	79	47	117	198	336	158	27	6	1	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	68	57.1	52.5	4.4	0	0	0	0	1	1	12	42	9	3	0	0
01:00	92	56.2	51.1	5.0	0	0	0	0	2	5	27	45	12	0	1	0
02:00	108	56.9	51.0	5.7	0	0	0	3	1	4	25	65	9	0	0	1
03:00	120	56.5	51.9	4.4	0	0	0	0	1	3	33	62	17	4	0	0
04:00	239	56.2	50.3	5.8	0	0	0	4	13	14	65	109	29	5	0	0
05:00	509	52.4	41.7	10.4	0	0	104	38	36	76	146	92	12	4	1	0
06:00	625	55.4	45.5	9.6	0	13	41	48	38	30	234	192	20	8	1	0
07:00	764	54.5	46.7	7.5	0	0	41	21	53	89	271	257	29	3	0	0
08:00	775	54.1	47.5	6.3	0	0	18	27	32	84	338	245	25	6	0	0
09:00	784	53.3	44.4	8.6	0	1	59	92	49	61	328	175	15	4	0	0
10:00	662	52.4	44.7	7.4	0	5	26	61	31	112	307	110	10	0	0	0
11:00	689	52.4	44.9	7.3	0	0	20	89	43	70	325	129	12	1	0	0
12:00	652	52.4	43.5	8.7	0	10	47	54	63	101	254	108	15	0	0	0
13:00	721	52.6	43.4	8.9	0	8	73	59	33	117	302	114	13	2	0	0
14:00	796	51.8	43.2	8.3	2	9	39	92	75	158	287	120	13	1	0	0
15:00	783	52.1	45.0	6.8	0	0	28	48	70	154	325	146	8	4	0	0
16:00	902	51.4	43.6	7.6	0	7	30	87	136	154	349	115	23	1	0	0
17:00	903	52.7	45.4	7.1	0	0	33	54	84	145	379	187	17	2	2	0
18:00	623	52.9	47.3	5.4	0	0	9	12	27	90	319	141	25	0	0	0
19:00	390	54.1	47.0	6.9	0	0	5	30	23	37	176	86	31	2	0	0
20:00	263	55.6	49.4	5.9	0	0	2	5	3	25	107	98	17	5	0	1
21:00	179	58.4	51.1	7.1	0	0	1	1	5	17	54	68	18	13	1	1
22:00	136	57.2	49.4	7.5	0	0	2	3	9	19	25	62	9	6	1	0
23:00	106	56.0	50.1	5.7	0	0	1	0	1	14	34	43	9	4	0	0
Total 2H(10-12)	1351	52.4	44.8	7.3	0	5	46	150	74	182	632	239	22	1	0	0
2H(14-16)	1579	52.0	44.1	7.7	2	9	67	140	145	312	612	266	21	5	0	0
12H(7-19)	9054	52.9	44.9	7.7	2	40	423	696	696	1335	3784	1847	205	24	2	0
24H(0-24)	11889	53.8	45.5	8.0	2	53	579	828	829	1580	4722	2811	397	78	7	3
AM Peak	09:00	00:00	00:00	05:00	00:00	06:00	05:00	09:00	07:00	10:00	08:00	07:00	04:00	06:00	01:00	02:00
	784	57.1	52.5	10.4	0	13	104	92	53	112	338	257	29	8	1	1
PM Peak	17:00	21:00	21:00	13:00	14:00	12:00	13:00	14:00	16:00	14:00	17:00	17:00	19:00	21:00	17:00	20:00
	903	58.4	51.1	8.9	2	10	73	92	136	158	379	187	31	13	2	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	143	58.4	51.9	6.3	0	0	2	0	2	8	29	72	22	7	1	0
01:00	139	57.8	51.5	6.0	0	0	1	1	2	7	35	65	24	2	2	0
02:00	159	57.8	49.9	7.6	0	1	4	4	2	7	47	74	16	3	0	1
03:00	180	57.8	51.8	5.9	0	0	2	2	2	4	45	84	34	7	0	0
04:00	351	57.4	50.5	6.7	0	1	3	6	13	24	90	154	45	15	0	0
05:00	727	55.4	44.1	10.9	0	0	114	45	40	95	211	176	28	9	3	6
06:00	1160	55.2	45.9	9.0	0	18	68	81	48	91	464	327	49	13	1	0
07:00	1745	53.0	45.2	7.5	1	1	92	94	132	336	640	395	49	5	0	0
08:00	1591	52.8	45.9	6.7	0	4	48	58	108	321	666	341	38	7	0	0
09:00	1519	52.8	44.2	8.3	0	11	111	116	101	228	639	285	23	5	0	0
10:00	1258	52.5	44.9	7.3	0	7	58	77	67	248	564	211	22	4	0	0
11:00	1356	52.7	44.9	7.5	0	7	55	108	72	227	644	221	16	3	0	3
12:00	1260	52.7	44.2	8.2	0	11	90	77	95	217	512	229	29	0	0	0
13:00	1282	52.8	44.0	8.6	0	12	110	80	67	249	524	201	31	8	0	0
14:00	1526	51.4	42.6	8.5	2	12	118	139	192	356	467	206	26	7	1	0
15:00	1473	52.5	45.1	7.1	0	1	71	60	116	315	601	269	35	5	0	0
16:00	1664	52.1	44.4	7.5	1	9	63	124	187	288	685	263	41	3	0	0
17:00	1530	53.2	46.0	7.0	0	1	52	73	112	250	647	345	41	6	3	0
18:00	1193	53.4	46.8	6.4	0	0	42	21	47	195	580	252	52	3	0	1
19:00	698	53.8	47.2	6.4	0	0	11	33	32	98	317	157	45	5	0	0
20:00	500	55.5	49.2	6.1	0	0	7	7	3	54	218	164	34	11	1	1
21:00	374	57.2	50.2	6.7	0	0	4	3	7	45	124	132	38	19	1	1
22:00	277	56.9	49.3	7.4	0	1	5	6	11	30	80	113	18	12	1	0
23:00	205	57.0	50.4	6.4	0	0	2	1	1	29	64	71	27	9	1	0
Total 2H(10-12)	2614	52.6	44.9	7.4	0	14	113	185	139	475	1208	432	38	7	0	3
2H(14-16)	2999	52.0	43.8	7.9	2	13	189	199	308	671	1068	475	61	12	1	0
12H(7-19)	17397	52.7	44.8	7.6	4	76	910	1027	1296	3230	7169	3218	403	56	4	4
24H(0-24)	22310	53.7	45.5	7.9	4	97	1133	1216	1459	3722	8893	4807	783	168	15	13
AM Peak	07:00	00:00	00:00	05:00	07:00	06:00	05:00	09:00	07:00	07:00	08:00	07:00	06:00	04:00	05:00	05:00
	1745	58.4	51.9	10.9	1	18	114	116	132	336	666	395	49	15	3	6
PM Peak	16:00	21:00	23:00	13:00	14:00	13:00	14:00	14:00	14:00	14:00	16:00	17:00	18:00	21:00	17:00	18:00
	1664	57.2	50.4	8.6	2	12	118	139	192	356	685	345	52	19	3	1

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

25/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	63	59.5	50.9	8.3	0	0	1	0	5	6	16	18	11	5	1	0
01:00	52	60.5	53.0	7.2	0	0	0	0	1	2	11	25	10	1	1	1
02:00	53	60.5	49.0	11.1	0	0	4	3	2	0	20	13	7	1	3	0
03:00	50	56.8	48.7	7.9	0	0	3	1	1	4	13	22	6	0	0	0
04:00	106	59.4	51.0	8.0	0	0	4	1	0	7	31	39	15	8	1	0
05:00	233	58.1	47.9	9.8	0	7	11	2	6	18	92	65	19	12	1	0
06:00	550	55.3	47.5	7.6	0	4	23	12	8	88	196	178	35	6	0	0
07:00	870	52.6	45.7	6.6	0	2	35	28	33	196	400	152	21	3	0	0
08:00	727	52.4	45.4	6.8	0	0	32	23	61	140	322	134	12	3	0	0
09:00	665	52.7	45.4	7.0	0	2	39	9	39	142	295	125	14	0	0	0
10:00	707	51.6	43.8	7.5	0	3	54	27	45	190	286	97	5	0	0	0
11:00	673	52.2	44.9	7.1	0	1	23	40	79	132	246	133	19	0	0	0
12:00	739	51.2	43.6	7.3	0	1	50	41	64	197	290	84	12	0	0	0
13:00	735	52.0	42.1	9.6	6	19	62	65	48	172	254	100	8	0	1	0
14:00	755	53.7	45.1	8.3	0	17	32	20	37	190	287	138	26	7	1	0
15:00	781	52.1	44.5	7.3	0	1	44	51	45	164	348	111	14	3	0	0
16:00	740	52.5	45.6	6.7	0	1	23	20	72	176	273	146	27	2	0	0
17:00	681	52.6	44.5	7.8	0	1	36	56	56	126	268	115	20	1	2	0
18:00	599	53.7	45.8	7.6	0	0	32	29	32	102	244	134	22	2	2	0
19:00	375	53.4	47.3	5.9	0	1	3	3	16	91	156	83	19	2	0	1
20:00	291	54.5	48.0	6.3	0	0	2	3	11	69	108	75	14	7	2	0
21:00	180	54.9	48.6	6.1	0	0	3	2	2	25	88	42	12	6	0	0
22:00	157	56.7	49.1	7.4	0	0	4	3	6	12	68	40	17	6	1	0
23:00	83	62.4	51.8	10.2	0	0	4	1	0	5	26	20	18	6	1	2
Total 2H(10-12)	1380	51.9	44.4	7.3	0	4	77	67	124	322	532	230	24	0	0	0
2H(14-16)	1536	52.9	44.8	7.8	0	18	76	71	82	354	635	249	40	10	1	0
12H(7-19)	8672	52.5	44.7	7.6	6	48	462	409	611	1927	3513	1469	200	21	6	0
24H(0-24)	10865	53.5	45.5	7.7	6	60	524	440	669	2254	4338	2089	383	81	17	4
AM Peak	07:00	01:00	01:00	02:00	00:00	05:00	10:00	11:00	11:00	07:00	07:00	06:00	06:00	05:00	02:00	01:00
	870	60.5	53.0	11.1	0	7	54	40	79	196	400	178	35	12	3	1
PM Peak	15:00	23:00	23:00	23:00	13:00	13:00	13:00	13:00	16:00	12:00	15:00	16:00	16:00	14:00	17:00	23:00
	781	62.4	51.8	10.2	6	19	62	65	72	197	348	146	27	7	2	2

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	75	58.9	51.1	7.6	0	0	2	2	0	4	16	39	7	4	1	0
01:00	80	57.0	48.6	8.1	0	0	0	1	13	3	34	19	7	1	1	1
02:00	118	57.9	51.9	5.8	0	0	1	0	5	2	18	71	17	3	1	0
03:00	118	58.0	53.2	4.6	0	0	0	0	1	1	19	66	26	4	1	0
04:00	222	58.2	51.4	6.6	0	0	0	4	13	17	24	123	28	12	1	0
05:00	425	56.6	47.7	8.6	0	0	26	17	12	39	148	145	24	10	4	0
06:00	546	54.8	48.7	5.9	0	0	1	11	49	33	207	201	39	4	1	0
07:00	754	54.4	47.5	6.7	0	6	10	18	47	79	322	244	23	3	1	1
08:00	803	52.9	46.5	6.1	0	0	7	67	39	81	389	207	13	0	0	0
09:00	716	53.3	44.7	8.4	0	10	43	47	53	91	298	161	12	1	0	0
10:00	743	52.8	44.6	7.9	0	12	27	64	46	103	342	142	7	0	0	0
11:00	764	52.4	44.2	7.9	0	3	48	63	56	137	301	146	8	2	0	0
12:00	822	52.5	43.2	9.0	1	22	49	67	91	106	347	127	10	2	0	0
13:00	847	53.1	43.1	9.6	1	30	86	40	28	113	422	120	7	0	0	0
14:00	902	51.7	44.9	6.6	0	1	32	47	74	195	410	134	7	1	0	1
15:00	884	52.6	43.2	9.0	1	8	93	63	79	109	373	140	15	3	0	0
16:00	869	52.1	45.7	6.3	0	0	18	42	74	182	360	170	23	0	0	0
17:00	779	53.1	46.2	6.6	0	1	22	31	60	112	346	185	20	2	0	0
18:00	556	54.2	47.7	6.2	0	0	14	8	26	62	253	171	18	3	0	1
19:00	328	53.6	46.8	6.5	0	0	6	10	21	67	134	64	22	4	0	0
20:00	275	55.1	49.2	5.7	0	0	1	4	8	32	115	81	28	6	0	0
21:00	164	56.1	50.5	5.5	0	0	0	2	3	9	68	55	21	6	0	0
22:00	124	57.6	51.0	6.4	0	0	0	2	2	10	38	50	16	4	2	0
23:00	83	58.1	51.4	6.4	0	0	1	0	0	6	28	28	16	3	1	0
Total 2H(10-12)	1507	52.6	44.4	7.9	0	15	75	127	102	240	643	288	15	2	0	0
2H(14-16)	1786	52.3	44.1	7.9	1	9	125	110	153	304	783	274	22	4	0	1
12H(7-19)	9439	53.1	45.0	7.8	3	93	449	557	673	1370	4163	1947	163	17	1	3
24H(0-24)	11997	54.0	45.9	7.8	3	93	487	610	800	1593	5012	2889	414	78	14	4
AM Peak	08:00	00:00	03:00	05:00	00:00	10:00	11:00	08:00	11:00	11:00	08:00	07:00	06:00	04:00	05:00	01:00
	803	58.9	53.2	8.6	0	12	48	67	56	137	389	244	39	12	4	1
PM Peak	14:00	23:00	23:00	13:00	12:00	13:00	15:00	12:00	12:00	14:00	13:00	17:00	20:00	20:00	22:00	14:00
	902	58.1	51.4	9.6	1	30	93	67	91	195	422	185	28	6	2	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	138	59.2	51.0	7.9	0	0	3	2	5	10	32	57	18	9	2	0
01:00	132	58.7	50.3	8.0	0	0	0	1	14	5	45	44	17	2	2	2
02:00	171	59.2	51.0	7.9	0	0	5	3	7	2	38	84	24	4	4	0
03:00	168	58.2	51.8	6.1	0	0	3	1	2	5	32	88	32	4	1	0
04:00	328	58.6	51.3	7.1	0	0	4	5	13	24	55	162	43	20	2	0
05:00	658	57.2	47.8	9.0	0	7	37	19	18	57	240	210	43	22	5	0
06:00	1096	55.1	48.1	6.8	0	4	24	23	57	121	403	379	74	10	1	0
07:00	1624	53.5	46.5	6.7	0	8	45	46	80	275	722	396	44	6	1	1
08:00	1530	52.7	46.0	6.5	0	0	39	90	100	221	711	341	25	3	0	0
09:00	1381	53.0	45.0	7.8	0	12	82	56	92	233	593	286	26	1	0	0
10:00	1450	52.2	44.2	7.7	0	15	81	91	91	293	628	239	12	0	0	0
11:00	1437	52.3	44.5	7.5	0	4	71	103	135	269	547	279	27	2	0	0
12:00	1561	51.9	43.4	8.2	1	23	99	108	155	303	637	211	22	2	0	0
13:00	1582	52.6	42.6	9.6	7	49	148	105	76	285	676	220	15	0	1	0
14:00	1657	52.7	45.0	7.4	0	18	64	67	111	385	697	272	33	8	1	1
15:00	1665	52.4	43.8	8.3	1	9	137	114	124	273	721	251	29	6	0	0
16:00	1609	52.3	45.6	6.5	0	1	41	62	146	358	633	316	50	2	0	0
17:00	1460	52.9	45.4	7.2	0	2	58	87	116	238	614	300	40	3	2	0
18:00	1155	54.0	46.7	7.0	0	0	46	37	58	164	497	305	40	5	2	1
19:00	703	53.5	47.1	6.2	0	1	9	13	37	158	290	147	41	6	0	1
20:00	566	54.8	48.6	6.0	0	0	3	7	19	101	223	156	42	13	2	0
21:00	344	55.6	49.5	5.9	0	0	3	4	5	34	156	97	33	12	0	0
22:00	281	57.2	49.9	7.0	0	0	4	5	8	22	106	90	33	10	3	0
23:00	166	60.4	51.6	8.5	0	0	5	1	0	11	54	48	34	9	2	2
Total 2H(10-12)	2887	52.3	44.4	7.6	0	19	152	194	226	562	1175	518	39	2	0	0
2H(14-16)	3322	52.6	44.4	7.9	1	27	201	181	235	658	1418	523	62	14	1	1
12H(7-19)	18111	52.8	44.9	7.7	9	141	911	966	1284	3297	7676	3416	363	38	7	3
24H(0-24)	22862	53.8	45.7	7.8	9	153	1011	1050	1469	3847	9350	4978	797	159	31	8
AM Peak	07:00	02:00	03:00	05:00	00:00	10:00	09:00	11:00	11:00	10:00	07:00	07:00	06:00	05:00	05:00	01:00
	1624	59.2	51.8	9.0	0	15	82	103	135	293	722	396	74	22	5	2
PM Peak	15:00	23:00	23:00	13:00	13:00	13:00	13:00	15:00	12:00	14:00	15:00	16:00	16:00	20:00	22:00	23:00
	1665	60.4	51.6	9.6	7	49	148	114	155	385	721	316	50	13	3	2

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

26/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	62	59.9	51.1	8.5	0	0	2	1	0	4	23	16	9	6	1	0
01:00	39	58.7	51.7	6.8	0	0	0	0	1	3	12	15	5	2	1	0
02:00	47	65.5	51.3	13.7	0	0	5	0	1	7	6	11	10	3	2	2
03:00	47	58.9	51.8	6.9	0	0	0	0	3	4	8	19	11	1	1	0
04:00	67	59.4	50.4	8.7	0	0	4	1	0	2	22	21	12	5	0	0
05:00	120	59.0	50.2	8.5	0	1	5	1	0	6	43	39	17	7	1	0
06:00	226	58.2	49.2	8.7	0	3	9	2	1	19	84	70	30	6	1	1
07:00	326	55.0	47.9	6.9	0	0	6	14	7	54	132	80	25	7	1	0
08:00	458	54.9	47.5	7.1	0	1	17	12	6	62	211	114	28	6	1	0
09:00	613	52.8	45.4	7.1	0	1	31	22	27	143	259	110	18	1	1	0
10:00	650	51.8	44.1	7.5	0	1	34	48	46	193	218	86	20	4	0	0
11:00	635	52.8	45.4	7.1	0	0	32	28	26	159	242	121	26	1	0	0
12:00	658	53.0	44.7	8.1	0	0	56	25	22	158	282	93	17	1	3	1
13:00	590	54.2	46.6	7.3	0	1	34	8	15	106	257	126	41	2	0	0
14:00	549	53.8	46.2	7.4	0	3	29	5	19	111	251	98	29	3	1	0
15:00	552	53.0	44.7	7.9	0	4	40	21	29	103	247	96	9	3	0	0
16:00	487	54.4	47.2	6.9	0	0	19	14	10	73	224	110	33	3	1	0
17:00	522	53.5	45.9	7.4	0	3	22	17	16	116	233	96	13	4	1	1
18:00	469	54.9	46.3	8.3	0	1	28	18	12	93	176	111	21	5	3	1
19:00	287	54.5	47.6	6.7	0	0	6	2	9	57	139	57	9	6	0	2
20:00	237	57.3	49.5	7.5	0	0	6	2	1	34	96	62	23	10	2	1
21:00	209	55.5	48.3	6.9	0	0	6	4	2	34	79	65	14	4	1	0
22:00	121	59.0	49.4	9.2	0	0	3	4	2	20	45	25	11	7	3	1
23:00	99	61.9	53.3	8.3	0	0	0	1	0	8	29	29	17	12	1	2
Total 2H(10-12)	1285	52.3	44.7	7.3	0	1	66	76	72	352	460	207	46	5	0	0
2H(14-16)	1101	53.4	45.5	7.7	0	7	69	26	48	214	498	194	38	6	1	0
12H(7-19)	6509	53.6	45.8	7.5	0	15	348	232	235	1371	2732	1241	280	40	12	3
24H(0-24)	8070	54.6	46.5	7.8	0	19	394	250	255	1569	3318	1670	448	109	26	12
AM Peak	10:00	02:00	03:00	02:00	00:00	06:00	10:00	10:00	10:00	10:00	09:00	11:00	06:00	05:00	02:00	02:00
	650	65.5	51.8	13.7	0	3	34	48	46	193	259	121	30	7	2	2
PM Peak	12:00	23:00	23:00	22:00	12:00	15:00	12:00	12:00	15:00	12:00	12:00	13:00	13:00	23:00	12:00	19:00
	658	61.9	53.3	9.2	0	4	56	25	29	158	282	126	41	12	3	2

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	60	61.6	53.0	8.3	0	0	0	0	1	6	14	23	9	4	2	1
01:00	54	57.6	52.3	5.1	0	0	0	0	0	2	15	24	12	0	1	0
02:00	69	58.3	50.7	7.4	0	0	0	2	4	5	18	25	11	3	1	0
03:00	91	58.3	53.7	4.4	0	0	0	1	0	0	9	52	25	4	0	0
04:00	142	58.0	50.7	7.1	0	0	0	6	3	12	34	60	21	5	0	1
05:00	238	58.3	48.0	9.9	0	0	19	7	22	13	66	55	43	13	0	0
06:00	266	57.0	48.6	8.2	0	0	6	22	9	24	62	113	19	10	1	0
07:00	452	56.1	49.9	6.0	0	0	3	11	6	35	159	181	47	8	2	0
08:00	540	54.7	49.3	5.2	0	0	1	12	9	40	250	178	42	8	0	0
09:00	621	55.3	47.8	7.3	0	0	12	46	24	41	238	218	33	6	3	0
10:00	638	54.5	45.9	8.3	0	0	48	37	28	57	276	162	21	9	0	0
11:00	714	53.3	48.1	5.0	0	0	3	14	25	61	388	194	27	1	0	1
12:00	650	53.0	46.5	6.3	0	1	11	30	34	116	289	151	14	3	1	0
13:00	580	55.1	47.7	7.2	0	3	17	21	24	45	251	179	34	5	1	0
14:00	551	55.6	47.6	7.7	0	0	17	38	25	46	190	182	43	10	0	0
15:00	544	54.1	47.6	6.2	0	1	10	11	26	68	256	135	34	2	1	0
16:00	501	55.3	48.8	6.2	0	0	3	13	22	56	188	176	33	8	1	1
17:00	475	55.1	48.3	6.6	0	0	8	13	16	57	194	149	30	6	1	1
18:00	462	53.5	46.8	6.5	0	0	13	13	28	72	196	121	17	2	0	0
19:00	297	55.9	48.1	7.5	0	0	10	7	12	40	105	101	10	10	2	0
20:00	217	55.0	48.8	6.0	0	0	1	7	8	25	81	72	20	3	0	0
21:00	120	58.2	50.1	7.8	0	0	1	3	8	9	39	35	15	9	1	0
22:00	110	57.1	50.2	6.6	0	0	1	2	4	7	39	38	13	6	0	0
23:00	73	59.5	50.6	8.6	0	0	1	1	1	9	25	25	5	3	2	1
Total 2H(10-12)	1352	54.2	47.1	6.9	0	0	51	51	53	118	664	356	48	10	0	1
2H(14-16)	1095	54.9	47.6	7.0	0	1	27	49	51	114	446	317	77	12	1	0
12H(7-19)	6728	54.7	47.8	6.7	0	5	146	259	267	694	2875	2026	375	68	10	3
24H(0-24)	8465	55.4	48.2	7.0	0	5	185	317	339	846	3382	2649	578	138	20	6
AM Peak	11:00	00:00	03:00	05:00	00:00	00:00	10:00	09:00	10:00	11:00	11:00	09:00	07:00	05:00	09:00	00:00
	714	61.6	53.7	9.9	0	0	48	46	28	61	388	218	47	13	3	1
PM Peak	12:00	23:00	23:00	23:00	12:00	13:00	13:00	14:00	12:00	12:00	12:00	14:00	14:00	14:00	19:00	16:00
	650	59.5	50.6	8.6	0	3	17	38	34	116	289	182	43	10	2	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	122	60.8	52.0	8.4	0	0	2	1	1	10	37	39	18	10	3	1
01:00	93	58.1	52.0	5.8	0	0	0	0	1	5	27	39	17	2	2	0
02:00	116	61.7	50.9	10.4	0	0	5	2	5	12	24	36	21	6	3	2
03:00	138	58.7	53.0	5.4	0	0	0	1	3	4	17	71	36	5	1	0
04:00	209	58.5	50.6	7.6	0	0	4	7	3	14	56	81	33	10	0	1
05:00	358	58.6	48.7	9.5	0	1	24	8	22	19	109	94	60	20	1	0
06:00	492	57.6	48.9	8.4	0	3	15	24	10	43	146	183	49	16	2	1
07:00	778	55.8	49.1	6.5	0	0	9	25	13	89	291	261	72	15	3	0
08:00	998	54.9	48.5	6.2	0	1	18	24	15	102	461	292	70	14	1	0
09:00	1234	54.2	46.6	7.3	0	1	43	68	51	184	497	328	51	7	4	0
10:00	1288	53.2	45.0	8.0	0	1	82	85	74	250	494	248	41	13	0	0
11:00	1349	53.3	46.9	6.2	0	0	35	42	51	220	630	315	53	2	0	1
12:00	1308	53.1	45.6	7.3	0	1	67	55	56	274	571	244	31	4	4	1
13:00	1170	54.7	47.1	7.3	0	4	51	29	39	151	508	305	75	7	1	0
14:00	1100	54.8	46.9	7.6	0	3	46	43	44	157	441	280	72	13	1	0
15:00	1096	53.7	46.2	7.3	0	5	50	32	55	171	503	231	43	5	1	0
16:00	988	54.9	48.0	6.6	0	0	22	27	32	129	412	286	66	11	2	1
17:00	997	54.4	47.1	7.1	0	3	30	30	32	173	427	245	43	10	2	2
18:00	931	54.3	46.6	7.4	0	1	41	31	40	165	372	232	38	7	3	1
19:00	584	55.2	47.8	7.1	0	0	16	9	21	97	244	158	19	16	2	2
20:00	454	56.2	49.1	6.9	0	0	7	9	9	59	177	134	43	13	2	1
21:00	329	56.5	49.0	7.3	0	0	7	7	10	43	118	100	29	13	2	0
22:00	231	58.2	49.8	8.1	0	0	4	6	6	27	84	63	24	13	3	1
23:00	172	61.0	52.2	8.5	0	0	1	2	1	17	54	54	22	15	3	3
Total 2H(10-12)	2637	53.4	45.9	7.2	0	1	117	127	125	470	1124	563	94	15	0	1
2H(14-16)	2196	54.2	46.5	7.4	0	8	96	75	99	328	944	511	115	18	2	0
12H(7-19)	13237	54.3	46.8	7.2	0	20	494	491	502	2065	5607	3267	655	108	22	6
24H(0-24)	16535	55.1	47.4	7.4	0	24	579	567	594	2415	6700	4319	1026	247	46	18
AM Peak	11:00	02:00	03:00	02:00	00:00	06:00	10:00	10:00	10:00	10:00	11:00	09:00	07:00	05:00	09:00	02:00
	1349	61.7	53.0	10.4	0	3	82	85	74	250	630	328	72	20	4	2
PM Peak	12:00	23:00	23:00	23:00	12:00	15:00	12:00	12:00	12:00	12:00	12:00	13:00	13:00	19:00	12:00	23:00
	1308	61.0	52.2	8.5	0	5	67	55	56	274	571	305	75	16	4	3

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

27/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	61	57.8	49.9	7.7	0	0	2	0	1	5	27	16	4	6	0	0
01:00	44	60.4	51.0	9.1	0	0	1	0	0	6	15	15	3	2	1	1
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	34	58.1	49.3	8.6	0	0	1	0	1	6	13	8	2	2	1	0
04:00	33	57.7	48.3	9.0	0	0	1	3	0	6	8	8	5	2	0	0
05:00	56	59.6	48.8	10.5	0	0	6	2	0	2	14	22	5	5	0	0
06:00	107	59.4	50.3	8.8	0	0	4	1	0	10	42	33	7	7	2	1
07:00	143	56.9	49.8	6.8	0	0	3	2	2	5	71	37	16	6	1	0
08:00	209	57.5	49.1	8.1	0	0	9	5	2	14	98	42	27	11	1	0
09:00	397	53.7	46.7	6.8	0	2	15	7	8	64	215	65	16	5	0	0
10:00	489	53.3	46.3	6.8	0	1	18	10	34	83	218	109	11	5	0	0
11:00	614	52.1	45.7	6.2	0	0	21	17	36	135	291	101	11	2	0	0
12:00	676	52.4	45.5	6.7	0	1	29	13	28	194	289	105	12	4	0	1
13:00	581	53.4	45.5	7.6	0	4	24	13	52	127	227	105	25	2	1	1
14:00	576	53.7	46.2	7.2	2	0	27	10	34	90	266	123	21	3	0	0
15:00	542	54.7	47.3	7.1	0	0	28	9	4	80	251	135	27	7	1	0
16:00	601	53.4	47.2	5.9	0	0	15	10	13	109	296	123	31	4	0	0
17:00	561	54.6	46.6	7.6	0	2	22	18	32	86	238	124	32	4	2	1
18:00	559	54.2	46.0	7.9	0	0	36	15	44	73	230	131	22	8	0	0
19:00	397	53.8	47.6	6.0	0	0	11	3	7	70	188	97	15	6	0	0
20:00	303	53.6	47.8	5.5	0	0	3	3	10	58	134	73	19	3	0	0
21:00	234	56.5	49.4	6.9	0	0	4	2	7	29	85	75	26	4	1	1
22:00	108	57.9	50.9	6.8	0	0	0	0	3	12	43	28	11	10	1	0
23:00	75	56.9	49.3	7.4	0	1	1	0	1	9	27	28	6	1	1	0
Total 2H(10-12)	1103	52.7	45.9	6.5	0	1	39	27	70	218	509	210	22	7	0	0
2H(14-16)	1118	54.2	46.7	7.2	2	0	55	19	38	170	517	258	48	10	1	0
12H(7-19)	5948	53.8	46.5	7.1	2	10	247	129	289	1060	2690	1200	251	61	6	3
24H(0-24)	7400	54.3	46.9	7.1	2	11	281	143	319	1273	3286	1603	354	109	13	6
AM Peak	11:00	01:00	01:00	05:00	00:00	09:00	11:00	11:00	11:00	11:00	11:00	10:00	08:00	08:00	06:00	01:00
	614	60.4	51.0	10.5	0	2	21	17	36	135	291	109	27	11	2	1
PM Peak	12:00	22:00	22:00	18:00	14:00	13:00	18:00	17:00	13:00	12:00	16:00	15:00	17:00	22:00	17:00	12:00
	676	57.9	50.9	7.9	2	4	36	18	52	194	296	135	32	10	2	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	56	57.5	49.9	7.4	0	0	0	2	3	8	16	10	15	2	0	0
01:00	54	59.6	52.1	7.2	0	0	0	1	2	5	9	21	10	6	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	47	57.2	51.3	5.7	0	0	1	0	0	1	14	22	8	1	0	0
04:00	108	57.7	48.7	8.8	0	0	1	3	13	18	23	34	9	5	1	1
05:00	132	58.6	48.9	9.4	0	0	3	10	11	12	26	42	20	7	0	1
06:00	169	57.8	51.6	5.9	0	0	1	2	2	5	50	75	23	11	0	0
07:00	220	56.0	49.5	6.2	0	0	1	4	9	19	82	80	19	4	2	0
08:00	328	56.0	50.0	5.7	0	0	1	3	13	17	132	120	29	13	0	0
09:00	559	54.5	48.8	5.5	0	1	4	8	21	47	234	208	33	3	0	0
10:00	608	54.8	46.4	8.0	0	0	33	38	31	73	216	178	32	7	0	0
11:00	786	53.0	47.5	5.3	0	0	9	17	29	97	412	196	23	3	0	0
12:00	661	54.2	48.9	5.1	0	0	1	14	23	40	314	227	34	8	0	0
13:00	662	54.6	49.2	5.3	0	0	8	9	10	47	285	262	37	3	1	0
14:00	592	54.3	48.1	6.0	0	0	11	14	18	65	255	199	24	6	0	0
15:00	588	55.8	49.5	6.1	0	0	5	14	13	53	214	231	39	18	1	0
16:00	632	55.2	48.5	6.5	0	2	4	29	16	54	270	195	51	11	0	0
17:00	497	55.7	50.1	5.5	0	0	2	8	14	22	190	200	50	11	0	0
18:00	496	54.8	48.8	5.8	0	0	5	12	19	42	195	185	34	4	0	0
19:00	441	54.9	48.9	5.8	0	0	3	4	9	62	197	126	25	14	1	0
20:00	305	56.3	49.9	6.2	0	0	4	2	4	21	136	102	20	15	1	0
21:00	174	56.4	50.2	6.0	0	0	1	2	3	16	65	57	23	7	0	0
22:00	100	59.6	50.5	8.8	0	0	1	4	5	5	29	43	5	4	3	1
23:00	68	56.9	49.9	6.7	0	0	1	1	1	4	32	19	5	5	0	0
Total 2H(10-12)	1394	53.9	47.1	6.6	0	0	42	55	60	170	628	374	55	10	0	0
2H(14-16)	1180	55.1	48.8	6.1	0	0	16	28	31	118	469	430	63	24	1	0
12H(7-19)	6629	54.9	48.6	6.0	0	3	84	170	216	576	2799	2281	405	91	4	0
24H(0-24)	8283	55.3	48.9	6.2	0	3	100	201	269	733	3396	2832	568	168	10	3
AM Peak	11:00	01:00	01:00	05:00	00:00	09:00	10:00	10:00	10:00	11:00	11:00	09:00	09:00	08:00	07:00	04:00
	786	59.6	52.1	9.4	0	1	33	38	31	97	412	208	33	13	2	1
PM Peak	13:00	22:00	22:00	22:00	12:00	16:00	14:00	16:00	12:00	14:00	12:00	13:00	16:00	15:00	22:00	22:00
	662	59.6	50.5	8.8	0	2	11	29	23	65	314	262	51	18	3	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	117	57.7	49.9	7.5	0	0	2	2	4	13	43	26	19	8	0	0
01:00	98	60.0	51.6	8.1	0	0	1	1	2	11	24	36	13	8	1	1
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	81	57.8	50.5	7.1	0	0	2	0	1	7	27	30	10	3	1	0
04:00	141	57.7	48.6	8.8	0	0	2	6	13	24	31	42	14	7	1	1
05:00	188	58.9	48.9	9.7	0	0	9	12	11	14	40	64	25	12	0	1
06:00	276	58.6	51.1	7.2	0	0	5	3	2	15	92	108	30	18	2	1
07:00	363	56.4	49.7	6.5	0	0	4	6	11	24	153	117	35	10	3	0
08:00	537	56.7	49.7	6.7	0	0	10	8	15	31	230	162	56	24	1	0
09:00	956	54.3	47.9	6.1	0	3	19	15	29	111	449	273	49	8	0	0
10:00	1097	54.1	46.4	7.5	0	1	51	48	65	156	434	287	43	12	0	0
11:00	1400	52.7	46.7	5.8	0	0	30	34	65	232	703	297	34	5	0	0
12:00	1337	53.6	47.2	6.2	0	1	30	27	51	234	603	332	46	12	0	1
13:00	1243	54.4	47.5	6.7	0	4	32	22	62	174	512	367	62	5	2	1
14:00	1168	54.1	47.2	6.7	2	0	38	24	52	155	521	322	45	9	0	0
15:00	1130	55.4	48.4	6.7	0	0	33	23	17	133	465	366	66	25	2	0
16:00	1233	54.4	47.9	6.2	0	2	19	39	29	163	566	318	82	15	0	0
17:00	1058	55.4	48.3	6.9	0	2	24	26	46	108	428	324	82	15	2	1
18:00	1055	54.7	47.3	7.1	0	0	41	27	63	115	425	316	56	12	0	0
19:00	838	54.4	48.3	5.9	0	0	14	7	16	132	385	223	40	20	1	0
20:00	608	55.0	48.9	5.9	0	0	7	5	14	79	270	175	39	18	1	0
21:00	408	56.5	49.7	6.5	0	0	5	4	10	45	150	132	49	11	1	1
22:00	208	58.8	50.7	7.8	0	0	1	4	8	17	72	71	16	14	4	1
23:00	143	56.9	49.6	7.1	0	1	2	1	2	13	59	47	11	6	1	0
Total 2H(10-12)	2497	53.4	46.6	6.6	0	1	81	82	130	388	1137	584	77	17	0	0
2H(14-16)	2298	54.8	47.8	6.7	2	0	71	47	69	288	986	688	111	34	2	0
12H(7-19)	12577	54.5	47.6	6.6	2	13	331	299	505	1636	5489	3481	656	152	10	3
24H(0-24)	15683	54.9	47.9	6.7	2	14	381	344	588	2006	6682	4435	922	277	23	9
AM Peak	11:00	01:00	01:00	05:00	00:00	09:00	10:00	10:00	10:00	11:00	11:00	11:00	08:00	08:00	07:00	01:00
	1400	60.0	51.6	9.7	0	3	51	48	65	232	703	297	56	24	3	1
PM Peak	12:00	22:00	22:00	22:00	14:00	13:00	18:00	16:00	18:00	12:00	12:00	13:00	16:00	15:00	22:00	12:00
	1337	58.8	50.7	7.8	2	4	41	39	63	234	603	367	82	25	4	1

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

28/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	58	56.9	49.7	6.9	0	0	1	0	1	4	25	23	3	0	0	1
01:00	26	55.5	47.0	8.2	0	0	1	0	1	10	6	5	1	2	0	0
02:00	35	58.2	48.5	9.3	0	0	2	1	0	7	8	13	2	1	1	0
03:00	48	63.8	52.0	11.4	0	0	5	0	0	1	10	13	10	8	1	0
04:00	80	59.4	49.2	9.8	0	1	5	2	0	7	23	24	12	6	0	0
05:00	221	55.8	48.0	7.5	0	1	11	0	3	28	97	60	17	3	1	0
06:00	556	52.5	45.2	7.1	0	3	25	13	40	139	221	102	12	0	1	0
07:00	1052	51.2	43.5	7.4	0	2	61	100	81	242	428	127	8	3	0	0
08:00	877	51.0	43.4	7.4	0	1	40	108	93	167	334	128	6	0	0	0
09:00	698	50.7	43.9	6.6	2	0	26	44	52	217	286	64	6	1	0	0
10:00	769	52.1	41.3	10.4	30	27	30	30	75	238	262	76	1	0	0	0
11:00	744	50.3	42.2	7.8	0	0	59	90	81	185	248	70	8	3	0	0
12:00	682	52.3	43.6	8.4	0	2	61	52	40	148	265	97	13	2	2	0
13:00	630	51.6	44.1	7.2	0	2	34	44	46	147	262	87	8	0	0	0
14:00	633	52.5	44.6	7.7	0	2	39	44	39	115	266	114	14	0	0	0
15:00	619	53.5	46.0	7.2	0	0	27	26	45	86	278	134	17	5	1	0
16:00	703	53.5	46.4	6.8	0	0	21	25	48	104	330	151	15	7	1	1
17:00	648	54.5	44.8	9.4	1	19	35	41	28	107	239	141	33	4	0	0
18:00	492	55.1	47.4	7.5	0	0	26	15	8	56	211	136	34	6	0	0
19:00	262	54.6	48.2	6.2	0	0	4	6	7	37	114	76	11	7	0	0
20:00	188	53.5	47.4	5.9	0	0	3	2	5	41	88	37	8	4	0	0
21:00	155	55.5	49.5	5.7	0	0	2	1	0	16	68	51	14	2	1	0
22:00	152	57.6	48.8	8.4	0	1	4	4	5	20	53	40	17	6	2	0
23:00	72	59.6	50.0	9.2	0	0	1	1	5	14	17	16	10	7	0	1
Total 2H(10-12)	1513	51.4	41.8	9.3	30	27	89	120	156	423	510	146	9	3	0	0
2H(14-16)	1252	53.0	45.3	7.5	0	2	66	70	84	201	544	248	31	5	1	0
12H(7-19)	8547	52.4	44.1	8.1	33	55	459	619	636	1812	3409	1325	163	31	4	1
24H(0-24)	10400	53.1	44.7	8.1	33	61	523	649	703	2136	4139	1785	280	77	11	3
AM Peak	07:00	03:00	03:00	03:00	10:00	10:00	07:00	08:00	08:00	07:00	07:00	08:00	05:00	03:00	02:00	00:00
	1052	63.8	52.0	11.4	30	27	61	108	93	242	428	128	17	8	1	1
PM Peak	16:00	23:00	23:00	17:00	17:00	17:00	12:00	12:00	16:00	12:00	16:00	16:00	18:00	16:00	12:00	16:00
	703	59.6	50.0	9.4	1	19	61	52	48	148	330	151	34	7	2	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	54	59.2	52.4	6.6	0	0	0	1	1	2	13	21	13	2	1	0
01:00	42	57.0	50.1	6.7	0	0	0	1	2	8	4	19	7	1	0	0
02:00	87	58.0	51.4	6.4	0	0	0	2	1	2	31	37	7	6	1	0
03:00	146	56.5	51.3	5.1	0	0	1	0	2	3	44	78	14	3	1	0
04:00	231	59.5	51.9	7.3	0	0	2	5	2	10	69	87	32	22	1	1
05:00	472	56.6	46.5	9.7	0	2	50	24	11	31	132	183	35	2	2	0
06:00	555	54.2	45.6	8.4	0	0	27	63	45	36	201	150	30	3	0	0
07:00	856	51.8	43.0	8.5	0	0	52	137	114	125	218	193	15	2	0	0
08:00	777	53.0	46.1	6.7	0	2	17	32	67	131	319	192	10	7	0	0
09:00	714	51.8	43.3	8.2	0	0	32	125	84	81	242	128	21	1	0	0
10:00	658	52.5	44.9	7.4	0	6	15	69	44	83	303	131	7	0	0	0
11:00	787	52.6	45.9	6.4	0	0	24	30	65	126	348	181	12	1	0	0
12:00	680	52.0	45.4	6.4	0	0	4	71	52	120	281	138	14	0	0	0
13:00	745	52.7	44.5	7.9	0	0	51	59	57	116	301	142	17	2	0	0
14:00	667	53.4	46.9	6.3	0	0	6	39	50	88	272	179	32	1	0	0
15:00	756	52.9	47.4	5.3	0	1	7	21	22	104	386	196	19	0	0	0
16:00	822	52.7	45.3	7.2	0	0	27	64	79	128	317	188	16	3	0	0
17:00	870	52.9	46.5	6.2	0	0	11	38	80	132	364	212	32	1	0	0
18:00	568	54.8	49.6	5.0	0	0	1	7	12	38	263	174	69	4	0	0
19:00	356	54.5	49.2	5.2	0	0	0	7	11	38	139	125	35	1	0	0
20:00	248	55.9	49.0	6.7	0	1	2	8	9	13	107	83	18	6	1	0
21:00	150	58.3	51.4	6.7	0	0	0	4	1	4	59	53	16	11	2	0
22:00	97	57.9	50.2	7.4	0	0	2	0	5	8	31	33	12	5	1	0
23:00	86	56.7	50.8	5.8	0	0	1	0	1	8	23	40	10	3	0	0
Total 2H(10-12)	1445	52.6	45.5	6.9	0	6	39	99	109	209	651	312	19	1	0	0
2H(14-16)	1423	53.2	47.1	5.8	0	1	13	60	72	192	658	375	51	1	0	0
12H(7-19)	8900	53.0	45.6	7.1	0	9	247	692	726	1272	3614	2054	264	22	0	0
24H(0-24)	11424	53.9	46.3	7.4	0	12	332	807	817	1435	4467	2963	493	87	10	1
AM Peak	07:00	04:00	00:00	05:00	00:00	10:00	07:00	07:00	07:00	08:00	11:00	07:00	05:00	04:00	05:00	04:00
	856	59.5	52.4	9.7	0	6	52	137	114	131	348	193	35	22	2	1
PM Peak	17:00	21:00	21:00	13:00	12:00	15:00	13:00	12:00	17:00	17:00	15:00	17:00	18:00	21:00	21:00	12:00
	870	58.3	51.4	7.9	0	1	51	71	80	132	386	212	69	11	2	0

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	112	58.1	51.0	6.8	0	0	1	1	2	6	38	44	16	2	1	1
01:00	68	56.6	48.9	7.4	0	0	1	1	3	18	10	24	8	3	0	0
02:00	122	58.3	50.6	7.4	0	0	2	3	1	9	39	50	9	7	2	0
03:00	194	58.9	51.5	7.1	0	0	6	0	2	4	54	91	24	11	2	0
04:00	311	59.6	51.2	8.1	0	1	7	7	2	17	92	111	44	28	1	1
05:00	693	56.4	47.0	9.1	0	3	61	24	14	59	229	243	52	5	3	0
06:00	1111	53.4	45.4	7.7	0	3	52	76	85	175	422	252	42	3	1	0
07:00	1908	51.5	43.3	7.9	0	2	113	237	195	367	646	320	23	5	0	0
08:00	1654	52.1	44.7	7.2	0	3	57	140	160	298	653	320	16	7	0	0
09:00	1412	51.3	43.6	7.4	2	0	58	169	136	298	528	192	27	2	0	0
10:00	1427	52.6	43.0	9.3	30	33	45	99	119	321	565	207	8	0	0	0
11:00	1531	51.8	44.1	7.4	0	0	83	120	146	311	596	251	20	4	0	0
12:00	1362	52.3	44.5	7.5	0	2	65	123	92	268	546	235	27	2	2	0
13:00	1375	52.2	44.3	7.6	0	2	85	103	103	263	563	229	25	2	0	0
14:00	1300	53.1	45.7	7.1	0	2	45	83	89	203	538	293	46	1	0	0
15:00	1375	53.3	46.8	6.3	0	1	34	47	67	190	664	330	36	5	1	0
16:00	1525	53.1	45.8	7.0	0	0	48	89	127	232	647	339	31	10	1	1
17:00	1518	53.8	45.8	7.8	1	19	46	79	108	239	603	353	65	5	0	0
18:00	1060	55.2	48.6	6.4	0	0	27	22	20	94	474	310	103	10	0	0
19:00	618	54.6	48.7	5.7	0	0	4	13	18	75	253	201	46	8	0	0
20:00	436	54.9	48.3	6.4	0	1	5	10	14	54	195	120	26	10	1	0
21:00	305	56.9	50.5	6.3	0	0	2	5	1	20	127	104	30	13	3	0
22:00	249	57.7	49.4	8.1	0	1	6	4	10	28	84	73	29	11	3	0
23:00	158	58.2	50.4	7.5	0	0	2	1	6	22	40	56	20	10	0	1
Total 2H(10-12)	2958	52.3	43.6	8.4	30	33	128	219	265	632	1161	458	28	4	0	0
2H(14-16)	2675	53.2	46.3	6.7	0	3	79	130	156	393	1202	623	82	6	1	0
12H(7-19)	17447	52.8	44.9	7.6	33	64	706	1311	1362	3084	7023	3379	427	53	4	1
24H(0-24)	21824	53.6	45.5	7.8	33	73	855	1456	1520	3571	8606	4748	773	164	21	4
AM Peak	07:00	04:00	03:00	10:00	10:00	10:00	07:00	07:00	07:00	07:00	08:00	07:00	05:00	04:00	05:00	00:00
	1908	59.6	51.5	9.3	30	33	113	237	195	367	653	320	52	28	3	1
PM Peak	16:00	23:00	21:00	22:00	17:00	17:00	13:00	12:00	16:00	12:00	15:00	17:00	18:00	21:00	21:00	16:00
	1525	58.2	50.5	8.1	1	19	85	123	127	268	664	353	103	13	3	1

360 TSL Ltd

East Heckington ATC, A17 (Western Site)

Direction: Eastbound

29/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	32	54.5	48.3	6.0	0	0	0	2	0	5	12	10	3	0	0	0
01:00	36	60.5	52.2	7.9	0	0	1	0	1	1	9	14	5	5	0	0
02:00	45	56.5	47.7	8.5	0	0	4	1	0	3	15	18	4	0	0	0
03:00	48	60.0	50.0	9.6	0	0	4	0	0	5	9	18	10	1	1	0
04:00	101	58.1	50.2	7.6	0	0	3	3	0	12	24	33	23	3	0	0
05:00	222	54.8	46.6	7.9	0	0	18	2	7	32	84	66	13	0	0	0
06:00	507	52.6	45.5	6.8	0	2	18	14	24	137	224	63	22	2	1	0
07:00	1047	49.3	41.9	7.1	0	1	75	91	155	357	275	85	8	0	0	0
08:00	854	49.9	44.0	5.6	0	0	30	15	76	345	317	66	2	3	0	0
09:00	734	50.4	43.4	6.8	0	1	41	32	68	262	265	54	5	6	0	0
10:00	647	51.1	43.9	6.9	0	2	40	18	37	234	236	69	9	2	0	0
11:00	569	51.3	44.0	7.0	0	0	27	41	62	126	230	74	8	1	0	0
12:00	652	50.9	44.0	6.7	0	2	28	41	36	210	253	76	6	0	0	0
13:00	604	52.4	45.0	7.1	0	0	34	22	38	132	270	89	17	2	0	0
14:00	591	53.3	44.4	8.6	0	4	44	41	45	98	222	109	25	3	0	0
15:00	619	52.0	44.9	6.9	0	1	20	45	39	162	228	109	12	3	0	0
16:00	703	52.4	45.5	6.6	0	1	32	8	57	156	308	124	15	2	0	0
17:00	696	52.6	46.2	6.1	0	0	23	15	23	158	328	123	24	2	0	0
18:00	460	56.1	47.3	8.5	0	4	25	16	16	42	185	121	40	11	0	0
19:00	293	55.4	48.2	6.9	0	1	9	2	3	32	155	66	16	7	2	0
20:00	203	54.7	48.4	6.0	0	0	3	3	0	35	91	56	10	4	1	0
21:00	189	55.4	49.5	5.7	0	0	1	1	4	19	87	58	12	6	1	0
22:00	152	56.6	48.0	8.3	0	0	8	2	4	23	57	43	6	8	1	0
23:00	80	59.1	51.3	7.5	0	0	0	0	4	5	29	23	14	3	1	1
Total 2H(10-12)	1216	51.2	44.0	7.0	0	2	67	59	99	360	466	143	17	3	0	0
2H(14-16)	1210	52.7	44.6	7.8	0	5	64	86	84	260	450	218	37	6	0	0
12H(7-19)	8176	51.7	44.3	7.1	0	16	419	385	652	2282	3117	1099	171	35	0	0
24H(0-24)	10084	52.5	45.0	7.3	0	19	488	415	699	2591	3913	1567	309	74	8	1
AM Peak	07:00	01:00	01:00	03:00	00:00	06:00	07:00	07:00	07:00	07:00	08:00	07:00	04:00	09:00	03:00	00:00
	1047	60.5	52.2	9.6	0	2	75	91	155	357	317	85	23	6	1	0
PM Peak	16:00	23:00	23:00	14:00	12:00	14:00	14:00	15:00	16:00	12:00	17:00	16:00	18:00	18:00	19:00	23:00
	703	59.1	51.3	8.6	0	4	44	45	57	210	328	124	40	11	2	1

360 TSL Ltd

Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	79	56.3	50.3	5.8	0	0	1	0	0	6	36	22	11	3	0	0
01:00	77	55.1	50.4	4.6	0	0	0	0	2	1	38	24	11	1	0	0
02:00	90	54.7	48.4	6.0	0	0	1	1	0	29	14	38	6	1	0	0
03:00	127	56.3	52.3	3.8	0	0	0	0	0	2	26	78	20	0	1	0
04:00	221	57.2	50.5	6.5	0	0	1	4	14	12	48	113	19	9	1	0
05:00	418	55.0	47.1	7.7	0	0	18	22	12	58	154	127	22	3	2	0
06:00	524	54.9	47.0	7.6	0	0	12	53	20	47	179	181	29	2	1	0
07:00	822	51.9	46.2	5.5	0	0	10	21	50	199	374	144	22	2	0	0
08:00	838	52.6	44.3	8.0	0	0	50	68	100	136	293	159	30	1	1	0
09:00	630	52.9	46.4	6.3	0	0	9	45	30	95	276	158	17	0	0	0
10:00	627	53.1	46.7	6.1	0	0	8	30	45	80	285	160	17	2	0	0
11:00	691	52.6	44.8	7.5	0	0	29	55	67	128	249	139	22	2	0	0
12:00	681	52.5	45.2	7.0	0	0	9	65	67	136	245	131	20	8	0	0
13:00	782	52.5	46.7	5.6	0	0	11	30	32	140	363	197	9	0	0	0
14:00	747	52.4	45.5	6.7	0	0	9	74	65	112	310	158	17	2	0	0
15:00	787	53.0	44.4	8.3	0	9	60	42	48	121	338	159	10	0	0	0
16:00	836	53.0	47.0	5.8	0	0	17	23	50	101	404	226	14	1	0	0
17:00	796	53.2	45.5	7.4	0	0	31	70	61	82	342	187	21	2	0	0
18:00	541	55.4	48.2	6.9	0	1	7	17	42	63	170	179	56	6	0	0
19:00	340	55.8	49.0	6.5	0	0	8	7	6	29	127	139	18	5	0	1
20:00	275	56.8	50.6	6.0	0	0	1	5	3	16	102	100	42	4	1	1
21:00	215	58.4	49.4	8.7	0	0	1	9	11	41	61	53	18	16	4	1
22:00	131	58.3	51.1	6.9	0	0	2	2	3	7	35	56	16	10	0	0
23:00	90	57.9	51.1	6.6	0	0	1	1	3	5	26	31	19	4	0	0
Total 2H(10-12)	1318	52.9	45.7	6.9	0	0	37	85	112	208	534	299	39	4	0	0
2H(14-16)	1534	52.8	44.9	7.6	0	9	69	116	113	233	648	317	27	2	0	0
12H(7-19)	8778	53.0	45.8	6.9	0	10	250	540	657	1393	3649	1997	255	26	1	0
24H(0-24)	11365	53.9	46.6	7.1	0	10	296	644	731	1646	4495	2959	486	84	11	3
AM Peak	08:00	04:00	03:00	08:00	00:00	00:00	08:00	08:00	08:00	07:00	07:00	06:00	08:00	04:00	05:00	00:00
	838	57.2	52.3	8.0	0	0	50	68	100	199	374	181	30	9	2	0
PM Peak	16:00	21:00	22:00	21:00	12:00	15:00	15:00	14:00	12:00	13:00	16:00	16:00	18:00	21:00	21:00	19:00
	836	58.4	51.1	8.7	0	9	60	74	67	140	404	226	56	16	4	1

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	111	55.8	49.7	5.9	0	0	1	2	0	11	48	32	14	3	0	0
01:00	113	57.1	51.0	5.9	0	0	1	0	3	2	47	38	16	6	0	0
02:00	135	55.4	48.2	6.9	0	0	5	2	0	32	29	56	10	1	0	0
03:00	175	57.9	51.7	6.1	0	0	4	0	0	7	35	96	30	1	2	0
04:00	322	57.5	50.4	6.9	0	0	4	7	14	24	72	146	42	12	1	0
05:00	640	54.9	46.9	7.7	0	0	36	24	19	90	238	193	35	3	2	0
06:00	1031	53.8	46.3	7.2	0	2	30	67	44	184	403	244	51	4	2	0
07:00	1869	50.8	43.8	6.8	0	1	85	112	205	556	649	229	30	2	0	0
08:00	1692	51.3	44.2	6.9	0	0	80	83	176	481	610	225	32	4	1	0
09:00	1364	51.8	44.8	6.7	0	1	50	77	98	357	541	212	22	6	0	0
10:00	1274	52.2	45.3	6.7	0	2	48	48	82	314	521	229	26	4	0	0
11:00	1260	52.0	44.5	7.3	0	0	56	96	129	254	479	213	30	3	0	0
12:00	1333	51.8	44.6	6.9	0	2	37	106	103	346	498	207	26	8	0	0
13:00	1386	52.5	46.0	6.3	0	0	45	52	70	272	633	286	26	2	0	0
14:00	1338	52.9	45.0	7.6	0	4	53	115	110	210	532	267	42	5	0	0
15:00	1406	52.6	44.6	7.7	0	10	80	87	87	283	566	268	22	3	0	0
16:00	1539	52.8	46.3	6.3	0	1	49	31	107	257	712	350	29	3	0	0
17:00	1492	53.0	45.9	6.9	0	0	54	85	84	240	670	310	45	4	0	0
18:00	1001	55.8	47.8	7.7	0	5	32	33	58	105	355	300	96	17	0	0
19:00	633	55.6	48.6	6.7	0	1	17	9	9	61	282	205	34	12	2	1
20:00	478	56.0	49.7	6.1	0	0	4	8	3	51	193	156	52	8	2	1
21:00	404	57.1	49.4	7.5	0	0	2	10	15	60	148	111	30	22	5	1
22:00	283	57.6	49.5	7.8	0	0	10	4	7	30	92	99	22	18	1	0
23:00	170	58.5	51.2	7.0	0	0	1	1	7	10	55	54	33	7	1	1
Total 2H(10-12)	2534	52.1	44.9	7.0	0	2	104	144	211	568	1000	442	56	7	0	0
2H(14-16)	2744	52.7	44.8	7.7	0	14	133	202	197	493	1098	535	64	8	0	0
12H(7-19)	16954	52.4	45.1	7.0	0	26	669	925	1309	3675	6766	3096	426	61	1	0
24H(0-24)	21449	53.3	45.8	7.2	0	29	784	1059	1430	4237	8408	4526	795	158	19	4
AM Peak	07:00	03:00	03:00	05:00	00:00	06:00	07:00	07:00	07:00	07:00	07:00	06:00	06:00	04:00	03:00	00:00
	1869	57.9	51.7	7.7	0	2	85	112	205	556	649	244	51	12	2	0
PM Peak	16:00	23:00	23:00	22:00	12:00	15:00	15:00	14:00	14:00	12:00	16:00	16:00	18:00	21:00	21:00	19:00
	1539	58.5	51.2	7.8	0	10	80	115	110	346	712	350	96	22	5	1

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East Heckington ATC, A17 (Western Site)

Direction: Eastbound

30/03/2022

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	66	56.6	51.1	5.3	0	0	0	0	2	5	18	29	10	2	0	0
01:00	44	61.3	53.9	7.1	0	0	1	0	0	1	5	20	13	3	1	0
02:00	40	60.8	49.1	11.3	0	0	4	3	0	1	7	16	6	2	1	0
03:00	60	58.3	49.6	8.4	0	0	4	1	1	2	14	29	7	2	0	0
04:00	98	57.4	50.7	6.5	0	0	2	2	1	4	25	48	13	3	0	0
05:00	221	56.7	48.4	8.0	0	1	13	2	3	20	73	86	19	4	0	0
06:00	480	53.1	46.0	6.9	0	0	22	7	34	90	223	88	12	2	2	0
07:00	915	51.4	44.3	6.9	0	1	44	54	65	239	387	111	12	1	1	0
08:00	877	50.7	44.2	6.3	1	1	28	30	104	253	358	94	6	2	0	0
09:00	691	50.5	43.1	7.1	0	2	39	48	75	221	228	67	10	1	0	0
10:00	643	52.2	44.5	7.5	0	5	45	15	33	158	281	97	9	0	0	0
11:00	617	51.5	44.3	6.9	0	2	34	22	35	189	248	80	5	2	0	0
12:00	598	50.9	42.8	7.8	0	5	43	47	51	170	216	55	10	1	0	0
13:00	586	51.1	43.7	7.2	0	6	36	13	48	191	221	66	5	0	0	0
14:00	656	51.0	43.9	6.9	0	4	41	20	33	207	290	55	6	0	0	0
15:00	633	50.8	43.1	7.3	0	1	39	49	74	163	228	69	10	0	0	0
16:00	709	51.4	44.5	6.6	0	4	27	32	44	191	310	98	3	0	0	0
17:00	622	52.2	45.7	6.3	0	2	20	13	33	156	286	94	15	3	0	0
18:00	505	53.7	45.7	7.8	0	1	34	15	15	109	206	104	15	5	1	0
19:00	302	53.3	47.2	5.9	0	0	3	7	15	59	134	72	7	4	1	0
20:00	202	52.6	46.4	6.0	0	0	5	2	7	57	92	26	11	2	0	0
21:00	170	55.6	48.6	6.8	0	0	4	7	2	16	67	57	14	3	0	0
22:00	114	59.9	50.6	9.0	0	1	4	1	1	13	27	39	17	10	1	0
23:00	80	56.4	50.8	5.4	0	0	0	1	0	6	31	27	12	3	0	0
Total 2H(10-12)	1260	51.9	44.4	7.2	0	7	79	37	68	347	529	177	14	2	0	0
2H(14-16)	1289	50.9	43.5	7.1	0	5	80	69	107	370	518	124	16	0	0	0
12H(7-19)	8052	51.5	44.1	7.1	1	34	430	358	610	2247	3259	990	106	15	2	0
24H(0-24)	9929	52.4	44.9	7.3	1	36	492	391	676	2521	3975	1527	247	55	8	0
AM Peak	07:00	01:00	01:00	02:00	08:00	10:00	10:00	07:00	08:00	08:00	07:00	07:00	05:00	05:00	06:00	00:00
	915	61.3	53.9	11.3	1	5	45	54	104	253	387	111	19	4	2	0
PM Peak	16:00	22:00	23:00	22:00	12:00	13:00	12:00	15:00	15:00	14:00	16:00	18:00	22:00	22:00	18:00	12:00
	709	59.9	50.8	9.0	0	6	43	49	74	207	310	104	17	10	1	0

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Direction: Westbound

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	86	58.6	52.4	6.0	0	0	0	0	1	5	23	34	17	5	1	0
01:00	94	60.0	52.9	6.8	0	0	0	2	1	5	20	31	27	7	1	0
02:00	114	56.5	49.8	6.5	0	0	1	2	5	10	36	47	7	6	0	0
03:00	177	57.4	51.7	5.4	0	0	0	2	6	5	41	79	40	4	0	0
04:00	253	56.9	50.0	6.7	0	0	2	5	10	23	83	89	29	11	1	0
05:00	385	55.7	48.6	6.9	0	0	8	10	23	37	129	137	33	8	0	0
06:00	567	55.4	46.6	8.6	0	7	36	23	9	61	217	188	23	1	2	0
07:00	808	54.1	46.7	7.1	0	0	13	65	65	79	290	254	40	2	0	0
08:00	712	51.6	42.6	8.7	0	12	40	97	88	100	263	96	15	1	0	0
09:00	656	52.6	44.0	8.3	0	8	57	29	33	113	305	109	2	0	0	0
10:00	675	52.6	43.2	9.0	0	10	77	34	48	83	313	104	6	0	0	0
11:00	751	51.1	44.4	6.5	1	0	20	48	89	168	319	99	5	2	0	0
12:00	771	51.2	43.6	7.3	2	11	17	66	65	205	319	79	5	2	0	0
13:00	893	50.5	43.6	6.7	0	4	32	59	120	195	399	81	2	1	0	0
14:00	869	51.0	45.3	5.5	0	1	13	33	82	165	463	110	2	0	0	0
15:00	796	52.1	45.6	6.2	0	0	12	47	62	183	323	140	29	0	0	0
16:00	944	51.1	44.7	6.2	0	0	22	52	117	204	400	141	7	1	0	0
17:00	931	52.2	46.7	5.3	0	0	13	19	52	158	479	190	19	1	0	0
18:00	584	53.5	47.0	6.2	0	0	10	20	42	79	240	174	17	2	0	0
19:00	318	54.7	49.0	5.5	0	0	0	3	20	31	124	113	21	6	0	0
20:00	271	55.2	49.2	5.8	0	0	4	4	4	30	98	110	16	5	0	0
21:00	165	56.9	50.1	6.6	0	0	1	4	5	5	69	60	13	6	2	0
22:00	106	55.8	48.8	6.7	0	0	1	3	5	11	44	30	7	5	0	0
23:00	92	55.6	48.3	7.1	0	0	1	3	3	19	33	17	15	0	1	0
Total 2H(10-12)	1426	51.9	43.8	7.8	1	10	97	82	137	251	632	203	11	2	0	0
2H(14-16)	1665	51.5	45.4	5.9	0	1	25	80	144	348	786	250	31	0	0	0
12H(7-19)	9390	52.1	44.8	7.0	3	46	326	569	863	1732	4113	1577	149	12	0	0
24H(0-24)	12018	53.3	45.7	7.3	3	53	380	630	955	1974	5030	2512	397	76	8	0
AM Peak	07:00	01:00	01:00	10:00	11:00	08:00	10:00	08:00	11:00	11:00	11:00	07:00	03:00	04:00	06:00	00:00
	808	60.0	52.9	9.0	1	12	77	97	89	168	319	254	40	11	2	0
PM Peak	16:00	21:00	21:00	12:00	12:00	12:00	13:00	12:00	13:00	12:00	17:00	17:00	15:00	19:00	21:00	12:00
	944	56.9	50.1	7.3	2	11	32	66	120	205	479	190	29	6	2	0

360 TSL Ltd

Direction: Total Flow

Hour Beginning	Total Volume	85th Percentile	Mean Average	Standard Deviation	Bin 1 <10mph	Bin 2 10<20	Bin 3 20<30	Bin 4 30<35	Bin 5 35<40	Bin 6 40<45	Bin 7 45<50	Bin 8 50<55	Bin 9 55<60	Bin 10 60<70	Bin 11 70<80	Bin 12 >=80
00:00	152	57.7	51.8	5.7	0	0	0	0	3	10	41	63	27	7	1	0
01:00	138	60.4	53.2	6.9	0	0	1	2	1	6	25	51	40	10	2	0
02:00	154	57.9	49.6	8.0	0	0	5	5	5	11	43	63	13	8	1	0
03:00	237	57.8	51.2	6.4	0	0	4	3	7	7	55	108	47	6	0	0
04:00	351	57.1	50.2	6.7	0	0	4	7	11	27	108	137	42	14	1	0
05:00	606	56.1	48.5	7.3	0	1	21	12	26	57	202	223	52	12	0	0
06:00	1047	54.4	46.3	7.8	0	7	58	30	43	151	440	276	35	3	4	0
07:00	1723	52.8	45.4	7.1	0	1	57	119	130	318	677	365	52	3	1	0
08:00	1589	51.2	43.5	7.5	1	13	68	127	192	353	621	190	21	3	0	0
09:00	1347	51.5	43.5	7.7	0	10	96	77	108	334	533	176	12	1	0	0
10:00	1318	52.5	43.8	8.3	0	15	122	49	81	241	594	201	15	0	0	0
11:00	1368	51.3	44.3	6.7	1	2	54	70	124	357	567	179	10	4	0	0
12:00	1369	51.1	43.3	7.5	2	16	60	113	116	375	535	134	15	3	0	0
13:00	1479	50.8	43.6	6.9	0	10	68	72	168	386	620	147	7	1	0	0
14:00	1525	51.1	44.7	6.2	0	5	54	53	115	372	753	165	8	0	0	0
15:00	1429	51.6	44.5	6.9	0	1	51	96	136	346	551	209	39	0	0	0
16:00	1653	51.2	44.6	6.4	0	4	49	84	161	395	710	239	10	1	0	0
17:00	1553	52.3	46.3	5.8	0	2	33	32	85	314	765	284	34	4	0	0
18:00	1089	53.7	46.4	7.0	0	1	44	35	57	188	446	278	32	7	1	0
19:00	620	54.1	48.1	5.8	0	0	3	10	35	90	258	185	28	10	1	0
20:00	473	54.3	48.0	6.1	0	0	9	6	11	87	190	136	27	7	0	0
21:00	335	56.3	49.3	6.7	0	0	5	11	7	21	136	117	27	9	2	0
22:00	220	58.0	49.7	8.0	0	1	5	4	6	24	71	69	24	15	1	0
23:00	172	56.1	49.4	6.5	0	0	1	4	3	25	64	44	27	3	1	0
Total 2H(10-12)	2686	51.9	44.1	7.5	1	17	176	119	205	598	1161	380	25	4	0	0
2H(14-16)	2954	51.4	44.6	6.5	0	6	105	149	251	718	1304	374	47	0	0	0
12H(7-19)	17442	51.8	44.5	7.1	4	80	756	927	1473	3979	7372	2567	255	27	2	0
24H(0-24)	21947	52.9	45.3	7.3	4	89	872	1021	1631	4495	9005	4039	644	131	16	0
AM Peak	07:00	01:00	01:00	10:00	08:00	10:00	10:00	08:00	08:00	11:00	07:00	07:00	05:00	04:00	06:00	00:00
	1723	60.4	53.2	8.3	1	15	122	127	192	357	677	365	52	14	4	0
PM Peak	16:00	22:00	22:00	22:00	12:00	12:00	13:00	12:00	13:00	16:00	17:00	17:00	15:00	22:00	21:00	12:00
	1653	58.0	49.7	8.0	2	16	68	113	168	395	765	284	39	15	2	0

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Appendix C

1. Temporary Construction Traffic signage (Diagram 7301 'WORKS TRAFFIC' in the TSRGD)

Town & Country Planning Act 1990 (as amended)
Planning and Compulsory Purchase Act 2004

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Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 14.2- Summary of the Personal Injury Collision Records

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Date / Time	Reference	Location	Severity	Conditions Weather/ Road	Involvement	Causation Factors
19/04/2017 05:30	170161906	100 yards west of B1395	Serious	Fine / Dry	1 Vehicle	Driver appears to have lost control and veered towards the nearside carriageway edge, clipping the grass verge. The driver appears to have over corrected the manoeuvre and subsequently the vehicle has overturned onto its roof.
04/07/2017 19:00	170283523	Junction of Sidebar Lane - B1395 and A17	Slight	Fine / Dry	2 Vehicles	Vehicle 2 appears to have been waiting to go ahead at junction. Vehicle 1 collided into rear of vehicle 2. It appears that the driver of vehicle 1 failed to judge the path or speed of Vehicle 2.
07/12/2018 05:14	180591881	East Heckington	Slight	Raining / Wet	2 Vehicles	Vehicle 1 appears to have veered onto the opposite side of the road and collided with vehicle 2. Vehicle 1 was reported to be driving carelessly / recklessly with possible fatigue.
06/03/2019 12:55	190115936	Counterflow traffic road with national speed limit	Serious	Raining / Wet	2 Vehicles	Vehicle 2 travelling along the A17 towards Sleaford has indicated to turn into a side road leading to Elm Grange Studio. Vehicle 2 braked and vehicle 1 appears to have collided with the rear of vehicle 2. Vehicle 2 was reported to be driving carelessly / recklessly, distracted, exceeding the speed limit and fatigued.
24/09/2020 10:30	200502879	Junction with B1395 Side Bar Lane	Slight	Fine / Dry	2 Vehicles	Vehicle 1 appears to have pulled out of Side Bar Lane into the path of vehicle 2 travelling on the A17. Vehicle 1 was reported to have failed to look properly.
25/05/2017 11:25	170218632	East Heckington	Slight	Fine / Dry	2 Vehicles	Vehicle 1 appears to have collided with the rear of vehicle 2. Vehicle 2 was static in a queue of traffic. Vehicle 1 appears to have failed to judge the path or speed of vehicle 2.

17/11/2018 17:34	180557125	Approx 100 metres short of Shell garage at a site of small central reservation	Slight	Fine / Dry	1 Vehicle	Vehicle 1 travelling eastbound on the A17 appears to have moved across its lane and clipped the curb with the front offside wheel. This appears to have caused the driver to lose control and the vehicle to roll onto its passenger side.
16/01/2019 01:30	190024430	Central reservation to the east of the junction leading to East Heckington	Slight	Fine / Dry	1 Vehicle	Vehicle 1 appears to have swerved to avoid an animal in the carriageway and collided with the central island.
18/04/2021 13:00	210211827	Opposite Jet service station on A17	Slight	Fine / Day	2 Vehicles	Vehicle 2 travelling from Heckington towards Swineshead Bridge appears to have been stationary behind another vehicle signalling to turn right into the Jet petrol station. Vehicle 1 appears to have collided with the rear of vehicle 2.
18/08/2021 07:55	210464384	East Heckington near to the Jet garage	Slight	Fine / Dry	1 Vehicles	Vehicle 1 appears to have collided with the central reservation and lost control, subsequently falling from their motorcycle.
29/09/2021 08:20	210565608	Opposite Four Winds petrol station	Slight	Fine / Dry	2 Vehicles	Vehicle 1 appears to have collided with the rear of vehicle 2. It is reported that the sunlight and angle of the sun played a significant part in the incident. It appears likely that vehicle 1 was dazzled by the sun.
01/10/2021 10:55	210570504	A17 westbound outside Jet garage	Slight	Fine / Wet	2 Vehicles	Traffic slowing westbound on A17 to enter Jet petrol station. Vehicle 2 travelling behind another appears to have braked following a late decision of the vehicle in front to turn. Vehicle 1 behind vehicle 2 appears to have also braked hard but collided with the rear of vehicle 2.
23/04/2021	10222130	Outside Shell garage	Slight	Fine / Dry	3 Vehicles	Vehicle 3 appears to have been braking in traffic. Vehicle 2 behind vehicle 3 also appears to have slowed. Vehicle 1 has failed to slow and

08:00						subsequently collided with the rear of vehicle 2, which was shunted into the rear of vehicle 3.
04/04/2017 18:10	170141596	East Heckington – A17 outside Jet garage	Slight	Fine / Dry	2 Vehicles	Vehicle 2 travelling southeastbound on the A17 appears to have stopped due to a fuel tanker turning right into jet garage. Vehicle 1 travelling behind vehicle 2 appears to have collided with the rear of vehicle 1.
03/12/2020 15:10	200640620	Outside Carpenters Cottage, East Heckington	Slight	Raining/ Wet	2 Vehicles	Vehicle 1 appears to have pulled out into path of vehicle 2, failing to judge the speed of vehicle 2.
29/07/2021 19:15	210425853	A17	Serious	Fine / Dry	1 Vehicle	Vehicle 1 appears to have been travelling at excessive speed along the A17 from Boston. Vehicle appears to have left the road and rolled across a private road bridge and into a ditch.
16/07/2017 22:49	170303390	Junction of A17 and A1121	Slight	Fine / Dry	2 Vehicles	Vehicle 1 involved in a police pursuit. Vehicle has travelled along the A1121 and approached the junction with the A17. Vehicle appears to have failed to negotiate the junction and travelled straight over and hit the kerb, resulting in the vehicle flipping onto its roof.
20/06/2018 08:48	180285069	Junction of A17 and A1121	Slight	Fine / Dry	2 Vehicles	Vehicle 1 turning right appears to have collided with vehicle 2.
17/09/2018 08:23	180444373	Single carriageway 50mph road.	Slight	Raining/ Wet	2 Vehicles	Vehicle 2 appears to have been slowing down due to traffic ahead. Vehicle 1 appears to have collided with the rear of vehicle 2.
15/01/2019 17:25	190024319	Junction of A17 and A1121	Slight	Fine / Dry	3 Vehicles	Vehicle 2 travelling along A17 at the junction with the A1121. Vehicle 1 appears to have turned into the path of vehicle 2 resulting in a collision.

						Vehicle 2 appears to have spun into the opposite side of the road and vehicle 3 then collided with vehicle 2.
21/02/2019 18:23	190092020	Outside the Barge public house	Slight	Fine / Dry	2 Vehicles	Vehicle 2 travelling from Sleaford towards Sutterton. Vehicle 1 has pulled across the front as it was heading in the opposite direction.
18/08/2021 16:54	210465669	Junction of A17 and A1121	Slight	Fine/ Dry	2 Vehicles	Vehicle 1 cut across the path of vehicle 2 when changing direction at a junction.
30/10/2021 15:46	210632038	Junction of A17 and A1121	Serious	Fine / Dry	2 Vehicles	Vehicle 1 travelling north west along the A17 towards Heckington. Vehicle 1 turned right across traffic which appears to have caused vehicle 2 to collide with it.

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 16.1- Agricultural and Soils Significant of Effect Methodology

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Appendix 16.1 Agriculture and Soils Significant of Effect Methodology

This Appendix sets out the criteria used to determine sensitivity (**Table 1)** and magnitude (**Table 2**) for agricultural soils followed by the matrix used to determine the resulting significant of effects (**Table 3**).

Table 1: Methodology for Determining Sensitivity for Agriculture and Soils

Sensitivity	ALC/biomass production[1]	Sensitivity of topsoil and subsoil[2]	Agricultural businesses
Very high	Land of ALC Grades 1 and 2	-	-
High	Land of ALC Subgrade 3a	High clay soils where the FCD[3] is >150, or medium textured soils where the FCD is >225	-
Medium	Land of ALC Subgrade 3b	High clay soils where the FCD is <150, or medium textured soils where the FCD is <225	Full-time businesses, and farm businesses where the location of land is particularly important such as diary farms. Farms affected outwith the site boundary.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225	Part-time farms or farms with low sensitivity to change, eg arable land held on short-term arrangements.
Negligible	Land of ALC Grades 4 and 5 with only indirect links	-	Agricultural land that is not farmed or does not form part of a farm business.

[1] IEMA Table 2

[2] IEMA Table 4. For the full list please refer to the IEMA Guide (2022) Table 4

[3] Field Capacity Days, ie days when the soil is replete with water

Table 2: Methodology for Determining Magnitude of Change for Agriculture and Soils

Magnitude of Effect	Definition	
	Effects on Agricultural Land (Soils)	**Effects on Farm Businesses (agricultural businesses)**
Major	The Proposed Development would directly lead to the loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of over 20 hectares of soil-related features; or potential for improvement in one or more soil functions over an area of more than 20 ha.	The impact of development would render a full-time agricultural business non-viable.
Moderate	The Proposed Development would directly lead to the loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of between 5 and 20 hectares of soil-related features; or potential for improvement in one or more soil functions over an area of between 5 ha and 20 ha.	The impact of the development would require significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5 ha of adjacent land to be farmed fully.
Minor	The Proposed Development would directly lead to loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of less than 5 hectares of soil-related functions; or potential for improvement in one or more soil functions over an area of less than 5 ha.	Land take would require only minor changes in the day-to-day management / structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundaries of the Site.
Negligible	No discernible loss or reduction or improvement of soil functions or volumes.	Land take would require only negligible changes in the day-to-day management of a full-time agricultural business or land take would require only minor changes to a part-time farm business

Table 3: Methodology for Determining Sensitivity

		Sensitivity of Receptor / Receiving Environment to Change / Effect				
		Very high	**High**	**Medium**	**Low**	**Negligible**
Magnitude of change/effect	**Major**	Very large	Large or very large	Moderate or large	Slight or moderate	Slight
	Moderate	Large or very large	Moderate or large	Moderate	Slight	Neutral or slight
	Minor	Moderate or large	Slight or moderate	Slight	Neutral or slight	Neutral or slight
	Negligible	Slight	Slight	Neutral or slight	Neutral or slight	Neutral or slight
	No Change	Neutral	Neutral	Neutral	Neutral	Neutral

Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 16.2- Semi Detailed Agricultural Land Classification

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Appendix 16.2

HECKINGTON FEN

SEMI-DETAILED AGRICULTURAL LAND CLASSIFICATION

May 2022

Appendix 16.2

HECKINGTON FEN

SEMI-DETAILED
AGRICULTURAL LAND
CLASSIFICATION

May 2022

Authorised By APK 05/22

Greenacres Barn, Stoke Common Lane, Purton Stoke, Swindon SN5 4LL
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CONTENTS

Appendices

Plans

1 INTRODUCTION

1.1 This report sets out the results of a semi-detailed Agricultural Land Classification (ALC) survey across a site of approximately 590 hectares of land at Heckington Fen.

1.2 The site comprises a series of agricultural fields, currently in arable use, with the A17 forming the southern boundary and Head Dike the north. The eastern boundary is shaped by Holland Dike and further arable land extends beyond the western boundary.

1.3 The site was surveyed at a semi-detailed level of survey, in September and October 2021.

1.4 This report:

- describes the methodology in section 2;
- describes the factors affecting agricultural land quality in section 3;
- and sets out the ALC grades in section 4.

2 METHODOLOGY

2.1 This report sets out a semi-detailed Agricultural Land Classification (ALC). It is based on a desktop study of relevant published information on climate, topography, geology and soil, in conjunction with a soil survey. The ALC study area, which measures approximately 590 hectares (ha) in area, as shown on **Plan KCC3076/01**.

2.2 The work has been carried out by a Chartered Scientist (CSci), who is a Fellow (F. I. Soil Sci) of the British Society of Soil Science (BSSS), and a team of highly experienced ALC surveyors. This ALC survey has been carried out by soil scientists who meet the requirements of the BSSS Professional Competency Standard (PSC) scheme for ALC (see BSSS PCS Document 2 'Agricultural Land Classification of England and Wales'. The BSSS PSC scheme is endorsed, amongst others, by the Department for Environment, Food and Rural Affairs (Defra), Natural England, the Science Council, and the Institute of Environmental Assessment and Management (IEMA).

2.3 This assessment is based upon the findings of a study of published information on climate, geology and soil in combination with a soil investigation carried out in accordance with the Ministry of Agriculture, Fisheries and Food (MAFF) 'Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land', October 1988 (henceforth referred to as the 'the ALC Guidelines').

2.4 The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade 1 'Excellent' to Grade 5 'Very Poor'), with Grade 3 subdivided into Subgrade 3a 'Good' and Subgrade 3b 'Moderate'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the '*best and most versatile*' category in Paragraphs 174 and 175 of the National Planning Policy Framework (NPPF), revised on the 20th of July 2021. Further details of the ALC system and national planning policy implications are set out by Natural England in its Technical Information Note 049[1].

2.5 A semi-detailed ALC survey was carried out in September 2021. For ease of surveying and reporting, the Site was divided into seven survey areas labelled A-G. The survey involved examination of the soil's physical properties at 138 auger bore locations on a

[1] Natural England (December, 2012). 'Agricultural Land Classification: protecting the best and most versatile agricultural land (TIN049)'. Available online @ http://publications.naturalengland.org.uk/publication/35012 Last accessed October 2021

200m by 200m grid. Two soil pits (Pit 1 and Pit 2, **Plan KCC3076/01**) were excavated with a spade to examine certain soil physical properties, such as stone content and subsoil structure, in more detail. The survey areas, auger-bore locations, and soil pits are shown on **Plan KCC3076/01**.

2.6 A sample of topsoil was collected at three auger-bore (AB) locations, i.e., Area C AB1, Area D AB4, and Area F AB21. The samples were sent to an accredited laboratory for particle size analysis, i.e., the proportions of sand, silt and clay. This is to determine the definitive texture class of the topsoil.

2.7 The sample locations were located using a hand-held Garmin E-Trec Geographic Information System (GIS) to enable the sample locations to be relocated for verification, if necessary.

2.8 The soil profile was examined at each sample location to a maximum depth of approximately 1.2m by hand with the use of a 5 cm diameter Dutch (Edleman) soil auger. The soil profile at each sample location was described using the '*Soil Survey Field Handbook: Describing and Sampling Soil Profiles*' (Ed. J.M. Hodgson, Cranfield University, 1997). Each soil profile was ascribed a grade following the ALC Guidelines.

3 FACTORS AFFECTING LAND QUALITY

3.1 As described in the ALC Guidelines, the main physical factors influencing agricultural land quality are:

- climate;
- site;
- soil; and
- interactive limitations.

3.2 These factors are considered in turn below.

Climate

3.3 Interpolated climate data relevant to the determination of the ALC grade of land at the Site is given in Table 1 below.

Table 1: ALC Climate Data for Heckington Fen, Lincolnshire

Climate Parameter	**Grid Ref:** TF 199 454
Average Altitude (m)	3
Average Annual Rainfall (mm)	577
Accumulated Temperature above 0˚C (January – June)	1433
Moisture Deficit (mm) Wheat	118
Moisture Deficit (mm) Potatoes	113
Field Capacity Days (FCD)	107
Grade according to climate	1

3.4 Agricultural land quality at the Site is not limited by climate with reference to Figure 1 '*Grade according to climate*' on page 6 of the ALC Guidelines. In this case, agricultural land at the Site would be Grade 1 without any additional limitations.

3.5 The soil profiles across the Site are predicted to be at field capacity (i.e., the amount of soil moisture or water content held in the soil after excess water has drained away) for approximately 107 Field Capacity Days (FCD) per year, mainly over the late autumn, winter and early spring. The climate interacts with soil physical properties, i.e., soil texture and wetness class, and can limit agricultural land quality due to soil wetness as per Table 6 of the ALC Guideline 'Grade according to soil wetness'.

Site

3.6 The approximately 590ha Site is located to the north-east of Heckington, south Lincolnshire. The Site is bordered by the A17 to the south, Side Bar Lane (B1395) to the east, and by Head Dyke to the north. The approximate centre of the Site is located at British National Grid (BNG) reference TF 19970 45431.

3.7 With regard to the ALC Guidelines, agricultural land quality can be limited by one or more of three main site factors as follows:

- gradient;
- micro-relief (i.e., complex change in slope angle over short distances); and
- risk of flooding.

3.8 **Gradient and Micro Relief.** The land at the Site is broadly level to slightly undulated at an elevation of between 1-4 metres (m) Above Ordnance Datum (AOD). The quality of agricultural land over the Site is not limited by gradient, which does not exceed 7°. No part of the Site is limited by micro-relief (i.e., complex changes in slope angle and direction over short distances).

3.9 **Risk of Flooding.** From the Government Flood Map for Planning website[2], the Site is mainly located in Flood Zone 3 (high probability of flooding), with smaller regions of Flood Zone 1 and Flood Zone 2 in the south. However, there are no records (data) to show that agricultural land in any part of the Site is limited by flooding, according to the criteria for frequency and/or duration in Table 2 '*Grade according to flood risk in summer*' and/or Table 3 '*Grade according to flood risk in winter*' of the ALC Guidelines.

Soil

3.10 **Geology/Soil Parent Material.** From British Geological Survey (BGS) maps at 1:50,000 scale, the land at the Site is underlain by Ampthill Clay Formation (mudstone) in the eastern region and West Walton Formation (mudstone and siltstone) in the west. The bedrock is entirely covered by Tidal Flat Deposits (clay and silt).

3.11 **Published Information on Soil.** Soil information is available only at a small scale (1:250,000) on the National Soil Map published by the Soil Survey of England and Wales (SSEW) in 1983. This provisional soil map indicates that land at the entire Site is covered soils grouped in the Wallasea 2 Association.

3.12 As described by the SSEW, the Wallasea 2 Association is extensive on reclaimed marine alluvium in the marshlands of Lincolnshire. These soils are clayey with a greyish brown topsoil over greyish or grey and ochreous mottled subsurface horizons. These soils are slightly permeable and respond to underdrainage; drained soils are occasionally waterlogged (Wetness Class II) but undrained soils are waterlogged for long periods in winter (Wetness Class III or IV).

[2] Government Flood Map for Planning website. Available online @ https://flood-map-for-planning.service.gov.uk/ Last accessed October 2021

3.13 **Soil Survey.** The detailed soil survey carried out in September 2021 determined soils which are comparable with those described by the SSEW as belonging to the Wallasea 2 Association. All the soils are non-calcareous. There is a complex variety of soil textures and drainage status (Wetness Class) over the Site, which reflects the variety of Tidal Flats Deposits (see 'Geology' above) deposited by the sea in the past. The texture of the topsoil ranges from medium silty clay loam, through heavy clay loams to silty clay. The soil profiles range from well-drained (Wetness Class I) where the subsoil is sandy (i.e., fine sandy loam to loamy fine sand), to slightly seasonally waterlogged (Wetness Class II) where the subsoil is slowly permeable, gleyed and mottled, silty clay. Where the depth of the slowly permeable silty clay is closer to the surface, the soil profiles are seasonally waterlogged and placed in Wetness Class III.

3.14 A log of all the soil profiles recorded on site is given as **Appendices KCC1** to **KCC7**, with the key in **Appendix KCC8**. Two soil pits (Pit 1 and Pit 2) were excavated with a spade to examine certain soil physical properties, such as subsoil structure, in more detail. A description of the soil pits is given as **Appendix KCC9**.

3.15 In order to substantiate topsoil texture determined during the ALC survey by hand-texturing, three samples of topsoil were collected over the Site (i.e., Area C AB2, Area D AB4, and Area F AB 21). The topsoil sample was sent to an accredited laboratory for analysis of particle size distribution (PSD), based on the British Standard Institution particle size grades. The certificate of analysis is provided as **Appendix KCC10**. The findings of the PSD analysis are shown in Table 2 below:

Table 2: Topsoil Texture (re Table 10, ALC Guidelines)

Topsoil Sample Location (See Plan KCC3076/01)	**% sand 0.063-2.0 mm***	**% silt 0.002-0.063 mm**	**% clay <0.002 mm**	**ALC Soil Texture Class**
Area C, AB1	22	48	30	Heavy Clay Loam
Area D, AB4	4	51	45	Silty Clay
Area F, AB21	19	61	20	Medium Silty Clay Loam

Interactive Limitations

3.16 From the information above, together with the findings of the detailed soil survey (see Soil Profile Logs given as **Appendices KCC1** to **KCC7**), it has been determined that the quality of agricultural land is mainly limited by soil wetness during the wettest months of the year during the Autumn, Winter and early Spring, and by a shortage of water in the soil (soil droughtiness) during the growing season, as described below.

3.17 **Soil Wetness.** From the ALC Guidelines, a soil wetness limitation exists where '*the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock*'. Agricultural land quality at the Site is limited by soil wetness as per Table 3 below (based on Table 6 'Grade According to Soil Wetness – Mineral Soils' in the ALC Guidelines).

Table 3: ALC Grade According to Soil Wetness

Wetness Class	**Texture of the Top 25 cm**	<126 **Field Capacity Days**
I	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	1 1 2 3a
II	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	1 2 3a 3a
III	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam* Heavy Silty Clay Loam/Heavy Clay Loam** Sandy Clay/Silty Clay/Clay	2 3a 3b 3b
Key * 18% to <27% clay; and ** 27% to 35% clay		

3.18 In a climate area with 107 FCD, slightly seasonally waterlogged profiles in Wetness Class II are limited by soil wetness to Grade 2 where the topsoil texture is medium silty clay loam, or to Subgrade 3a where the topsoil is heavy clay loam.

3.19 Where the soil profiles are slowly permeable and seasonally waterlogged (Wetness Class III), they are limited by soil wetness to Subgrade 3a where the topsoil is medium silty clay loam, or Subgrade 3b where the topsoil is heavy clay loam, or silty clay.

3.20 **Soil Droughtiness.** From the ALC Guidelines, a soil droughtiness limitation exists 'in areas with relatively low rainfall or high evapotranspiration, or where the soil holds only small reserves of moisture available to plant roots.' The ALC grade according to soil droughtiness is shown in Table 4 below (based on Table 8 'Grade According to Droughtiness' in the ALC Guidelines). To be eligible for Grades 1 to 3b the moisture balances (MBs) must be equal to, or exceed, the stated minimum values for both wheat and potatoes. If the MB for either crop is less (i.e., more negative) than that shown for Subgrade 3b, the soil is Grade 4 on droughtiness):

Table 4: ALC Grade According to Soil Droughtiness

Grade/Subgrade	**Moisture Balance (MB) Limits (mm)**	
	Wheat	**Potatoes**
1	+30	+10
2	+5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

3.21 The grade according to soil droughtiness per auger log is shown in **Appendix KCC1**. Many soil profiles are limited by soil droughtiness to Grade 2.

4 ALC GRADING OF THE SITE

4.1 The area and proportion of agricultural land in each ALC grade has been measured from an ALC map given as **Plan KCC3076/02**. The findings are reported in Table 5 below.

4.2 By semi-detailed ALC survey, it has been determined that the quality of agricultural land at the Site is classified as a mixture of Grade 1, Grade 2, Subgrade 3a, and Subgrade 3b. The area (ha) and proportion of land in each grade (% of the Site) has been measured from the ALC map given as **Plan KCC3076/02** and is reported in Table 5. As described in the ALC Guidelines, i.e., paragraph 5 on page 7, *'a degree of variability in physical characteristics within a discrete area is to be expected. If the area includes a small proportion of land of different quality, the variability can be considered as a function of the mapping scale'*. Therefore, it should be noted that some parcels of land in a particular ALC grade may contain single, isolated auger-bores of a different grade (i.e., of a higher or lower grade). Following the ALC Guidelines, these outliers have not been mapped out separately from the predominant, surrounding ALC grade at this scale of mapping.

Table 5: Agricultural Land Classification – Heckington Fen, Lincolnshire – As this is a semi-detailed survey, all measurements are rounded to the nearest whole hectare

ALC Grade	**Area (Ha)**	**Area (% of Total Site)**
Grade 1 (Excellent)	66	11
Grade 2 (Very Good)	77	13
Subgrade 3a (Good)	175	30
Subgrade 3b (Moderate)	263	45
Grade 4 (Poor)	0	0
Grade 5 (Very Poor)	0	0
Non-agricultural / Other land	8	1
Total	**590**	**100**

APPENDIX KCC1

Area A: Soil Profile Logs

Project Number	Project Name	Parcel
C800A	KCC3076 Heckington Fen	Area A

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	AR	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Flat Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1			Stones - type 2			Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 19400 46800	519400	346800	1	≤7	N		0	30	30	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		10	-10	2	WC II	3a	Wetness			3a
								30	45	15	10YR4/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
								45	120	75	7.5YR5/2	CD - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
2	TF 19400 46600	519400	346600	1	≤7	N		0	30	30	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		6	-14	3a	WC III	3b	Wetness			3b
								30	120	90	10YR5/2	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
3	TF 19200 46400	519200	346400	1	≤7	N		0	35	35	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								35	120	85	7.5YR5/2	CD - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
4	TF 19400 46400	519400	346400	2	≤7	N		0	37	37	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		10	-10	3a	WC III	3b	Wetness			3b
								37	120	83	10YR5/2	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
5	TF 19000 46200	519000	346200	2	≤7	N		0	38	38	10YR4/2						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		45	14	1	WC II	3a	Wetness			3a
								38	80	42	10YR5/2	CP - C	7.5YR5/6	CF - C	10YR7/1	Yes	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
								80	120	40	10YR7/2	CP - C	7.5YR5/6			Yes	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
6	TF 19200 46200	519200	346200	3	≤7	N		0	35	35	10YR4/3						FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		62	27	1	WC I	1	Droughtines	Wetness		1
								35	70	35	10YR7/2	CP - C	7.5YR5/6			Yes	FSL - Fin	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
								70	120	50	10YR7/2	CP - C	5YR4/6			Yes	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
7	TF 19400 46200	519400	346200	1	≤7	N		0	30	30	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		6	-14	3a	WC III	3b	Wetness			3b
								30	120	90	10YR5/2	CP - C	7.5YR5/6	CD - C	10YR6/1	Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
8	TF 19000 46000	519000	346000	2	≤7	N		0	38	38	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		10	-10	2	WC III	3b	Wetness			3b
								38	120	82	10YR6/2	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
9	TF 19200 46000	519200	346000	3	≤7	N		0	35	35	10YR4/2						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		37	18	1	WC II	2	Wetness			2
								35	45	10	10YR4/3					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
								45	65	20	10YR7/2	CD - C	10YR5/8			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
								65	120	55	10YR5/2	CP - C	7.5YR4/6			Yes	ZC - Silty	clay			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									
10	TF 19400 46000	519400	346000	1	≤7	N		0	25	25	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi							NON -	Non-calcar		10	-10	3a	WC II	3a	Droughtines	Wetness		3a
								25	45	20	10YR4/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON -	No	No									
								45	120	75	10YR5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON -	No	Yes									

11	TF 19000 45800	519000	345800	2	≤7	N		0	37	37	10YR4/2							MZCL - S	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi				NON -	Non-calcar	17	-3	2	WC III	3a	Wetness			3a
								37	120	83	10YR5/2	CP - C	7.5YR4/6				Yes	ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratche			Poor	NON -	No	Yes									
12	TF 19200 45800	519200	345800	3	≤7	N		0	36	36	10YR4/2							MZCL - S	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi				NON -	Non-calcar	16	-4	2	WC III	3a	Wetness			3a
								36	120	84	10YR5/1	MP - I	5YR4/6				Yes	ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratche			Poor	NON -	No	Yes									
13	TF 19400 45800	519400	345800	2	≤7	N		0	35	35	10YR4/2							ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi				NON -	Non-calcar	12	-8	2	WC II	3a	Wetness			3a
								35	45	10	10YR4/3						No	ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratche			Moderate	NON -	No	No									
								45	120	75	10YR5/2	CP - C	5YR4/6				Yes	ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratche			Poor	NON -	No	Yes									
14	TF 19400 45600	519400	345600	2	≤7	N		0	36	36	10YR4/2							ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi				NON -	Non-calcar	9	-11	3a	WC III	3b	Wetness			3b
								36	120	84	10YR5/2	CP - C	5YR4/6	CD - C	10YR6/1		Yes	ZC - Silty	0				HR - All hard rocks or stones (i.e. those which cannot be scratche			Poor	NON -	No	Yes									
	END																																		

APPENDIX KCC2

Area B: Soil Profile Logs

Project Number	Project Name	Parcel
800B	KCC3076 Heckington Fen	Area B

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	RDM	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Falt Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 19600 46600	519600	346600	2	≤7	NE		0	25	25	10YR4/2					Yes	ZC - Silty	1			HR - All hard rocks or stones (i.e. those which cannot be sc					RMtch		Not Appli	NON - I	No	No	3	-17	3a	WC III	3b	Wetness			3b
								25	40	15	10YR4/2	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be sc					RMtch		Poor	NON - I	No	Yes									
								40	100	60	5YR3/4	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be sc					RMtch		Poor	NON - I	No	Yes									
								100	120	20							ZC - Silty clay												Poor			Yes								
2	TF 19800 46600	519800	346600	1	≤7	NE		0	30	30	10YR4/2					Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Droughtines	Wetness		3a
								30	40	10	10YR4/2	FF - Fe	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON - I	No	No									
								40	70	30	7.5YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								70	120	50	7.5YR4/2					Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor		No	Yes									
3	TF 20000 46600	520000	346600	1	≤7	NE		0	38	38	10YR3/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	11	-9	2	WC I	3a	Wetness			3a
								38	40	2	10YR3/3	CD - C	10YR5/6			No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON - I	No	No									
								40	80	40	7.5YR3/2	MD - I	10YR5/6			No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	No									
								80	120	40							ZC - Silty clay												Poor			Yes								
4	TF 20200 46600	520200	346600	2	≤7	NE		0	35	35	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	10	-10	2	WC II	3a	Wetness			3a
								35	40	5	10YR3/2	FD - F	10YR5/6			No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON - I	No	No									
								40	80	40	7.5YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								80	120	40							ZC - Silty clay												Poor			Yes								
5	TF 19600 46400	519600	346400	2	≤7	NE		0	35	35	10YR3/3					Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	8	-12	3a	WC III	3b	Wetness			3b
								35	60	25	10YR4/2	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								60	120	60							ZC - Silty clay												Poor	NON -	Non-ca	Yes								
6	TF 19800 46400	519800	346400	2	≤7	NE		0	30	30	10YR4/2					Yes	ZC - Silty	1			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	30	-10	2	WC II	3a	Wetness			3a
								30	45	15	10YR4/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON - I	No	Yes									
								45	80	35	10YR4/2	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	VC - Ve	No	Yes									
								80	120	40	10YR5/6						FS - Fine Sand												Moderate			No								
7	TF 20000 46400	520000	346400	1	≤7	NE		0	35	35	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	10	-10	2	WC II	3a	Wetness			3a
								35	40	5	10YR3/2	CD - C	10YR5/6			No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON - I	No	No									
								40	80	40	10YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								80	120	40							ZC - Silty clay												Poor			Yes								
8	TF 20200 46400	520200	346400	0	≤7	NE		0	30	30	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	6	-14	3a	WC III	3b	Wetness			3b
								30	40	10	10YR4/2	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								40	80	40	7.5YR4/2	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								80	120	40							ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor		No	Yes									
9	TF 19600 46200	519600	346200	2	≤7	NE		0	33	33	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	8	-12	3a	WC III	3b	Wetness			3b
								33	60	27	10YR4/2	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								60	120	60							ZC - Silty clay												Poor			Yes								
10	TF 19800 46200	519800	346200	2	≤7	NE		0	30	30	10YR4/2					Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Wetness	Droughtiness		3a
								30	40	10	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON - I	No	No									
								40	80	40	10YR4/2	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON - I	No	Yes									
								80	120	40							ZC - Silty clay												Poor			Yes								

11	TF 20000 46200	520000	346200	2	≤7	NE		0	38	38	10YR4/2				Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-10	3a	WC II	3a	Wetness	Droughtiness		3a
								38	40	2	10YR3/1	FD - F	10YR5/6		No	ZC - Silty	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No									
								40	68	28	10YR4/2	CD - C	10YR5/6		Yes	ZC - Silty	2		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								68	120	52	10YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	3		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
12	TF 20200 46200	520200	346200	2	≤7	NE		0	30	30	10YR3/2				Yes	HZCL - Si	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	15	-5	2	WC II	3a	Wetness			3a
								30	40	10	10YR3/1				No	ZC - Silty	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No									
								40	55	15	10YR4/1	MD - I	10YR5/6		Yes	ZC - Silty	2		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								55	120	65						ZC - Silty clay				Poor	NON -	Non-ca	Yes									
13	TF 19600 46000	519600	346000	2	≤7	NE		0	35	35	10YR3/2				Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	8	-11	3a	WC II	3a	Wetness	Droughtiness		3a
								35	40	5	7.5YR4/2	FD - F	10YR5/6		Yes	ZC - Silty	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No									
								40	60	20	7.5YR4/2	CD - C	10YR5/6		Yes	ZC - Silty	2		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								60	120	60	7.5YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	3		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
14	TF 19800 46000	519800	346000	2	≤7	NE		0	25	25	10YR4/2				Yes	ZC - Silty	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	3	-17	3a	WC III	3b	Wetness			3b
								25	40	15	10YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								40	100	60	5YR3/4	MD - I	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								100	120	20						ZC - Silty clay				Poor			Yes									
15	TF 20000 46000	520000	346000	1	≤7	NE		0	30	30	10YR3/3				No	ZC - Silty	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	37	-11	3a	WC I	3a	Droughtines	Wetness		3a
								30	40	10	10YR3/1				No	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No									
								40	58	18	10YR3/3				No	ZC - Silty	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No									
								58	80	22	7.5YR4/3	MD - I	10YR5/6		No	ZL - Silt l	2		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	VC - Ve	No	No									
								80	120	40						ZL - Silt loam				Moderate			No									
16	TF 20200 46000	520200	346000	2	≤7	NE		0	30	30	10YR4/2				No	HZCL - Si	1		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	60	11	1	WC I	2	Wetness			2
								30	40	10	10YR3/2				No	HZCL - Si	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No									
								40	50	10	10YR4/2	MD - I	10YR5/6		Yes	HZCL - Si	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No									
								50	90	40	7.5YR4/4	MD - I	10YR5/6		No	ZL - Silt l	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	VC - Ve	No	No									
								90	120	30						ZL - Silt loam				Moderate			No									
17	TF 19600 45800	519600	345800	1	≤7	NE		0	35	35	7.5YR3/2				No	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	8	-12	3a	WC III	3b	Wetness			3b
								35	60	25	7.5YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								60	120	60						ZC - Silty clay				Poor			Yes									
18	TF 19800 45800	519800	345800	2	≤7	NE		0	35	35	10YR4/2				No	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	8	-12	3a	WC II	3a	Wetness	Droughtiness		3a
								35	40	5	10YR4/2	FF - Fe	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No									
								40	50	10	10YR4/3	CD - C	10YR5/6		No	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No									
								50	80	30	10YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								80	120	40						ZC - Silty clay				Poor												
19	TF 20000 45800	520000	345800	1	≤7	NE		0	30	30	10YR3/2				Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	6	-14	3a	WC III	3b	Wetness			3b
								30	40	10	10YR4/1	CD - C	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								40	80	40	10YR4/1	MD - I	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								80	120	40						ZC - Silty clay				Poor			Yes									
20	TF 20200 45800	520200	345800	2	≤7	NE		0	30	30	10YR3/1				No	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Droughtines	Wetness		3a
								30	40	10	10YR3/2				No	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No									
								40	80	40	10YR4/1	VD - V	10YR5/6		Yes	ZC - Silty	0		HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
								80	120	40						ZC - Silty clay				Poor			Yes									

21	TF 19600 45600	519600	345600	1	≤7	NE	0	30	30	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Droughtines	Wetness	3a
							30	40	10	10YR4/1			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							40	80	40	7.5YR4/1	CD - C	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							80	120	40					ZC - Silty clay			Poor			Yes								
22	TF 19800 45600	519800	345600	1	≤7	NE	0	35	35	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	10	-10	2	WC II	3a	Wetness		3a
							35	40	5	10YR4/1	FF - Fe	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							40	80	40	7.5YR4/2	MD - I	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							80	120	40					ZC - Silty clay			Poor			Yes								
23	TF 20000 45600	520000	345600	2	≤7	NE	0	30	30	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Wetness	Droughtiness	3a
							30	40	10	10YR4/2	FF - Fe	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							40	50	10	7.5YR4/2	CD - C	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							50	120	70	7.5YR4/2	MD - I	10YR5/6	Yes	ZC - Silty clay			Poor	NON - Non-ca		Yes								
24	TF 20200 45600	520200	345600	2	≤7	NE	0	38	38	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	13	-7	2	WC II	3a	Wetness		3a
							38	48	10	10YR3/2	FF - Fe	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							48	80	32	10YR4/2	MD - I	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							80	120	40					ZC - Silty clay			Poor	NON - Non-ca		Yes								
25	TF 19800 45400	519800	345400	3	≤7	NE	0	30	30	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Wetness	Droughtiness	3a
							30	40	10	10YR3/3			No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							40	80	40	10YR4/1	MD - I	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							80	120	40					ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor		No	Yes								
26	TF 20000 45400	520000	345400	3	≤7	NE	0	30	30	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Wetness	Droughtiness	3a
							30	40	10	10YR4/2	FF - Fe	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							40	50	10	10YR4/2	CD - C	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							50	80	30	10YR5/2	MD - I	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							80	120	40					ZC - Silty clay			Poor			Yes								
27	TF 20200 45400	520200	345400	4	≤7	NE	0	30	30	10YR3/2			No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Not Appli	NON - I	No	No	9	-11	3a	WC II	3a	Wetness	Droughtiness	3a
							30	40	10	10YR4/2			Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON - I	No	No								
							40	48	8	10YR3/2	FF - Fe	10YR5/6	No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	No								
							48	80	32	10YR4/1	MP - I	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes								
							80	120	40					ZC - Silty clay			Poor			Yes								
	END																											

APPENDIX KCC3

Area C: Soil Profile Logs

Project Number	Project Name	Parcel
800C	KCC3076 Heckington Fen	Area C

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	AR	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Falt Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 20400 46600	520400	346600	2	≤7	N		0	28	28	10YR4/2						HCL - Cla	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		93	30	1	WC I	1	N/A			1
								28	80	52	10YR7/2	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Good			NON -	No	No									
								80	120	40	10YR6/1	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Good			NON -	No	No									
2	TF 20600 46600	520600	346600	3	≤7	N		0	30	30	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		10	-6	2	WC III	3b	Wetness			3b
								30	55	25	10YR5/2	CD - C	7.5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
								55	70	15	10YR6/2	CD - C	10YR5/6			Yes	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Moderate			NON -	No	No									
								70	120	50	10YR5/1	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
3	TF 20800 46600	520800	346600	1	≤7	N		0	34	34	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								34	120	86	2.5Y5/2	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
4	TF 20400 46400	520400	346400	1	≤7	N		0	34	34	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								34	120	86	10YR5/2	CP - C	7.5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
5	TF 20600 46400	520600	346400	2	≤7	N		0	35	35	10YR4/2						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		94	30	1	WC I	1	N/A			1
								35	60	25	10YR7/2	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Good			NON -	No	No									
								60	120	60	10YR6/1	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Good			NON -	No	No									
6	TF 20800 46400	520800	346400	1	≤7	N		0	30	30	10YR3/2						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		22	2	2	WC II	3a	Wetness			3a
								30	50	20	10YR4/2					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Moderate			NON -	No	No									
								50	120	70	10YR5/3	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
7	TF 21000 46400	521000	346400	1	≤7	N		0	35	35	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								35	120	85	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
8	TF 20400 46200	520400	346200	2	≤7	N		0	42	42	10YR3/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		12	-8	2	WC II	3a	Wetness			3a
								42	120	78	2.5Y5/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	Yes	Yes									
9	TF 20600 46200	520600	346200	2	≤7	N		0	22	22	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		2	-18	3a	WC III	3b	Wetness			3b
								22	120	98	10YR5/3	CP - C	7.5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
10	TF 20800 46200	520800	346200	3	≤7	N		0	34	34	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								34	120	86	10YR5/1	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									

11	TF 21000 46200	521000	346200	2	≤7	N		0	36	36	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									NON - Non-calcar			9	-11	3a	WC III	3b	Wetness			3b
								36	120	84	2.5Y5/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
12	TF 21200 46000	521200	346000	3	≤7	N		0	42	42	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									NON - Non-calcar			12	-8	2	WC II	3a	Wetness			3a
								42	120	78	2.5Y5/2	CP - C	5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
	END																																								

APPENDIX KCC4

Area D: Soil Profile Logs

Project Number	Project Name	Parcel
800D	KCC3076 Heckington Fen	Area D

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	AR	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Falt Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 20400 46000	520400	346000	1	≤7	N		0	35	35	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								35	120	85	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
2	TF 20600 46000	520600	346000	1	≤7	N		0	34	34	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								34	120	86	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
3	TF 20800 45980	520800	345980	3	≤7	N		0	45	45	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		14	-6	2	WC II	3a	Wetness			3b
								45	120	75	10YR5/2	CP - C	7.5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
4	TF 20400 45800	520400	345800	1	≤7	N		0	35	35	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								35	120	85	2.5Y5/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
5	TF 20600 45800	520600	345800	1	≤7	N		0	36	36	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		9	-11	3a	WC III	3b	Wetness			3b
								36	120	84	10YR6/2	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
6	TF 20800 45800	520800	345800	3	≤7	N		0	28	28	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		5	-15	3a	WC III	3b	Wetness			3b
								28	120	92	7.5YR5/2	CD - C	7.5YR5/8			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
7	TF 21000 45800	521000	345800	2	≤7	N		0	30	30	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		6	-14	3a	WC III	3b	Wetness			3b
								30	120	90	10YR5/1	CD - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
8	TF 21200 45800	521200	345800	3	≤7	N		0	25	25	10YR4/2						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3a	Wetness			3a
								25	120	95	2.5Y5/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									
9	TF 21400 45800	521400	345800	1	≤7	N		0	38	38	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		85	22	1	WC I	3a	Wetness			3a
								38	50	12	2.5Y5/2	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Good			NON -	Non-ca	No									
								50	120	70	10YR6/2	CP - C	7.5YR5/8			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Good			NON -	Non-ca	No									
10	TF 20400 45600	520400	345600	1	≤7	N		0	24	24	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		3	-17	3a	WC III	3b	Wetness			3b
								24	120	96	10YR5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche					Poor			NON -	No	Yes									

11	TF 20600 45600	520600	345600	2	≤7	N	0	30	30	10YR4/2				HZCL - Si	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			12	-8	2	WC III	3b	Wetness			3b
							30	120	90	10YR5/1	CP - C	7.5YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
12	TF 20800 45600	520800	345600	1	≤7	N	0	20	20	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			1	-19	3a	WC III	3b	Wetness			3b
							20	120	100	2.5Y5/1	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
13	TF 21000 45600	521000	345600	2	≤7	N	0	35	35	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			8	-12	3a	WC III	3b	Wetness			3b
							35	120	85	2.5Y5/2	CP - C	5YR5/8	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
14	TF 21200 45600	521200	345600	3	≤7	N	0	30	30	10YR4/3				FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			104	41	1	WC I	1	N/A			1
							30	120	90	2.5Y6/2	CP - C	7.5YR5/6	Yes	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Good	NON - I	No	No									
15	TF 21400 45600	521400	345600	1	≤7	N	0	34	34	10YR4/3				MZCL - S	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			94	31	1	WC I	1	N/A			1
							34	120	86	10YR7/2	CD - C	10YR5/6	Yes	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Good	NON - I	No	No									
16	TF 20400 45400	520400	345400	3	≤7	N	0	38	38	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			10	-10	2	WC III	3b	Wetness			3b
							38	120	82	10YR5/2	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
17	TF 20600 45400	520600	345400	2	≤7	N	0	45	45	10YR4/2				HZCL - Si	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			22	2	2	WC II	3a	Wetness			3a
							45	120	75	2.5Y5/1	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
18	TF 20800 45400	520800	345400	1	≤7	N	0	35	35	10YR4/2				HZCL - Si	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			16	-4	2	WC III	3b	Wetness			3b
							35	120	85	2.5Y5/1	CP - C	5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
19	TF 21000 45400	521000	345400	2	≤7	N	0	38	38	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			10	-10	2	WC III	3b	Wetness			3b
							38	120	82	2.5Y5/1	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	No	Yes									
20	TF 21200 45400	521200	345400	3	≤7	N	0	36	36	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			9	-11	3a	WC III	3b	Wetness			3b
							36	120	84	10YR6/2	CP - C	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON - I	Yes	Yes									

21	TF 20800 45200	520800	345200	2	≤7	N		0	34	34	10YR4/3						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									NON - Non-calcar			41	6	2	WC I	1	Droughtiness			2
								34	85	51	10YR7/2	CD - C	10YR5/6			Yes	LFS - Loa	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Good	NON - Non-ca		No									
								85	120	35	2.5Y5/3	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - Non-ca		No									
22	TF 21000 45200	521000	345200	2	≤7	N		0	35	35	10YR4/3						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									NON - Non-calcar			26	6	2	WC II	2	Wetness			2
								35	45	10	10YR7/2	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Good	NON - Non-ca		No									
								45	120	75	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - Non-ca		Yes									
23	TF 21200 45200	521200	345200	3	≤7	N		0	38	38	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									NON - Non-calcar			10	-10	2	WC III	3b	Wetness			3b
								38	120	82	10YR5/2	CP - C	7.5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	Yes	Yes									
	END																																								

APPENDIX KCC5

Area E: Soil Profile Logs

Project Number	Project Name	Parcel
800E	Site E Heckington Fen	Area E

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	RDM	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Falt Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Heckington Fen Revision 2 Revision Date 27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 19000 45600	519000	345600	3	≤7	N		0	30	30	10YR3/3					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	18	0	2	WC II	3a	Wetness			3a
								30	55	25	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								55	80	25	7.5YR4/1	CD - C	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
								80	120	40							ZC - Silty clay												Poor			Yes								
2	TF 19200 45600	519200	345600	3	≤7	N		0	30	30	10YR3/3					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	70	13	1	WC I	2	Wetness			2
								30	55	25	10YR3/4					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								55	80	25	7.5YR3/3					No	FSZL - Fir	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								80	120	40							FSZL - Fine sandy silt loam												Moderate			No								
3	TF 19000 45400	519000	345400	3	≤7	N		0	30	30	10YR3/3					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	17	-3	2	WC II	2	Wetness			2
								30	40	10	10YR3/1					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								40	58	18	7.5YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
								58	120	62							ZC - Silty clay												Poor			Yes								
4	TF 19200 45400	519200	345400	3	≤7	N		0	38	38	10YR4/4					No	MSZL - M	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	35	16	1	WC II	1	N/A			1
								38	58	20	10YR4/6					No	FSZL - Fir	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								58	90	32	10YR4/2	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
								90	120	30							ZC - Silty clay												Poor			Yes								
5	TF 19400 45400	519400	345400	2	≤7	N		0	30	30	10YR3/2					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	17	-8	2	WC II	3a	Wetness			3a
								30	43	13	10YR3/2	FF - Fe	10YR5/6			No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								43	50	7	10YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
								50	90	40	10YR4/2	MD - I	10YR5/6			Yes	SCL - San	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
								90	120	30							SCL - Sandy clay loam												Poor			Yes								
6	TF 19000 45200	519000	345200	3	≤7	N		0	30	30	10YR3/2					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	34	3	2	WC I	2	Droughtines	Wetness		2
								30	45	15	10YR3/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								45	50	5	7.5YR3/3					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								50	80	30	7.5YR4/4					No	FS - Fine	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	VC - Ve	No	No									
								80	120	40	7.5YR4/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor		No	No									
7	TF 19200 45200	519200	345200	1	≤7	N		0	35	35	10YR3/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	13	-7	2	WC II	3a	Wetness			3a
								35	40	5	7.5YR4/2					Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								40	50	10	7.5YR3/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								50	80	30	7.5YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	NON - I	No	Yes									
								80	120	40							ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor		No	Yes									
8	TF 19400 45200	519400	345200	2	≤7	N		0	30	30	10YR3/2					No	FSZL - Fir	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	NON - I	No	No	65	33	1	WC I	1	N/A			1
								30	45	15	10YR3/3					No	FSZL - Fir	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								45	60	15	10YR4/4					No	FSZL - Fir	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								60	90	30	10YR4/4	CD - C	10YR5/6			No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								90	120	30							MZCL - Silty clay loam (medium)												Moderate			No								
9	TF 18800 45000	518800	345000	3	≤7	N		0	30	30	10YR3/3					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	SC - Slig	No	No	56	4	2	WC I	1	Droughtiness			2
								30	45	15	7.5YR3/2					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	SC - Slig	No	No									
								45	100	55	10YR4/4					No	FS - Fine	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	SC - Slig	No	No									
								100	120	20							FS - Fine Sand												Moderate			No								
10	TF 19000 45000	519000	345000	3	≤7	N		0	30	30	10YR3/2					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Not Appli	SC - Slig	No	No	29	4	2	WC II	2	Droughtines	Wetness		2
								30	48	18	10YR3/3					No	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	SC - Slig	No	No									
								48	65	17	7.5YR4/4					No	FS - Fine	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	VC - Ve	No	No									
								65	80	15	7.5YR4/1	MD - I	10YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Poor	SC - Slig	No	Yes									
								80	120	40							ZC - Silty clay												Poor			Yes								

11	TF 19200 45000	519200	345000	2	≤7	N		0	20	20	10YR3/3				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	SC - Slig	No	No	52	21	1	WC I	1	N/A			1
								20	49	29	10YR4/4				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	SC - Slig	No	No									
								49	80	31	10YR5/6	CF - C	10YR5/6		No	FS - Fine	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	VC - Ve	No	No									
								80	120	40						ZC - Silty clay							Poor			Yes									
12	TF 19400 45000	519400	345000	2	≤7	N		0	30	30	10YR3/4				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	12	-6	2	WC II	3a	Wetness			3a
								30	55	25	10YR3/3				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON - I	No	No									
								55	60	5	10YR4/4	CD - C	10YR5/6		No	HZCL - Si	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	SC - Slig	No	No									
								60	80	20	7.5YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor		No	Yes									
								80	120	40						ZC - Silty clay							Poor			Yes									
13	TF 18800 44800	518800	344800	3	≤7	N		0	35	35	10YR3/3				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	MC - M	No	No	55	19	1	WC I	1	N/A			1
								35	43	8	7.5YR3/4				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	MC - M	No	No									
								43	90	47	10YR5/8	CD - C	10YR5/6		No	FS - Fine	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	VC - Ve	No	No									
								90	120	30						ZC - Silty clay							Poor			Yes									
14	TF 19000 44800	519000	344800	3	≤7	N		0	28	28	10YR3/2				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	7	-13	3a	WC III	3b	Wetness			3b
								28	35	7	7.5YR4/2	CD - C	10YR5/6		Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON - I	No	No									
								35	80	45	7.5YR4/2	MD - I	10YR5/6		Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON - I	No	Yes									
								80	120	40						ZC - Silty clay							Poor			Yes									
15	TF 19200 44800	519200	344800	3	≤7	N		0	40	40	10YR4/4				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	12	-8	2	WC II	3a	Wetness			3a
								40	45	5	10YR4/3				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON - I	No	No									
								45	53	8	10YR4/4	CD - C	10YR5/6		No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON - I	No	No									
								53	120	67	10YR4/1	MD - I	10YR5/6		Yes	ZC - Silty clay							Poor	NON -	Non-ca	Yes									
16	TF 19400 44800	519400	344800	1	≤7	N		0	30	30	10YR4/2				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	24	-9	2	WC II	3a	Wetness			3a
								30	40	10	10YR4/3				No	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON - I	No	No									
								40	60	20	10YR4/1	MD - I	10YR5/6		Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Poor	NON - I	No	Yes									
								60	90	30	10YR5/6				No	FS - Fine Sand							Moderate	SC - Slightly c		No									
								90	120	30						ZC - Silty clay							Poor												
17	TF 18800 44600	518800	344600	3	≤7	N		0	35	35	10YR3/3				No	MSZL - M	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	SC - Slig	No	No	33	11	1	WC I	1	N/A			1
								35	48	13	10YR3/4				No	MSZL - M	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	SC - Slig	No	No									
								48	60	12	10YR3/3				No	MSZL - M	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	VC - Ve	No	No									
								60	90	30						MSZL - Medium sandy silt loam							Poor			No									
								90	120	30						ZC - Silty clay							Poor			Yes									
18	TF 19200 44600	519200	344600	3	≤7	N		0	35	35	10YR3/3				No	MZCL - S	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	-6	-27	3a	WC I	1	N/A			1
								35	65	30	10YR5/6	FD - F	10YR5/6		No	MS - Me	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	VC - Ve	No	No									
								65	90	25						MS - Medium Sand							Moderate			No									
								90	120	30						ZC - Silty clay							Poor			Yes									
19	TF 19200 44400	519200	344400	4	≤7	N		0	30	30	10YR3/3				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	51	15	1	WC I	1	N/A			1
								30	39	9	10YR3/2				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON - I	No	No									
								39	90	51	7.5YR5/4				No	FS - Fine	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate		No	No									
								90	120	30						ZC - Silty clay							Poor			Yes									
20	TF 19500 44500	519500	344500	2	≤7	N		0	30	30	10YR2/2				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Not Appli	NON - I	No	No	54	18	1	WC I	1	N/A			1
								30	43	13	10YR3/2				No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate	NON - I	No	No									
								43	90	47	10YR5/8	CD - C	10YR5/6		No	FS - Fine	0	HR - All hard rocks or stones (i.e. those which cannot be scratche						Moderate		No	No									
								90	120	30						ZC - Silty clay							Poor			Yes									
	END																																		

APPENDIX KCC6

Area F: Soil Profile Logs

Project Number	Project Name	Parcel
800F	KCC3076 Heckington Fen	Area F

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	AR	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Falt Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 19600 45400	519600	345400	2	≤7	N		0	34	34	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								34	120	86	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
2	TF 19600 45200	519600	345200	4	≤7	N		0	44	44	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		13	-7	2	WC II	3a	Wetness			3a
								44	120	76	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
3	TF 19800 45200	519800	345200	2	≤7	N		0	36	36	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		9	-11	3a	WC III	3b	Wetness			3b
								36	50	14	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
								50	120	70	10YR5/2	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
4	TF 20000 45200	520000	345200	2	≤7	N		0	30	30	10YR4/2						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		20	0	2	WC II	3a	Wetness			3a
								30	45	15	10YR4/4					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
								45	120	75	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
5	TF 20200 45200	520200	345200	2	≤7	N		0	35	35	10YR4/3						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								35	120	85	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
6	TF 19650 45000	519650	345000	2	≤7	N		0	30	30	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		18	2	2	WC II	3a	Wetness			3a
								30	50	20	10YR4/3					No	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
								50	70	20	10YR7/2	CD - C	10YR5/8			Yes	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
								70	120	50	10YR5/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
7	TF 19800 45000	519800	345000	3	≤7	N		0	37	37	10YR4/2						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		24	4	2	WC II	2	Droughtines	Wetness		2
								37	52	15	10YR6/2	MP - M	7.5YR4/6			Yes	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
								52	120	68	10YR5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
8	TF 20000 45000	520000	345000	3	≤7	N		0	30	30	10YR4/3						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		86	28	1	WC I	1	N/A			1
								30	120	90	10YR6/2	CP - C	7.5YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
9	TF 20200 45000	520200	345000	2	≤7	N		0	38	38	10YR4/3						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		10	-10	2	WC III	3b	Wetness			3b
								38	120	82	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										
10	TF 19650 44800	519650	344800	3	≤7	N		0	30	30	10YR4/2						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		24	4	2	WC II	3a	Wetness			3a
								30	45	15	10YR4/3					No	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
								45	55	10	10YR6/2	CD - C	10YR4/6			Yes	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Moderate			NON -	No	No										
								55	120	65	10YR5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche				Poor			NON -	No	Yes										

11	TF 19800	44800	519800	344800	3	≤7	N		0	30	30	10YR4/2						HZCL - Si	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	20	0	2	WC II	3a	Wetness				3a
									30	45	15	10YR4/3					No	HZCL - Si	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									45	120	75	2.5Y5/2	CP - C	5YR4/6			Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes									
12	TF 20000	44800	520000	344800	3	≤7	N		0	30	30	10YR4/2						ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	9	-11	3a	WC III	3b	Wetness				3b
									30	40	10	10YR4/3					No	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									40	120	80	2.5Y4/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes									
13	TF 20200	44800	520200	344800	2	≤7	N		0	35	35	10YR4/2						ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	8	-12	3a	WC III	3b	Wetness				3b
									35	120	85	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes									
14	TF 19800	44600	519800	344600	2	≤7	N		0	28	28	10YR4/2						ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	53	-6	2	WC III	3b	Wetness				3b
									28	60	32	7.5YR5/2	CP - C	5YR4/6			Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes									
									60	120	60	10YR6/2	CP - C	7.5YR4/6			Yes	FSZL - Fi	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
15	TF 20000	44600	520000	344600	3	≤7	N		0	28	28	10YR4/2						HZCL - Si	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	66	16	1	WC I	1	N/A				1
									28	80	52	10YR6/2	CD - C	10YR5/6			Yes	FSL - Fin	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									80	120	40	10YR7/1	FD - F	10YR5/6			Yes	FSL - Fin	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
16	TF 20200	44600	520200	344600	2	≤7	N		0	38	38	10YR4/3						ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	10	-10	2	WC III	3b	Wetness				3b
									38	120	82	2.5Y5/2	CP - C	7.5YR4/6	CD - C	2.5Y6/1	Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes									
17	TF 19800	44400	519800	344400	2	≤7	N		0	28	28	10YR4/2						FSZL - Fi	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		SC -	Slightly calcar	74	24	1	WC I	1	N/A				1
									28	50	22	10YR5/2	CD - C	10YR5/6			Yes	FSL - Fin	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									50	120	70	10YR6/2	CD - C	10YR5/6			Yes	FSL - Fin	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
18	TF 20000	44400	520000	344400	3	≤7	N		0	45	45	10YR4/2						MZCL - S	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	42	10	1	WC I	1	N/A				1
									45	55	10	7.5YR6/2	CD - C	7.5YR5/6	CD - C	2.5Y6/1	Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	No									
									55	120	65	10YR7/2	CP - C	7.5YR5/6			Yes	MZCL - S	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
19	TF 20200	44400	520200	344400	2	≤7	N		0	35	35	10YR4/3						MZCL - S	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON -	Non-calcar	36	19	1	WC II	2	Wetness				2
									35	45	10	10YR4/4					No	MZCL - S	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									45	60	15	7.5YR5/2	CD - C	7.5YR5/6			Yes	FSZL - Fi	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									60	70	10	2.5Y5/2	CP - C	7.5YR5/6			Yes	HZCL - Si	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									70	120	50	2.5Y5/2	CP - C	7.5YR5/6			Yes	ZC - Silty	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes									
20	TF 19800	44200	519800	344200	4	≤7	N		0	35	35	10YR4/2						FSZL - Fi	0					HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		SC -	Slightly calcar	78	22	1	WC I	1	N/A				1
									35	45	10	10YR4/3					No	FSZL - Fi	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									
									45	120	75	10YR7/2	CD - C	10YR5/6			Yes	LFS - Loa	0					HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No									

21	TF 20000 44200	520000	344200	3	≤7	N		0	35	35	10YR4/2						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									SC - Slightly calcar			73	21	1	WC I	1	N/A			1
								35	60	25	10YR7/2	CD - C	10YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								60	120	60	7.5YR5/2	CD - C	10YR5/6			Yes	LFS - Loa	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
22	TF 20200 44200	520200	344200	4	≤7	N		0	34	34	10YR4/3						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi									NON - Non-calcar			44	13	1	WC II	2	Wetness			2
								34	60	26	10YR5/3	CD - C	10YR5/6			Yes	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
								60	120	60	10YR5/2	CD - C	10YR5/6			Yes	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche								Moderate	NON - I	No	No									
	END																																								

APPENDIX KCC7

Area G: Soil Profile Logs

Project Number	Project Name	Parcel
800G	KCC3076 Heckington Fen	Area G

Date of Survey	Survey Type	Surveyor(s)	Company
23/09/2021	ALC	AR	Askew Land and Soil

Weather	Relief	Land use and vegetation
Dry, Sunny	Level	

Grid Reference	Postcode	Altitude	Area
TF199454	PE20	3	590

MAFF prov	MAFF detailed	Flooding
Grade 1/2	None	Flood Zone 3

AAR	AT0	MDw	MDp	FCD	Climate grade
577	1433	118	113	107	1

Bedrock	Superficial deposits
Ampthill Clay/West Walton	Tidal Falt Deposits

Soil association(s) 1:250,000	Detailed soil information
Wallasea 2	None

Revision Number	Date Revised
2	27/10/2021

Point	Grid ref.			Alt (m)	Slope °	Aspect	Land use	Depth (cm)			Matrix	Ochreous Mottles		Grey Mottles		Gley	Texture	Stones - type 1				Stones - type 2				Ped			SUBS STR	CaCO3	Mn C	SPL	Drought			Wet		Final ALC			
	NGR	X	Y					Top	Bttm	Thick	Munsell colour	Form	Munsell colour	Form	Munsell colour			%	> 2cm	> 6cm	Type	%	> 2cm	> 6cm	Type	Strength	Size	Shape					MBw	MBp	Gd	WC	Gw	Limitation 1	Limitation 2	Limitation 3	Grade
1	TF 20400 45200	520400	345200	3	≤7	N		0	35	35	10YR4/2						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		16	-4	2	WC III	3b	Wetness			3b
								35	120	85	10YR5/2	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	No	Yes									
2	TF 20400 45000	520400	345000	3	≤7	N		0	28	28	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		5	-15	3a	WC III	3b	Wetness			3b
								28	120	92	10YR5/1	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	No	Yes									
3	TF 20600 45000	520600	345000	3	≤7	N		0	38	38	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		85	22	1	WC I	3a	Wetness			3a
								38	120	82	10YR6/2	CP - C	7.5YR5/6			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Good	NON -	No	No									
4	TF 20800 45000	520800	345000	2	≤7	N		0	30	30	10YR4/3						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		56	24	1	WC I	2	Wetness			2
								30	55	25	10YR7/3	CD - C	10YR5/8			Yes	FSZL - Fi	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Good	NON -	No	No									
								55	120	65	7.5YR5/2	CD - C	7.5YR4/6			Yes	MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON -	No	No									
5	TF 21000 45000	521000	345000	2	≤7	N		0	35	35	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		8	-12	3a	WC III	3b	Wetness			3b
								35	120	85	10YR6/2	MP - M	7.5YR5/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	Yes	Yes									
6	TF 20400 44800	520400	344800	2	≤7	N		0	38	38	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		30	-2	2	WC III	3b	Wetness			3b
								38	55	17	10YR5/2	CP - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	No	Yes									
								55	120	65	10YR6/2	CP - C	7.5YR5/6	CD - C	10YR7/1	Yes	HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Moderate	NON -	No	No									
7	TF 20600 44800	520600	344800	2	≤7	N		0	37	37	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		10	-10	3a	WC III	3b	Wetness			3b
								37	120	83	10YR5/2	CD - C	7.5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	No	Yes									
8	TF 20800 44800	520800	344800	4	≤7	N		0	28	28	10YR4/3						HZCL - Si	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		11	-9	2	WC III	3b	Wetness			3b
								28	120	92	2.5Y5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	No	Yes									
9	TF 21000 44800	521000	344800	3	≤7	N		0	30	30	10YR4/3						MZCL - S	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		60	4	2	WC I	1	Droughtiness			2
								30	120	90	10YR7/2	CD - C	10YR5/6			Yes	LFS - Loa	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Good	NON -	No	No									
10	TF 20400 44600	520400	344600	3	≤7	N		0	45	45	10YR4/2						ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi								NON -	Non-calcar		14	-6	2	WC II	3a	Wetness			3a
								45	120	75	10YR5/1	CP - C	5YR4/6			Yes	ZC - Silty	0			HR - All hard rocks or stones (i.e. those which cannot be scratche							Poor	NON -	No	Yes									

11	TF 20600 44600	520600	344600	1	≤7	N	0	27	27	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			4	-16	3a	WC III	3b	Wetness	3b
							27	120	93	10YR5/2	CP - C	7.5YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes							
12	TF 20800 44600	520800	344600	3	≤7	N	0	30	30	10YR4/3				FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			104	41	1	WC I	1	N/A	1
							30	120	90	10YR7/3	CD - C	10YR5/6	Yes	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Good	NON -	No	No							
13	TF 21000 44600	521000	344600	3	≤7	N	0	25	25	10YR4/2				MZCL - S	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			62	8	2	WC I	1	N/A	1
							25	55	30	10YR4/3			No	MZCL - S	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No							
							55	120	65	10YR7/2	CD - C	10YR5/6	Yes	LFS - Loa	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Good	NON -	No	No							
14	TF 20400 44400	520400	344400	3	≤7	N	0	30	30	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			6	-14	3a	WC III	3b	Wetness	3b
							30	45	15	10YR5/2	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	Yes	Yes							
							45	120	75	2.5Y5/1	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes							
15	TF 20600 44400	520600	344400	1	≤7	N	0	36	36	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			9	-11	3a	WC III	3b	Wetness	3b
							36	120	84	10YR5/1	CP - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes							
16	TF 20400 44200	520400	344200	2	≤7	N	0	32	32	10YR4/3				MZCL - S	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			72	31	1	WC I	1	N/A	1
							32	55	23	10YR7/2	CD - C	10YR5/6	Yes	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Good	NON -	No	No							
							55	95	40	10YR7/2			No	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Good	NON -	No	No							
							95	120	25	10YR5/1	CP - C	7.5YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	No							
17	TF 20600 44200	520600	344200	2	≤7	N	0	38	38	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			10	-10	2	WC III	3b	Wetness	3b
							38	120	82	10YR5/2	CD - C	7.5YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	No	Yes							
18	TF 20800 44200	520800	344200	4	≤7	N	0	38	38	10YR4/2				HZCL - Si	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			24	4	2	WC II	3a	Wetness	3a
							38	45	7	10YR6/2	CD - C	10YR5/6	Yes	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Moderate	NON -	No	No							
							45	120	75	10YR6/2	CP - C	7.5YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	Yes	Yes							
19	TF 20600 44000	520600	344000	3	≤7	N	0	35	35	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			22	-7	2	WC III	3b	Wetness	3b
							35	55	20	10YR5/2	CD - C	10YR5/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	Yes	Yes							
							55	120	65	10YR6/2	CD - C	10YR5/6	Yes	FSZL - Fi	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	Yes	Yes							
20	TF 20800 44000	520800	344000	3	≤7	N	0	35	35	10YR4/2				ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratched with a fi		NON - Non-calcar			8	-12	3a	WC III	3b	Wetness	3b
							35	120	85	10YR5/2	CD - C	7.5YR4/6	Yes	ZC - Silty	0	HR - All hard rocks or stones (i.e. those which cannot be scratche	Poor	NON -	Yes	Yes							
	END																										

APPENDIX KCC8

Soil Profile Logs Key

Mottle form

FF - Few Faint
FD - Few Distinct
FP - Few Prominent
CF - Common Faint
CD - Common Distinct
CP - Common Prominent
MF - Many Faint
MD - Many Distinct
MP - Many Prominent
VF - Very many Faint
VD - Very many Distinct
VP - Very many Prominent

Texture

C - Clay
CHK - Chalk
CS - Coarse Sand
CSL - Coarse sandy loam
CSZL - Coarse sandy silt loam
FP - Fibrous and semifibrous peats
FS - Fine Sand
FSL - Fine sandy loam
FSZL - Fine sandy silt loam
HCL - Clay loam (heavy)
HP - Humified peats
HZCL - Silty clay loam (heavy)
IMP - Impenetrable to roots
LCS - Loamy Coarse Sand
LFS - Loamy fine sand
LMS - Loamy medium sand
LP - Loamy peats
MCL - Clay loam (medium)
MS - Medium Sand
MSL - Medium sandy loam
MSZL - Medium sandy silt loam
MZ - Marine Light Silts
MZCL - Silty clay loam (medium)
OC - Organic clays
OL - Organic loams
OS - Organic sands
PL - Peaty loams
PS - Peaty sands
SC - Sandy clay
SCL - Sandy clay loam
SP - Sandy peats
ZC - Silty clay
ZL - Silt loam

Stone Type

CH - Chalk or chalk stones
FSST - Soft fine grained sandstones
GH - Gravel with non-porous (hard) stones
GS - Gravel with porous stones (mainly soft stone types listed above)
HR - All hard rocks or stones (i.e. those which cannot be scratched with a finger nail)
MSST - Soft, medium or coarse grained sandstones
SI - Soft 'weathered' igneous or metamorphic rocks or stones
SLST - Soft oolitic or dolomitic limestones
ZR - Soft, argillaceous or silty rocks or stones

Ped. Shape

SG - Single grain
GRA - Granular
SAB - Subangular Blocky
AB - Angular Blocky
PRIS - Prismatic
PLAT - Platy
MASS - Massive
NA - N/A

Subsoil Structure Condition

Not Applicable
Good
Moderate
Poor

Soil or Ped. Strength

Loose
Very friable
Friable
Firm
Very firm
Extremely firm
Extremely hard
N/A

Calcareousness

NON - Non-calcareous (<0.5% $CaCO_3$)
VSC - Very slightly calcareous (0.5 - 1% $CaCO_3$)
SC - Slightly calcareous (1 - 5% $CaCO_3$)
MC - Moderately calcareous (5 - 10% $CaCO_3$)
VC - Very calcareous (>10% $CaCO_3$)

Ped. Size

VF - Very Fine
F - Fine
M - Medium
C - Coarse
VC - Very Coarse
NA - N/A

Degree of Ped. Development

W - Weak
M - Moderate
S - Strong
NA - Not applicable

Wetness Class

WC I
WC II
WC III
WC IV
WC V
WC VI

ALC Grades

1
2
3a
3b
4
5
Non-Ag

Gley

None
Gley
N/A

Heckington Fen Revision 2 Revision Date 27/10/2021

APPENDIX KCC9

Soil Pit Descriptions

Project	Location	Date	Surveyor(s)	Company
C800, Site D	KCC3076 Heckington Fen	1st October 2021	AR	Askew Land and Soil

Pit	WC	Grade	Limitation(s)	Notes
At Site D, AB2	III	3b	Wetness and Workabilty	Good topsoil structure. Looks like minimum tillage is practiced.

Grid Ref.			Altitude	Nearest	Topography				Flora		Weather and conditions			
Square	East	North		point	Gradient	Aspect	Slope form	Surface	Culivation type	Vegetation types	Temp	Sky	Wind	Precipitation
TF	20602	46000	0m	AB2	Level	N/A	N/A	Flat	Uncultivated stubble	Wheat stubble	Mild	Cloudy	Slight	Dry

Horizon	Depth		Matrix			Gleying			Mottles			Stone content					Calc.	Mn C	Ped/soil structure				Horizon boundary		Biopores	SPL
	Top	Bttm	Texture	Colour	Munsell	Gley	Colour	Munsell	Form	Colour	Munsell	%	H	Type	S	Type			Dev.	Size	Structure	Strength	Distinct	Form	>0.5mm	
1	0	34	Silty Clay	Dark Greyish Brown	10YR4/2	No						0					Non	No	Mod	Medium	Subangular Blocky	Firm	Clear	Wavy	>0.5%	No
2	34	55	Silty Clay	Grey	2.5Y5/1	Yes	Grey	2.5Y5/1	CPOM	Yellowish Red	5YR4/6	0					Non	No	Poor	Coarse	Prismatic	Firm	N/A	N/A	<0.5%	Yes

Pit	WC	Grade	Limitation(s)	Notes
2	1	1	No limitations	

Grid Ref.			Altitude	Nearest	Topography				Flora		Weather and conditions			
Square	East	North		point	Gradient	Aspect	Slope form	Surface	Culivation type	Vegetation types	Temp	Sky	Wind	Precipitation
TF	208	452	2	AB21	Level	N/A	N/A	Flat	Uncultivated stubble	Wheat stubble	Mild	Cloudy	Slight	Dry

Horizon	Depth		Matrix			Gleying			Mottles			Stone content					Calc.	Mn C	Ped/soil structure				Horizon boundary		Biopores	SPL
	Top	Bttm	Texture	Colour	Munsell	Gley	Colour	Munsell	Form	Colour	Munsell	%	H	Type	S	Type			Dev.	Size	Structure	Strength	Distinct	Form	>0.5mm	
1	0	34	Medium Silty Clay Loam	Brown	10YR4/3	No						0					Non	No	Mod	Medium	Subangular Blocky	Firm	Clear	Wavy	>0.5%	No
2	34	85	Loamy Fine Sand	Light Grey	10YR7/2	Yes	Light Grey	10YR7/2	CDOM	Yellowish Brown	10YR5/6	0					Non	No	Good	Coarse	Prismatic	Firm	Clear	Wavy	>0.5%	No
3	85	120	Silty Clay	Light Olive Brown	2.5Y5/3	Yes	Light Olive Brown	2.5Y5/3	CDOM	Strong Brown	7.5YR4/6	0					Non	No	Poor	Coarse	Prismatic	Firm	Clear	Wavy	<0.5%	Yes

APPENDIX KCC10

Laboratory Analysis

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 20/10/2021

0998

Contract	**C800, Heckington Fen, Lincolnshire**
Serial No.	**39552_1**

Client:

Kernon Countryside Consultants Limited
Greenacres Barn,
Stoke Common Lane,
Purton Stoke,
Swindon
SN5 4LL

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Kernon Countryside Consultants Limited

Samples Labelled:

C800, Heckington Fen, Lincolnshire

Approved Signatories:

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

☐ **D. Sabnis**
Operations Manager

Date Received: 14/10/2021

Samples Tested Between: 14/10/2021 **and** 20/10/2021

Remarks:

For the attention of Sarah Kernon
Your Reference No: KCC3076

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 20/10/2021

0998

Contract	**C800, Heckington Fen, Lincolnshire**		
Serial No.	**39552_1**	**Target Date**	28/10/2021
Scheduled By	Kernon Countryside Consultants Limited		
Schedule Remarks			

Bore Hole No.	Type	Sample Ref.	Top Depth	Particle Size Distribution (BS1377)	Sample Remarks
Area C	-	AB1	0.00	1	
Area D	-	AB4	0.00	1	
Area F	-	AB21	0.00	1	
Totals				**3**	**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 20/10/2021

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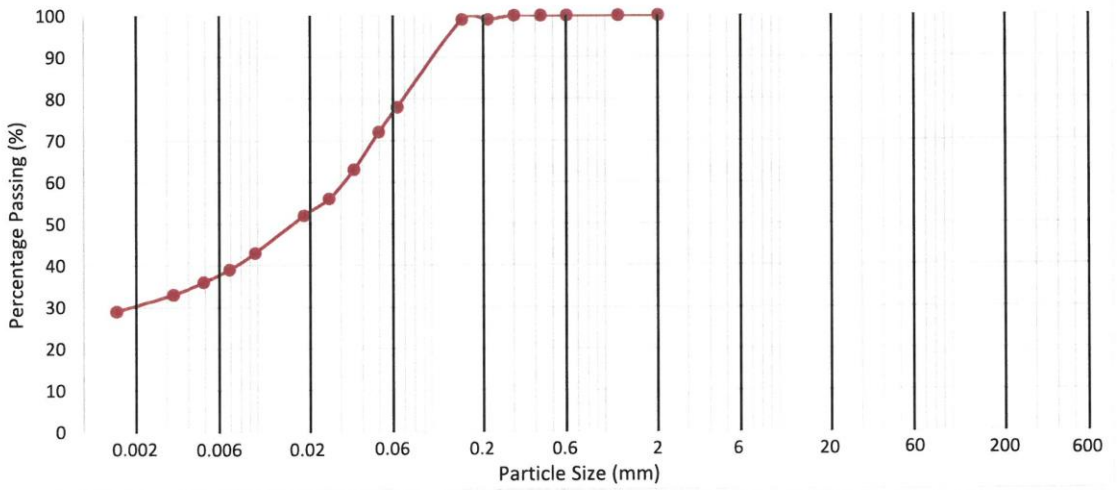
Contract	C800, Heckington Fen, Lincolnshire
Serial No.	39552_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
Area C	0.00 - 0.25	-	AB1	Dark greyish brown slightly sandy silty CLAY with occasional dark grey mottling	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.0493	72	48
	0.0355	63	
	0.0255	56	
	0.0183	52	Clay by Dry Mass (%)
	0.0096	43	
	0.0068	39	
	0.0049	36	30
	0.0032	33	
	0.0015	29	

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	22
1.18	100	
0.600	100	
0.425	100	
0.300	100	
0.212	99	
0.150	99	
0.063	78	

Fines By Dry Mass (%)	
<0.063mm	78

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part 2: 1990: 9.2,9.5

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

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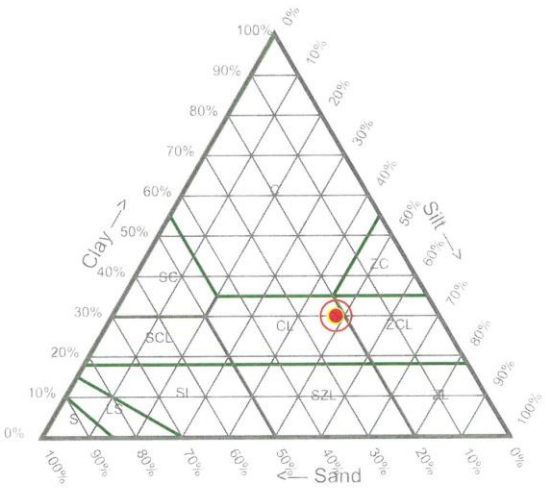
Particle size class estimator

Here is a tool that allows you to estimate the particle size class of a soil sample from the proportions of sand, silt and clay. The estimator is based on the texture class intervals of the Soil Survey of England and Wales - note that other international standards also exist, such as the USDA and FAO triangles.

Enter soil sample proportions:

Clay (%):	X 30	Sand (%):	X 22	Silt (%):	X 48	•Calculate Calculate •f



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Soil sample is a Clay Loam

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TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 20/10/2021

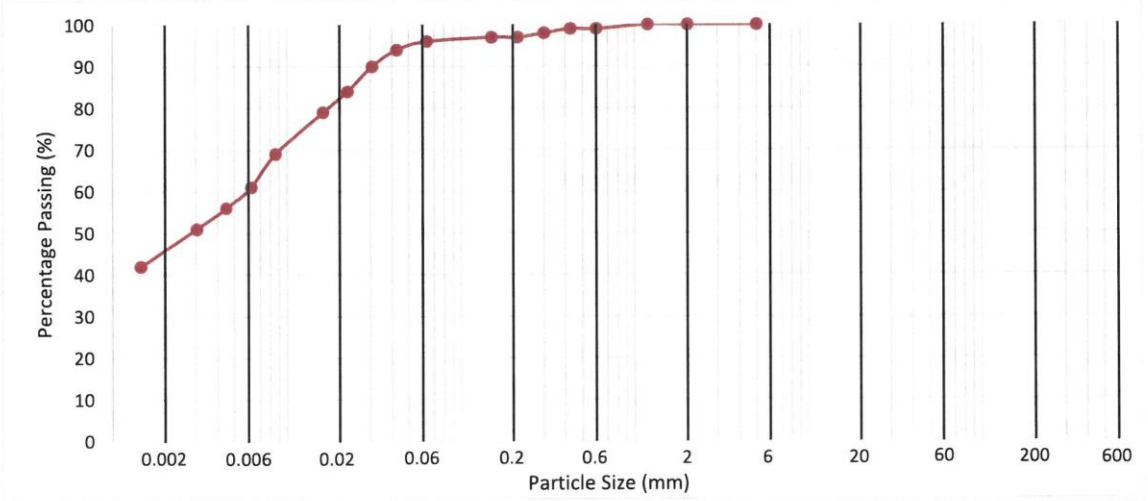
0998

Contract	C800, Heckington Fen, Lincolnshire
Serial No.	39552_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
Area D	0.00 - 0.25	-	AB4	Dark greyish brown slightly sandy silty CLAY with occasional dark grey mottling and rare decayed roots	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



Hydrometer

Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0423	94	51	
0.0306	90		
0.0221	84		
0.0160	79		
0.0085	69		
0.0062	61		
0.0045	56		45
0.0030	51		
0.0014	42		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	4
1.18	100	
0.600	99	
0.425	99	
0.300	98	
0.212	97	
0.150	97	
0.063	96	

Fines By Dry Mass (%)	
<0.063mm	96

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5	100	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5

Method of test: BS1377: Part 2: 1990: 9.2,9.5

Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter

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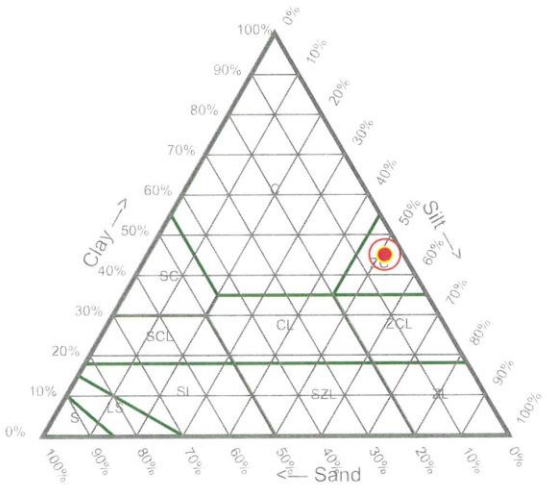
Enter soil sample proportions:

Clay (%):	X 45	Sand (%):	X 4	Silt (%):	X 51	•Calculate Calculate •F



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Soil sample is a Silty Clay

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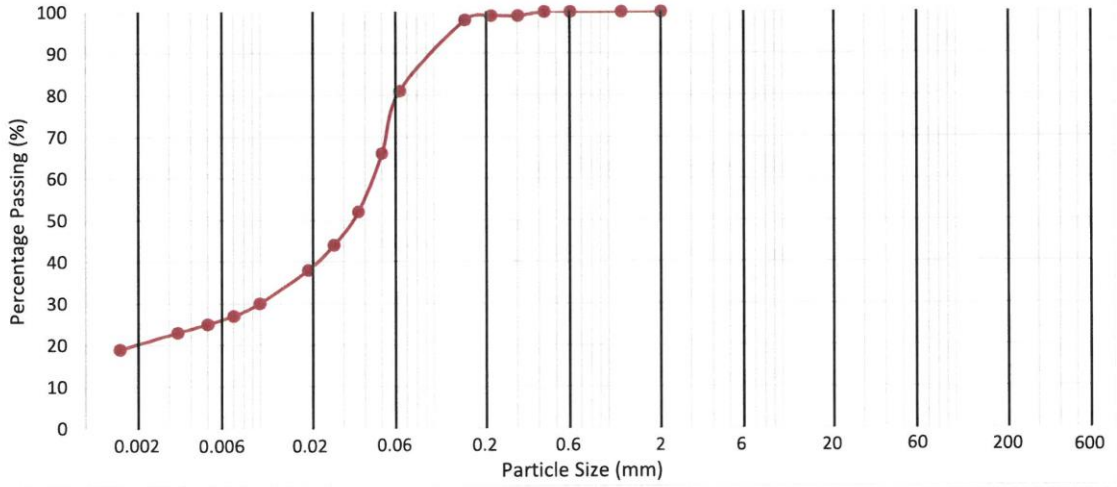
Contract	C800, Heckington Fen, Lincolnshire
Serial No.	39552_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
Area F	0.00 - 0.25	-	AB21	Dark greyish brown slightly sandy silty CLAY with occasional dark grey mottling	

Method of Test:	Hydrometer + Pre-sieve	Method of Pretreatment:	Not required



Hydrometer: Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)	Clay by Dry Mass (%)
0.0497	66	61	
0.0363	52		
0.0262	44		
0.0187	38		
0.0098	30		
0.0070	27		
0.0050	25		20
0.0033	23		
0.0016	19		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	100	19
1.18	100	
0.600	100	
0.425	100	
0.300	99	
0.212	99	
0.150	98	
0.063	81	

Fines By Dry Mass (%)	
<0.063mm	81

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		0
125		
90		
63		
50		
37.5		
28		
20		
14		
10		
6.3		
5		

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2,9.5
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
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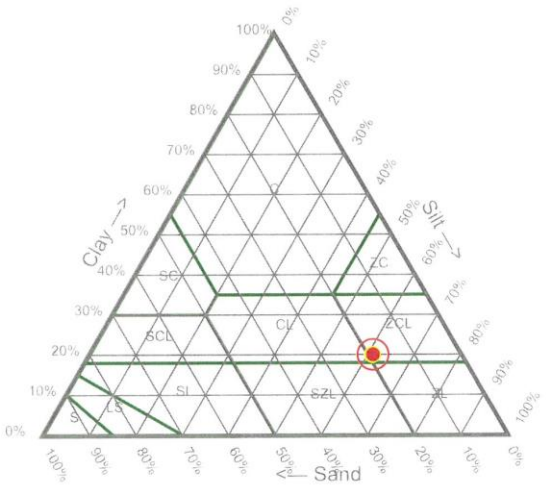
Enter soil sample proportions:

Clay (%):	X	Sand (%):	X	Silt (%):	X	•Calculate	Calculate	•F
	20		19		61			



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Soil sample is a Silty Clay Loam

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Plan KCC3076/01

Semi-Detailed Auger Points Plan

KEY

- Auger sample location
- Topsoil texture sample
- Soil Pit

PLAN	**KCC3076/01**		
TITLE	**Semi-Detailed Auger Points Plan**		
SITE	Heckington Fen		
CLIENT	Ecotricity Group Ltd		
NUMBER	**KCC3076/01 10/21hr**		
DATE	May 2022	**SCALE**	NTS

KERNON COUNTRYSIDE CONSULTANTS LTD
GREENACRES BARN, PURTON STOKE, SWINDON,
WILTSHIRE SN5 4LL
Tel 01793 771 333 Email: info@kernon.co.uk

Plan KCC3076/02

Semi-Detailed Agricultural Land Classification Plan

KEY		Ha	%	PLAN	KCC3076/02		
	Grade 1	66	11	TITLE	Semi-Detailed Agricultural Land Classification Plan		
	Grade 2	77	13	SITE	Heckington Fen		
	Grade 3a	175	30	CLIENT	Ecotricity Group Ltd		
	Grade 3b	263	45	NUMBER	KCC3076/02 11/21tk		
	Grade 4			DATE	May 2022	SCALE	NTS
	Grade 5						
	Non-agricultural	8	1				
	Urban						
	Not surveyed						

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Greenacres Barn, Stoke Common Lane, Purton Stoke, Swindon, Wiltshire SN5 4LL
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Development Consent Order Application for Ground Mounted Solar Panels, Energy Storage Facility, Below Ground Grid Connection to Bicker Fen Substation and All Associated Infrastructure Works.

Preliminary Environmental Information Report

Appendix 16.3- Methodology of Practical Farming vs ALC Report (Savills)

June 2022

https://www.ecotricity.co.uk/our-green-energy/heckington-fen-solar-park

Scope of the Report	Ecotricity (Heck Fen Solar) Limited -Practical farming and ALC. - report for the planning inspectorate

The proposed main sections and outline of the details for the above report are as follows (the sections will be backed up with appendices containing supporting data):

1. **Review the latest ALC assessment with reference to the Defra guidance on this, and put it into the context of practical farming decisions**

- Detail the number of fields that have predominately grade 1 , 2 or 3 classifications, as opposed to the percentage of the overall site.

- Understand how the land is farmed, for example by blocks of fields, and how the field access works. Explain the current cropping in place and how the current arable rotation is planned.

2. **Confirm after reviewing the land what issues other than the ALC grade are determining the cropping at the site:**

- Including machinery and labour efficiency in relation to the fields, particularly given significant inflation in both of these costs.

- Understand how drainage is affecting cropping choices. Detail when the land was drained, how it was drained and the effectiveness of those drains currently.

- Weed burdens, particularly the presence of any weeds that are difficult to control with normal chemical and cultivation techniques, so have a significant effect on cropping choices such as blackgrass and brome.

- What buildings are available at the site for crop management and crop storage, and how this affects cropping decisions.

- Other practical factors that are affecting cropping, such as if an irrigation licence is present.

3. **As well as physical constraints, wider factors also determine cropping choice in agricultural as a whole at a local and regional level:**

- The amount of grade 1, 2 and 3 land in the region.

- Trends in UK cropped areas, for the main crops that are typically grown on grade 1, 2 and 3 land. The availability of contracts for specific crops and trends in demand from end users.

- The risk compared to the reward of growing the main crops found on grade 1, 2 and 3 land and the working capital required per hectare (which is of increasing importance in cropping decisions due to the recent input cost inflation and interest rate rises).

- The labour requirement of different crops, and the availability of suitable labour in the region.

4. **Look at options for farming the land once the solar panels are in place, and how land use could change in the long term**

- Are there farming enterprises that would fit with the solar panels, such as livestock grazing.

- What was the historical land use on the site, how sustainable is cropping of land in the long term. Was the farming historically more mixed or livestock focused, and would there be advantages or returning to a more traditional farming system.

- How could the land be returned to other farming uses when the solar panels are removed.

5. **What are the environmental implications of a change in land use**

- Detail the chemical inputs of the current farming system, and how these would change with a move to a solar use.

- Confirm what the carbon output is from the current farming system and what this would be with any farming system that is done as part of the move to a solar site (calculated via industry standards such as the Farm Carbon Toolkit).

- Are there other bio-diversity implications of moving the land from the current combinable cropping system to a solar site land use.

- Set out how the change off land use sits within the government's agricultural and food policies.

Office Location
Querns Business Centre,
Whitworth Road,
Cirencester
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cirencester@pegasusgroup.co.uk

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