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CIVIL ENGINEERING REPORT INCORPORATING WATER CYCLE MANAGEMENT STRATEGY

DEVELOPMENT SITE

SSD-36138263: AUGUSTA STREET WAREHOUSE & DISTRIBUTION CENTRE

AUGUSTA STREET, BLACKTOWN, NSW

Prepared for:

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DOCUMENT VERIFICATION

Project Title	SSD-36138263 - Augusta Street Warehouse and Distribution Centre
Document Title	Civil Engineering Report Incorporating Water Cycle Management Strategy
Project No.	Co13904.03
Description	SSD Report for proposed industrial development
Client Contact	The Trustee for Huntingwood Property Trust (TfHPT) – Mr Louis Towning

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File Name	13904.03-03f.rpt	

Document History

Date	**Revision**	**Issued to**	**No. Copies**
28 April 2023	DRAFT A	TfHPT – Mr Louis Towning	PDF
16 June 2023	DRAFT B	TfHPT – Mr Louis Towning	PDF
19 June 2023	FINAL DRAFT	TfHPT – Mr Louis Towning	PDF
10 July 2023	D	TfHPT – Mr Louis Towning	PDF
14 July 2023	E	TfHPT – Mr Louis Towning	PDF
11 September 2023	F	TfHPT – Mr Louis Towning	PDF

EXECUTIVE SUMMARY

The Trustee for Huntingwood Property Trust (TfHPT - the Applicant) are seeking to construct an industrial development located at Augusta Street, Blacktown (within the Huntingwood Precinct).

The Proposal is considered State Significant Development (SSD) and accordingly, an Environmental Impact Statement (EIS) has been prepared to support the SSD Application for the Proposal. This Water and Hydrology Assessment has been prepared by Costin Roe Consulting to support the preparation of the EIS and assess the Proposal's impact on the surrounding environment in relation to soils and water including stormwater and stormwater management for both construction and operational phases of the development.

Proposal overview

The proposed SSDA seeks approval to redevelop the site to accommodate a warehouse and distribution centre use inclusive of the following:

- Site establishment works, including tree removal, minor excavation / bulk earthworks.
- Construction and operation of four (4) new warehouse buildings comprising a multi-level warehouse building on the eastern portion of the site and three single storey warehouse buildings on the western portion of the site.
- Other associated works including landscaping, at-grade car parking and general site improvements.
- Vehicle access provided via Augusta Street and a new proposed access from the Great Western Highway.
- Lot consolidation of properties.

Access to the eastern portion of the development will be enabled by a new intersection coordinated by TfNSW to allow access to and from the site via the Great Western Highway. Access to the western portion of the site will be made via Flushcombe Road and Augusta Street.

Purpose of this assessment

This Water and Hydrology Impact Assessment has been prepared to address the following Secretary's Environmental Assessment Requirements (SEARs):

- Item Number 12: Ground and Water Conditions
- Item Number 13: Stormwater and Wastewater
- Item Number 14: Flooding Risk

Construction impacts

During the construction phase, a Sediment and Erosion Control Plan will be in place to ensure the downstream drainage system and receiving waters are protected from sediment laden runoff.

Operational impacts

During the operational phase of the development, we propose a stormwater quality treatment system incorporating the use of a treatment train approach with the primary treatment being via either pit litter baskets and/or gross pollutant traps (GPT's). Tertiary

treatment will be facilitated via either bio-retention systems (combined with an On-Site detention (OSD) basins), or proprietary filtration within underground on-site detention tanks.

Best management practices have been applied to the development to ensure that the quality of stormwater runoff is not detrimental to the receiving environment. Further to the above, the proposed stormwater quality system meets the requirements of *Huntingwood Precinct Development Control Plan 2011*, Blacktown City Council Water Sensitive Urban Design (WSUD) 2020 document and objectives stated in Clause 2.44 of the Industrial and Employment SEPP.

Stormwater quantity management proposes detention of stormwater discharge which limits post-development flows to pre-development flows, based on the Blacktown City Council requirements and those included in the Huntingwood Precinct Development Control Plan 2011 ("*on-site detention requirements established in the "On-Site Stormwater Detention Handbook" prepared by the Upper Parramatta River Catchment Trust Fourth Edition dated December 2005 (UPRCT)"*) and councils deemed to comply on-site detention tool. On-site detention has been proposed as either open basins or underground detention tanks.

Further it has been confirmed that the development considers flood and overland flow planning requirements in relation to Blacktown Creek and unnamed tributary of Blacktown Creek. The development confirms acceptable impact criteria, and design which is consistent with the requirements of Huntingwood Precinct Development Control Plan 2011.

The development does not increase runoff from existing conditions and, as such, the site discharge will not adversely affect any land drainage system or watercourse as a result of the development.

Conclusion

The hydrological assessment of the local site drainage confirms that recommended water quality and quantity measures will ensure that no adverse impacts result on receiving waterways as a result of the development.

The detail contained in this report provides sufficient information to show the consent authority that legal points of discharge and a suitable stormwater management strategy is available for the development and the requirements associated with the strategy. It is recommended the management strategies in this report be approved and incorporated into the future detailed design.

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1 INTRODUCTION & SCOPE

1.1 Introduction

Costin Roe Consulting Pty Ltd (CRC) has been commissioned by The Trustee for Huntingwood Property Trust to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the State Significant Development Application (SSD- 36138263) for the proposed Augusta Street warehouse and distribution centre at Augusta Street, Blacktown.

This report presents a civil engineering assessment the properties at Augusta Street, Blacktown, which is located within the Huntingwood Precinct. This report provides an assessment of the civil engineering characteristics of the development site and technical considerations of the following aspects:

- Earthworks & geotechnical paramaters;
- Water Cycle Management Strategy (WCMS).

The WCMS comprises several key areas of stormwater and water management which are provided below. These key areas have been established with the aim to reduce impacts from the development on the surrounding environment and neighbouring properties. The water cycle management strategy identifies the management measures required to meet the targets set. The key water cycle management areas assessed in this report are:

- Storm Water Quantity;
- Storm Water Quality;
- Water Supply and Reuse;
- Flooding; and
- Erosion and Sediment Control

A request for Planning Secretary's Environmental Assessment Requirements (SEAR's) to the DPIE has been made by the applicant. **Section 1.3** of this report for specific responses to civil engineering and water management related items included in the SEAR's. Reference to **Appendix E** should be made for SSD-36138263 SEAR's dated 2 August 2022.

1.2 Consultation

Consideration to the various stakeholders has been made in relation to the development, including Council has been made during the assessment period.

Stakeholder	Consultation Method and Date	Issues Discussed	Project Response
Blacktown City Council - Mr Christophe Ferguson	E-mail - 25 March 2022	Confirming that their Overland Flow Study flood extents and XP-RAFTS catchments do not cover the site under application and requests that a	See Appendix G

		hydrologic and hydraulic assessment be completed for this application.	
Blacktown City Council Flood Advice	E-mail - 9 May 2022	Confirming that the Stormwater and Flooding reports referenced in the Huntingwood Precinct DCP documents needs to be obtained from DBL Property (Pty) Ltd.	See Appendix H
Blacktown City Council – Mr Laith Almoil	E-mail - 20 June 2022	Confirming that the OSD Deemed to Comply excel spreadsheet version 1.9 is the applicable version and should be used to calculate the OSD parameters.	See Appendix I

1.3 SEAR's Responses

This report supports an EIS for the proposal, and to address the NSW Department of Planning and Environment Amended SEARS letter dated 2 August 2022, reference SSD-36138263.

We note the below "key issues and documentation" assessments are based on the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs) recently implemented by DPIE and following key areas in the document:

- *Item 12. Ground and Water Conditions*
- *Item 13. Water Management*
- *Item 14. Flooding Risk*

Table 1.1 provides a summary of the SEARs General Requirements which relate to water and hydrology, and where these have been addressed in this report.

Table 1.1. SEARs Warehouse and Distribution Centres Key Areas

SEAR's Key Item	Response and where addressed
12. Ground and Water Conditions	
Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site, including soil erosion, salinity and acid sulfate soils.	Refer to **Section 3** and geotechnical assessments by **PSM** and **JBS&G** for confirmation of soil resources and potential impacts. A large part of the site is currently undeveloped. The exception to this are the properties which front Flushcombe Road (which comprise 4Ha in area) located on the far west of the land area, which have existing industrial development, four abandoned residential dwellings in the western portion of the site and a small access road and existing Telstra tower on the site. The site is noted to be located within an established industrial precinct, called the Huntingwood Precinct. Existing industrial warehouses are present in the precinct and these located to the west of this site. The proposed works involve bulk earthworks, construction of retaining walls, realignment of the existing creeks to prepare the site for 4 new warehouse structures and its associated drainage infrastructure to avoid adverse impacts on the downstream properties. The existing site levels range between RL66.01m and RL91.36m, naturally draining from south to north. The site comprise of two ridges dividing the site into four catchment areas. The proposed development's warehouse FFL's are noted to be between RL73.31m and RL85.30m. A maximum fill height of 10m and a maximum of -11m cut is noted across the site's total earthworks. We note there are two conservation areas within the site, one of which is considered a riparian corridor as referenced in the Huntingwood DCP.

SEAR's Key Item	Response and where addressed
	Refer to **Section 3,** the Geotechnical report by **PSM** for confirmation of soil resources and potential impacts and the Acid Sulfate Soils (ASS) report by **JBS&G** for the confirmation that an Acid Sulfate Soil Management Plan is not required.
Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on: - Surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses. - Groundwater resources in accordance with the Groundwater Guidelines.	Refer to **Section 4, 5 & 6** for assessment of water resources, hydrology (including quality and quantity), watercourses and riparian lands during operation. We note there are two conservation areas/watercourses located within the property boundary. Blacktown Creek towards the east of the site and an unnamed watercourse (to be referenced as "Unnamed Watercourse" going forward) to the west of the site, both draining in a northernly direction. The two watercourses on the property have been reported to be highly dilapidated and currently of low ecological value (refer *Biodiversity Development Assessment Report – Anne Clements & Associates*). The proposed development includes rehabilitation of the existing watercourses including the provision of a riparian corridor (in accordance with NRAR guidelines and the Huntingwood DCP 2011). Further, as part of the development, revegetation and rehabilitation works are proposed to bother watercourses. Refer to **Section 8** for soil and water management measures during construction, drawings in **Appendix A** for associated erosion and sediment control drawings, and **Appendix C** for a Draft Soil and Water Management Plan. The proposed erosion and sediment control measures during the construction of the development are based on the Landcom document *Managing Urban Stormwater – Soils & Construction Volume 1 ('Blue Book') (Landcom, 2004)*. Measures proposed will limit potential for offsite impact associated with water runoff and soils during construction.

SEAR's Key Item	Response and where addressed
	Consideration to management of salinity and acid sulphate has been made based on the recommendations of the geotechnical investigations by **PSM** and **JBS&G**. A surface water runoff including surface water runoff, water quality and water quantity has been completed. The key stormwater objectives, based on relevant water sensitive urban design criteria, have been set out in **Section 4.1** and **Section 6.1** of the report. Discharge from the site is noted to be made to Blacktown Creek, the Unnamed Watercourse and a small portion draining towards the existing stormwater infrastructure in the north-eastern corner of the site. The drainage under the GWH via existing culverts from both the Blacktown Creek and the Unnamed Watercourse is controlled with fitted aperture plates. **Section 6** provides a demonstration of the key criteria being met, based on MUSIC modelling. Configuration of the proposed measures are shown on the Civil Design Drawings included in **Appendix A**. For a groundwater impact assessment, refer to Section 3.5 & the Geotechnical Engineer's report - Portions of the building foundations of the warehouses in the center and on the eastern boundary of the site will be in areas where a deep cut is expected, and ground water will likely be encountered. With no basement for the warehouse proposed, groundwater will likely not be an issue for this development. With the development's likelihood to encounter groundwater in the areas of deep cut, impact from groundwater and on groundwater systems as a result of development are to be considered.
13. Water Management	
Provide an Integrated Water Management Plan for the development that:	Refer to **Section 4, 5 & 6** for assessment of water resources, hydrology (including quality and quantity), watercourses and riparian lands

SEAR's Key Item	Response and where addressed
• is prepared in consultation with the local council and any other relevant drainage or water authority. • outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision). • details the proposed drainage design for the site including any on-site detention facilities, water quality management measures and the nominated discharge points, on-site sewage management, and measures to treat, reuse or dispose of water. • demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse impacts on any downstream properties.	during operation, in consultation with the relevant local council and authorities (refer **Appendix G, H & I).** Stormwater management assessments of the site's surface water runoff, water quality and water quantity have been completed. The key stormwater objectives (proposed drainage design for the site including any on-site detention facilities, water quality management measures and the nominated discharge points), based on relevant water sensitive urban design criteria, have been set out in **Section 4.1** and **Section 6.1** of the report. A large part of the site is currently undeveloped. The exception to this are the properties which front Augusta Street (which comprise 4Ha in area) located on the far west of the land area, which have existing industrial development, four abandoned residential dwellings in the western portion of the site and a small access road and existing Telstra tower on the site. The development of the land will not result in unacceptable impacts to any resources noting similar water quantity discharge and improved stormwater quality. We note there are two conservation areas/watercourses located within the property boundary. Discharge from the site is noted to be made to the Blacktown Creek, the Unnamed Watercourse and a small portion draining towards the existing stormwater infrastructure in the north-eastern corner of the site. The existing drainage under the GWH via existing culverts from both the Blacktown Creek and the Unnamed Watercourse is currently controlled with fitted aperture plates.
Where drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed	Refer **Section 4** and drawings in **Appendix A** for detailed assessment of the existing- and post development conditions pertaining to the overland flow path.

SEAR's Key Item	Response and where addressed
works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.	The proposal requires consideration to upstream catchments (approximately 55Ha) draining under the Western Motorway through the site via the two conservation areas/watercourses located within the property boundary. The upstream catchment south-east of the site discharge into an existing bio-retention basin within that catchment, before flowing through the site.
14. Flooding Risk	
Identify any flood risk on-site having regard to adopted flood studies, the potential effects of climate change, and any relevant provisions of the NSW Floodplain Development Manual.	Refer **Section 7** for assessments pertaining to flooding and overland flow. The proposal requires consideration to upstream catchments (approximately 55Ha) draining under the Western Motorway through the site via the two watercourses and associated riparian corridors on the site. Runoff from the upstream catchment south-east of the site (which comprises the Wet and Wild amusement park) is noted to be managed via an existing detention and bio-retention basin within that catchment, before flowing through the site. These managed flows comprise the bulk of runoff within Blacktown Creek. A new flood model for the site was compiled and the assessment shows a reduction in post development 1% AEP flood levels, hence meeting impact requirements and shows the proposed building achieves flood planning and freeboard requirements. Additionally, to the new flood model created by Costin Roe Consult, the existing flood study conducted by Hyder Consult and referenced by council in the Huntingwood Precinct DCP, was referenced and compared to the new model. Both studies indicate there is no flooding in the 1% AEP local events, but some flooding in the PMF event. The development floor levels have been set allowing for freeboard to the overland flow

SEAR's Key Item	Response and where addressed
	path of greater than 0.5m during the 1% AEP flood event. The requirements of Council and NSW Floodplain Development Manual are met for this development.
Assess the impacts of the development, including any changes to flood risk on-site or off-site, and detail design solutions and operational procedures to mitigate flood risk where required.	Refer **Section 7** for assessments pertaining to flooding and overland flow. The assessments show the existing overland flow from the upstream catchments can be conveyed via the realigned watercourses, with no impacts on the development site. Flood planning considerations are met. The site has suitable flood immunity to the known flood behaviour and acceptable flood risk has been demonstrated.

2 DEVELOPMENT SITE

2.1 Location

The property is located within the Blacktown City Council (BCC) local government area (LGA), as shown in **Figure 2.1 and 2.2.** The site is also located within the Huntingwood Precinct of the Western Sydney Employment Lands, an established industrial precinct.

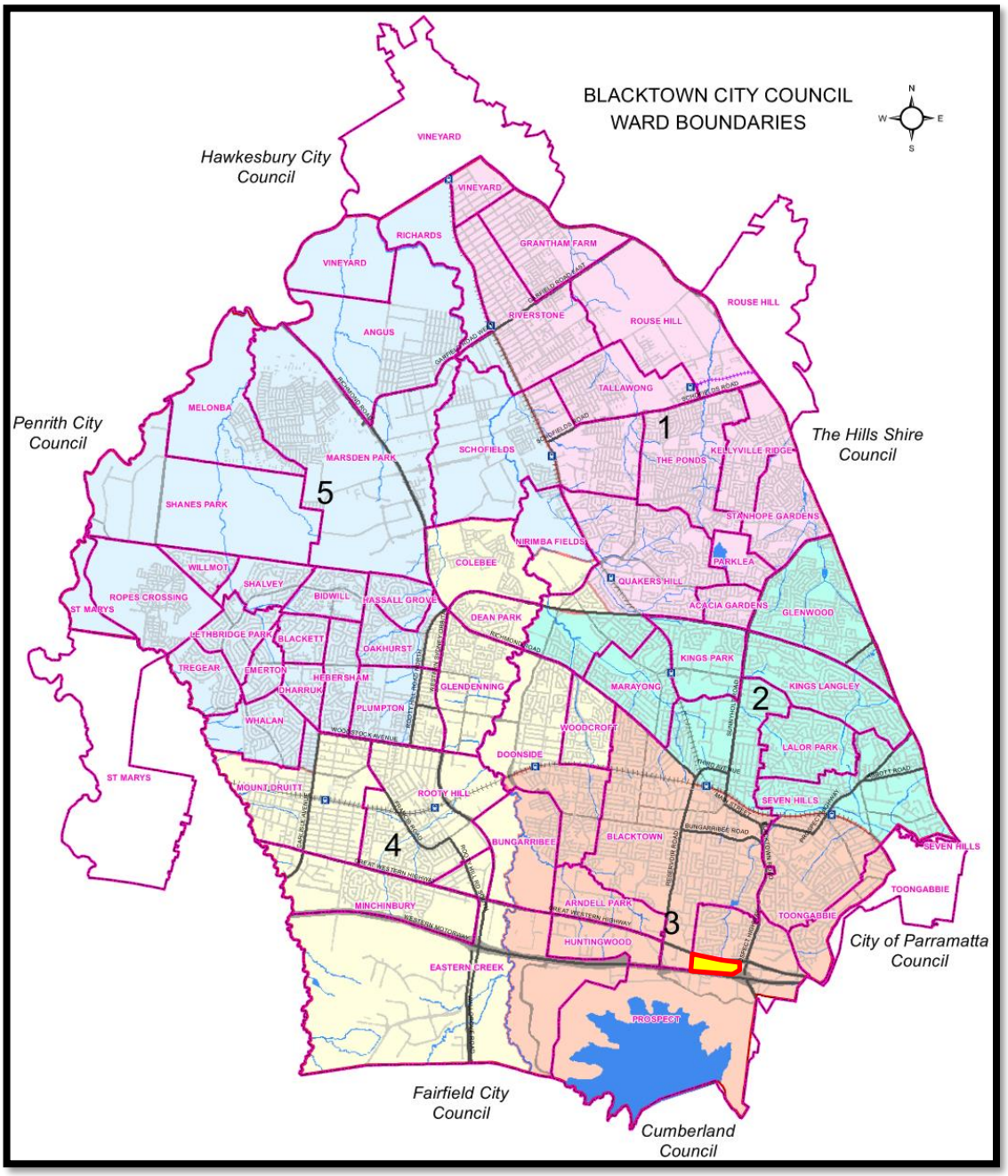


Figure 2.1. Site Location within the Blacktown Council LGA (Source: Blacktown City Council Ward Map)

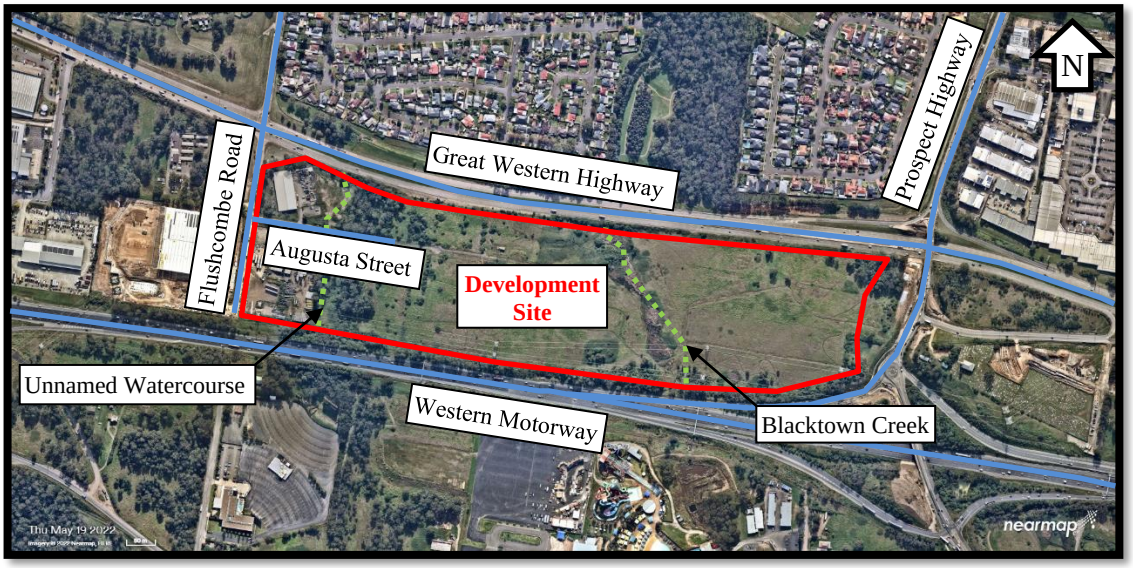


Figure 2.2. Site Location and Aerial Imagery (Source: Nearmap 16 June 2022)

2.2 Existing Site Description

The total site area is approximately 26.64 Ha. The site can be divided into four separate sub-catchment areas by the existing riparian corridors, somewhat central ridge line and Augusta Street.

The site is approximately 1100m in length fronting both the Western Motorway (south) and the Great Western Highway (GWH), and approximately 270m in width fronting Flushcombe Road.

To the north is the GWH and a residential area, to the east is a small portion of Industrial land (understood to be Transport for NSW (TfNSW) land) as well as the Prospect Highway and a cemetery, to the south is the Western Motorway as well as a waterpark (Raging Waters Sydney, temporarily closed) and a drive-in movie theatre. Further to the west are existing industrial developments.

The site is crossed by two watercourses as shown in **Figures 2.2** and **2.3**. Blacktown Creek towards the east of the site and the Unnamed Watercourse to the west of the site. Blacktown Creek is currently degraded with little to no native vegetation

The existing site generally grades from two ridges on the site, draining east and west from the ridgeline, towards the a riparian corridor and drainage swale, which drains from the south to the north, as seen in **Figure 2.3**.

Discharge from the site is via Blacktown Creek, the Unnamed Watercourse and a small portion draining towards the existing stormwater infrastructure in the north-eastern corner of the site. The drainage under the GWH via existing culverts from both the Blacktown Creek and the Unnamed Watercourse is controlled with fitted aperture plates (Source: Flood Study and Stormwater Management by Hyder Consulting, 18 January 2010).

The highest level on site is at RL91.36m AHD in the south-eastern corner of the site and the lowest is at RL66.01m AHD within the Blacktown Creek.

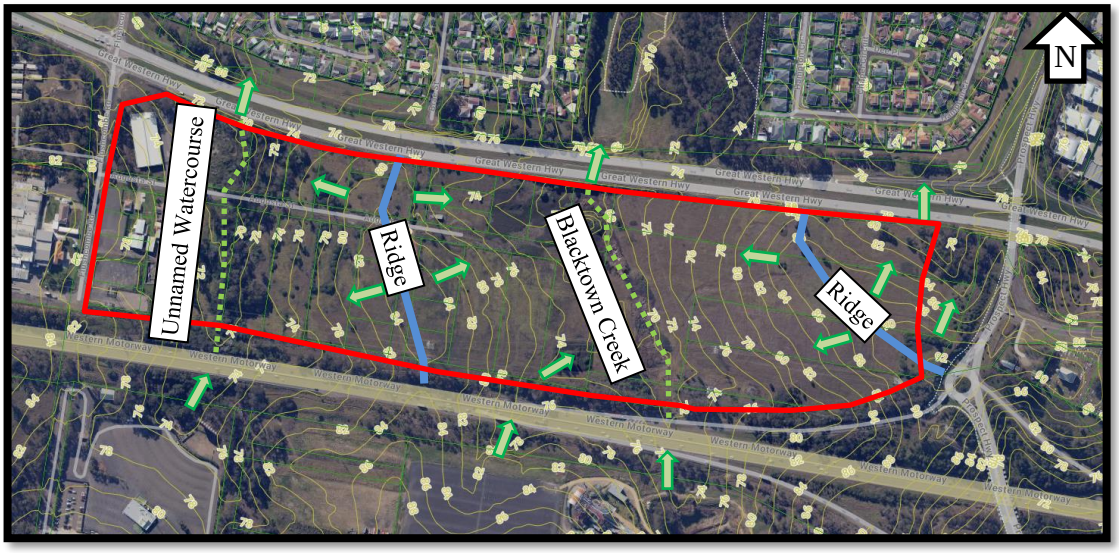


Figure 2.3. Site General overland flow drainage (Source: Nearmap 16 June 2022)

Approximately 4Ha of the site along Flushcombe Road is currently developed with warehouse and other building structures, which would be demolished with this development.

Existing fill material comprising clay material mixed with debris from demolition (e.g. tiles, bricks and glass bottles) were observed during the geotechnical investigation at localised areas, showing some historical disturbance of the existing site.

Augusta Street (asphalt surface) enters the site from Flushcombe road and crosses the existing Unnamed Watercourse over two 900mm dia. RCPs.

There are also various easements and existing services located across the site, most notably being the following:

1. Endeavour Energy's overhead cables and transmission towers spanning from the east to the west along the southern boundary of the site.
2. 100mm dia. CICL Sydney Water potable water pipeline along Augusta Street up to the existing Telstra tower, where the pipeline diverts to the north and eventually cross under the GWH.
3. 500mm and 150mm dia. CICL Sydney Water potable water pipeline along Flushcombe Road.
4. 225mm dia. PP Sydney Water sewer pipeline as well as a Vocus Communication conduit located along the eastern embankment of Blacktown Creek from the south to north.
5. Other services located along Flushcombe Road include Endeavour Energy conduits, Jemena Gas pipelines and NBN conduits.

2.3 Proposed Development

The proposed SSDA seeks approval to redevelop the site to accommodate a warehouse and distribution centre with the following:

The proposed SSDA seeks approval to redevelop the site to accommodate a warehouse and distribution centre use inclusive of the following:

- Site establishment works, including tree removal, minor excavation / bulk earthworks.
- Construction and operation of four (4) new warehouse buildings comprising a multi-level warehouse building on the eastern portion of the site and three single storey warehouse buildings on the western portion of the site. The warehouse buildings will include ancillary office space and indicative warehouse fit out works including warehouse racking.
- The warehouse and distribution tenancies are proposed to be operated 24 hours per day, 7 days per week.
- Other associated works including landscaping, at-grade car parking and general site improvements.
- Business and building identification signage including wayfinding signage.
- Vehicle access provided via Augusta Street and a new proposed access from the Great Western Highway
- Lot consolidation of properties.

The indicative site layout prepared by Pace Architects has been included in **Figure 2.4**.

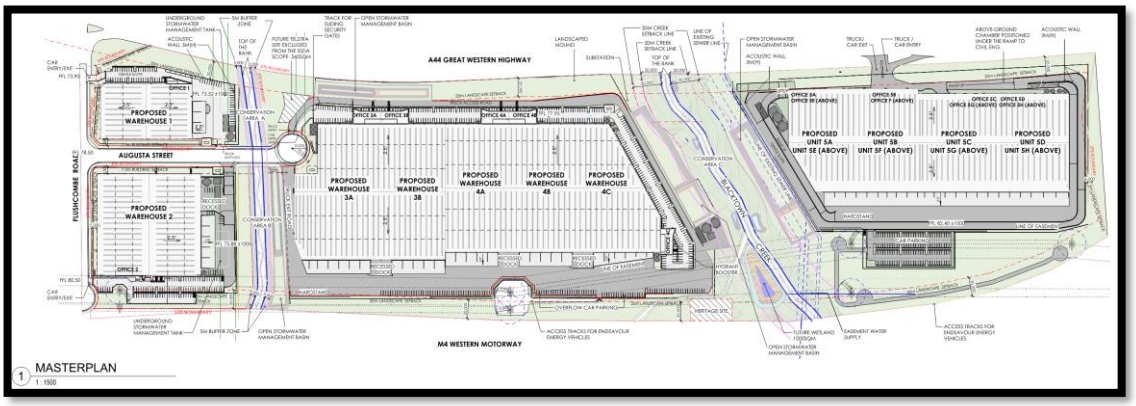


Figure 2.4. Proposed Development – Concept Layout Plan

A variance of +/-1.0m to the final building levels has been shown on the drawings. This variance is included in the concept design drawings to ensure that allowances for items unknown at the concept phase can be included in the overall development earthworks without significant export. Refer to **Section 3.2** for further discussion pertaining to earthworks and spoil allowances.

3 SITE WORKS

3.1 Soil and Geological Conditions

Based on geotechnical investigation by PSM and our knowledge of the area, the site is expected to be underlain by Bringelly Shale of the Wianamatta Group (Rwb) comprising shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff.

The 1:100,000 Penrith geological map (1991) also indicated that a diatreme (Jv16) comprising volcanic breccia and basalt is located in close proximity to the site.

The summary of the inferred subsurface conditions encountered in the geotechnical investigation is summarised below in **Figure 3.1** (Source: PSM's Geotechnical Report PSM4636-006L dated 25 August 2023).

Table 3 – Summary of Inferred Subsurface Conditions Encountered in Test Locations

Inferred Unit	Inferred top of unit depth below ground surface (m)	Description
TOPSOIL	0.0	CLAY to Silty CLAY trace gravel: red and brown, high plasticity; gravel sub-angular up to 5 mm, soft to firm consistency, moist to wet condition, rootlets observed.
FILL	0.1 – 0.3	CLAY to CLAY trace gravel: red, grey and brown, low to high plasticity; gravel sub-angular up to 20 mm, soft to very stiff consistency, dry to moist condition, rootlets observed. Some debris from demolition e.g., tiles, bricks and glass bottles were observed at localised areas
NATURAL SOIL	0.0 – 1.8	CLAY to CLAY trace gravel: red, grey and yellow brown, low to high plasticity; gravel sub-angular up to 25 mm, firm to hard consistency, dry to moist condition, with ironstone embedded.
BEDROCK A	1.2 – 3.5	SHALE: red, grey and brown, extremely to slightly weathered, very low to low strength
BEDROCK B	5.7 – 7.6	SHALE: grey and brown, moderately to slightly weathered, low strength

Figure 3.1. Summary of Inferred subsurface conditions encountered in Test Locations (Source: Table 3 in geotechnical report PSM4636-006L)

A maximum fill height of 8.7m and a maximum of -9.4m cut will be encountered across the site during the bulk earthwork operation.

It is recommended that the bulk earthworks be completed in accordance with the PSM bulk earthworks specifications referenced PSM4636-003S. The geotechnical report classifies the site as Class H1 and recommend the Civil- and Structural engineers consider likely heave/settlement due to the effect of climatic factors in the design. The warehouse foundations will need to be found on either stiff clay of suitable strength or engineered fill.

It is expected that some of the existing fill material may need to be re-worked. The extent of re-work (i.e., remove and re-compact as engineered fill) will need to be confirmed on site during detailed investigations.

It is expected that some excavation through rock will be required to reach bulk excavation levels for the development. The rock material is classified as "very low to low" strength.

Acid sulphate soils are not likely to be present on the development site so are not considered to be an issue.

3.2 Bulk Earthworks

Bulk earthworks will be required to facilitate the development of the estate for industrial use. The earthworks will be undertaken to provide large flat building pads, hardstand areas and a car parking areas. Earthworks are also required to raise Augusta Street to a height which is above the 1% AEP flood level to facilitate continuous access via Flushcome Rd/Augusta Street.

A high-level earthwork volume estimate assessment has been completed for the site. The estimated volumes are shown on the Costin Roe drawings in **Appendix A**.

The earthworks analysis has been completed to a level of detail to enable general pad levels to be set and to obtain an order of magnitude cut and fill volume estimate. Given the preliminary nature of the assessment, an upper and lower bound of earthworks volumes has been included to allow for contingency in cost planning estimates. The assessment in **Appendix A** is based on the earthworks using building pad RLs of 72.75m AHD, 76.00m AHD, 78.10m AHD, 79.30m AHD and 85.30m AHD respectively from west to east.

The primary drivers for the proposed earthworks levels are a balance between minimising the extent of retaining walls as well as balancing the earthworks and minimising fill as much as practically possible. As noted earlier (refer **Section 2.3**) a variance of +/-1.0m to the final building levels has been shown on the drawings. This variance is included in the concept design drawings to ensure that allowances for items unknown at the concept phase (such as building spoil generation from construction, geotechnical conditions, final grading designs, service trenching spoil and road box out) can be kept on site, without exporting, and including in the overall development earthworks.

The earthworks volume estimates are as follows:

	Apparent Volume	Upper Bound (+15%)	Lower Bound (-15%)
Cut (m^3)	-359,900	-413,885	-305,915
Fill (m^3)	289,250	332,637	245,862
Balance (m^3)	-70,650	-81,247	-60,052

Table 3.1. Earthwork Volume Estimates

Given the order of magnitude of the volume of earthworks and concept nature of the earthworks modelling, a more balanced cut and fill result is expected to be achievable through a detailed modelling exercise, unless a larger volume of unsuitable material is encountered during the earthworks process. Consideration to bulking of cut materials including rock and clay materials should be allowed for. Bulking of clay would normally be expected to be 4% of the removed volume and rock bulking can be expected in the range of 8-12%.

Earthworks allowances for services trenches, retaining walls and detailed building excavation should also be made to avoid excessive unknown exports during later stages of the project. Allowances in the range of 1,250-2,500m^3/Ha can be expected depending on the type of development and final site layouts. As noted, an upper and lower bound of earthworks volumes has been included to allow for some of these items.

Soil Erosion and Sediment Control measures, including sedimentation basins are to be placed in accordance with submitted drawings and the *Soil and Water Management Plan* in **Section 8** of this report.

All geotechnical testing and inspections performed during the filling operations will be undertaken to Level 1 geotechnical control, in accordance with AS3798-2007.

3.3 Retaining Walls

The civil engineering objective is to minimise retaining walls within the constraints of the masterplan layout, allowable grading to suit industrial development and batters in landscaped areas where possible.

Retaining will be required across the entire site with walls in cut up to 8m in height and walls in fill up to 8m in height. The walls in fill are anticipated to comprise modular masonry block system (Keystone) with reinforced soil backfill and the walls in cut to comprise reinforced concrete block system.

While Blacktown Development Control Plan 2015 does not apply to the site, the design geometry of walls has been completed in accordance with *Table 6.3* and *Figure 6.3* of Blacktown City Councils *DCP Part E – Development in Industrial Areas, Section 6.2*. Refer **Figure 3.2** below.

Location of retaining walls is shown on drawing **Co13904.03-SSDA500 to SSDA504.**

■ **Controls**

Provision	Control
Embankment batters from property boundary	3m:1m (length to height ratio)
Maximum height of retaining wall elements	3m
Terraced fill greater than 3m in height	1.5m:3m (length to height ratio)

Table 6.3 Cut and fill requirements

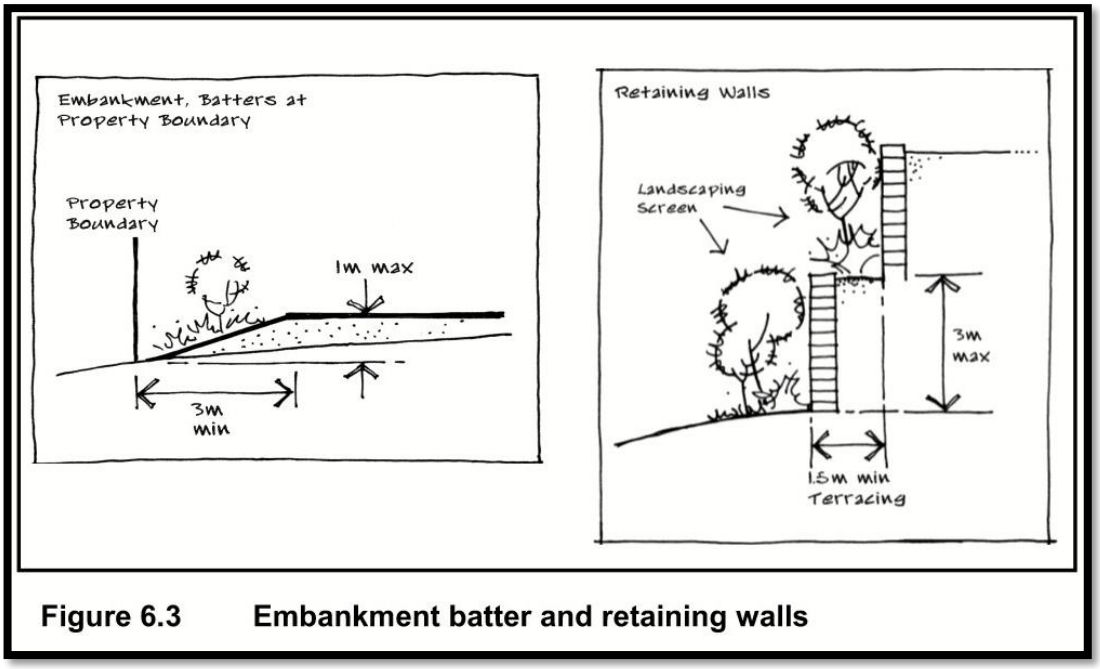


Figure 3.1 DCP *Part E – Development in Industrial Areas* Figure 6.3 & Table 6.3

3.4 Embankment Stability

To assist in maintaining embankment stability permanent batters in clay will be no steeper than 2.5 horizontal to 1 vertical while temporary batters will be no steeper than 2 horizontal to 1 vertical.

Permanent batters will also be adequately vegetated or turfed which will assist in maintaining embankment stability.

Stability of batters and reinstatement of vegetation shall be in accordance with the submitted drawings and the *Soil and Water Management Plan* in **Section 8** of this report.

3.5 Groundwater

Groundwater was identified in a geotechnical investigation completed by PSM which was referenced as *PSM4636-006L*.

The ground water levels were measured by PSM at 3.8mbgl (western portion of the site), 5.9mbgl (centre of the site) and 4.5mbgl (eastern portion of the site). Ground water will be encountered during the bulk earthworks activity during construction. Portions of the building foundations of the warehouses in the centre and on the eastern boundary of the site will be in areas where a deep cut is expected, and ground water will likely be encountered. With no basement for the warehouse proposed, groundwater will likely not be an issue for this development. With the development's likelihood to encounter groundwater in the areas of deep cut, impact from groundwater and on groundwater systems as a result of development are to be considered.

Surface water management, including conveyance of surface runoff, management of water quantity (through on-site detention) and water quantity (through on-site and estate wide management systems using WSUD principles and best practice pollution reduction objectives) has been proposed in the design.

3.6 Acid Sulphate Soils and Salinity

An assessment of the potential for acid sulphate soils has been requested as part of the SEAR's requirements.

We note the **JBS&G** report confirms a very low potential for acid sulfate potential and that the management of ASS will not be required.

The **PSM** investigation confirms soils are non-saline to moderately saline.

4 WATER CYCLE MANAGEMENT STRATEGY & DRAINAGE METHODOLOGY

4.1 Key Areas and Objectives

Water Cycle Management (WCM) is a holistic approach that addresses competing demands placed on a region's water resources, whilst optimising the social and economic benefits of development in addition to enhancing and protecting the environmental values of receiving waters.

Developing a WCMS at the SSD stage of the land development process provides guidance on urban water management issues. This WCMS has been prepared to inform DPIE, and relevant stakeholders, that the development is able to provide and integrate WCM measures into the stormwater management strategy for the development.

The key WCM targets which have been adopted in the design are included in **Table 4.1** following, and included in the drawings found in **Appendix A**

Table 4.1. WCM Targets

Element	Target	Reference
Water Quantity	Minimise flooding from increased stormwater runoff due to development	Huntingwood Precinct DCP, Section 4.2.1 which requires OSD in accordance with 'On-Site Detention Handbook' prepared by UPRCT, Fourth Edition, Dec 2005.
Water Quality	Load-based pollution reduction targets based on an untreated urbanised catchment: Gross Pollutants 92% Total Suspended Solids 90% Total Phosphorus 68% Total Nitrogen 47% Total Hydrocarbons 91%	Huntingwood Precinct DCP, Section 4.2.3
Flooding	Buildings set at least 0.5m above the 1% AEP flood level (with culverts 50% blocked). 1% AEP flow path maintained through site. Restoration of degraded creek with the design width and top of bank designed to 1 in 2-year ARI. Creek crossings for driveways, or roads will be subject to DECCW requirements.	Huntingwood Precinct DCP, Section 4.2.4 NSW Floodplain Development Manual.

Element	Target	Reference
	Outside of the riparian zone the trunk drainage will be a pipe designed for the 1 in 100 year ARI flow providing a fail-safe overland flow path dedicated that can convey at least 50% of the pipe flow.	
Stream Health	Stream Erosion Index less than 3.5	Blacktown City Council Part J DCP
Water Supply (Water Conservation)	Reduce Demand on non-potable water uses. Provide 80% reduction of non-potable uses.	Huntingwood Precinct DCP, Section 4.2.2 Blacktown City Council Part J DCP
Construction Stormwater Management & Erosion and Sediment Control	A construction stormwater management plan and appropriate associated erosion and sedimentation control measures must be described in the environmental assessment for all stages of construction to mitigate potential impacts to surrounding properties.	Landcom Blue Book Council DPI

A summary of the how each of the WCM objectives will be achieved are described below. Reference to the relevant sections of the report should be made for further and technical details relating to the WCM measures:

- *Stormwater Quantity Management (Refer **Section 5**)*

  The intent of this criterion is to reduce the impact of urban development on existing drainage system by limiting post-development discharge within the receiving waters to the pre-development peak, and to ensure no affectation of upstream, downstream, or adjacent properties.

  Attenuation of stormwater runoff from the development is required in accordance with on-site detention requirements established in the "On-Site Stormwater Detention Handbook" prepared by the Upper Parramatta River Catchment Trust Fourth Edition dated December 2005 (UPRCT).

  Refer to **Section 5** of the document for further discussion pertaining to water quantity management.

- *Stormwater Quality Management (Refer **Section 6**)*

  There is a need to target pollutants that are present in stormwater runoff to minimise the adverse impact these pollutants could have on downstream receiving waters.

  The required pollutant reductions are included in **Table 4.1** of this document and MUSIC modelling has been completed to confirm the reduction objectives can be met for the estate. We note the pollutant reduction requirements included in the Huntingwood Precinct DCP are greater than those adopted in Councils 2020 WSUD Guidelines for

Development and Part J DCP. The higher level of treatment is noted to be required to offset for untreated parts of the catchment (including roadways).

A series of Stormwater quality improvement devises (SQID's) have been incorporated in the design of the estate. The proposed management strategy will include the following measures:

- Primary treatment of external areas will be made via pit inserts or GPT's.
- Tertiary treatment of the development will be made via bioretention basins where there is available space as well as via one of two proprietary treatment systems where space is limited. The second mentioned treatment systems are proposed to be syphon actuated filtration systems housed in underground tanks.
- Discharge into watercourses as noted in previous sections of the report will occur following treatment which meets the Huntingwood DCP pollution targets. Refer to drawings **Co13904.03-DA400-414.**
- Some treatment will also be present by provision of rainwater reuse tanks on development sites through reuse and settlement within the tanks.

Reference to **Section 6** of this document should be made for detailed Stormwater Quality modelling and measures.

- *Flood Management (refer **Section 7**)*

  The proposed development considered flooding and large rainfall events in relation to the two watercourses through the site (with 50% blockage of the existing culverts), and local runoff and overland flow paths including the overland flow from the upstream catchments to the south of the site (west of the Western Motorway).

  Consideration to flood requirements has been made per the Huntingwood Precinct DCP and NSW Floodplain Development Manual. Refer **Section 7** for details.

  The following measures have been incorporated in the design:

  - All buildings are sited 500mm above the 1% AEP design flood level of local flow paths.
  - Overland flow paths to manage runoff in large storm events have been made including achieving at least 500mm freeboard to building levels from the flow paths. We note that generally a greater level of flood immunity is available to the development sites than that required by flood planning policy. As such appropriate and acceptable level of flood risk to the development is available.

- *Stream Health (refer **Section 6.4**)*

  Stream Erosion Index (SEI) calculation has been made, in accordance with the methodology set out in Blacktown City Councils Water Sensitive Urban Design Handbook (2020). Blacktown City Council Require that the post development duration of stream forming flows shall be no greater than 3.5 times the pre-development duration of stream forming flows with a stretch target of 1.

- *Water Demand Reduction/ Rainwater Reuse (refer **Section 6.6**)*

  Rainwater reuse measures will be provided as part of future building development designs. Rainwater reuse will be required to reduce demand on non-potable uses by 80%. The

reduction in demand will target non-potable uses such as toilet flushing and irrigation. **Refer Section 6.6**.

- *Stormwater Management During Construction (refer **Section 8**)*

  A construction stormwater management plan and associated erosion and sediment control measures is proposed based on *Landcom Blue Book* and Council requirements. The management measures take a staged approach from initial site establishment, construction stages and the period between the completion of the estate infrastructure works and development of individual lots.

4.2 Existing Site Drainage

The majority of the site is currently undeveloped industrial zoned land, which has been described in **Section 2.2**, with the exception of the 4Ha parcel of land currently developed with warehouses, four abandoned residential dwellings and other infrastructure.

The existing site generally grades from two ridges on the site, draining east and west from the ridgeline, towards the a riparian corridor and drainage swale, which drains from the south to the north, as seen in **Figure 2.3**.

Discharge from the site is via Blacktown Creek, the Unnamed Watercourse and a small portion draining towards the existing stormwater infrastructure in the north-eastern corner of the site. The drainage under the GWH via existing culverts from both the Blacktown Creek and the Unnamed Watercourse is controlled with fitted aperture plates shown in the diagrams below (Source: Flood Study and Stormwater Management by Hyder Consulting, 18 January 2010).

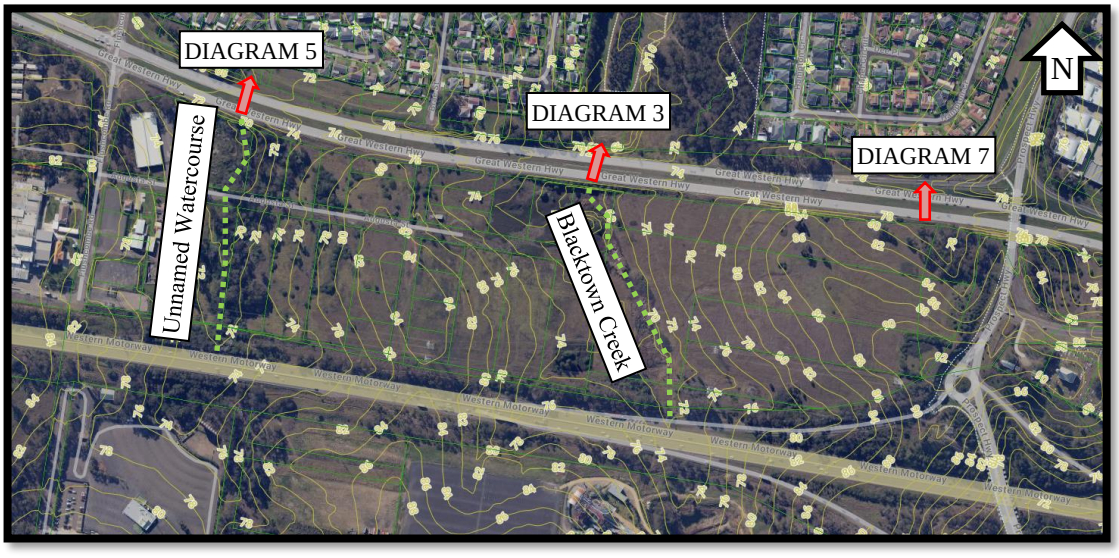


Figure 4.1 Locations of culverts under GWH (details of culverts shown in Figures 4.2 below obtained from Flood Study and Stormwater Management by Hyder Consulting, 18 January 2010)

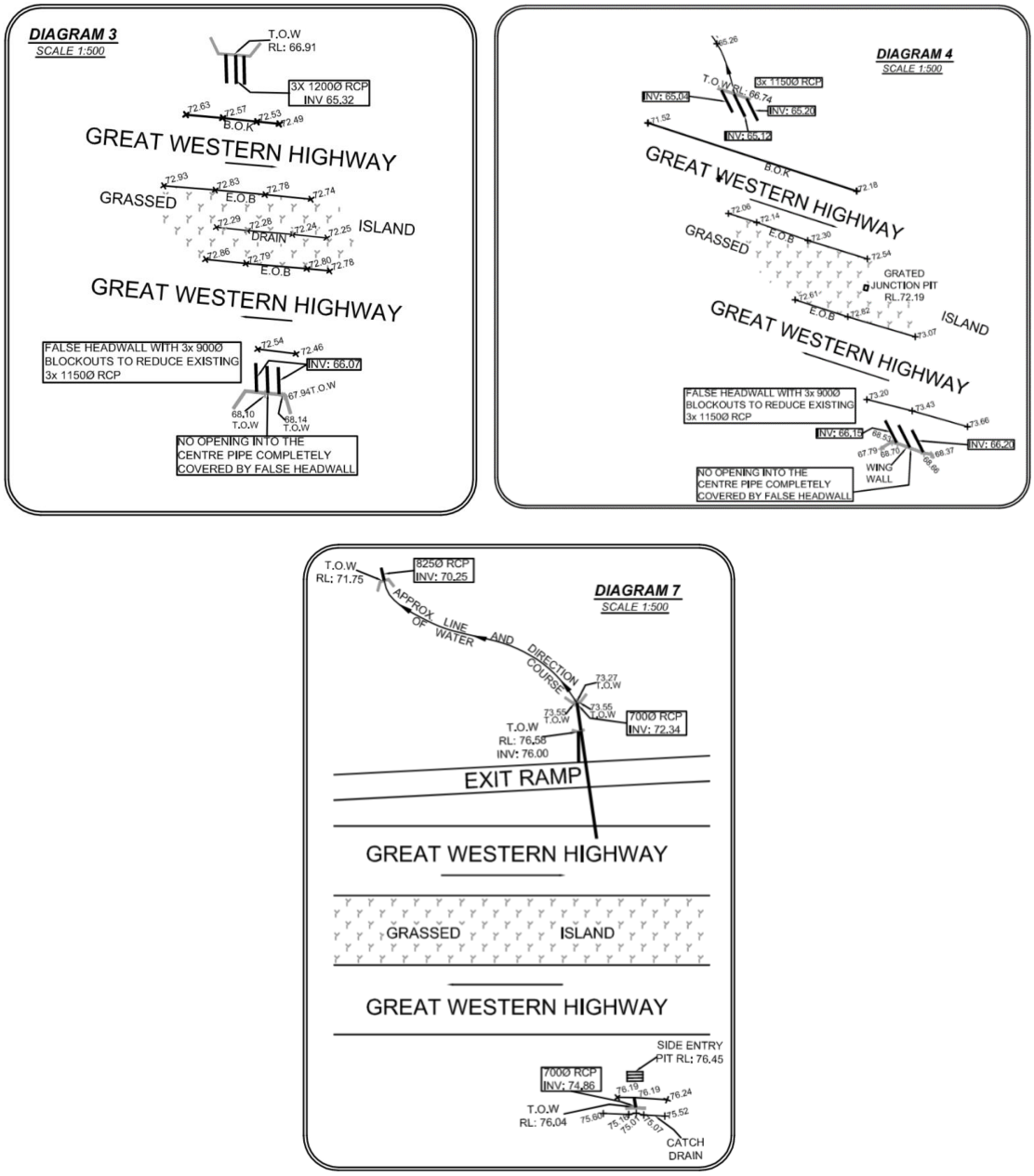


Figure 4.2 Details of culverts under GWH obtained from Appendix H in the Flood Study and Stormwater Management by Hyder Consulting, 18 January 2010

The remainder of the site has minimal existing formal inground drainage systems (mostly contained within the 4Ha of developed site to the west of the site). These systems are anticipated to be decommissioned as part of the development of the new pads, unless determined to be of value as part of the future development.

It is noted that the design allowances for the trunk drainage system is based on a design capacity which allows for the 1% AEP design flow and 50% blockage of both inlet pits and the culvert system. Further discussion on the system and overland flow considerations is included in **Section 7**.

4.3 Proposed Surface Water Drainage System

As required by the Huntingwood DCP, trunk drainage outside of the riparian zone will be a pipe designed for the 1% AEP (1 in 100 year ARI) flow providing a fail-safe overland flow path dedicated that can convey at least 50% of the pipe flow. This results in the trunk piped system being able to convey all stormwater runoff up to and including the 1% AEP event.

A typical major (1% AEP overland) and minor (5% AEP inground) drainage system, typically adopted as general engineering practice and the minimum requirements of Council, to safely and efficiently convey collected stormwater run-off from the development to the legal point of discharge as such is not relevant for this site, given the minor system in this instance caters for the capacity of the major.

We note that emergency overland flow paths (i.e., those for events greater than the 1% AEP) have been considered in the design layout. The major system will employ the use of defined overland flow paths, such as roads and open channels, to safely convey excess run-off from the site.

The design of the stormwater system for this site will be based on relevant national design guidelines, Australian Standard Codes of Practice, the standards of PCC and accepted engineering practice. Runoff from buildings will generally be designed in accordance with *AS 3500.3 National Plumbing and Drainage Code Part 3 – Stormwater Drainage*. Overall site runoff and stormwater management will generally be designed in accordance with the Institution of Engineers, Australia publication "*Australian Rainfall and Runoff*" (2019 Edition), Volumes 1 and 2 (AR&R).

Water quality and re-use are to be considered in the design to ensure that any increase in the detrimental effects of pollution is mitigated, Council Water Quality Objectives are met and that the demand on potable water resources is reduced.

The proposed drainage system will be required to convey the overland flow from upstream catchments south of the property through the site.

The legal point of discharge is a point specified by Council where stormwater from a property can be discharged. The legal point of discharge is usually Council's stormwater infrastructure (where available), the street kerb and channel for smaller developments or downstream receiving waters like an existing stream or gully, lake, pond or waterbody. Legal points of discharge for this site is via the existing Blacktown Creek culvert, the Unnamed Watercourse culvert and the culvert located in the north-eastern corner of the site, all draining from the site, under the GWH.

With reference to the drawings in **Appendix A,** the drainage system proposed can be described as follows:

- Minor System (On-lot piped drainage): 5% AEP
- Major System (Overland Flow): 1% AEP
- Trunk drainage system designed to the 1% AEP (1 in 100yr ARI);
- Site discharge via the existing inter-allotment drainage system culverts under the GWH.
- Treatment of stormwater via rainwater tanks (portion of the roof), pit inserts, bioretention basins and/or one of two proprietary filtration systems where space is limited.
- Conveyance of overland flow from the site and upstream catchments via hardstands, parking areas and other roads to the existing riparian corridors within the site.

4.4 Hydrologic Modelling and Analysis

4.4.1 Rainfall Data

Rainfall intensity Frequency Duration (IFD) data used as a basis for DRAINS modelling and initial pipe sizing based on rational method assessments for the 2 to 100 Year ARI events, was taken from The Bureau of Meteorology Online IFD Tool.

4.4.2 Runoff Models

In accordance with the recommendations and standards of Council, the calculation of the runoff from storms of the design ARI has been calculated with the catchment modelling software DRAINS for internal drainage only.

Detailed hydraulic assessment of the internal drainage system will be calculated at detail/ construction certificate stage.

The design parameters for the DRAINS model are to be based on the recommendations as defined by council and parameters for the area and are as follows:

Table 4.2. DRAINS Parameters

Model	Model for Design and analysis run	Rational method	
	Rational Method Procedure	ARR2019	
	Soil Type-Normal	3.0	
	Paved (Impervious) Area Depression Storage	1	mm
	Supplementary Area Depression Storage	1	mm
	Grassed (Pervious) Area Depression Storage	5	mm
AMC	Antecedent Moisture Condition (ARI=1-5 years)	2.5	
AMC	Antecedent Moisture Condition (ARI=10-20 years)	3.0	
AMC	Antecedent Moisture Condition (ARI=50-100 years)	3.5	
	Sag Pit Blocking Factor (Minor Systems)	0	
	On Grade Pit Blocking Factor (Minor Systems)	0	
	Sag Pit Blocking Factor (Major Systems)	0.5	
	On Grade Pit Blocking Factor (Major Systems)	0.2	

4.5 Hydraulics

4.5.1 General Requirements

Hydraulic calculations will be carried out utilising DRAINS modelling software during the detail design stage to ensure that all surface and subsurface drainage systems perform to or exceed the required standard.

4.5.2 Freeboard

The calculated water surface level in open junctions of the piped stormwater system will not exceed a freeboard level of 150mm below the finished ground/ grate level, for the peak runoff from the Minor System runoff.

The calculated water surface for the peak runoff from the Major System runoff will not exceed a freeboard level of 500mm below the finished floor level of the building.

4.5.3 Public Safety

For all areas subject to pedestrian traffic, the product (dV) of the depth of flow d (in metres) and the velocity of flow V (in metres per second) will be limited to 0.4, for all storms up to the 100-year ARI.

For other areas, the dV product will be limited to 0.6 for stability of vehicular traffic (whether parked or in motion) for all storms up to the 100-year ARI.

4.5.4 Inlet Pit Spacing

The spacing of inlets throughout the site will be such that the depth of flow, for the Major System design storm runoff, will not exceed the top of the kerb (150mm above gutter invert).

4.5.5 Overland Flow (development lots)

Dedicated flow paths have been designed to convey all storms up to and including the

100-year ARI. These flow paths will convey stormwater from the site to the detention systems prior to discharge.

5 WATER QUANTITY MANAGEMENT

Blacktown City Council's Huntingwood Precinct DCP and Water Sensitive Urban Design (WSUD) 2020 Developers Guideline require management of stormwater quantity for developments, with the intent of minimising flooding from the increased stormwater run-off due to the development.

Water quantity management may be made by providing a stormwater detention system (i.e., on-site detention), to limit the runoff discharged from private property or to provide an assessment which confirms on-site detention is not necessary for the development. It is noted that the DCP requires the OSD designs to be in accordance with the "*On-Site Stormwater Detention Handbook - Fourth Edition dated December 2005*" prepared by the Upper Parramatta River Catchment Trust (UPRCT). Further consultation with Blacktown (E-mail 20 June 2022 (Laith Almoil), confirming that the OSD Deemed to Comply excel spreadsheet version 1.9 is an appropriate version and should be used to calculate the OSD parameters (refer **Appendix K**).

The site is divided into seven catchments for on-site detention calculations, with three upstream catchments to the south and a section of the Western Motorway draining through the site. The upstream catchment (22.01Ha) associated with the water park, has an existing Stormwater attenuation basin located before the discharge point into the development site. We note existing catchments upstream of the site bypass any site detention systems and do not form part of the OSD calculations for the development. Refer to **Figure 5.1** below showing the approximate catchments and sizes.

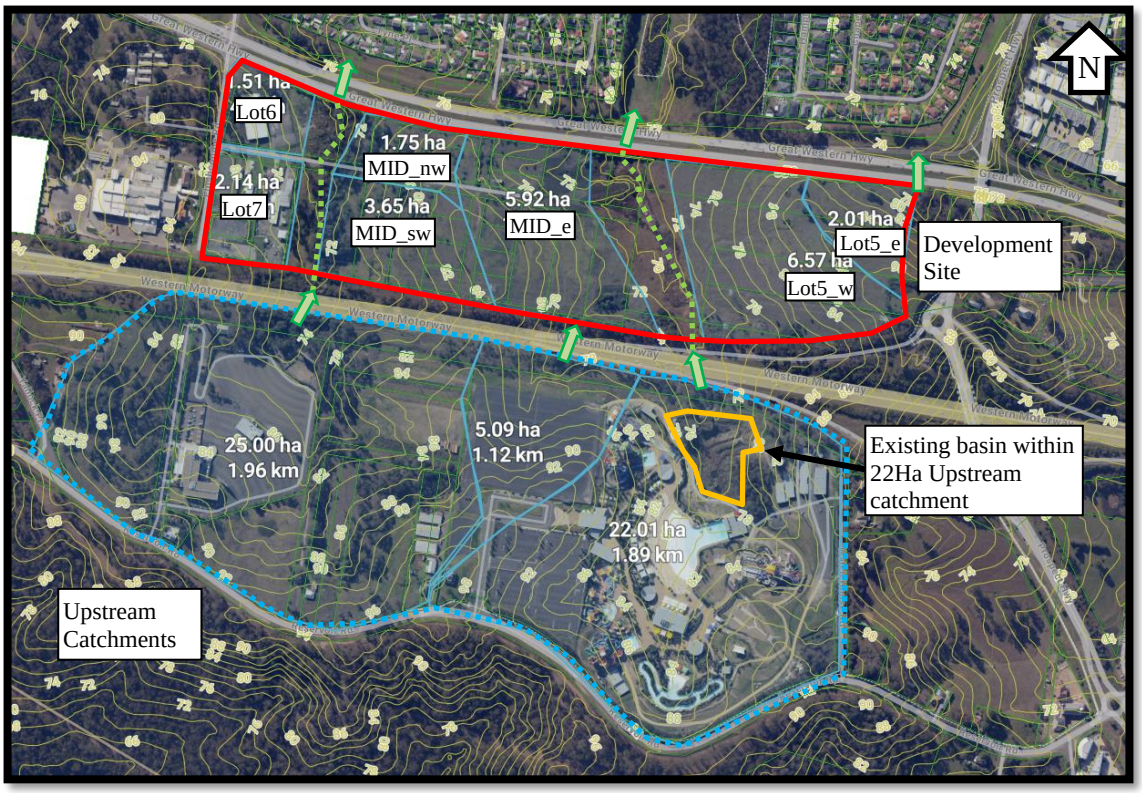


Figure 5.1 Existing Catchments (source: Mecone Mosaic 2022)

Table 5.1. OSD Volume Requirements

Catchment Name	Site Area to OSD (Ha)	Required Storage below Emergency Overflow Weir (m3)
Catchment 1 (Warehouse 1)	1.21	555
Catchment 2 (Warehouse 2)	2.18	995
Catchment 3A (Warehouse 3)	1.03	480
Catchment 3B (Warehouse 3)	2.93	1382
Catchment 4 (Warehouse 4)	5.41	2530
Catchment 5A (Warehouse 5)	4.86	2270
Catchment 5B (Warehouse 5)	1.90	865

Of the total 26.6Ha development size, approximately 4.50Ha existing landscaped areas located along the boundaries of the site will remain landscaped areas sloping away from the development, bypassing the OSD storage, in addition to the 2.58Ha of area covered by the Blacktown Creek, the Unnamed watercourse and Augusta Street. These areas of the site are sloped to eventually discharge into Blacktown creek and the Discharge swale on the west.

Blacktown Council's Mr. Laith Almoil was contacted to obtain Blacktown Council's latest '*OSD Deemed to Comply Tool*' and to confirm that this should be used to determine the On-site detention (OSD) requirements and to design the OSD tank. Mr. Almoil confirmed the above requirements in an e-mail attached under **Appendix I**.

The Q100 flood level at the respective discharge points is summarised in the table below:

Table 5.2. Approximate Q100 Flood Levels at respective discharge points

Catchment Name	Approximate Q100 Level (m ADH)
Catchment 1 (Warehouse 1)	RL69.00
Catchment 2 (Warehouse 2)	RL71.40
Catchment 3A (Warehouse 3)	RL68.90
Catchment 3B (Warehouse 3)	RL69.65
Catchment 4 (Warehouse 4)	RL69.40
Catchment 5A (Warehouse 5)	RL70.50
Catchment 5B (Warehouse 5)	RL76.50

Refer to drawing **Co13904.03-SSDA400-404** for location of OSD systems and **Appendix K** for calculations.

6 STORMWATER QUALITY, REUSE AND MAINTENANCE

6.1 Stormwater Quality Objectives

There is a need to provide a design which incorporates the principles of Water Sensitive Urban Design (WSUD) and to target pollutants that are present in the stormwater so as to minimise the adverse impact these pollutants could have on receiving waters and to also meet the requirements specified by Council.

Blacktown City Council has nominated, in the *Huntingwood Precinct DCP*, the requirements for stormwater quality to be performed on a catchment wide basis. These are presented in terms of annual percentage pollutant reductions on a developed catchment and are included in **Table 4.1**.

6.2 Proposed Stormwater Treatment System

Developed impervious areas including roof, hardstand, car parking, roads and other extensive impervious areas are required to be treated by the Stormwater Treatment Measures (STM's). The STM's shall be sized according to the whole catchment area of the development. The STM's for the development shall be based on a treatment train approach to ensure that all the objectives above are met.

Components of the treatment train for the development are as follows:

- Primary treatment to the parking, roof, and hardstand areas is to be performed via the provision of pit inserts to all grated pits;
- Tertiary treatment is to be performed via Bio-retention basins prior to discharge from the site Catchments 3A, 3B, 4&5A, and to a proprietary filtration treatment system (Ocean Protect Stormfilters (or approved equivalent))in the new OSD tanks for catchments 1, 2 and 5B, prior to discharge;
- A portion of the roof will also be treated via rainwater reuse and settlement within the rainwater tank.

6.3 Stormwater Quality Modelling

The MUSIC model was chosen to model water quality. By simulating the performance of stormwater management systems, MUSIC can be used to predict if the proposed systems and changes to land use are appropriate for their catchments and capable of meeting specified water quality objectives (CRC 2002). The water quality constituents modelled in MUSIC, of relevance to this report, include Total Suspended Solids (TSS), Total Phosphorus (TP) and Total Nitrogen (TN).

The pollutant retention criteria set as required by Council and nominated in **Section 4.1** of this report were used as a basis for assessing the effectiveness of the selected treatment trains.

The parameters used in the MUSIC model are presented in **Appendix B**. **Figure 6.1 to Figure 6.7** below shows the MUSIC model layout.

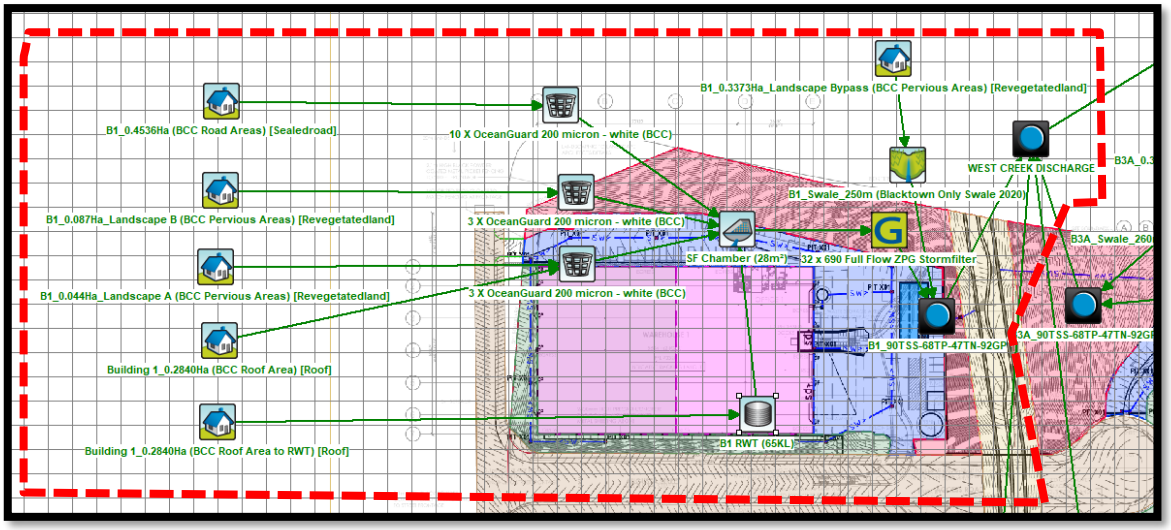


Figure 6.1. MUSIC model layout (Catchment 1)

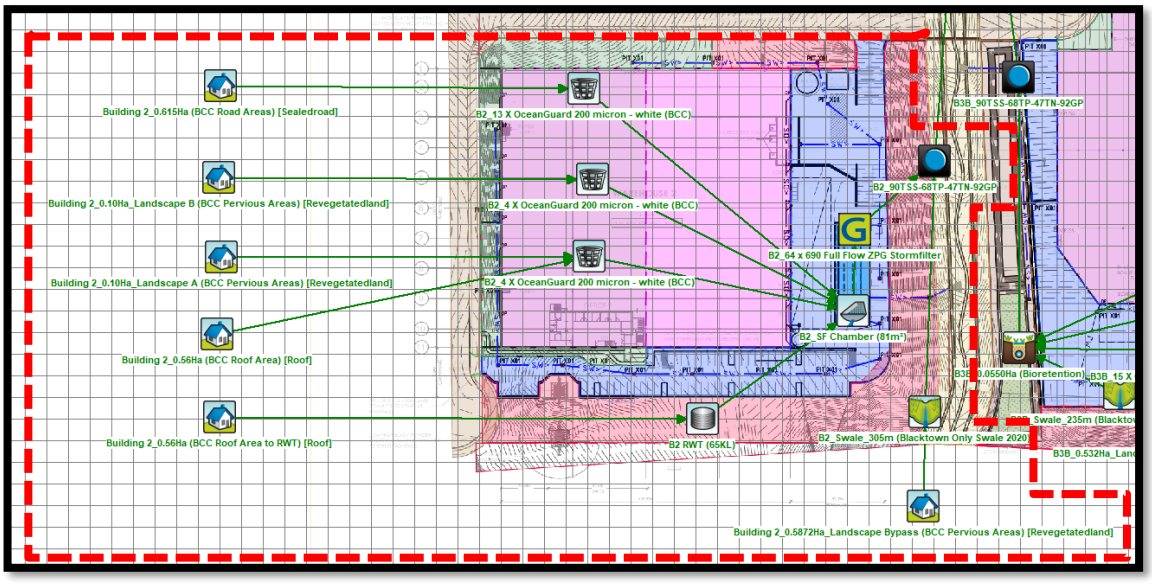


Figure 6.2. MUSIC model layout (Catchment 2)

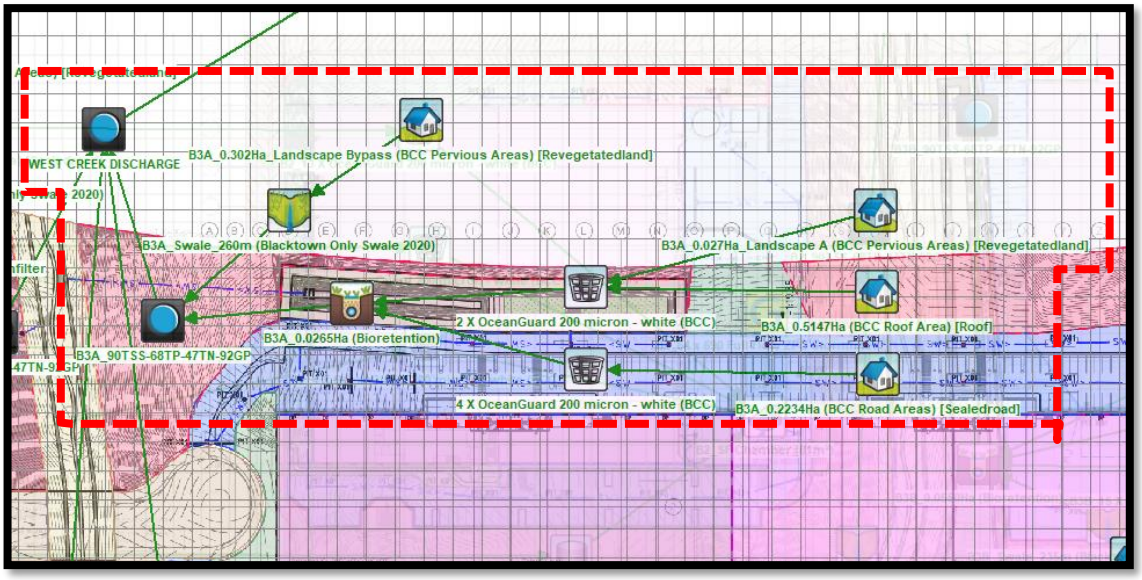


Figure 6.3. MUSIC model layout (Catchment 3A)

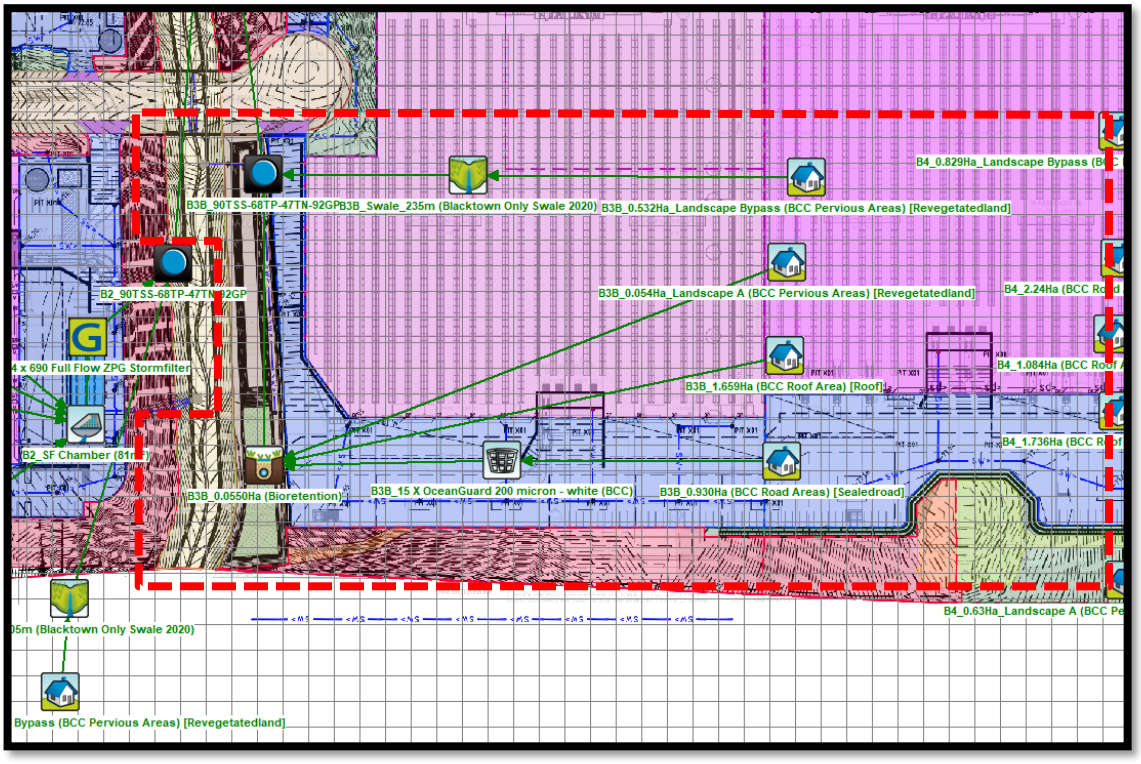


Figure 6.4. MUSIC model layout (Catchment 3B)

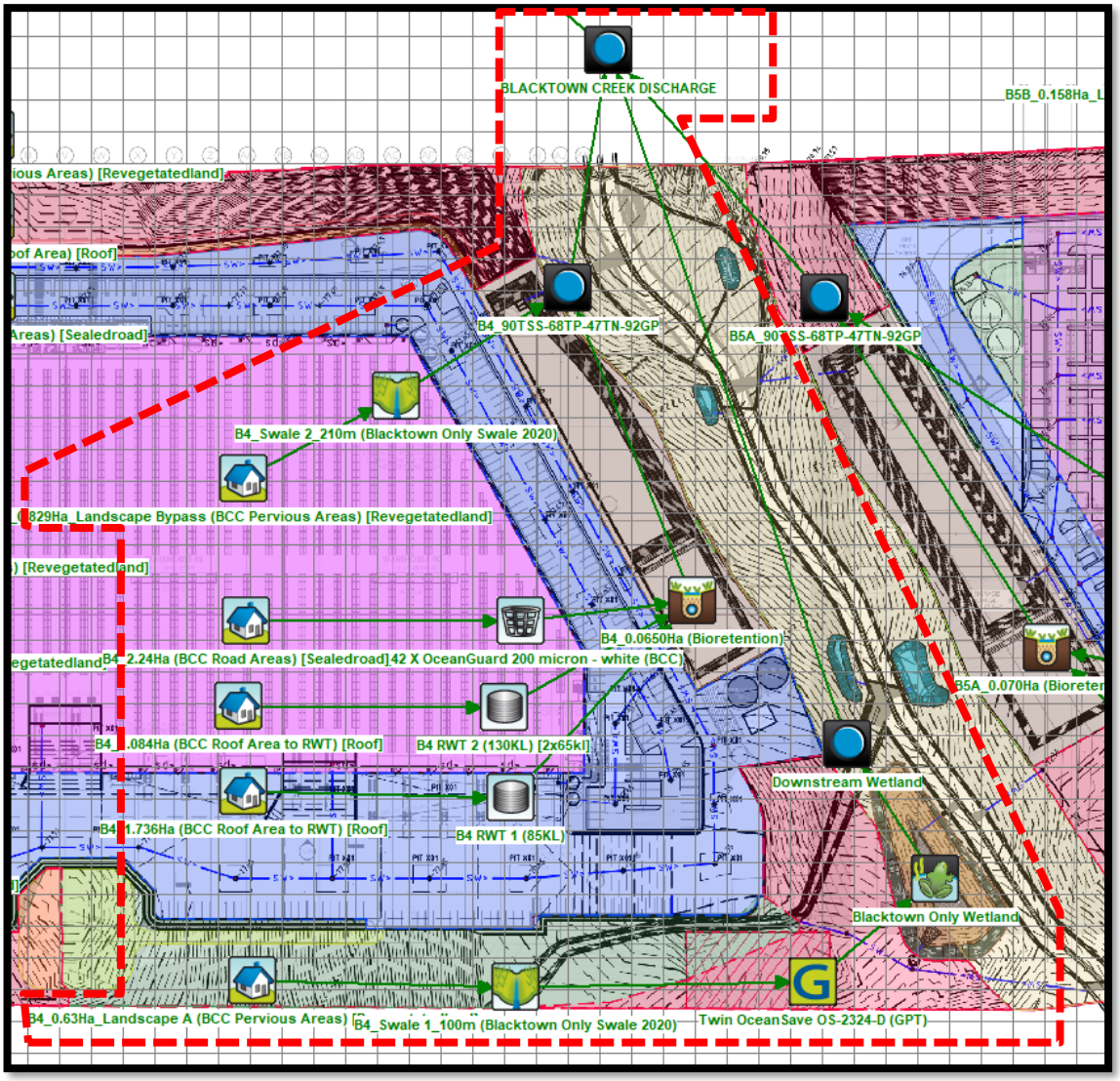


Figure 6.5. MUSIC model layout (Catchment 4)

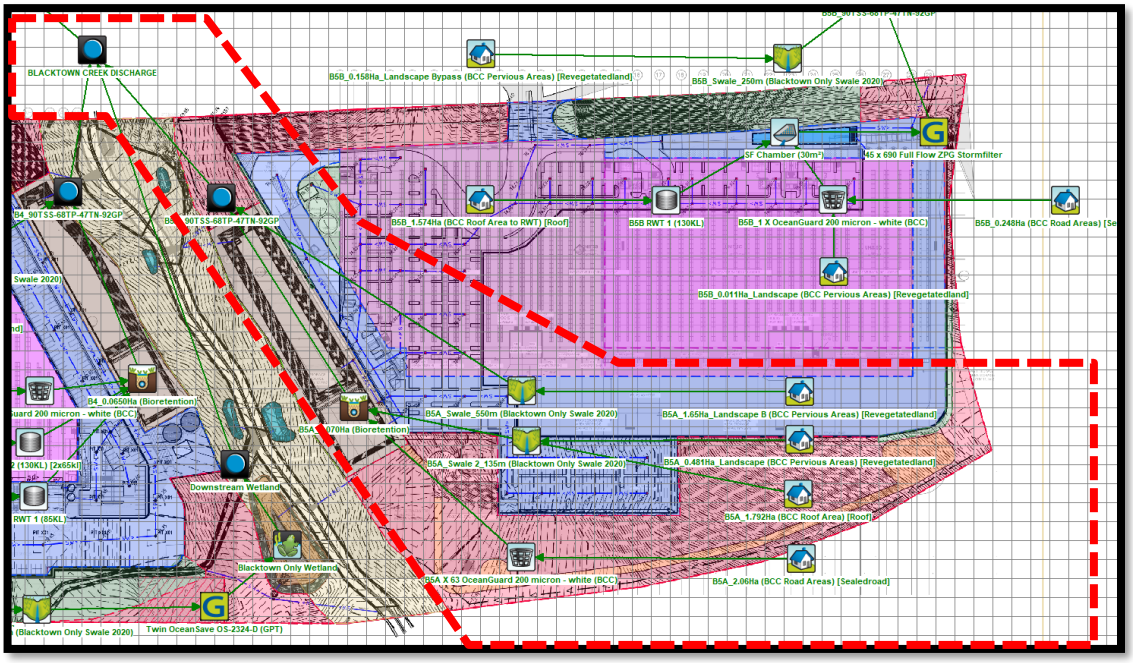


Figure 6.6. MUSIC model layout (Catchment 5A)

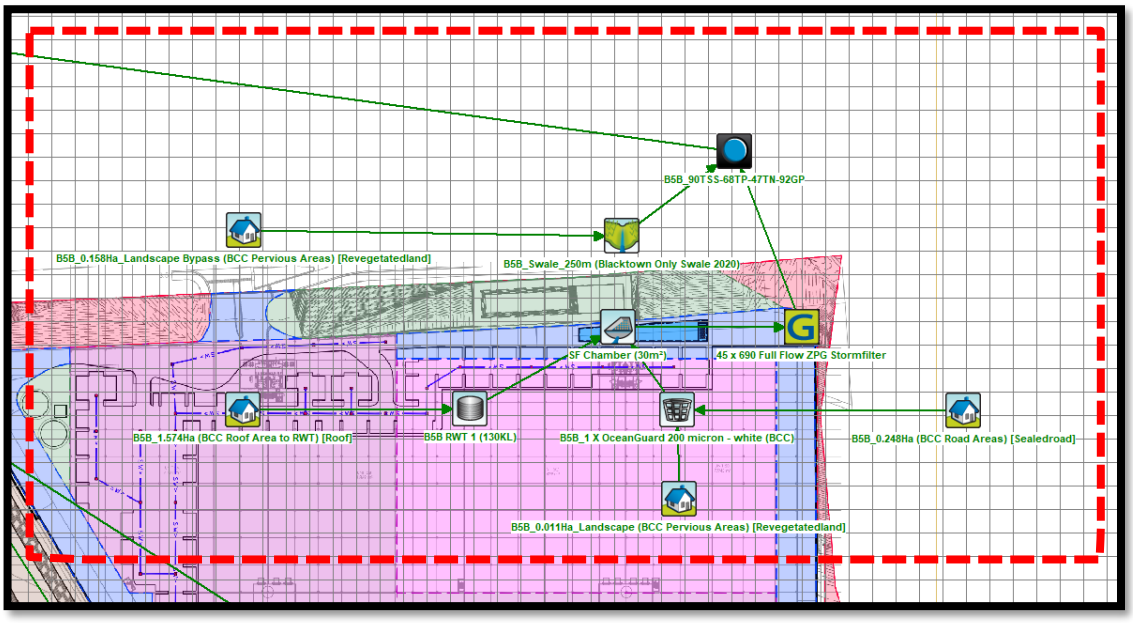


Figure 6.7. MUSIC model layout (Catchment 5B)

Table 6.1 shows the results of the MUSIC analysis. The reduction rate is expressed as a percentage and compares the post-development pollutant loads without treatment versus post-development loads with treatment.

Table 6.1. MUSIC analysis results - % reductions

	Source	Residual Load	% Reduction
Total Suspended Solids (kg/yr) (TSS)	20300	2010	90.1
Total Phosphorus (kg/yr) (TP)	42.9	12.5	71.1
Total Nitrogen (kg/yr) (TN)	300	142	53.1
Gross Pollutants (kg/yr) (GP)	3190	0	100

MUSIC modelling has been performed to assess the effectiveness of the selected treatment trains and to ensure that the pollutant retention requirements of Precinct's DCP have been met.

The MUSIC modelling has shown that the proposed treatment train of STM will provide stormwater treatment which will meet Council's and typical growth centre water quality reduction objective requirements in an effective and economical manner.

Given the expected low source loadings of hydrocarbons and oil/grease and removal efficiencies of the treatment devices we consider that the requirements of the Council have been met. Further discussion on hydrocarbons can be found in **Appendix B.**

6.4 Stormwater Harvesting

Stormwater harvesting refers to the collection of stormwater from the developments internal stormwater drainage system for re-use in non-potable applications. Stormwater from the stormwater drainage system can be classified as either rainwater where the flow is from roof areas, or stormwater where the flow is from all areas of the development.

For the purposes of this development, we refer to a rainwater harvesting system, where benefits of collected stormwater from roof areas over a stormwater harvesting system can be made as rainwater is generally less polluted than stormwater drainage.

Rainwater harvesting is proposed for this development with re-use for non-potable applications. Internal uses include such applications as toilet flushing while external applications will be used for irrigation. The aim is to reduce the water demand for the development by 80%.

In general terms the rainwater harvesting system will be an in-line tank for the collection and storage of rainwater. At times when the rainwater storage tank is full rainwater can pass through the tank and continue to be discharged via gravity into the stormwater drainage system. Rainwater from the storage tank will be pumped for distribution throughout the development in a dedicated non-potable water reticulation system. This however would be subject to future detail design.

Rainwater tanks have been designed, using MUSIC software to balance the supply and demand, based on the below base water demands and to provide 80% reduction in non-potable water demand. Rainwater tank reuse demands were calculated based on typical water demands of toilets and irrigation of landscaped areas. Water demands for toilets was calculated using

0.1kL/day/ toilet. Water demands for irrigation of landscaped areas was calculated using 0.4kL/year/m^2.

6.4.1 Rainwater Tank Sizing

The use of rainwater reduces the mains water demand and the amount of stormwater runoff. By collecting the rainwater run-off from roof areas, rainwater tanks provide a valuable water source suitable for flushing toilets and landscape irrigation.

Rainwater tanks have been designed, using MUSIC software to balance the supply and demand, based on the calculated base water demands and proposed roof catchment areas. Allowances in the MUSIC model has been made for high flow bypass which will be managed by 300mm downpipe roofwater collection configuration along a portion of each of the warehouses.

Table 6.2. Rainwater Reuse Requirements

Warehouse	Roof Catchment (Ha)	Highflow Bypass (L/s)	Tank Size in MUSIC (kL)	Predicted Demand Reduction (%)	Provided Tank (kL)
Warehouse 1	0.284	100	50kl	84	65kl
Warehouse 2	0.560	100	60kl	81	65kl
Warehouse 3&4	2.820	100	195kl	81	2x65kl 1x85kl
Warehouse 5	1.574	100	115kl	81	2x65kl

The MUSIC model, results summarised in **Table 6.2**, predicts that the reuse demands of 80% will be met for the development with the provision of minimum rainwater tank sizes noted above.

Table 6.3. Water Demand

Warehouse	Irrigation Area (m2)	Irrigation (Annual Demand (kl/yr)	No. of Toilets estimated (No.)	Daily Demand (kL/day)
Warehouse 1	1313	525	4	0.4
Warehouse 2	2018	807	5	0.5
Warehouse 3&4	7655	1837 1225	9	0.4 0.5
Warehouse 5	5000	2000	30	3

We note that the final configuration and sizing of the rainwater tanks is subject to detail design considerations and optimum site utilisation.

6.5 Stream Erosion Index (SEI)

Blacktown Council's WSUD developer handbook confirms that SEI will not be required where permanent on-site stormwater detention is provided using Blacktown Council's spreadsheet (Appendix K), providing a low flow orifice sized at 50% AEP and with a total minimum storage volume of 300m3/Ha for the 50% AEP event. The development site also includes Rainwater tanks supplying 80% of non-potable water demand (see section 6.4.1) & Bioretention basins to Catchments 3A, 3B, 4 & 5A in its proposed treatment train process.

6.6 Maintenance and Monitoring

It is important that each component of the stormwater system and water quality treatment train is properly operated and maintained. In order to achieve the design treatment objectives, an indicative maintenance schedule has been prepared and included as **Appendix C** to assist in the effective operation and maintenance of the various water quality components.

Inspection frequency may vary depending on site specific attributes and rainfall patterns in the area. In addition to the nominated frequency, it is recommended that inspections are made following large storm events.

7 FLOODING AND OVERLAND FLOW

7.1 Introduction

A review of overland flow and flooding in relation to the proposed development has been completed. The assessment confirms the requirements of Blacktown City Council's DCP and assessments as required of the SEAR's have been met.

Our review and assessment have been based on a review of the detail survey, the proposed development, and assessment of the site in relation to the flood modelling and documented flood behaviour included in the flood study completed by Hyder in 2010 for the development area (document ref: DN00214). This flood study was completed in support of a rezoning application for the Huntingwood East Precinct to form part of the required documentation regarding flooding and stormwater management to prepare a Precinct Plan.

One riparian corridor drain through the site from south to north, being Blacktown Creek to the east, and an unnamed drainage swale to the west (hereon referred to as Drainage Swale) to the west, both being tributaries of the Parramatta River. An upstream catchment from the opposite side of the M4 Motorway to the south discharges into the creeks through three sets of headwalls and pipes underneath the motorway, two into Blacktown Creek and one into the Drainage Swale. At the downstream site boundary to the north, each creek is discharged through a set of pipes underneath the Great Western Highway. Blacktown Creek discharges into another riparian corridor adjacent to some residential properties, and the Drainage Swale discharges as overland flow through residential properties.

In its existing condition, the creeks are responsible for conveyance of flood waters towards the Parramatta River and provide some degree of flood storage within the site boundaries. Realignment of the creeks is proposed to fit the architectural scheme and has been designed to ensure negligible flood affectation as a result of the development.

An overland flow assessment and two-dimensional flood model (TUFLOW) has been completed in relation to the overland flow path and the creeks in the existing and realigned condition. The

following sections of the report describe the catchment description, flood description and proposed flood management.

Detailed technical information pertaining to the TUFLOW modelling and output completed by our office is included in **Appendix J**.

We have included the following items as part of our review:

• Hyder (2010) – Flood Study and Stormwater Management – Huntingwood East Precinct, Blacktown (document ref: DN00214)

• Review of Councils Floodplain Management Policy in relation to the development including review of potential impacts of the development on existing flooding, and potential impacts on the development from flooding.

7.2 Hyder Flood Study 2010

Extracts of flood behaviour within the site creeks were obtained from a flood study prepared by Hyder in 2010. The study involved a hydrological and hydraulic assessment of the catchment at a local level.

We provide excerpts associated with the 1% AEP storm event from the Flood Study in **Figure 7.1** and **Figure 7.2** to provide a localised overview of the flood conditions over the development site. **Figure 7.1** is noted to be an excerpt of the 1% AEP flood depths and levels and **Figure 7.2** is the 1% AEP flood hazard.

Discussion on flood behaviour are made in **Section 7.3**.



Figure 7.1. Hyder Flood Study – 1% AEP Flood Extent

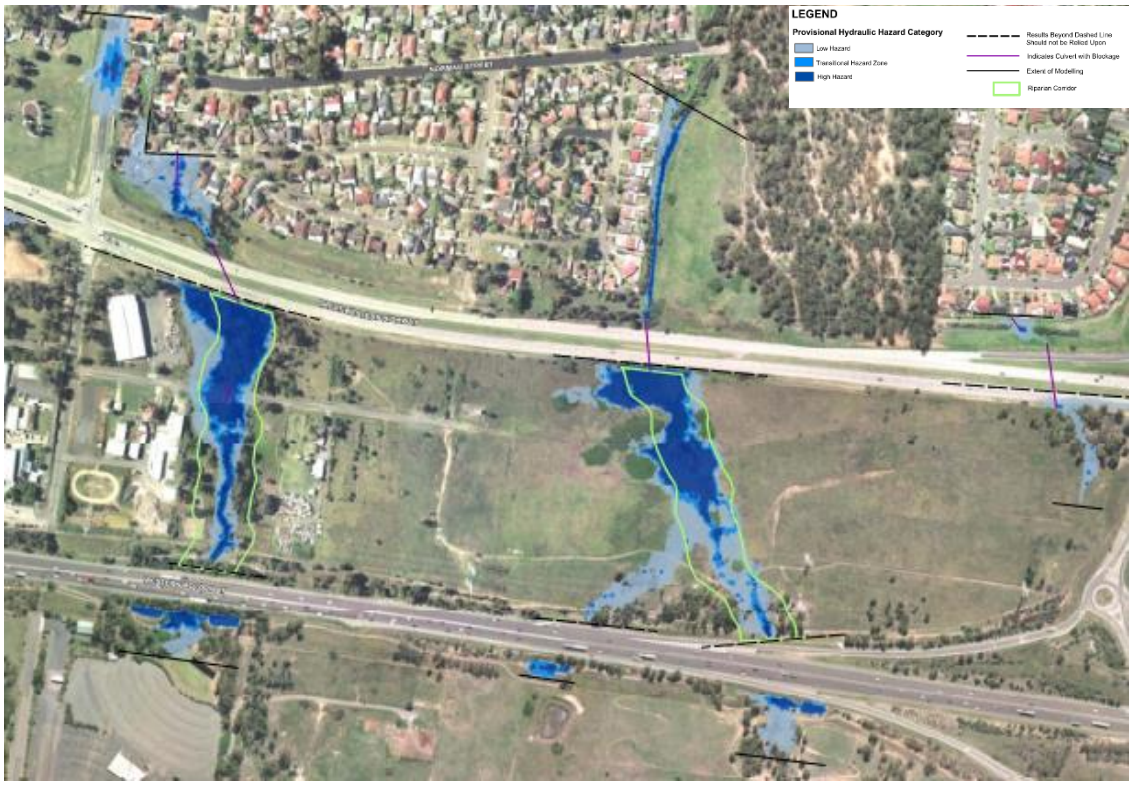


Figure 7.2. Hyder Flood Study – 1% AEP Flood Hazard Map

7.3 Existing Overland Flow and Flood Behaviour

Hyder's flood assessment confirms that the site is a major overland flow path in the 1% AEP flood event, conveying water from upstream catchments to the south towards Parramatta River. The contributing catchments total approximately 55Ha and are split across the two creeks. With reference to **Figure 7.1**, flood water enters through existing stormwater infrastructure constructed underneath the M4 Motorway and converges in the creeks on site. From the flood study, flood levels within the site range from 70m to 75m AHD, reaching depths of up to 4.3m towards the downstream end.

Given the above, the site is shown to be impacted by flooding during the 1% AEP and in more intense storm events. Additional modelling has been conducted to determine the effect of the proposed development on the existing flood behaviour.

7.4 Costin Roe Consulting Modelling

7.4.1 Introduction

A detailed site specific TUFLOW model of the pre and post development conditions has been completed by Costin Roe Consulting. The assessment being completed with consideration to Blacktown City Council's WSUD developer handbook (2020) and – Engineering Guide for Development. Technical parameters and detail included in the TUFLOW model are included as **Appendix J.**

The pre-developed model has been prepared utilising the flood levels and hydrographs as completed by our office, which has been verified against the flood information derived from a flood study completed by Hyder in 2010. Post development modelling has been completed with the introduction of the proposed development. Flood plans showing detailed pre-development and post-development results for the modelled storm events are attached in **Appendix J2**.

7.4.2 Pre-Development 1% AEP

Reference to **Figure 7.3** shows the pre-developed 1% AEP output for depth and levels. **Figure 7.4** shows velocity and **Figure 7.5** show true hazard categorisation.

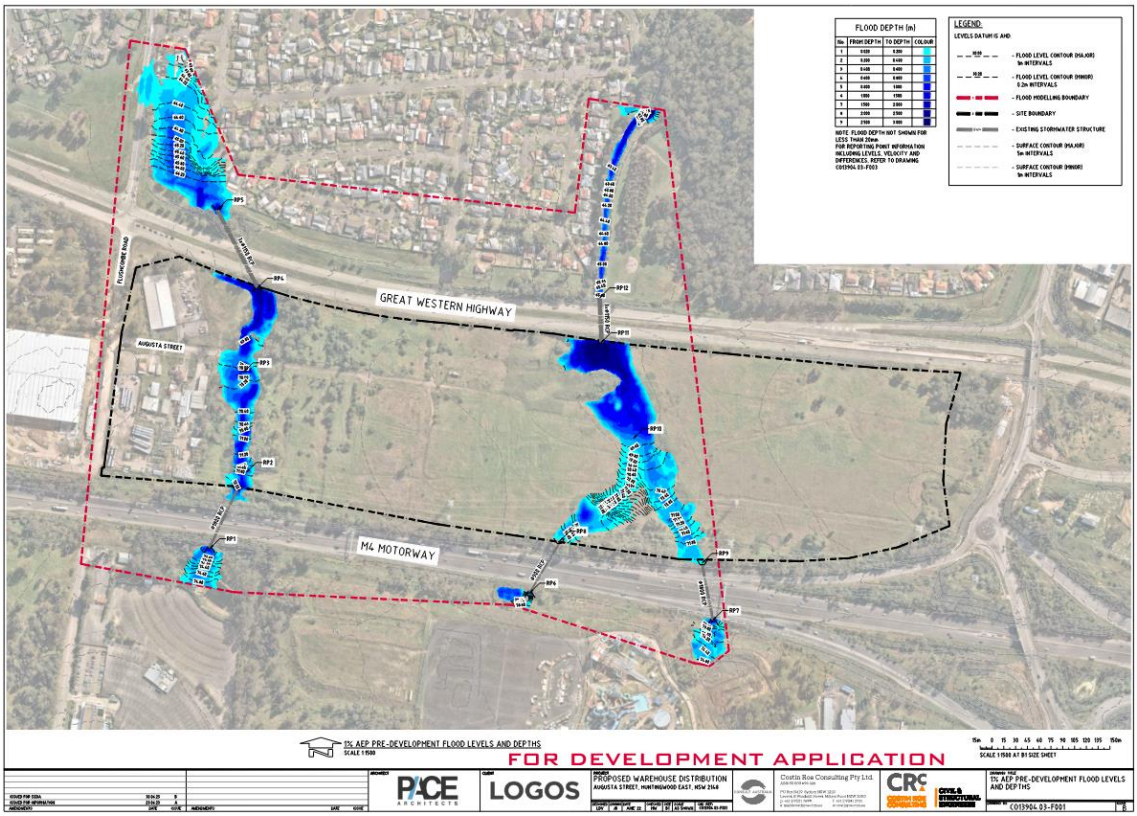


Figure 7.3: 1% AEP Pre-developed Level and Depth Output

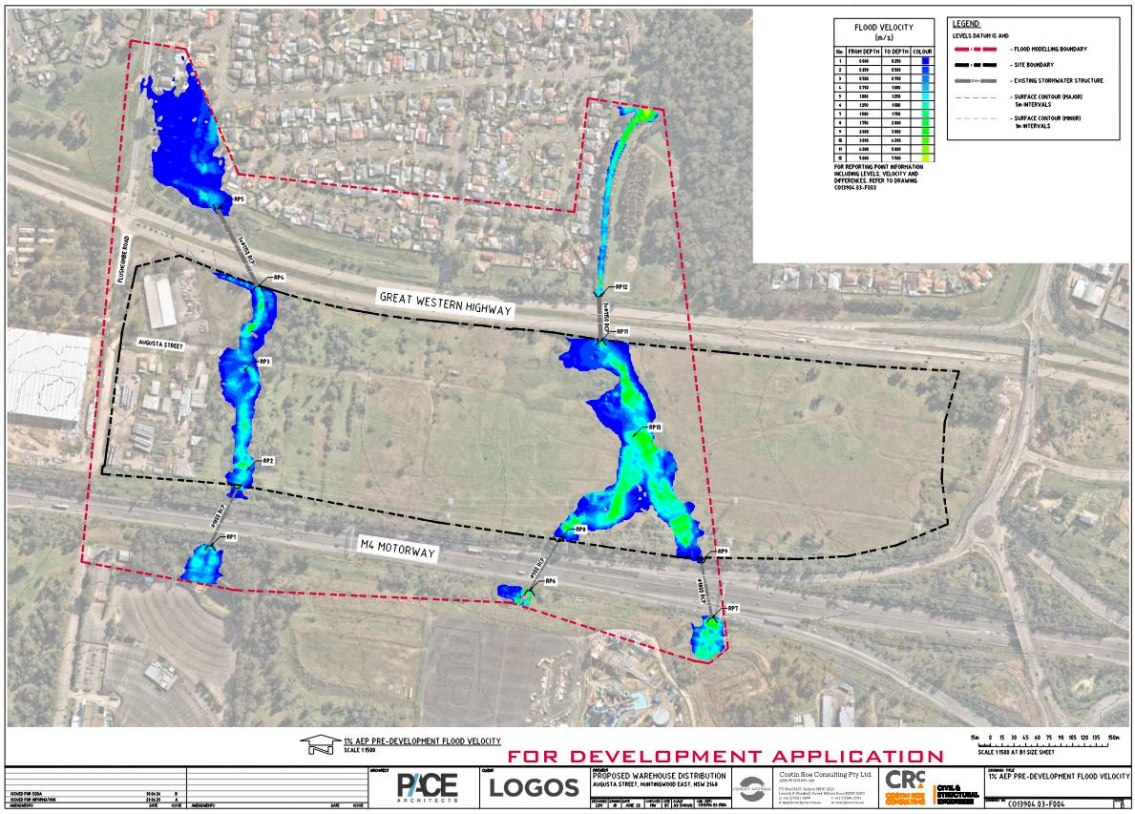


Figure 7.4: 1% AEP Pre-developed Velocity

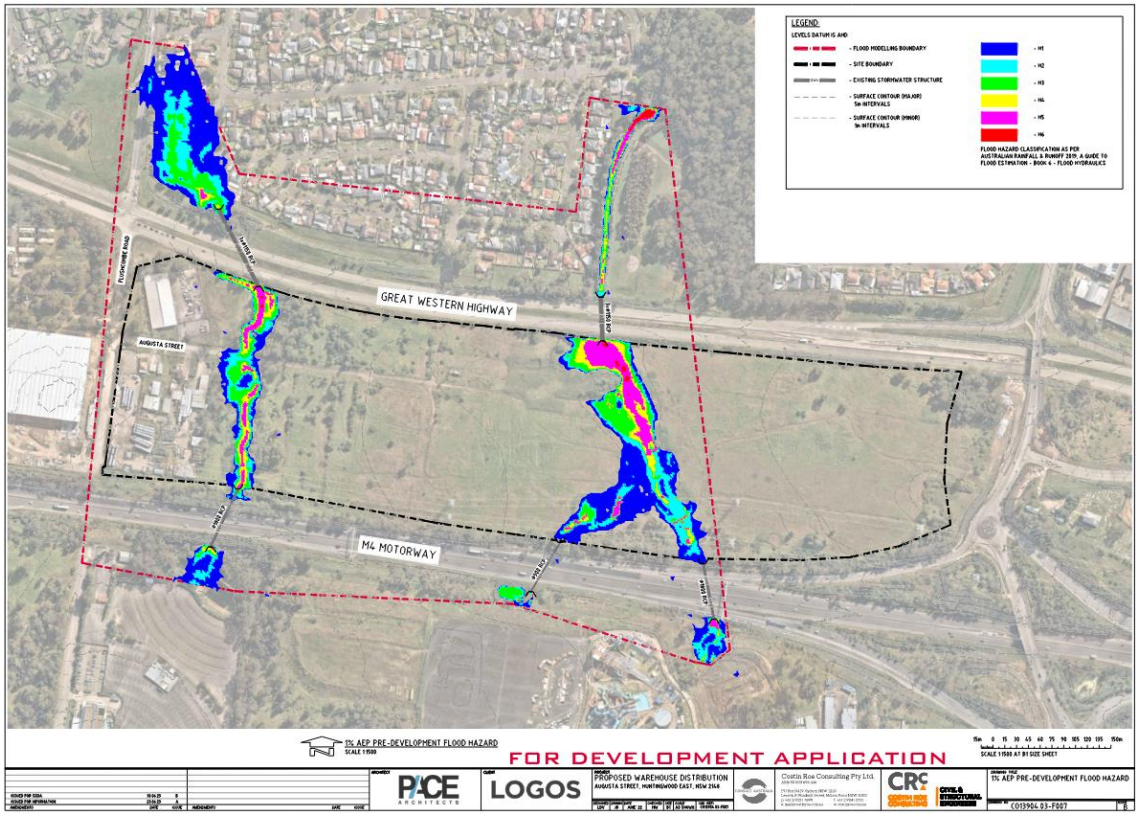


Figure 7.5: 1% AEP Pre-developed Flood Hazard Categorisation

7.4.3 Post-Development 1% AEP

Reference to **Figure 7.6** shows the post-developed 1% AEP output for depth and levels. **Figure 7.7** shows velocity and **Figure 7.8** show true hazard categorisation.

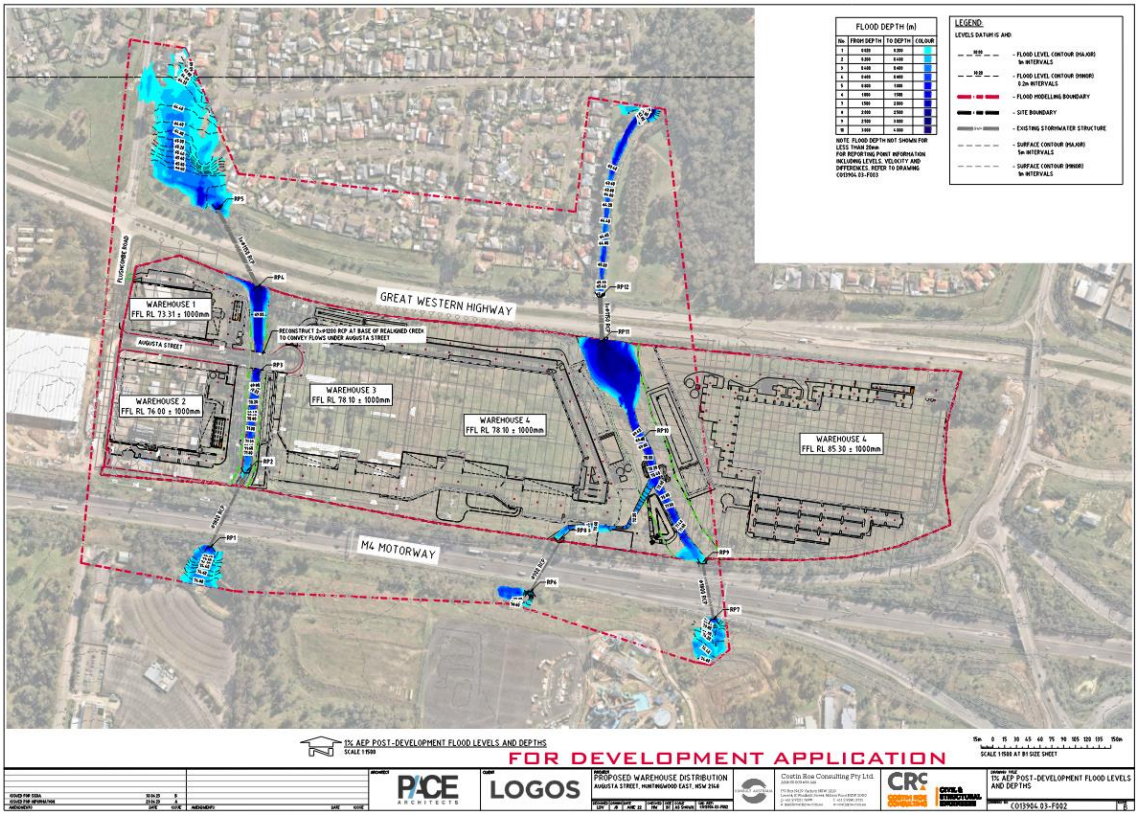


Figure 7.6: 1% AEP Post-developed Level and Depth Output

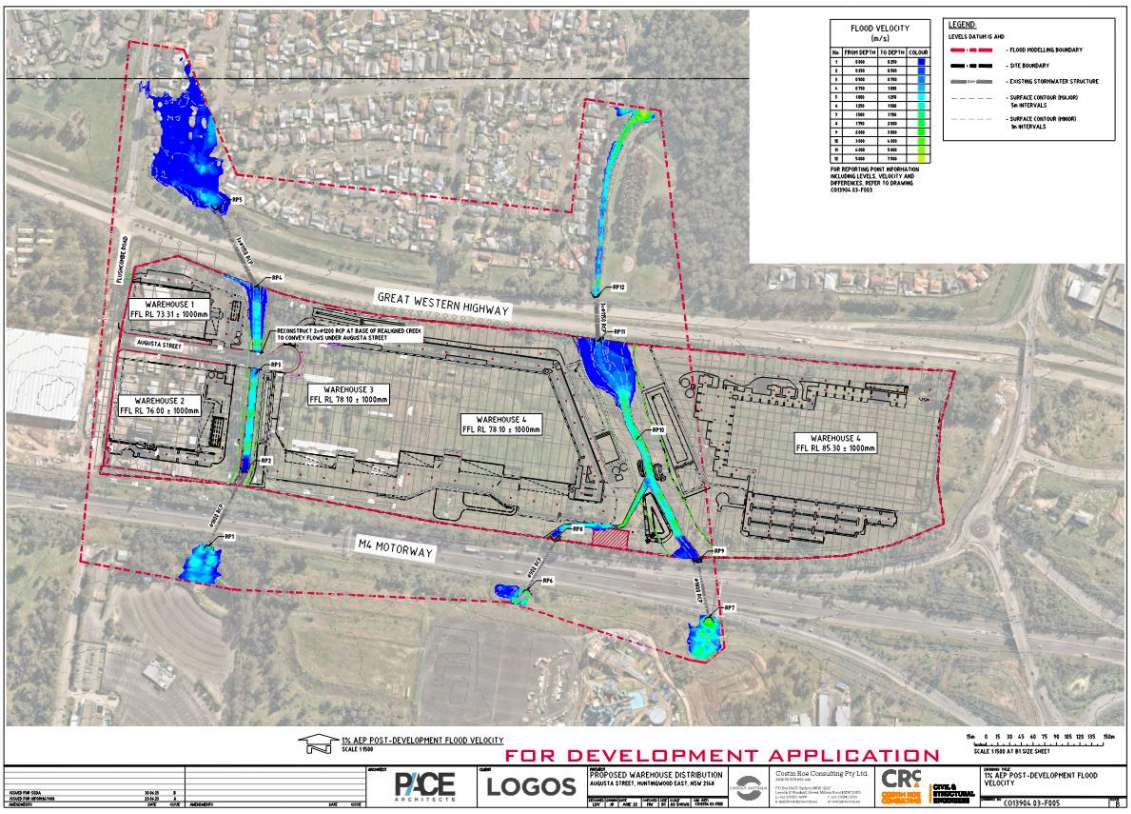


Figure 7.7: 1% AEP Post-developed Velocity

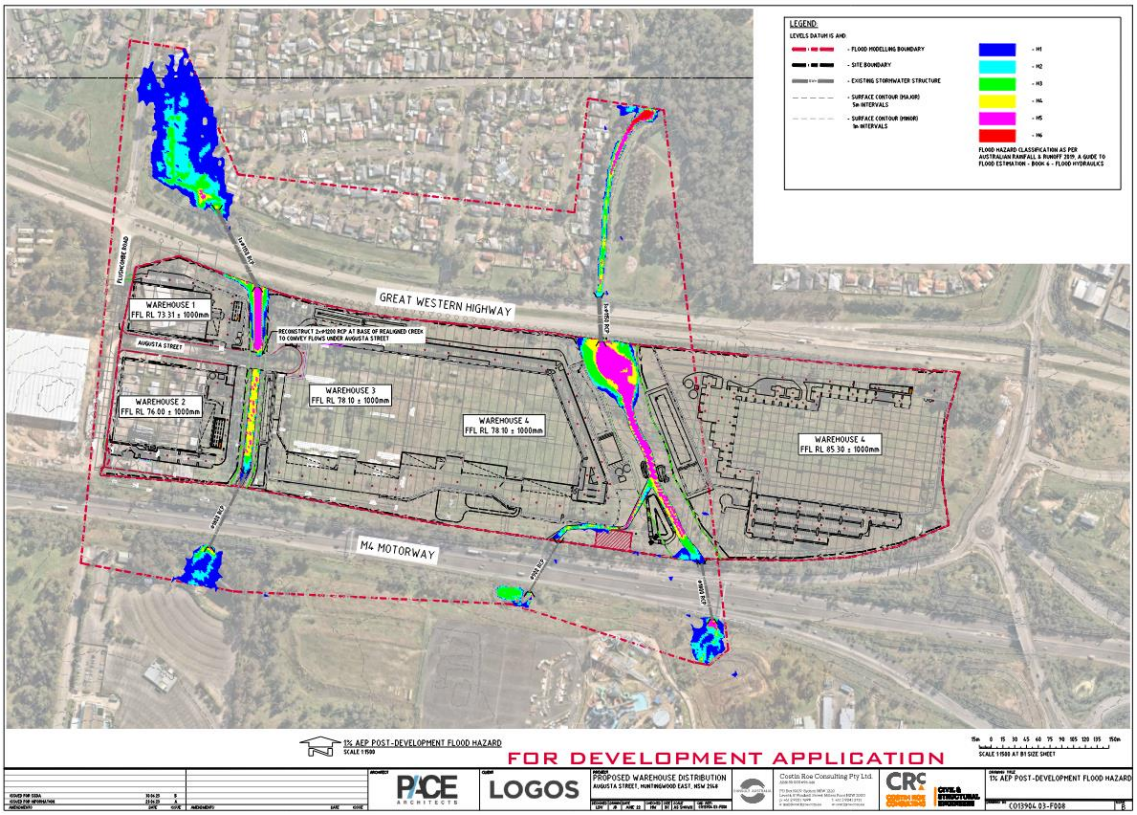


Figure 7.8: 1% AEP Post-developed Flood Hazard Categorisation

7.4.4 1% AEP Comparison

Figure 7.9 shows the 1% AEP flood level afflux (flood level difference) and **Figure 7.10** shows the 1% AEP velocity afflux, associated with the development. **Table 7.1** contains data at 12 reporting points to compare the pre and post development conditions.

The output for the 1% AEP storm event shows that:

- There is generally a decrease in flood levels upstream and downstream of the development site.
- Flood levels within the creek differ from the pre-developed condition due to the proposed creek realignment.

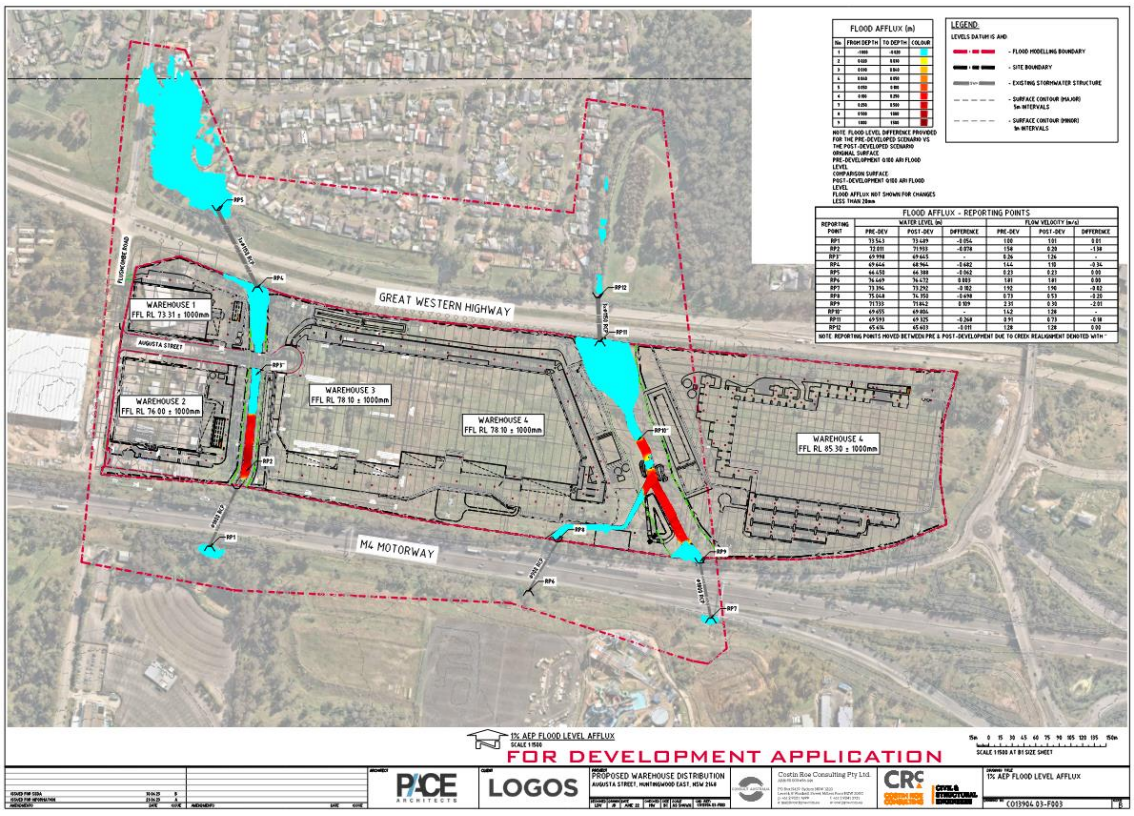


Figure 7.9: 1% AEP Post Developed Flood Level Afflux

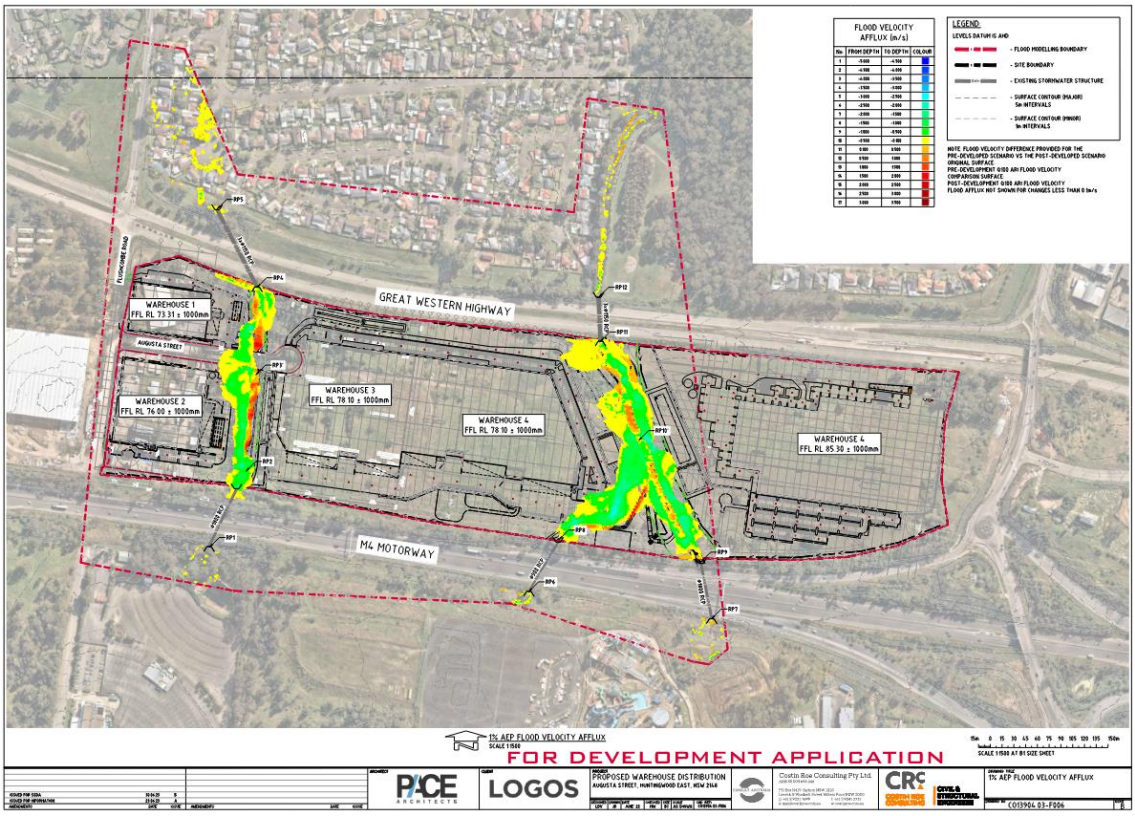


Figure 7.10: 1% AEP Post Developed Flood Velocity Afflux

Table 7.1. Reporting Points and Flood Afflux Confirmation at the Peak of the 1% AEP

FLOOD AFFLUX – REPORTING POINTS						
Reporting Point	Water level (m)			Flow velocity (m/s)		
	Pre-dev	Post-dev	Difference	Pre-dev	Post-dev	Difference
RP1	73.543	73.489	-0.054	1.00	1.01	0.01
RP2	72.011	71.933	-0.078	1.58	0.02	-1.38
RP3*	69.998	69.645	-	0.26	1.26	-
RP4	69.646	68.964	-0.682	1.44	1.10	-0.34
RP5	66.450	66.388	-0.062	0.23	0.23	0.00
RP6	76.469	76.472	0.003	1.81	1.81	0.00
RP7	73.394	73.292	-0.102	1.92	1.90	-0.02
RP8	75.048	74.350	-0.698	0.73	0.53	-0.20
RP9	71.733	71.842	0.109	2.31	0.30	-2.01

RP10*	69.655	69.804	-	1.42	1.28	-
RP11	69.593	69.325	-0.268	0.91	0.73	-0.18
RP12	65.614	65.603	-0.011	1.28	1.28	0.00

Note: Reporting points denoted with * have been moved between pre and post development due to the realignment of the site creeks.

7.4.5 Pre-Development PMF

Reference to **Figure 7.11** shows the pre-developed PMF output for depth and levels. **Figure 7.12** shows velocity and **Figure 7.13** show true hazard categorisation.

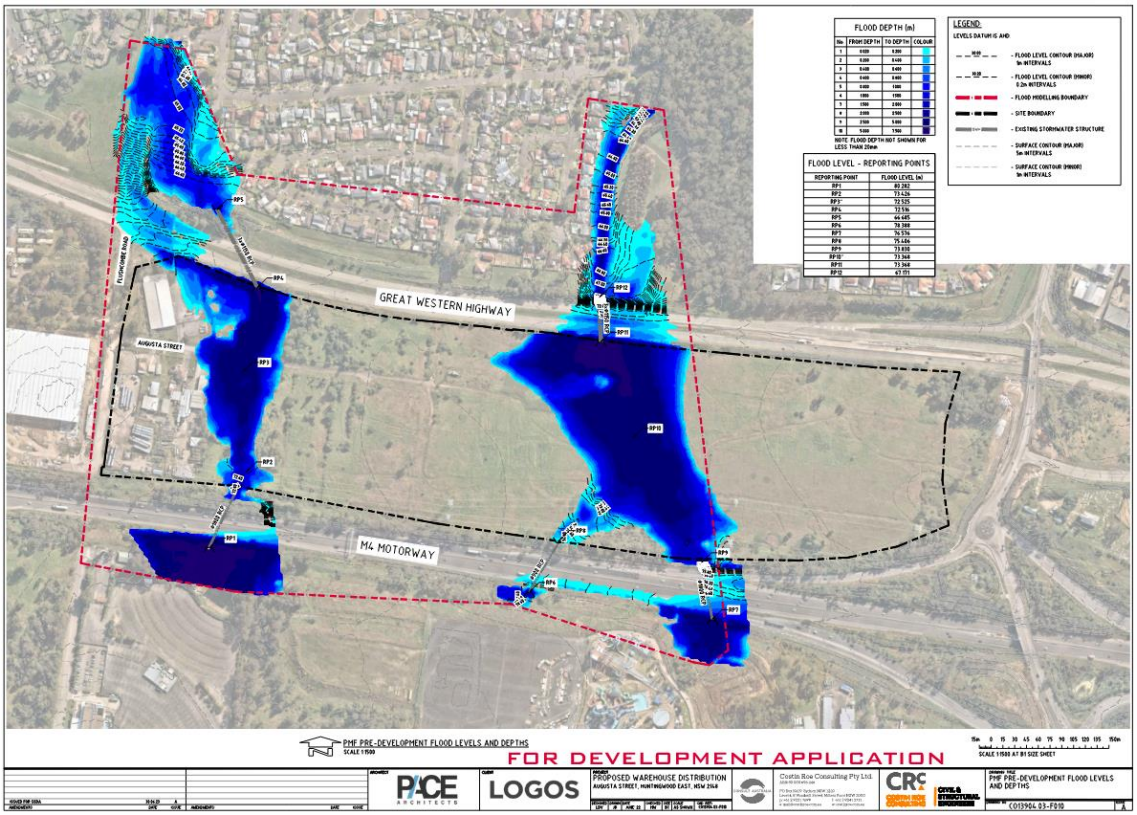


Figure 7.11: PMF Pre-developed Level and Depth Output

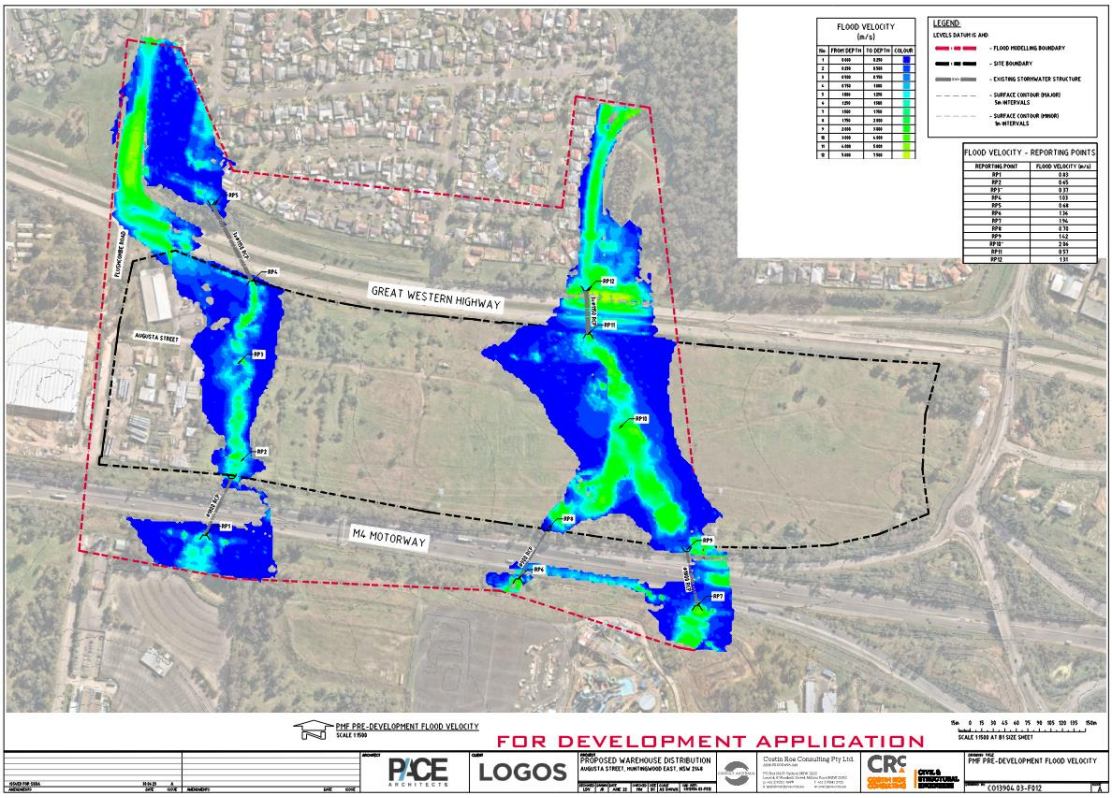


Figure 7.12: PMF Pre-developed Flood Velocity

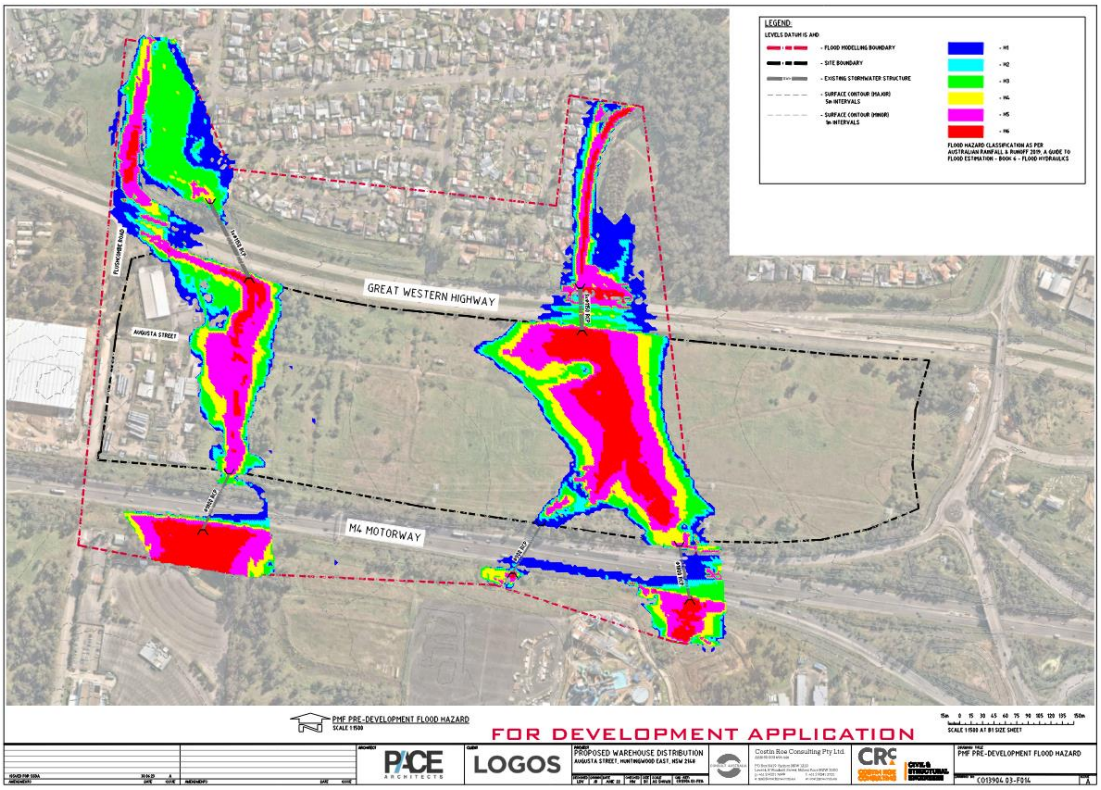


Figure 7.13: PMF Pre-developed Flood Hazard Categorisation

7.4.6 Post-Development PMF

Reference to **Figure 7.14** shows the post-developed PMF output for depth and levels. **Figure 7.15** shows velocity and **Figure 7.16** shows true hazard categorisation.

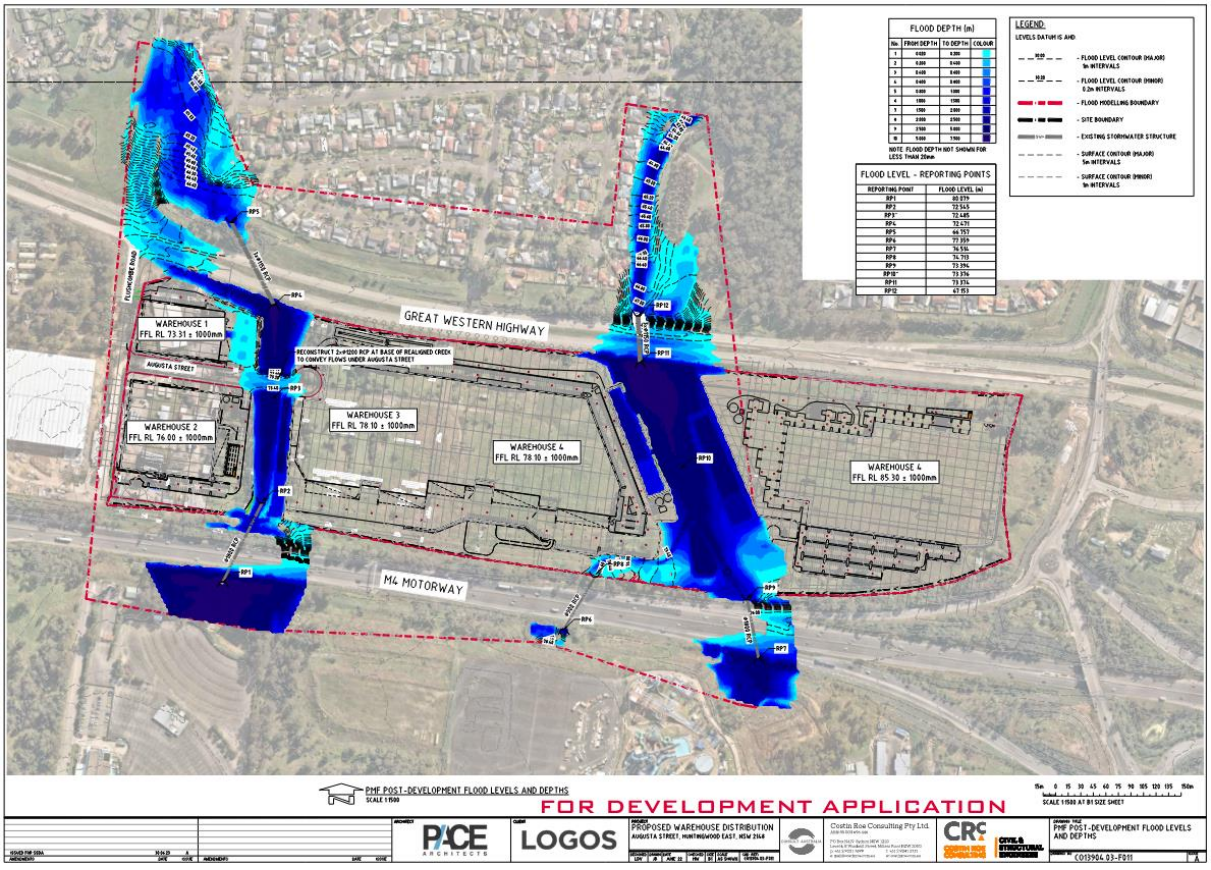


Figure 7.14: PMF Post-developed Level and Depth Output

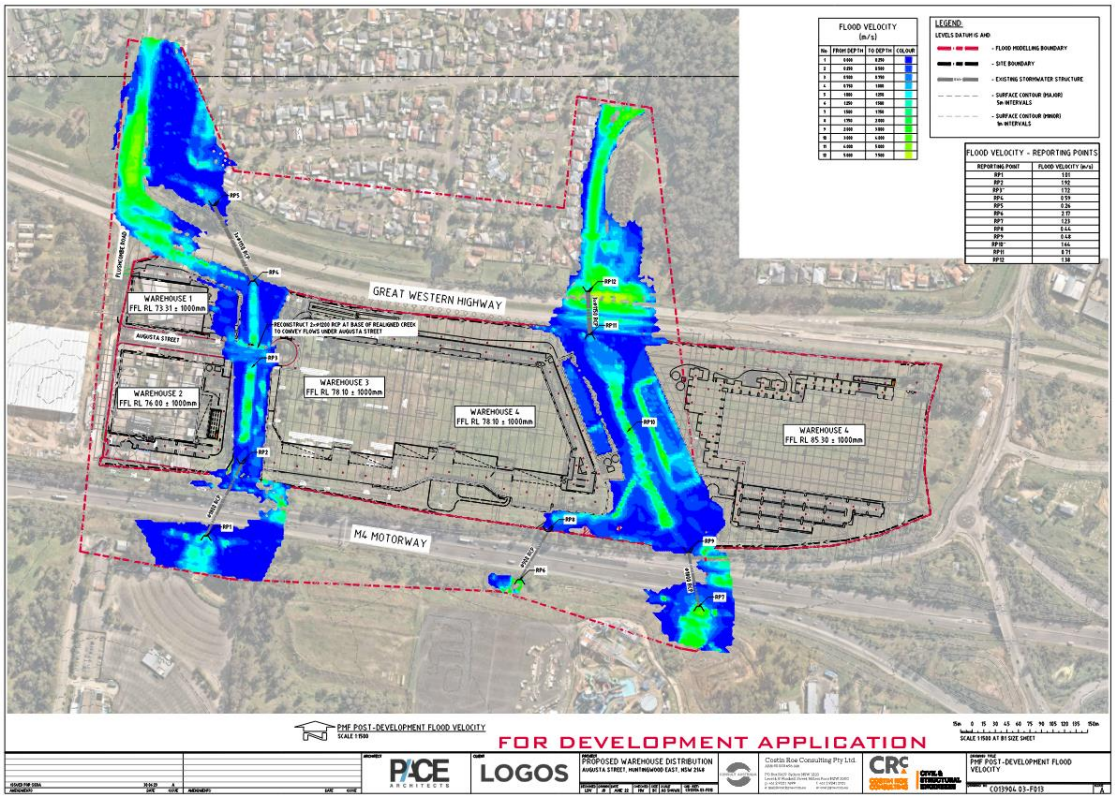


Figure 7.15: PMF Post-developed Flood Velocity

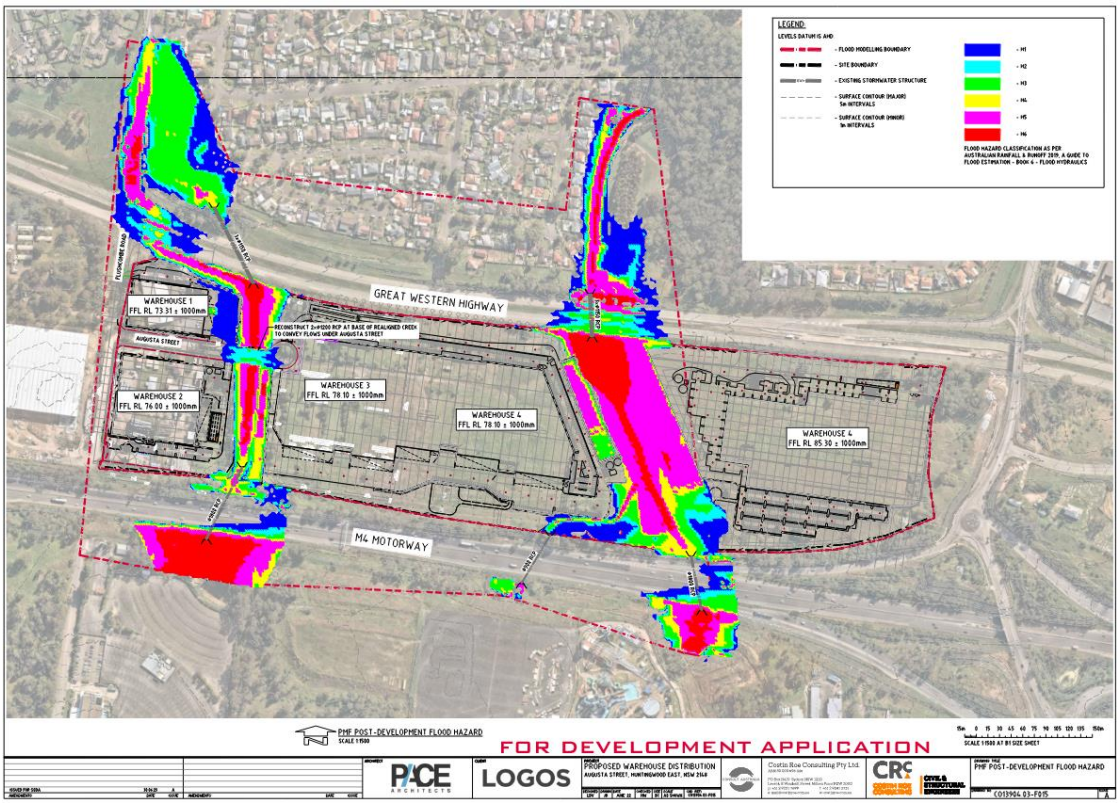


Figure 7.16: PMF Post-developed Flood Hazard Categorisation

7.5 Council Flood modelling Requirements

Council's *WSUD developer handbook* provides relevant requirements relating to development sites identified as affected by mainstream flooding, local runoff, local overland flooding, or sites situated in a defined low point with the potential for overland flows.

The intent of the document is to ensure that new developments do not experience undue flood risk and that existing development is not adversely flood affected through increased damage or hazard as a result of new development.

The flood planning level (FPL) for business/ industrial to be at or above the 1% AEP (1 in 100-year ARI) flood level plus 0.5m freeboard.

Building No	FPL	Proposed FFL
Building 1	RL69.00m	RL73.31m
Building 2	RL72.00m	RL76.00m
Building 3	RL72.00m	RL78.10m
Building 4	RL74.35m	RL78.10m
Building 5	RL76.50m	RL85.30

All levels on the site are noted to be higher than the FPL.

The PMF or extreme event provides an upper limit of flooding and associated consequences for the problem being investigated. It is used for emergency response planning purposes to address the safety of people.

In relation to flood impact on the development or impact from the development on flooding, it is noted that the modelled 1% AEP flood extent does not encroach the subject property, hence no adverse impact to existing flood conditions or surrounding developments are associated with the proposed development. As noted, that the majority of the site is not impacted by the regional PMF flood event, except for Building 1's hardstand being noted as Hazard Category H1.

Overall flood risk for the development, and from the development is considered low to negligible, and the development meets current council flood policy.

Hydraulic and Hazard Categorisation

Floodwaters can vary significantly, both in time and place across the floodplain. They can flow fast and deep at some locations and slow and shallow at other locations. This can result in large variations to the personal danger and physical property damage resulting from the flood.

Blacktown Council has 3 principles for management of the residual impacts of flooding (that is, the remaining flooding impacts once floor levels are raised to the flood planning level). These are, in order of importance:

1. Protection of people from injury.
2. Protection of building structures from damage.

3. Protection of building contents.

Blacktown Council's general standards for hazard for areas outside the Hawkesbury-Nepean backwater flooding area are based on Figure 6.7.9 Combined Flood Hazard Curves from Australian Rainfall and Runoff 2019 (ARR). These include:

- Vehicle parking (H1) - V * D <= 0.3 where V <= 2 m/s and D <= 0.2 m
- Driveways (H1) - V * D <= 0.3 where V <= 2 m/s and D <= 0.3 m
- Pedestrian Access (H2) - V * D <= 0.6 where V <= 2 m/s and D <= 0.5 m

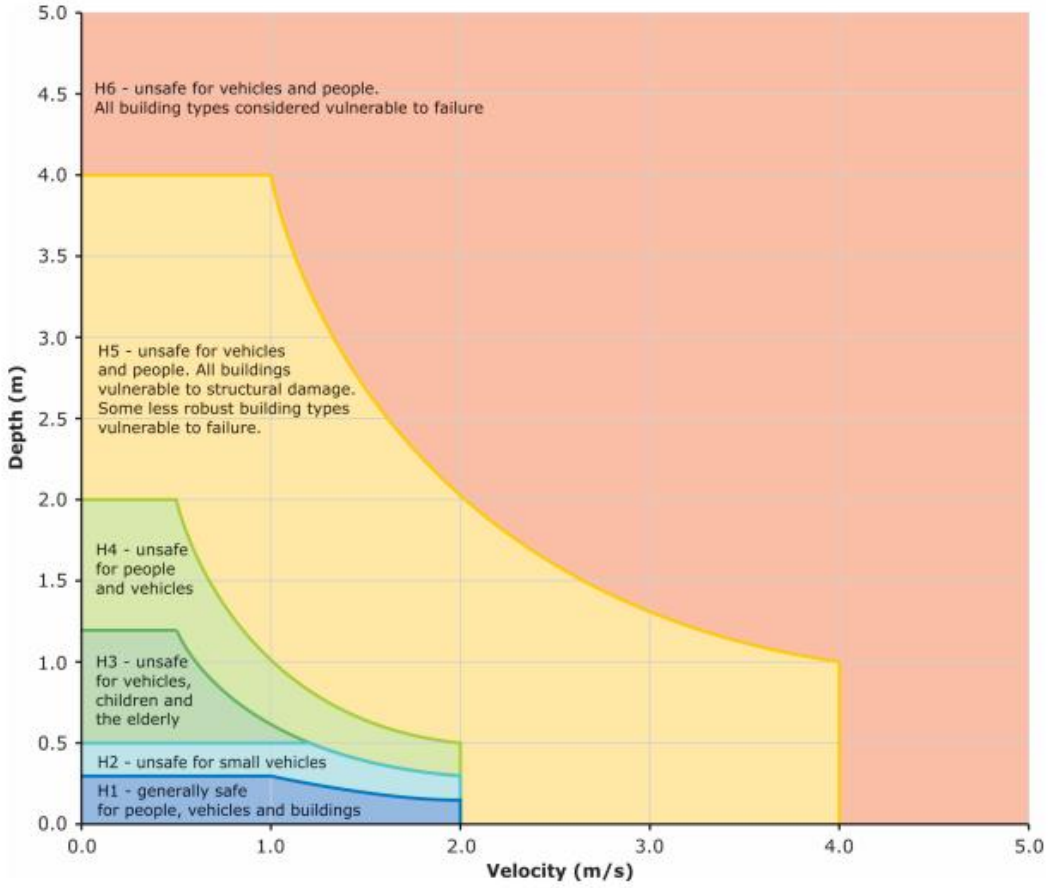


Figure 6.7.9. Combined Flood Hazard Curves (Smith et al., 2014)

Figure 7.17. Combined Flood Hazard Curves (Smith et al., 2014)

Table 6.7.3. Combined Hazard Curves - Vulnerability Thresholds (Smith et al., 2014)

Hazard Vulnerability Classification	Description
H1	Generally safe for vehicles, people and buildings.
H2	Unsafe for small vehicles.
H3	Unsafe for vehicles. children and the elderly.
H4	Unsafe for vehicles and people.
H5	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure.
H6	Unsafe for vehicles and people. All building types considered vulnerable to failure.

Table 6.7.4. Combined Hazard Curves - Vulnerability Thresholds Classification Limits (Smith et al., 2014)

Hazard Vulnerability Classification	Classification Limit (D and V in combination)	Limiting Still Water Depth (D)	Limiting Velocity (V)
H1	D*V ≤ 0.3	0.3	2.0
H2	D*V ≤ 0.6	0.5	2.0
H3	D*V ≤ 0.6	1.2	2.0
H4	D*V ≤ 1.0	2.0	2.0
H5	D*V ≤ 4.0	4.0	4.0
H6	D*V > 4.0	-	-

Figure 7.18. Adopted Hazard Criteria and Provisional Flood Hazard Chart (Australian Rainfall and Runoff 2019)

Flood Damages

Damage caused by floods is generally categorised as either tangible or intangible. Tangible damages are financial in nature and can be readily measured in monetary terms. They include direct damages such as damage or loss caused by floodwaters wetting goods and property, and indirect damages such as lost wages incurred during cleanup periods after the flood event. Intangible damage includes emotional stress and even mental and physical illness caused by the flood. It is difficult, if not impossible to quantify intangible damages in financial terms.

From a flood planning perspective, it is important to consider the following direct damage categories:

- Contents Damage – refers to damage to the contents of buildings, including carpets and furniture etc.;
- Structural Damage – refers to damage to the structural fabric of buildings, such as foundations, walls floors, windows, and built-in fittings; and
- External Damage – includes damage to all items external to buildings, including cars, landscaping etc.

As there is no way to prevent a flood from occurring, and it is unrealistic to exclude all development within flood-prone areas, the intent of establishing a FPL is to minimise the risk of direct damage when a flood occurs. By minimising the direct damage, there is a carry-on effect, whereby other associated indirect tangible damages and intangible damages are also minimised.

Emergency Response Planning

Flood planning refers to the preparation of a formal community-based plan of action to deal with the threat, onset and aftermath of flooding. It involves planning for an event equal to, or greater than the event used to derive the FPL.

The plan of action should include an on-site response plan that addresses what measures should be undertaken once the threat of a flood is determined to be imminent. A flood evacuation strategy should also be included so that all persons within the precinct are familiar with the processes required if a flood occurs.

7.6 Flood Assessment Conclusion

A TUFLOW hydrodynamic flood model has been completed and the pre and post development flood events assessed for the 1% AEP rainfall event.

The assessment shows a reduction in post development 1% AEP flood levels, hence meeting impact requirements. The assessment shows the proposed building achieves flood planning and freeboard requirements.

8 CONSTRUCTION SOIL AND WATER MANAGEMENT

8.1 Soil and Water Management General

Without any mitigation measures and during typical construction activities, site runoff would be expected to convey a significant sediment load. A *Soil and Water Management Plan* (SWMP) and *Erosion and Sediment Control Plan* (ESCP), or equivalent, would be implemented for the construction of the Proposal. The SWMP and ESCPs would be developed in accordance with the principles and requirements of *Managing Urban Stormwater – Soils & Construction Volume 1 ('Blue Book')(Landcom, 2004)* with a staged approach.

In accordance with the principles included in the Blue Book, a number of controls have been incorporated into a preliminary Staged ESCP (refer to accompanying Drawings in **Appendix A**. The Staged ESCP considers initial site establishment, requirements during construction of roads and infrastructure and estate earthworks, completion of estate works and the period between this and development of individual lots.

Section 1 provides a summary of the construction works for the Proposal. While all construction activities have the potential to impact on water quality, the key activities are:

- Erosion and sediment control installation.
- Grading of existing earthworks to suit building layout, drainage layout and pavements.
- Stormwater and drainage works.
- Service installation works.
- Building construction works.

We note that a more detailed ESCP and Construction Soil and Water Management Plan forms part of the Construction Environmental Management Plan (CEMP) submitted in the EIS and prepared by the Principal Contractor. The measures in **Section 8** of this report will be generally consistent with those of the CEMP.

8.2 Typical Management Measures

Sediment Basins

Sediment basins have been sized (based on 5 day, 85th percentile rainfall) and located to ensure sediment concentrations in site runoff are within acceptable limits. Preliminary basin sizes have been calculated in accordance with the Blue Book and are based on 'Type F' soils. These soils are fine grained and require a relatively long residence time to allow settling. (Or 'Type D' soils. These soils contain a significant proportion of fine (<0.005mm) "dispersible" materials that will never settle unless flocculated.)

Sediment basins for 'Type F'/'Type D' soils are typically wet basins which are pumped out following a rainfall event when suspended solids concentrations of less than 50 mg/L have been achieved.

Refer CO13904.03-SSDA200 for calculations, per the Blue Book Guidelines Section 6.3.3.

Sediment Fences & Diversion Drains

Sediment fences are located around the perimeter of the site to ensure no untreated runoff leaves the site. They have also been located around the existing drainage channels to minimise sediment migration into waterways and sediment basins. They have also been located around the proposed stockpiles on the site.

Stabilised Site Access

For the proposal, a stabilised site access is proposed at the seperate entries to the eastern works area via the GWH and the western works area via Flushcombe Road. This will limit the risk of sediment being transported onto Flushcombe Road, Great Western Highway and other public roads.

8.3 Other Management Measures

Other management measures that will be employed are expected to include:

- Minimising the extent of disturbed areas across the site at any one time.
- Progressive stabilisation of disturbed areas or previously completed earthworks to suit the proposal once trimming works are complete.
- Regular monitoring and implementation of remedial works to maintain the efficiency of all controls.

It is noted that the controls included in the preliminary ESCP are expected to be reviewed and updated as the design, staging and construction methodology is further developed for the Proposal.

9 CONCLUSION

This Civil Engineering Report has been prepared in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the State Significant Development Application (SSD- 36138263) for a Proposed Development at Augusta Street, Blacktown, NSW within the Huntingwood Precinct.

A civil engineering strategy for the site has been developed which provides a best practice solution within the constraints of the existing landform and proposed development layout. Within this strategy a stormwater quantity and quality management strategy has been developed to consider peak flows and reduce pollutant loads in stormwater leaving this site. The stormwater management for the development has been designed in accordance with Blacktown City Council requirements and ensuring acceptable impacts relating to the development.

The hydrological assessment shows local post development flows from the site will be managed to pre-development flow or lower, consistent with the requirements of Blacktown City Council, Huntingwood Precinct DCP and UPRCT OSD requirements. The assessment demonstrates that the site discharge will be acceptable per local and regional planning requirement and not unduly affect any land, drainage systems or watercourse as a result of the development.

During the construction phase, a Sediment and Erosion Control Plan will be in place to ensure the downstream drainage system and receiving waters are protected from sediment laden runoff.

During the operational phase of the development, we propose a stormwater quality treatment system incorporating the use of a treatment train approach with the Primary treatment being via either pit litter baskets and/or gross pollutant traps (GPT's) and the Tertiary treatment via adequately sized Bioretention basins combined with an On-Site detention (OSD) storage pond (one exception of Tertiary treatment will be at the most north-eastern catchment which will discharge via an underground OSD tank combined with a proprietary filtration chamber) is proposed to mitigate any increase in stormwater pollutant load generated by the development.

MUSIC modelling results indicate that the proposed STM are effective in reducing pollutant loads in stormwater discharging from the site and meet the requirements of Council's pollution reduction targets. Best management practices have been applied to the development to ensure that the quality of stormwater runoff is not detrimental to the receiving environment.

A TUFLOW hydrodynamic flood model has been completed and the pre and post development flood events assessed for the 5%, 1%, 0.5%, 0.2% AEP rainfall events and the PMF event.

The assessment shows a reduction in post development 1% AEP flood levels, hence meeting impact requirements. The assessment shows the proposed building achieves flood planning and freeboard requirements.

This Appendix confirms the technical input and detailed output completed as part of the assessment. Appendix J is to be read in conjunction with Section 7 of this report.

It is recommended the management strategies in this report be approved and incorporated into the future detailed design.

10 REFERENCES

- Engineering Guide for Development (2005), Blacktown City Council
- Huntingwood Precinct DCP, August 2011, Blacktown City Council
- Water Sensitive Urban Design – Technical Guidelines for Western Sydney (May 2004), URS Australia Pty Ltd
- Upper Parramatta River Catchment Trust On-Site Stormwater Detention Handbook (4th Edition)
- NSW Government (2005). *Floodplain Development Manual.*
- Managing Urban Stormwater: Harvesting and Reuse – 2006 (NSW DEC);
- Managing Urban Stormwater: Source Control – 1998 (NSW EPA);
- Managing Urban Stormwater: Treatment Techniques – 1997 (NSW EPA);
- Landcom (2004). *Managing Urban Stormwater – Soils and Construction* – 4th Edition.
- PSM Geotechnical Report referenced PSM4636-006L and dated 25 August 2023
- JBS&G Acid Sulfate Soils Management Report referenced *62742/143,986 L01 Huntingwood East, Augusta St Blacktown - ASSM (Rev 0)* and dated 19 July 2022
- Hyder Consulting Flood Study and Stormwater Management report referenced DN00214 and dated 18 January 2010

Appendix A

DRAWINGS BY COSTIN ROE CONSULTING

STATE SIGNIFICANT DEVELOPMENT APPLICATION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW, 2148
CIVIL WORKS PACKAGE

DRAWING LIST

DRAWING NO.	DRAWING TITLE
GENERAL:	
C013904.03-SSDA 100	DRAWING LIST & GENERAL NOTES
EROSION & SEDIMENT CONTROL:	
C013904.03-SSDA 200	EROSION AND SEDIMENT CONTROL PLAN - STAGE 1
C013904.03-SSDA 201	EROSION AND SEDIMENT CONTROL PLAN - STAGE 2
C013904.03-SSDA 202	EROSION AND SEDIMENT CONTROL ENGINEERING NOTES
C013904.03-SSDA 250	EROSION AND SEDIMENT CONTROL DETAILS - SHEET 1
C013904.03-SSDA 251	EROSION AND SEDIMENT CONTROL DETAILS - SHEET 2
EARTHWORKS PLAN:	
C013904.03-SSDA 300	BULK EARTHWORKS PLAN
C013904.03-SSDA 310	CUT & FILL PLAN
C013904.03-SSDA 350	BULK EARTHWORKS SECTIONS - SHEET 1
C013904.03-SSDA 351	BULK EARTHWORKS SECTIONS - SHEET 2
C013904.03-SSDA 352	BULK EARTHWORKS SECTIONS - SHEET 3
INFRASTRUCTURE DRAINAGE:	
C013904.03-SSDA 400	STORMWATER DRAINAGE KEY PLAN
C013904.03-SSDA 401	STORMWATER DRAINAGE PLAN - WAREHOUSE 1 & 2
C013904.03-SSDA 402	STORMWATER DRAINAGE PLAN - WAREHOUSE 3
C013904.03-SSDA 403	STORMWATER DRAINAGE PLAN - WAREHOUSE 4
C013904.03-SSDA 404	STORMWATER DRAINAGE PLAN - WAREHOUSE 5 GROUND FLOOR
C013904.03-SSDA 410	BLACKTOWN CREEK REALIGNMENT PLAN
C013904.03-SSDA 415	WESTERN CREEK PLAN
C013904.03-SSDA 450	STORMWATER DRAINAGE DETAILS - SHEET 1
C013904.03-SSDA 451	STORMWATER DRAINAGE DETAILS - SHEET 2
C013904.03-SSDA 452	STORMWATER DRAINAGE DETAILS - SHEET 3
C013904.03-SSDA 453	STORMWATER DRAINAGE DETAILS - SHEET 4
C013904.03-SSDA 454	STORMWATER DRAINAGE DETAILS - SHEET 5
C013904.03-SSDA 455	STORMWATER DRAINAGE DETAILS - SHEET 6
C013904.03-SSDA 456	STORMWATER DRAINAGE DETAILS - SHEET 7
C013904.03-SSDA 457	STORMWATER DRAINAGE DETAILS - SHEET 8
C013904.03-SSDA 458	STORMWATER DRAINAGE DETAILS - SHEET 9
C013904.03-SSDA 470	PRE DEVELOPMENT STORMWATER CATCHMENT PLAN
C013904.03-SSDA 471	POST DEVELOPMENT STORMWATER CATCHMENT PLAN

DRAWING LIST

DRAWING NO.	DRAWING TITLE
FINISHED LEVELS:	
C013904.03-SSDA 500	FINISHED LEVELS PLAN - WAREHOUSE 1 & 2
C013904.03-SSDA 501	FINISHED LEVELS PLAN - WAREHOUSE 1 & 2
C013904.03-SSDA 502	FINISHED LEVELS PLAN - WAREHOUSE 3
C013904.03-SSDA 503	FINISHED LEVELS PLAN - WAREHOUSE 4
C013904.03-SSDA 504	FINISHED LEVELS PLAN - WAREHOUSE 5 GROUND FLOOR
ROADWORKS:	
C013904.03-SSDA 700	ROADWORKS GENERAL ARRANGEMENT PLAN
C013904.03-SSDA 711	ROADWORKS CIVIL WORKS PLAN - SHEET 1
C013904.03-SSDA 712	ROADWORKS CIVIL WORKS PLAN - SHEET 2
C013904.03-SSDA 721	ROADWORKS LONG SECTIONS FLUSHCOMBE ROAD
C013904.03-SSDA 750	ROADWORKS TYPICAL SECTIONS
C013904.03-SSDA 755	ROADWORKS TYPICAL DETAILS



LOCALITY PLAN
N.TS

GENERAL NOTES:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE.
   ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
   ENGINEER'S DRAWINGS ISSUED IN ANY ELECTRONIC FORMAT MUST NOT BE USED FOR DIMENSIONAL SETOUT. REFER TO THE ARCHITECT'S DRAWINGS FOR ALL DIMENSIONAL SETOUT INFORMATION.
4. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
5. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
6. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH ACCEPTABLE SAFETY STANDARDS & APPROPRIATE SAFETY SIGNS SHALL BE INSTALLED AT ALL TIMES DURING THE PROGRESS OF THE JOB.

ELECTRONIC INFORMATION NOTES:

1. THE ISSUED DRAWINGS IN HARD COPY OR PDF FORMAT TAKE PRECEDENCE OVER ANY ELECTRONICALLY ISSUED INFORMATION, LAYOUTS OR DESIGN MODELS.
2. THE CONTRACTOR'S DIRECT AMENDMENT OR MANIPULATION OF THE DATA OR INFORMATION THAT MIGHT BE CONTAINED WITHIN AN ENGINEER-SUPPLIED DIGITAL TERRAIN MODEL AND ITS SUBSEQUENT USE TO UNDERTAKE THE WORKS WILL BE SOLELY AT THE DISCRETION OF AND THE RISK OF THE CONTRACTOR.
3. THE CONTRACTOR IS REQUIRED TO HIGHLIGHT ANY DISCREPANCIES BETWEEN THE DIGITAL TERRAIN MODEL AND INFORMATION PROVIDED IN THE CONTRACT AND/OR DRAWINGS AND IS REQUIRED TO SEEK CLARIFICATION FROM THE SUPERINTENDENT.
4. THE ENGINEER WILL NOT BE LIABLE OR RESPONSIBLE FOR THE POSSIBLE ON-GOING NEED TO UPDATE THE DIGITAL TERRAIN MODEL, SHOULD THERE BE ANY AMENDMENTS OR CHANGES TO THE DRAWINGS OR CONTRACT INITIATED BY THE CONTRACTOR.

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED AS CLOUDED	08.09.23	C
REVISED AS CLOUDED	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA100

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DRAWING TITLE: DRAWING LIST & GENERAL NOTES

DRAWING No: C013904.03-SSDA100 ISSUE: C

TABLE 1 - STABILISATION REQUIREMENTS AND TREATMENT METHODS

DURING CONSTRUCTION - TEMPORARY STABILISATION
(DURING PERIODS OF INACTIVITY OR WHEN WORKS ARE ON HOLD)

LANDS	STABILISATION REQUIREMENT	TIMEFRAMES	TREATMENT METHODS - PRODUCTS	REMARKS
ALL LANDS	C-FACTOR = 0.15 (50% EQUIVALENT GROUND COVER[1]	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY (EVEN THOUGH WORKS MIGHT CONTINUE LATER)	SOIL BINDER (I.E VITAL P47/STONEWALL OR EQUIVALENT[1])	- SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT[1]. - VITAL DILUTION RATE = 1:10(VITAL:WATER). -RE-APPLY/MAINTAIN AS NECESSARY (APPROX. EVERY 3-6 MONTHS WITHOUT SUITABLE VEGETATION COVER) TO ENSURE THE REQUIRED COVER IS PROVIDED.
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC OR EQUIVALENT[1]	- COVER ALL EXPOSED SOILS. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
WATERWAYS, DRAINAGE LINES AND CONCENTRATED FLOW AREAS	C-FACTOR = 0.05 (70% GRASS COVER OR EQUIVALENT GROUND COVER[1]	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND BEFORE THEY ARE ALLOWED TO CARRY CONCENTRATED FLOWS.	REFER TO THE DRAIN SPECIFICATIONS DETAILED ON THE PLAN FOR SPECIFIC LINING/STABILISATION REQUIREMENTS. EXAMPLE TREATMENT METHODS ARE SHOWN BELOW.	
			TEMPORARY LINING - GEOTEXTILE (I.E. BIDIM A24 OR EQUIVALENT[1])	- COMPLETE ANY SUBSOIL TREATMENT BEFORE LAYING THE MATTING. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
			JUTE MESH, SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT[1]) - LOW FLOWS TO MODERATE	- COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF 5 TONNES/Ha). - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75mm. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT[1]. - VITAL DILUTION RATE = 1L / m^2 OF DILUTED VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			JUTE MATTING (~350gsm) AND SEEDING OR EQUIVALENT[1]) - LOW FLOWS TO MODERATE	- COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha). - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75mm. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			TURF REINFORCEMENT MATTING (TRM) (E.G. TERRAMAT OR EQUIVALENT[1]) - MODERATE FLOWS	- COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha). - PLACE TOPSOIL TO A DEPTH OF AT LEAST 75mm. - COMPLETE ANY FERTILISATION AND SEEDING BEFORE LAYING THE MATTING. - INSTALL MATTING IN ACCORDANCE WITH SD 5-7. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			ROCK LINING - HIGH FLOWS	- COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha). - INSTALL GEOTEXTILE UNDERLAY (IF SPECIFIED) IN ACCORDANCE WITH SD 5-7. - INSTALL ROCK ARMOURING (TO THE DEPTH AND SIZE AS SPECIFIED ON THE PLAN).
STOCKPILES	C-FACTOR = 0.10 (60% GRASS COVER OR EQUIVALENT GROUND COVER[1]	APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION	SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT[1])	- APPLY SEED TO ALL STOCKPILE SURFACES (NOTE: SEEDING MAY NOT BE REQUIRED IF EXISTING SEEDBED IS PRESENT). -SPRAY ALL STOCKPILE SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT[1] - VITAL DILUTION RATE = 1:10 (VITAL:WATER). - APPLICATION RATE = 1L / m2 OF DILUTED VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			GEOTEXTILE, JUTE MATTING, BLACK PLASTIC OR EQUIVALENT[1]	- COVER ALL EXPOSED SOILS. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PROVIDED.
GENERAL SURFACES	C-FACTOR = 0.10 / 0.05 (60% / 70% GRASS COVER OR EQUIVALENT GROUND COVER[1]	C-FACTOR = 0.1 APPLIES AFTER 10 WORKING DAYS FROM COMPLETION OF FORMATION AND C-FACTOR = 0.05 APPLIES WITHIN A FURTHER 60 DAYS	TOPSOIL, SEEDING AND SOIL BINDER (I.E. VITAL P47/STONEWALL OR EQUIVALENT[1])	- REFER TO SD 7-1 - COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha). - PLACE GYPSUM TREATED TOPSOIL TO A DEPTH OF AT LEAST 75mm. - APPLY ANY FERTILISERS REQUIRED. - APPLY SEED TO ALL SURFACES. - SPRAY ALL SURFACES WITH VITAL P47/STONEWALL OR EQUIVALENT[1]. - VITAL DILUTION RATE = 1:10 (VITAL:WATER). - APPLICATION RATE = 1L / m2 OF DILUTED VITAL MIXTURE. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.
			HYDROMULCH OR EQUIVALENT[1]	- REFER TO SD 7-1 - COMPLETE SUBSOIL TREATMENT (I.E. GYPSUM LIGHTLY RIPPED INTO SUBGRADE AT A RATE OF STONNES/Ha). - PLACE GYPSUM TREATED TOPSOIL TO A DEPTH OF AT LEAST 75mm. - APPLY HYDROMULCH WITH APPROVED SEED MIX TO SOIL SURFACE. - RE-APPLY/MAINTAIN AS NECESSARY TO ENSURE THE REQUIRED COVER IS PERMANENTLY MAINTAINED.

[1] - EQUIVALENT COVER/PRODUCT MUST ACHIEVE THE EQUIVALENT C-FACTOR WITH PROVEN RESEARCH/DOCUMENTATION TO VERIFY THIS. STANDARD DRAWINGS REFERENCED CAN BE LOCATED IN THE 'SOILS & CONSTRUCTION, MANAGING URBAN STORMWATER - VOLUME 1' BOOK BY LANDCOM. ALTERNATIVE DETAILS MAY BE SOUGHT IN CONSULTATION WITH THE ENGINEER

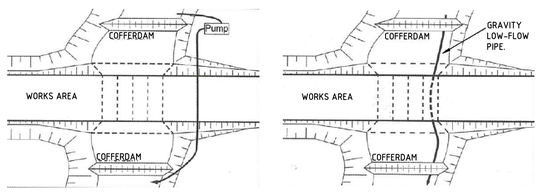
TABLE 2 - LIMITATIONS TO ACCESS DURING CONSTRUCTION

LAND USE	LIMITATION	REMARKS
CONSTRUCTION AREAS	LIMITED TO 5 (PREFERABLE 2) METRES FROM THE EDGE OF ANY ESSENTIAL CONSTRUCTION ACTIVITY AS SHOWN ON ENGINEERING PLANS.	ALL SITE WORKERS SHOULD CLEARLY RECOGNISE THESE AREAS THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCE (DOWNSLOPE) OR SIMILAR MATERIALS.
ACCESS CORRIDORS	LIMITED TO A MAXIMUM WIDTH OF 7 METERS	THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON SITE, THEY CAN VARY IN POSITION SO AS TO BEST CONSERVE EXISTING VEGETATION AND PROTECT DOWNSTREAM AREAS WHILE BEING CONSIDERATE OF THE NEEDS EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES.
REMAINING LANDS, INCLUDING REVEGETATION AREA	ENTRY PROHIBITED EXCEPT FOR ESSENTIAL MANAGEMENT WORKS	THINNING OF GROWTH MIGHT BE NECESSARY, FOR EXAMPLE, FOR FIRE REDUCTION OR WEED REMOVAL.

EROSION CONTROL NOTES

ALL SEDIMENT CONTROL WORK INCLUDING DIVERSION BANKS, CATCH DRAINS, V-DRAINS AND SEDIMENT FENCES SHALL BE COMPLETED IN ACCORDANCE WITH THE STAGED PLANS PRESENTED AND SHALL FACILITATE A STAGED CONSTRUCTION METHODOLOGY.

1. ALL EROSION & SEDIMENT CONTROLS SHALL BE COMPLETED IN ACCORDANCE WITH THE 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWATER - THE BLUE BOOK' BY LANDCOM.
2. SEDIMENT FENCES AND SEDIMENT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
3. STRAW BALE BARRIERS & GEOFABRIC FENCES OR SEDIMENT FANCNES ARE TO BE CONSTRUCTED TO TOE OF BATTER, PRIOR TO COMMENCEMENT OF EARTHWORKS, IMMEDIATELY AFTER CLEARING OF VEGETATION AND BEFORE REMOVAL OF TOP SOIL.
4. ALL TEMPORARY EARTH BERMS, DIVERSION AND SEDIMENT BASIN EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED. REFER TO TABLE 1 FOR APPROVED STABILISATION METHODS.
5. CLEAN OR NON-SITE WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM OVER STABLE SURFACES.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
7. ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS OF 5mm OR GREATER WITHIN A 24 HOUR PERIOD FOR STRUCTURAL DAMAGE OR CLOGGING, TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
8. THE SITE IS TO BE INSPECTED FOLLOWING A RAINFALL EVENT OF 5mm OR GREATER WITHIN A 24 HOUR PERIOD FOR EVIDENCE OF EROSION AND RESPOND WITH INCREASED CONTROL IF REQUIRED.
9. ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
10. ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
11. ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAY'S EARTHWORKS TO DIRECT WATER TO A STABLE OUTLET OVER THE BATTER OR INTERNALLY TOWARDS SEDIMENT CONTROL. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
12. ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
13. AFTER PERMANENT STABILISATION OF THE SITE IS COMPLETE (I.E. BY TOPSOILING, PAVING ETC.) AND THE SITE IS DEEMED TO BE STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SEDIMENT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
14. ALL STOCKPILES ARE TO BE SUITABLY COVERED AND STABILIZED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
15. ANY AREA THAT IS NOT APPROVED BY THE CONTRACT ADMINISTRATOR FOR CLEARING OR DISTURBANCE BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEARLY MARKED AND SIGN POSTED, FENCED OFF OR OTHERWISE APPROPRIATELY PROTECTED AGAINST ANY SUCH DISTURBANCE.
16. ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS INDICATED ON THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN OR APPROVED FOR SUCH USE BY THE SITE MANAGER. A 6m BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING AREA BY USE OF THE MEASURES IN THE APPROVED ESCP.
17. ACCESS AND EXIT AREAS SHALL INCLUDE TRUCK SHAKER GRID OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR VEHICLES.
18. THE CONTRACTOR IS TO ENSURE RUNOFF FROM ALL AREAS WHERE THE NATURAL SURFACE IS DISTURBED BY CONSTRUCTION, INCLUDING ACCESS ROADS, DEPOT AND STOCKPILE SITES, SHALL BE FREE OF SEDIMENTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
19. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWNS AND DRAINS ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES WATER SHALL NOT BE ALLOWED TO POND ON THE WORKS UNLESS SUCH PONDING IS PART OF AN APPROVED ESCP / SWMP.



PUMPED SYSTEM OPTION — GRAVITY PIPE OPTION

INSTREAM WORKS COFFERDAM ARRANGEMENT

DUST CONTROL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE DUST CONTROL MEASURES ARE APPLIED AND MAINTAINED IN ACCORDANCE WITH THE GOVERNING AUTHORITIES REQUIREMENTS.
2. THE APPLICATION OF LIQUID BASED DUST SUPPRESSION MEASURES MUST BE SUCH THAT SEDIMENT LADEN RUNOFF RESULTING FROM SUCH MEASURES DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD. (EG UTILISING SEDIMENT CONTROLS)
3. DUST GENERATION ASSOCIATED WITH WIND EROSION TO BE CONTROLLED USING WATER TRUCKS, DUST SUPPRESSING FOG, MIST GENERATORS, SEALANT PLACED OVER THE SOIL, SURFACE ROUGHENING OR RE-VEGETATION.
4. THE FOLLOWING ACTIVITIES SHALL BE ADOPTED, IF NECESSARY, TO MANAGE DUST CONTROL ON SITE:
   - LIMITING THE AREA OF SOIL DISTURBANCE AT ANY GIVEN TIME
   - REPLACING TOPSOIL AFTER COMPLETION OF EARTHWORKS.
   - PROGRAMMING WORK TO MINIMISE THE LIFE OF STOCKPILES.
   - TEMPORARILY STABILISING LONG-TERM STOCKPILES.
   - GRAVELLING UNSEALED ACCESS AND HAUL ROADS.
   - MINIMISING TRAFFIC MOVEMENT ON EXPOSED SURFACES.
   - LIMITING VEHICULAR TRAFFIC TO 15km/h.
   - RETAINING EXISTING VEGETATION AS WIND BREAKS.
   - UTILISING A WATER CART WITH POTABLE WATER ONLY
5. OIL, LANDFILL GAS CONDENSATE OR ANY CONTAMINATED LEACHATE IS NOT TO BE USED FOR DUST SUPPRESSION.

INSTREAM WORKS:

1. SEDIMENT FENCES AND SEDIMENT FENCE RETURNS TO BE ERECTED PRIOR TO THE COMMENCEMENT OF ANY WORK. SEDIMENT FENCES TO REMAIN UNTIL COMPLETION OF INSTREAM WORK IN THESE LOCATION TO PROTECT EXISTING DOWNSTREAM PROPERTIES AND ROAD PAVEMENT. (REFER TO SSDA250 FOR DETAILS).
2. UNDERTAKE WORK DURING A PERIOD OF DRY FORECASTED WEATHER.
3. PROTECT DISTURBED AREA WITH COFFERDAMS AS REQUIRED.
4. TEMPORARY LOW FLOW DIVERSION PIPE OR PUMPED SYSTEM MAY BE INSTALLED AT THE BASE OF CHANNEL TO DIVERT CLEAN WATER FROM UPSTREAM BASEFLOW.
5. UNDERTAKE ALL INSTREAM WORK IN THE SPECIFIED SECTION OF THE CHANNEL IN ACCORDANCE WITH APPROVED PLANS AND IMMEDIATELY PLANT TO STABLISE THE WORKS.
6. PLANT WITH APPROPRIATE SPECIES, AT A DENSITY THAT WOULD NATURALLY OCCUR.

SITE STABILITY NOTE:

LAND DISTURBANCE & LAND FILLING ACTIVITIES MUST BE UNDERTAKEN IN A PHASED MANNER, IMPACTING A MAXIMUM AREA OF 65Ha AT ANY ONE TIME PER CONDITION B41(a).
DISTURBED AREAS MUST BE STABILISED TO A C-FACTOR OF 0.05 PRIOR TO THE COMPLETION OF ANY OTHER WORKS PER CONDITION B41(b).
REFER TO TABLE 1 ABOVE FOR APPROVED STABILISATION METHODS

INSPECTION & MAINTENANCE NOTES:

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ADEQUATE INSPECTIONS AND MAINTENANCE ARE CARRIED OUT DURING SITE WORKS. DAILY AND WEEKLY INSPECTION CHECKLISTS HAVE BEEN PROVIDED IN THE COSTIN ROE SOIL AND WATER MANAGEMENT PLAN (SWMP) 13904.03-03D.rpt DATED 23/07/23.

AS NOTED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ADEQUATE MAINTENANCE OF EROSION & SEDIMENT CONTROL MEASURES ARE UNDERTAKEN DURING THE WORKS PERIOD. DAMAGED, DISLODGED OR FAULTY ESC MEASURES ARE TO BE IMMEDIATELY RECTIFIED AND THE SURROUNDING AREA IS TO BE REMEDIATED AS PER NOTES ON THIS DRAWING, THE SWMP AND THE LANDCOM 'BLUE BOOK'.

SOIL & WATER MANAGEMENT PLAN NOTE:

ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SOIL AND WATER MANAGEMENT PLAN BY COSTIN ROE CONSULTING, REF 13904.03-03D.rpt

SEDIMENT CONTROL BASIN NOTES

1. TYPE D BASIN IS REQUIRED.
2. VOLUME OF THE BASINS SHALL BE AS NOMINATED ON DRAWING. NOMINAL POND LOCATIONS AND NOMINAL DIMENSIONS.
3. SEDIMENT BUILD UP TO NOT EXCEED 33% TOTAL CAPACITY OF BASIN.
4. DEWATERING OF BASIN TO BE PERFORMED TO THE BOTTOM OF THE SEDIMENT SETTLING ZONE FOLLOWING ACHIEVEMENT OF WQO's. MANAGEMENT OF DOSAGE AND DISCHARGE TO BE ACHIEVED WITHIN 5 DAYS OF THE INITIAL RAINFALL EVENT.
5. FOLLOWING DEWATERING PER NOTE 4, WATER LEVEL TO BE MAINTAINED AT 20% CAPACITY AFTER A FOUR DAY SETTLING PERIOD FOLLOWING A STORM EVENT SUCH THAT THE BASIN HAS SUFFICIENT CAPACITY TO CONTAIN RUNOFF AND SEDIMENT FROM SUBSEQUENT RAINFALL EVENTS.
6. WATER TO BE DOSED WITH GYPSUM TO ACCELERATE SETTLEMENT OF SUSPENDED SOLIDS AS REQUIRED.
7. GYPSUM DOSAGE RATE TO BE APPLIED AT APPROX. 32kg PER 100 CUBIC METRE OF COLLECTED RUNOFF.
8. THE USE OF ALUM (OR ANY OTHER ALTERNATIVE) AS A FLOCCULANT IS NOT RECOMMENDED. ALUM OR ANY OTHER FLOCCULANT IS TO BE USED ONLY FOLLOWING CONSULTATION WITH AND ACCEPTANCE FROM COUNCIL ESC OFFICERS.
9. DISCHARGE FROM POND IS PERMISSIBLE WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW A TSS OF 50mg/L. CLARIFICATION WOULD GENERALLY BE ACHIEVED IN 36-72 HOURS WITH THE USE OF GYPSUM PLUS NO VISIBLE OIL OR GREASE. CORRELATION TESTS MUST BE UNDERTAKEN ON SITE TO ENSURE THIS IS ACHIEVED.
10. DEWATERING SHALL BE DONE IN SUCH A MANNER AS TO REMOVE THE CLEAN WATER (BEING WATER WITHIN THE ADOPTED CRITERIA) WITHOUT REMOVING OR DISTURBING THE SEDIMENT THAT HAS SETTLED. THE PUMP INTAKE PIPE IS NOT TO REST ON THE SETTLED SEDIMENT LAYER.
11. IF WATER EXCEEDS TSS OF 50mg/L DURING DEWATERING, PUMPING IS TO CEASE. RECORDS ARE TO BE KEPT (ON-SITE AT ALL TIMES) OF ALL MEASUREMENT PRIOR TO, DURING AND AFTER DISCHARGE. RECORDS TO BE MADE AVAILABLE TO COUNCIL OFFICERS UPON REQUEST.
12. PROVIDE SECURITY FENCE TO BASIN FOR SAFETY.

SEDIMENTATION BASIN NOTE:

REFER TO SEDIMENT & EROSION CONTROL NOTES.

FOR SEDIMENT AND EROSION CONTROL DETAILS, REFER TO THE LANDCOM 'BLUE BOOK' AND EXTRACTS ON DRAWING SSDA250.

SEDIMENTATION BASIN SIZING BASED ON RECOMMENDATIONS OF 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWAER-THE BLUE BOOK'. CAPACITY BASED ON 5-DAY RAINFALL DEPTHS AT 85th PERCENTILE INTENSITY (32.2mm) IN THE LIVERPOOL CATCHMENT AREA.

NOTES:
1. ASSUME TYPE D SOIL (CLAY/SILTY CLAY)
2. ASSUME GROUP D SOIL (HIGH PLASTICITY AND SHRINK/SWELL PROPERTIES)
3. REFER TO DRAWING SSDA201 FOR SEDIMENTATION BASIN CALCULATIONS

C

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED AS CLOUDED	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

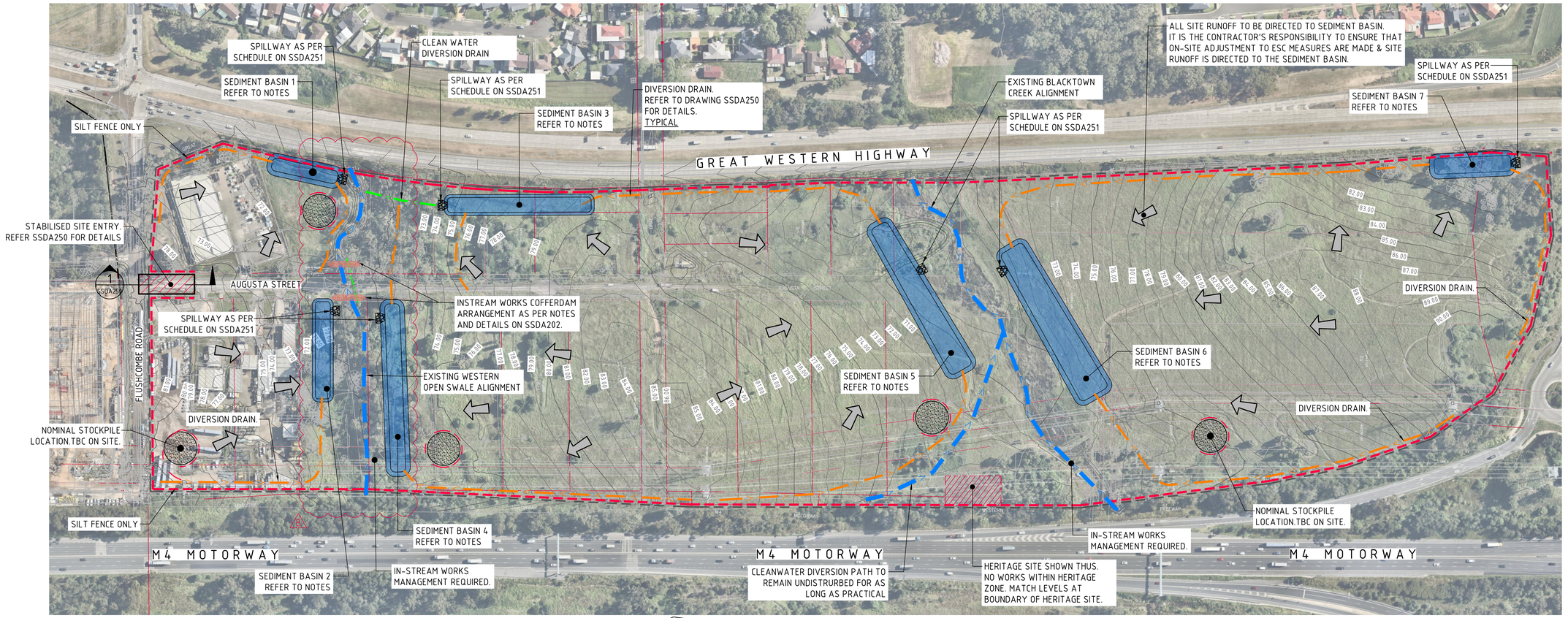
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CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA200

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DRAWING TITLE: EROSION & SEDIMENT CONTROL ENGINEERING NOTES
DRAWING No: C013904.03-SSDA200
ISSUE: C



EROSION AND SEDIMENT CONTROL PLAN - STAGE 1

SCALE 1:1500

SEDIMENT BASIN DIMENSIONS

SEDIMENT BASIN 1:

CATCHMENT AREA	= 1.49ha
REQUIRED BASIN VOLUME	= 360m³
BASE DIMENSION (LxB)	= 8.0m x 15.0m
TOP DIMENSION (LxB)	= 17.0m x 24.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 375m³

SEDIMENT BASIN 2:

CATCHMENT AREA	= 2.53ha
REQUIRED BASIN VOLUME	= 611m³
BASE DIMENSION (LxB)	= 12.0m x 20.0m
TOP DIMENSION (LxB)	= 21.0m x 29.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 616m³

SEDIMENT BASIN 3:

CATCHMENT AREA	= 1.73ha
REQUIRED BASIN VOLUME	= 418m³
BASE DIMENSION (LxB)	= 10.0m x 15.0m
TOP DIMENSION (LxB)	= 19.0m x 24.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 434m³

SEDIMENT BASIN 4:

CATCHMENT AREA	= 3.46ha
REQUIRED BASIN VOLUME	= 836m³
BASE DIMENSION (LxB)	= 15.0m x 24.0m
TOP DIMENSION (LxB)	= 24.0m x 33.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 843m³

SEDIMENT BASIN 5:

CATCHMENT AREA	= 6.48ha
REQUIRED BASIN VOLUME	= 1565m³
BASE DIMENSION (LxB)	= 25.0m x 31.0m
TOP DIMENSION (LxB)	= 34.0m x 40.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 1581m³

SEDIMENT BASIN 6:

CATCHMENT AREA	= 6.62ha
REQUIRED BASIN VOLUME	= 1599m³
BASE DIMENSION (LxB)	= 26.0m x 31.0m
TOP DIMENSION (LxB)	= 35.0m x 40.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 1634m³

SEDIMENT BASIN 7:

CATCHMENT AREA	= 1.96ha
REQUIRED BASIN VOLUME	= 573m³
BASE DIMENSION (LxB)	= 11.0m x 16.0m
TOP DIMENSION (LxB)	= 20.0m x 25.0m
MAX SIDE SLOPE	= 1V:3H
DEPTH	= 1.5m
PROVIDED BASIN VOLUME	= 486m³

LEGEND:

PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS. TYPICAL (N.S.O.P.)

- DENOTES DIVERSION DRAIN
- DENOTES CLEAN WATER DIVERSION DRAIN
- DENOTES SILT FENCE WITH CATCH DRAIN
- DENOTES SILT FENCE ONLY
- DENOTES CONSTRUCTION ENTRY
- DENOTES OVERLAND FLOW PATH
- DENOTES NOMINAL STOCKPILE LOCATION.

NOTES:

REFER TO DRAWING SSDA200 FOR DETAILED EROSION AND SEDIMENT CONTROL NOTES.

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

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AMENDMENTS	DATE	ISSUE
REVISED AS CLOUDED	10.07.23	B
ISSUED FOR INFORMATION	30.06.23	A

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CLIENT: LOGOS

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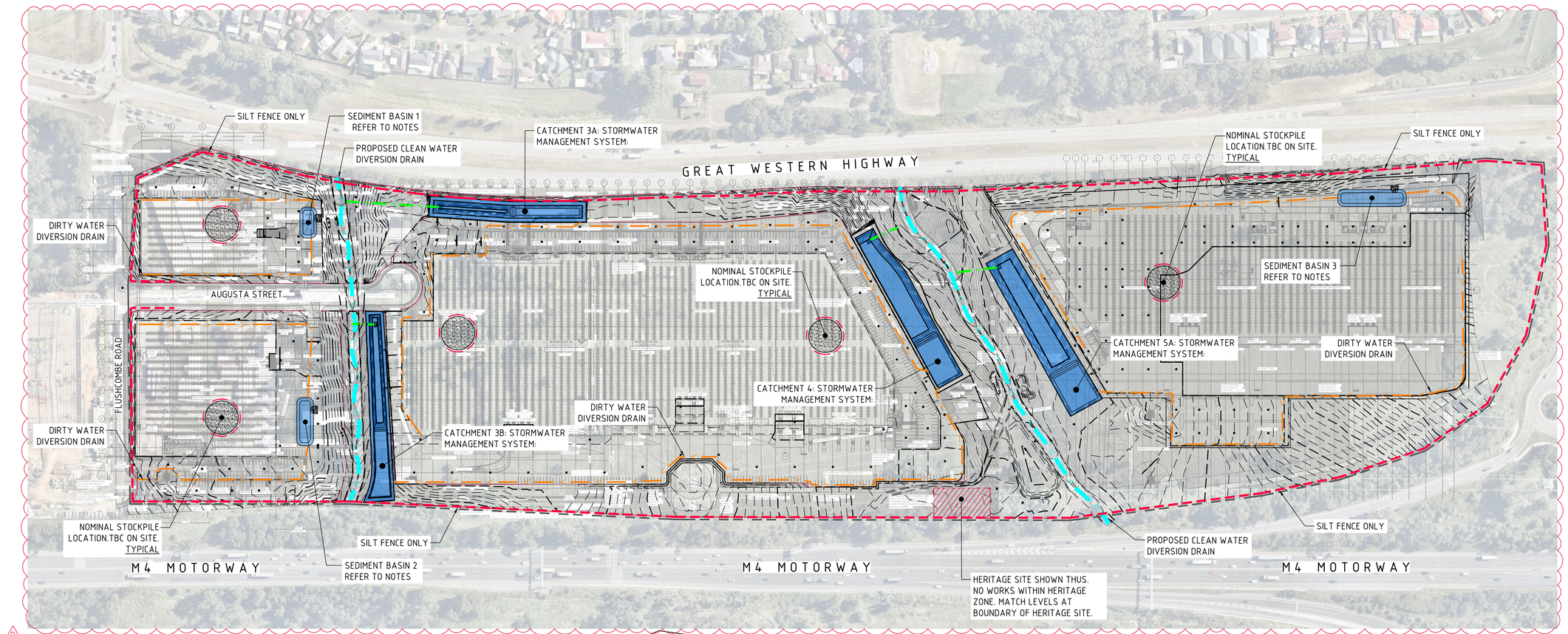
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LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904 03-SSDA201

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DRAWING TITLE: EROSION AND SEDIMENT CONTROL PLAN STAGE 1

DRAWING No: C013904.03-SSDA201 ISSUE: B



B

EROSION AND SEDIMENT CONTROL PLAN - STAGE 2

SCALE 1:1500

LEGEND:

PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS.
TYPICAL (N.S.O.P.)

- DENOTES DIVERSION DRAIN
- DENOTES CLEAN WATER DIVERSION DRAIN
- DENOTES PROPOSED CLEAN WATER DIVERSION DRAIN
- DENOTES SILT FENCE WITH CATCH DRAIN
- DENOTES SILT FENCE ONLY
- DENOTES CONSTRUCTION ENTRY
- DENOTES OVERLAND FLOW PATH
- DENOTES NOMINAL STOCKPILE LOCATION.

NOTES:

REFER TO DRAWING SSDA200 FOR DETAILED EROSION AND SEDIMENT CONTROL NOTES.

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

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REVISED ARCHITECTURAL	10.09.23	C
REVISED AS CLOUDED	10.07.23	B
ISSUED FOR INFORMATION	30.06.23	A

AMENDMENTS DATE ISSUE

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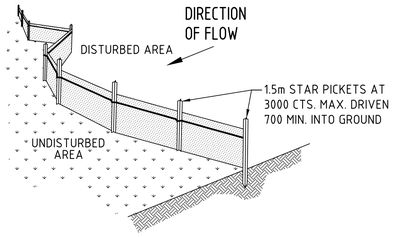
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DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN
STAGE 2

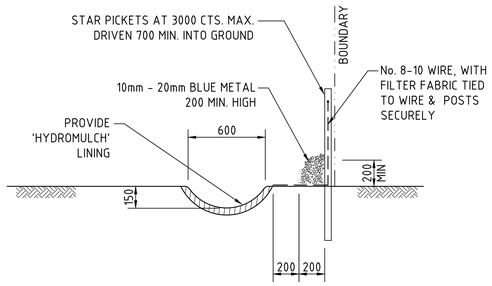
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TYPICAL SILT FENCE DETAIL

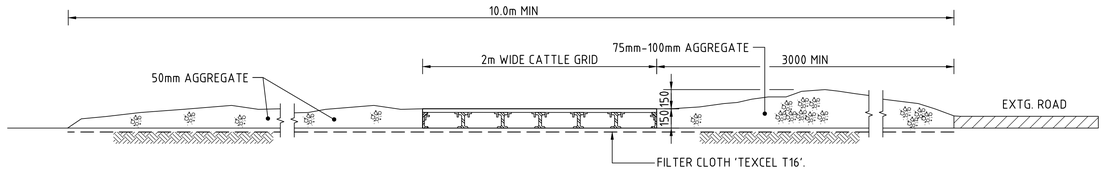
N.T.S

NOTE: PROVIDE 1m RETURNS AT 30m INTERVALS. TYPICAL

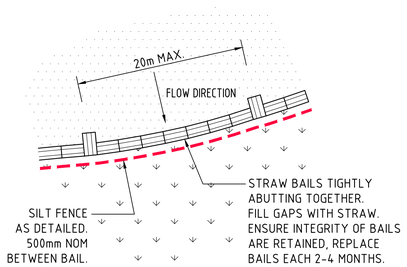


TYPICAL OPEN DRAIN & SILT FENCE

SCALE 1:20

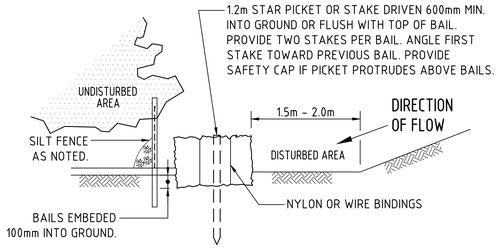


SECTION 1:20 (1 / C200) : STABILISED CONSTRUCTION ENTRANCE 'TRUCK SHAKER'



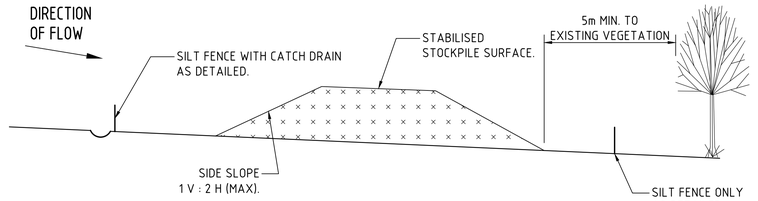
SILT FENCE WITH HAY BAIL PLAN

N.T.S



SILT FENCE WITH HAY BAIL DETAIL

N.T.S

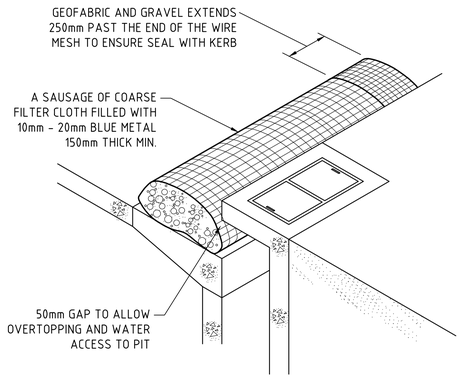


TYPICAL STOCKPILE DETAIL

N.T.S

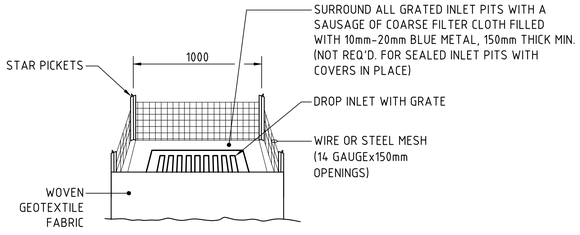
STOCKPILE NOTES

1. PLACE ALL STOCKPILES IN LOCATIONS MORE THAN 5m FROM EXISTING VEGETATION, ROADS & HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT ELONGATED MOUNDS. SIDE SLOPE TO BE 1 V: 2 H MAX.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE STOCKPILES ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE USING WOOD CHIP MULCH - 16 TONNE/Ha.
5. CONSTRUCT SILT FENCE WITH CATCH DRAIN ON UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES & SILT FENCE ONLY 1 TO 2m DOWNSLOPE AS SHOWN.



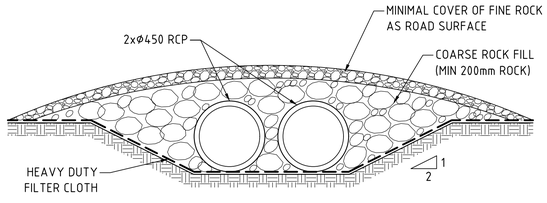
KERB INLET CONTROL

N.T.S



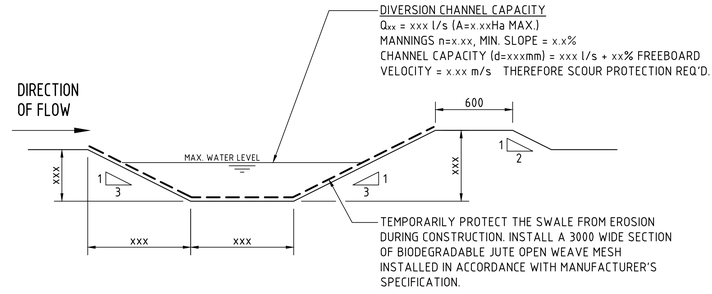
GRATED INLET PIT FILTER DETAIL

N.T.S



TYPICAL CROSSING OVER DIVERSION CHANNEL

SCALE 1:20



DIVERSION DRAIN SECTION

SCALE 1:20

NOTE :
ADOPT ABOVE DETAILS AROUND ALL PITS WITHIN AREA ENCOMPASSED BY SILT FENCE & TO PITS ON THE ROAD ADJACENT TO SITE BOUNDARY.

200mm 0 500 1000 1500 2000mm

SCALE 1:20 AT B1 SIZE SHEET

FOR INFORMATION

ISSUED FOR INFORMATION	16.06.23	A
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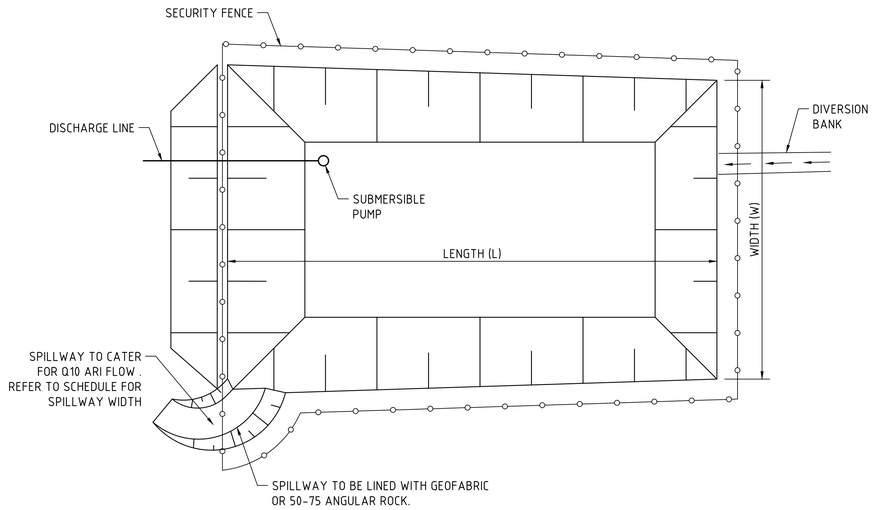
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DRAWING TITLE: EROSION AND SEDIMENT CONTROL DETAILS SHEET 1

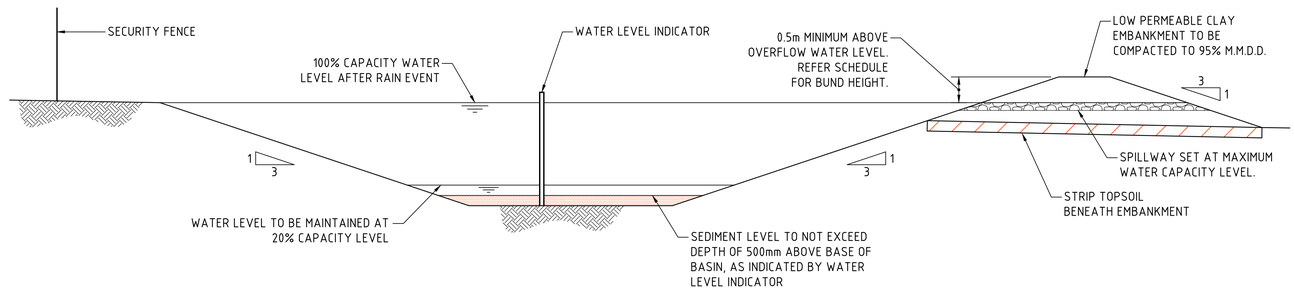
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ISSUE: A



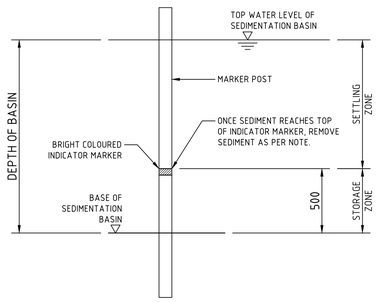
TYPICAL SEDIMENT CONTROL POND PLAN

SCALE 1:250



TYPICAL SEDIMENT CONTROL BASIN SECTION

SCALE 1:50



SEDIMENT STORAGE MARKER

SCALE 1:20

SPILLWAY DETAIL & SCHEDULE					
CATCHMENT (Ha)	FLOW (m^3/s)	WIDTH (mm)	FLOW DEPTH (mm)	ROCK SIZE (mm)	BUND HEIGHT ABOVE SPILLWAY (mm)
0.20	0.14	1000	200	-	600
0.5	0.2	2000	200	-	600
1	0.3	2000	200	-	700
2	0.6	4000	200	-	700
5	1.4	5000	300	200	800
10	2.8	8000	350	200	850
20	5.5	14000	400	250	900
40	11.0	20000	500	250	1000

2m 0 5 10 15 20 25m
SCALE 1:250 AT B1 SIZE SHEET

500mm 0 1 2 3 4 5m
SCALE 1:50 AT B1 SIZE SHEET

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT B1 SIZE SHEET

FOR INFORMATION

ISSUED FOR INFORMATION	16.06.23	A
AMENDMENTS	DATE	ISSUE

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LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA251

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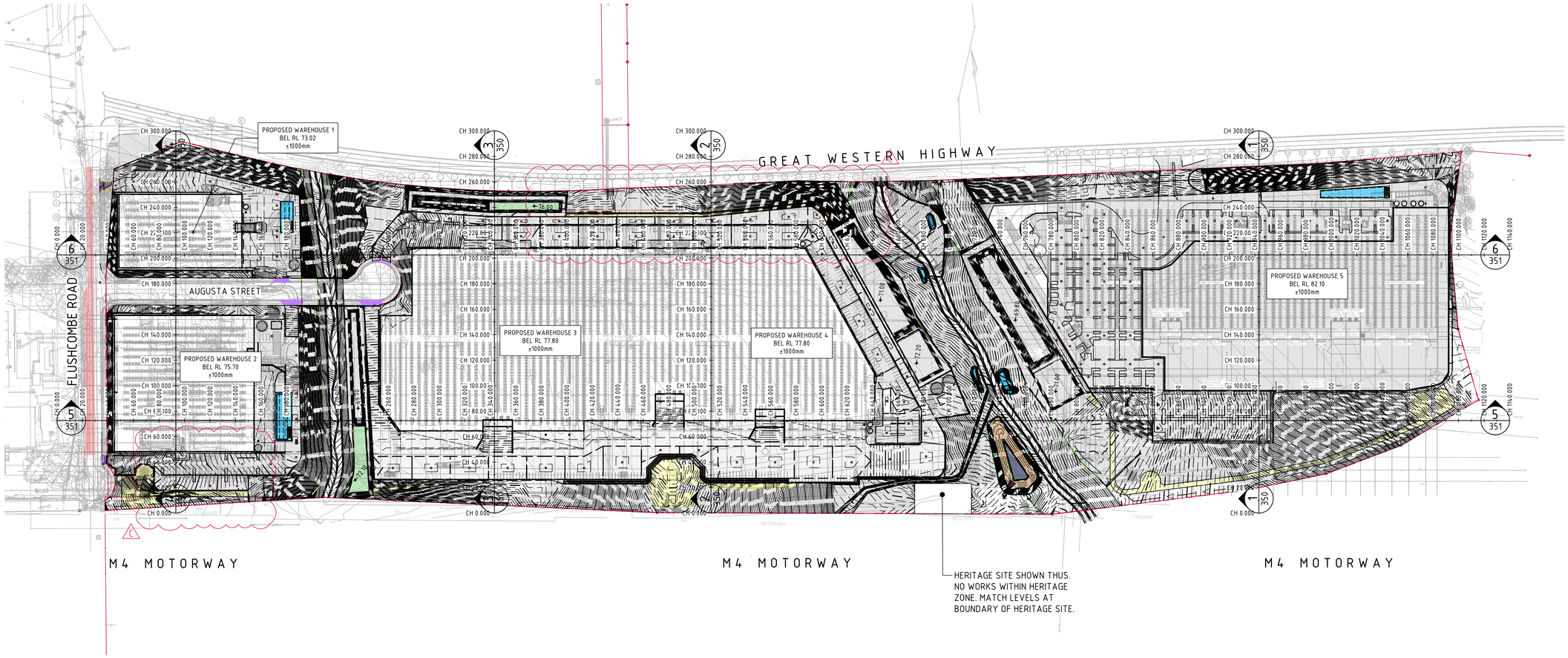
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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
EROSION AND SEDIMENT CONTROL DETAILS SHEET 2

DRAWING No C013904.03-SSDA251

ISSUE A



BULK EARTHWORKS PLAN
SCALE 1:1500

SITE PREPARATION NOTES:

1. ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL REPORT PSM4636-007L PROVIDED BY PSM CONSULT PTY LTD DATED 22/03/2022.
2. EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.
3. STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM SITE OR STORE AS DIRECTED.
4. COMPLETE CUT TO FILL EARTHWORKS TO ACHIEVE THE REQUIRED LEVELS AS INDICATED ON THE DRAWINGS WITHIN A TOLERANCE OF +0mm/-10mm THROUGH BUILDING PADS/PAVEMENTS AND +0mm/-20mm ELSEWHERE.
5. PREPARE STEEP BATTERS TO RECEIVE FILL BY CONSTRUCTING BENCHING TO FACILITATE FILL PLACEMENT AND COMPACTION. WHERE EXPOSED ROCK (WEATHERED SHALE OR SANDSTONE) IS ENCOUNTERED AT CUT SUBGRADE LEVEL, THE EARTHWORKS CONTRACTOR IS TO ALLOW TO RIP THE SURFACE TO A NOMINAL 0.3-0.4m DEPTH AND RECOMPACT (PER THE ENGINEERING SPEC) AS REQUIRED.
6. AREAS TO RECEIVE FILL (THAT ARE NOT ON BENCHED BATTERS) AND AREAS IN CUT SHALL BE PROOF ROLLED TO IDENTIFY ANY SOFT HEAVING MATERIAL. SOFT MATERIAL SHALL BE BOXED OUT AND REMOVED PRIOR TO FILL PLACEMENT. PROOF ROLLING TO BE INSPECTED BY A GEOTECHNICAL ENGINEER OR THE EARTHWORKS DESIGNER.
7. SITE WON FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
8. IMPORTED FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HILF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HILF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
9. ALL ENGINEERED FILL PARTICLES SHALL BE ABLE TO BE INCORPORATED WITHIN A SINGLE LAYER. FURTHER, LESS THAN 30% OF PARTICLES SHALL BE RETAINED ON THE 37.5 mm SIEVE. ENGINEERED FILL SHALL BE ABLE TO BE TESTED IN ACCORDANCE WITH THE STANDARD COMPACTION METHOD (AS1289.5.4.1) OR HILF TEST METHOD (AS1289.5.7.1). THESE METHODS REQUIRE LESS THAN 20% RETAINED ON THE 37.5 mm SIEVE. WHERE BETWEEN 20% AND 30% OF PARTICLES ARE RETAINED ON THE 37.5 mm SIEVE THE ABOVE TEST METHODS SHALL STILL BE ADOPTED AND TEST REPORTS ANNOTATED APPROPRIATELY. THESE REQUIREMENTS SHOULD BE MET BY THE MATERIAL AFTER PLACEMENT AND COMPACTION
10. ALL THE EARTHWORKS UNDERTAKEN AND THE SUBGRADE CONDITION IN THE CUT AREAS (IN THE STATED PERIOD) ARE DOCUMENTED IN THE REPORTS AND HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATION.
11. PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
12. EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING OR RIPPING.
13. MATCH EXISTING LEVELS AT BATTER INTERFACE.
14. CONTRACTOR TO MATCH EXISTING LEVELS AT THE INTERFACE OF EARTHWORKS AND EXISTING SURFACE AT BATTER LOCATIONS OR WHERE NO RETAINING WALLS ARE PRESENT. ANY DISCREPANCY BETWEEN DESIGN AND EXISTING LEVELS TO BE REFERRED TO THE ENGINEER FOR DIRECTION OR ADJUSTMENTS TO DESIGN LEVELS.
15. DURING EARTHWORKS THE CONTRACTOR IS TO ENSURE ALL AREAS ARE FREE DRAINING & WILL NOT RETAIN WATER DURING RAINFALL. PROVIDE TEMPORARY MEASURES AS REQUIRED TO ENSURE FREE FLOWING RUNOFF THROUGH MANAGED DRAINAGE PATHS, DIVERSION DRAINS OR OTHER SUITABLE DISPOSAL METHOD AS AGREED DURING THE WORKS. REFER ANY CONCERNS TO THE ENGINEER. REFER TO EROSION AND SEDIMENT CONTROL DRAWINGS AND NOTES.

EARTHWORK ESTIMATES

SITE AREA	= 27.4 Ha
TOPSOIL STRIP (200mm OVER 27.4 Ha)	=(-54,800m³) (TO BE EXPORTED/REUSED)
CUT	= -359,900m³
FILL	= +289,250m³
DIFFERENCE	= -70,650m³ (i.e. CUT OVER FILL)

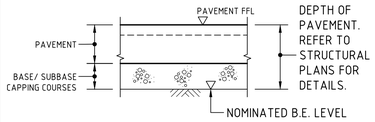
NOTE:
VOLUMES BASED ON 200mm TOPSOIL STRIP OVER THE NOMINATED AREA. EARTHWORKS VOLUMES ARE APPROXIMATE ONLY.
NO ALLOWANCE HAS BEEN MADE FOR DELETERIOUS MATERIAL, EROSION AND SEDIMENT CONTROL, BULKING OR COMPACTION OF FILLED SOILS, THE REMOVAL OF UNCONTROLLED OR CONTAMINATED MATERIAL OR ANY OTHER UNSPECIFIED EXCAVATION RELATED TO CONSTRUCTION ACTIVITIES.

LEGEND:

LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

- 50.00 – EXISTING CONTOUR (0.2m INTERVAL)
- 50.00 – B.E.L. CONTOUR (MAJOR 1.0m)
- 50.10 – B.E.L. CONTOUR (MINOR 0.25m)
- +50.00 – B.E.L. SPOT LEVEL



NOMINATED B.E.L. DETAIL
NTS

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
UPDATED ARCHITECTURAL MASTERPLAN	11.09.23	D
ADDITIONAL PARKING ADDED TO WH2, ACOUSTIC WALL & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	22.06.23	A

AMENDMENTS	DATE	ISSUE

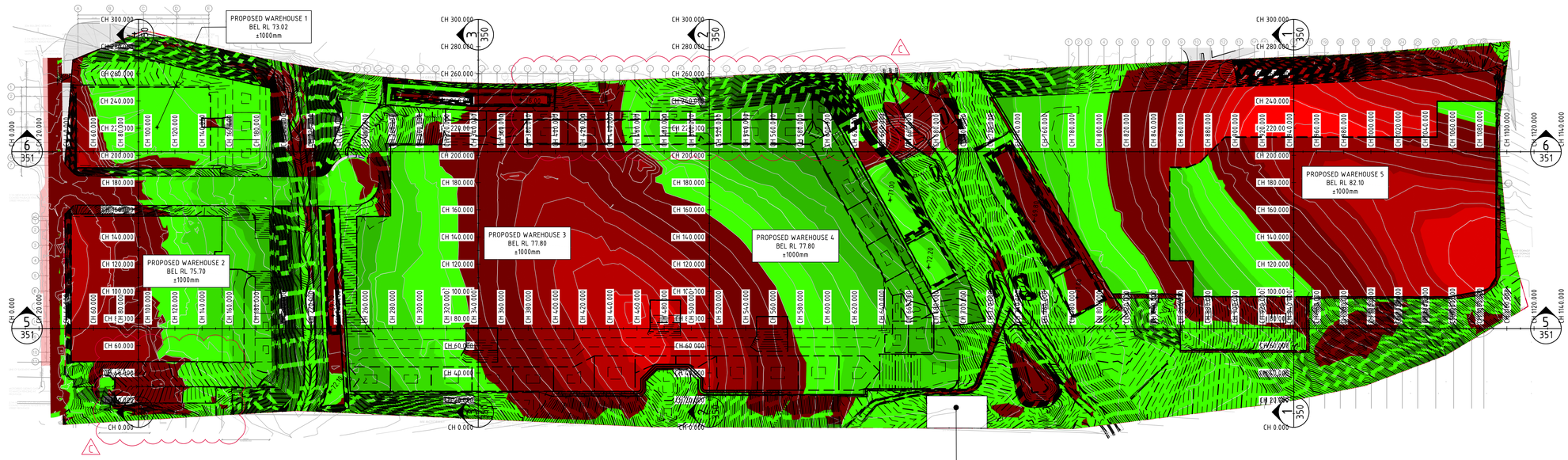
ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA300

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COSTIN ROE CONSULTING — CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: BULK EARTHWORKS PLAN
DRAWING No: C013904.03-SSDA300
ISSUE: D



CUT/FILL PLAN
SCALE 1:1500

DEPTH RANGE				
	No.	FROM DEPTH	TO DEPTH	COLOUR
CUT	1	-11.000	-10.000	
	2	-10.000	-9.000	
	3	-9.000	-8.000	
	4	-8.000	-7.000	
	5	-7.000	-6.000	
	6	-6.000	-5.000	
	7	-5.000	-4.000	
	8	-4.000	-3.000	
	9	-3.000	-2.000	
	10	-2.000	-1.000	
	11	-1.000	0.000	
FILL	12	0.000	1.000	
	13	1.000	2.000	
	14	2.000	3.000	
	15	3.000	4.000	
	16	4.000	5.000	
	17	5.000	6.000	
	18	6.000	7.000	
	19	7.000	8.000	
	20	8.000	9.000	
	21	9.000	10.000	

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL MASTERPLAN	11.09.23	D
ADDITIONAL PARKING ADDED TO WH2, ACOUSTIC WALL & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	22.06.23	A

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ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA310

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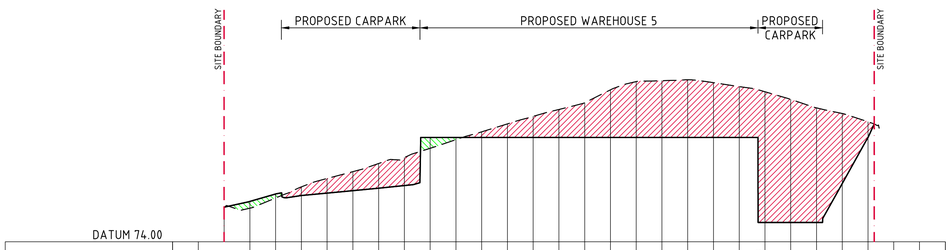
Costin Roe Consulting Pty Ltd.
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CRC COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
CUT/FILL PLAN

DRAWING No C013904.03-SSDA310
ISSUE D

LEGEND:

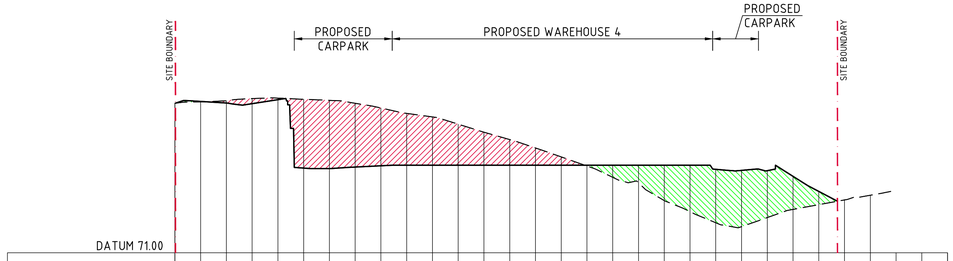
- DENOTES BULK EARTHWORKS PROFILE
- DENOTES EXISTING PROFILE
- DENOTES AREA IN CUT
- DENOTES AREA IN FILL



DATUM 74.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	77.19		
10.000	75.985		
20.000	76.360		
30.000	76.843	77.134	0.528
40.000	77.336	77.713	0.310
50.000	77.757	77.589	-0.674
60.000	78.091	77.779	-1.138
70.000	78.408	77.969	-1.478
80.000	78.553	78.159	-1.924
90.000	78.703	78.364	-2.173
100.000	78.853	82.100	0.841
110.000	79.005	82.100	0.174
120.000	78.984	82.100	-0.437
130.000	78.974	82.100	-1.055
140.000	79.001	82.100	-1.638
150.000	79.027	82.100	-2.170
160.000	79.047	82.100	-2.699
170.000	79.074	82.100	-3.693
180.000	79.136	82.100	-4.337
190.000	79.062	82.100	-4.409
200.000	78.956	82.100	-4.477
210.000	78.783	82.100	-4.255
220.000	78.578	82.100	-3.949
230.000	78.126	75.500	-10.168
240.000	77.694	75.500	-9.552
250.000	77.291	75.500	-8.900
260.000	76.924	82.100	-5.436
270.000	76.965	82.107	-1.208
280.000			
290.000			
300.000			

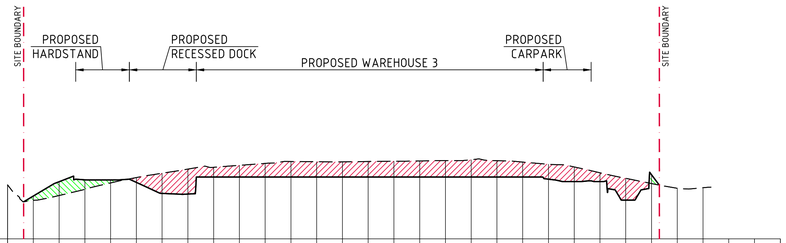
SECTION 1
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200



DATUM 71.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	82.61		
10.000	82.718	82.752	0.034
20.000	82.808	82.630	-0.178
30.000	82.976	82.579	-0.397
40.000	83.012	82.889	-0.124
50.000	82.919	77.575	-5.343
60.000	82.835	77.534	-5.302
70.000	82.609	77.658	-4.951
80.000	82.241	77.757	-4.484
90.000	81.822	77.800	-4.022
100.000	81.551	77.800	-3.751
110.000	80.984	77.800	-3.184
120.000	80.363	77.800	-2.563
130.000	79.792	77.800	-1.992
140.000	79.141	77.800	-1.341
150.000	78.444	77.800	-0.644
160.000	77.739	77.800	0.061
170.000	76.862	77.800	0.938
180.000	76.436	77.800	1.364
190.000	75.052	77.800	2.748
200.000	74.195	77.800	3.605
210.000	73.633	77.479	4.146
220.000	73.032	77.397	4.366
230.000	73.734	77.378	3.644
240.000	74.369	76.936	2.567
250.000	74.736	75.762	1.026
260.000	75.102	75.465	
270.000	75.465		
280.000			
290.000			
300.000			

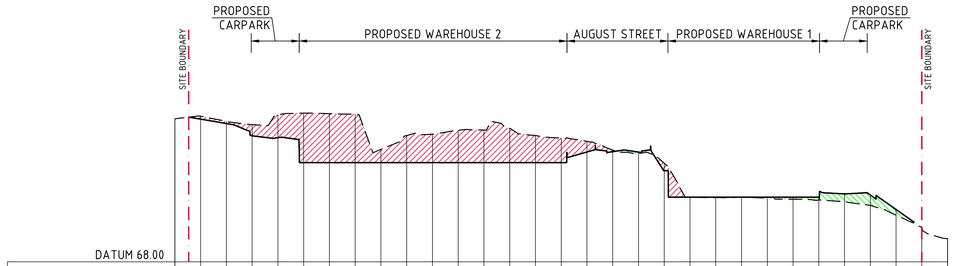
SECTION 2
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200



DATUM 73.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	77.19		
10.000	75.985	76.321	0.336
20.000	76.360	77.433	1.073
30.000	76.843	77.577	0.733
40.000	77.336	77.566	0.230
50.000	77.757	77.378	-0.379
60.000	78.091	76.529	-1.561
70.000	78.408	76.471	-1.937
80.000	78.553	77.800	-0.753
90.000	78.703	77.800	-0.903
100.000	78.853	77.800	-1.053
110.000	79.005	77.800	-1.205
120.000	78.984	77.800	-1.184
130.000	78.974	77.800	-1.174
140.000	79.001	77.800	-1.201
150.000	79.027	77.800	-1.227
160.000	79.047	77.800	-1.247
170.000	79.074	77.800	-1.274
180.000	79.136	77.800	-1.336
190.000	79.062	77.800	-1.262
200.000	78.956	77.800	-1.156
210.000	78.783	77.627	-1.156
220.000	78.578	77.440	-1.138
230.000	78.126	77.440	-0.686
240.000	77.694	76.000	-1.694
250.000	77.291	77.976	0.686
260.000	76.924		
270.000	76.965		
280.000			
290.000			
300.000			

SECTION 3
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200



DATUM 68.00

CHAINAGE	EXISTING SURFACE LEVEL	BULK EARTHWORKS LEVEL	CUT/FILL DEPTH
0.000	79.10		
10.000	79.302	79.079	-0.224
20.000	78.902	78.734	-0.167
30.000	78.651	77.783	-0.869
40.000	79.407	77.635	-1.772
50.000	79.538	75.700	-3.838
60.000	79.499	75.700	-3.799
70.000	79.452	75.700	-3.752
80.000	78.730	75.700	-1.030
90.000	77.803	75.700	-2.103
100.000	77.903	75.700	-2.203
110.000	78.217	75.700	-2.517
120.000	78.225	75.700	-2.525
130.000	78.358	75.700	-2.658
140.000	77.803	75.700	-2.103
150.000	77.597	75.700	-1.897
160.000	77.348	76.525	-0.823
170.000	76.677	76.549	-0.128
180.000	76.403	76.520	0.117
190.000	75.655	75.070	-0.585
200.000	73.008	73.020	0.012
210.000	72.982	73.020	0.038
220.000	73.013	73.020	0.007
230.000	72.988	73.020	0.032
240.000	72.860	73.020	0.160
250.000	72.800	73.020	0.220
260.000	72.653	73.273	0.620
270.000	72.378	73.185	0.807
280.000	72.063	71.622	0.440
290.000	70.652		
300.000	69.80		

SECTION 4
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:200

2m 0 5 10 15 20m
SCALE 1:200 AT B1 SIZE SHEET

10m 0 10 20 30 40 50 60 70 80 90 100m
SCALE 1:1000 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
UPDATED ARCHITECTURAL MASTERPLAN	11.09.23	B
ISSUED FOR INFORMATION	22.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA350

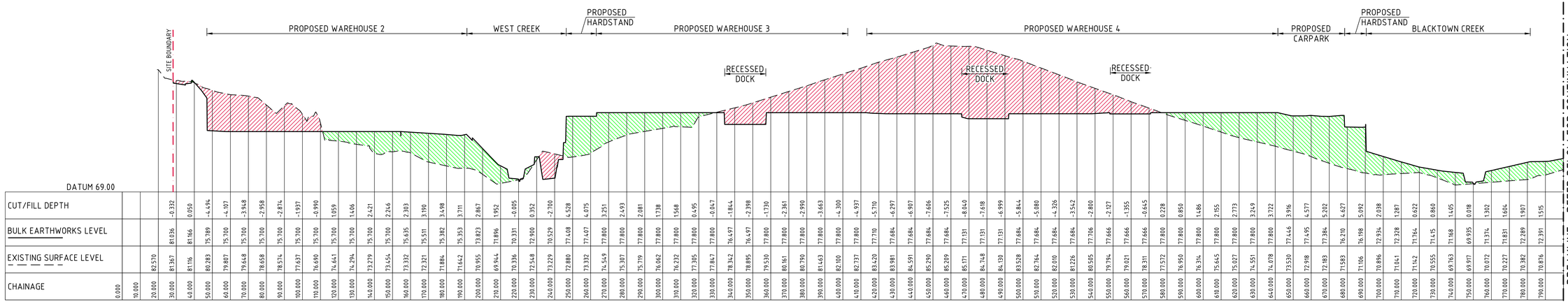
CONSULT AUSTRALIA

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: BULK EARTHWORKS SECTIONS SHEET 1

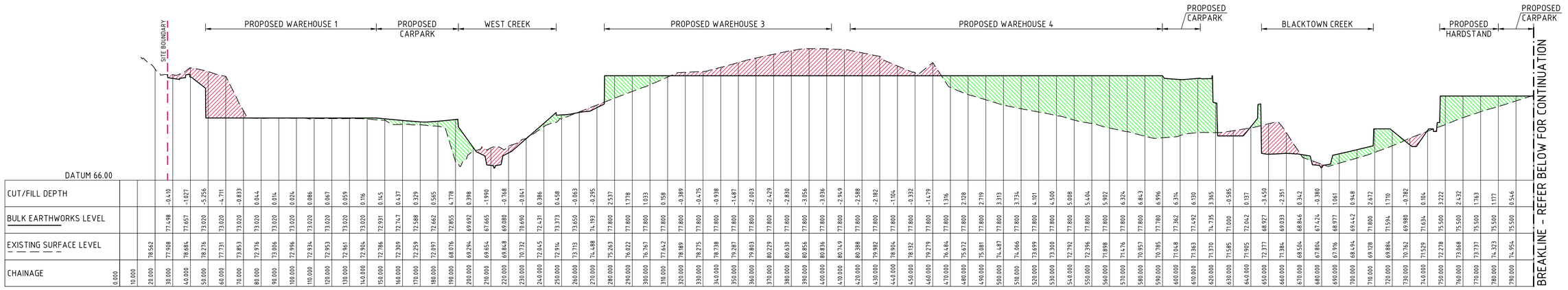
DRAWING No: C013904.03-SSDA350

ISSUE: B



DATUM 69.00

| CHAINAGE | 0.000 | 10.000 | 20.000 | 30.000 | 40.000 | 50.000 | 60.000 | 70.000 | 80.000 | 90.000 | 100.000 | 110.000 | 120.000 | 130.000 | 140.000 | 150.000 | 160.000 | 170.000 | 180.000 | 190.000 | 200.000 | 210.000 | 220.000 | 230.000 | 240.000 | 250.000 | 260.000 | 270.000 | 280.000 | 290.000 | 300.000 | 310.000 | 320.000 | 330.000 | 340.000 | 350.000 | 360.000 | 370.000 | 380.000 | 390.000 | 400.000 | 410.000 | 420.000 | 430.000 | 440.000 | 450.000 | 460.000 | 470.000 | 480.000 | 490.000 | 500.000 | 510.000 | 520.000 | 530.000 | 540.000 | 550.000 | 560.000 | 570.000 | 580.000 | 590.000 | 600.000 | 610.000 | 620.000 | 630.000 | 640.000 | 650.000 | 660.000 | 670.000 | 680.000 | 690.000 | 700.000 | 710.000 | 720.000 | 730.000 | 740.000 | 750.000 | 760.000 | 770.000 | 780.000 | 790.000 |
|---|---|---



DATUM 66.00

| CHAINAGE | 0.000 | 10.000 | 20.000 | 30.000 | 40.000 | 50.000 | 60.000 | 70.000 | 80.000 | 90.000 | 100.000 | 110.000 | 120.000 | 130.000 | 140.000 | 150.000 | 160.000 | 170.000 | 180.000 | 190.000 | 200.000 | 210.000 | 220.000 | 230.000 | 240.000 | 250.000 | 260.000 | 270.000 | 280.000 | 290.000 | 300.000 | 310.000 | 320.000 | 330.000 | 340.000 | 350.000 | 360.000 | 370.000 | 380.000 | 390.000 | 400.000 | 410.000 | 420.000 | 430.000 | 440.000 | 450.000 | 460.000 | 470.000 | 480.000 | 490.000 | 500.000 | 510.000 | 520.000 | 530.000 | 540.000 | 550.000 | 560.000 | 570.000 | 580.000 | 590.000 | 600.000 | 610.000 | 620.000 | 630.000 | 640.000 | 650.000 | 660.000 | 670.000 | 680.000 | 690.000 | 700.000 | 710.000 | 720.000 | 730.000 | 740.000 | 750.000 | 760.000 | 770.000 | 780.000 | 790.000 |
|---|---|---

CATCHMENT 1: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT DEVICE
UNDERGROUND TANK WITH OCEAN PROTECT 690mm ZPG STORMFILTER UNITS
OR AN APPROVED EQUIVALENT WATER QUALITY TREATMENT DEVICE
NUMBER OF STORMFILTER CARTRIDGES = 32
ON-SITE DETENTION VOLUME PROVIDED = 680m3

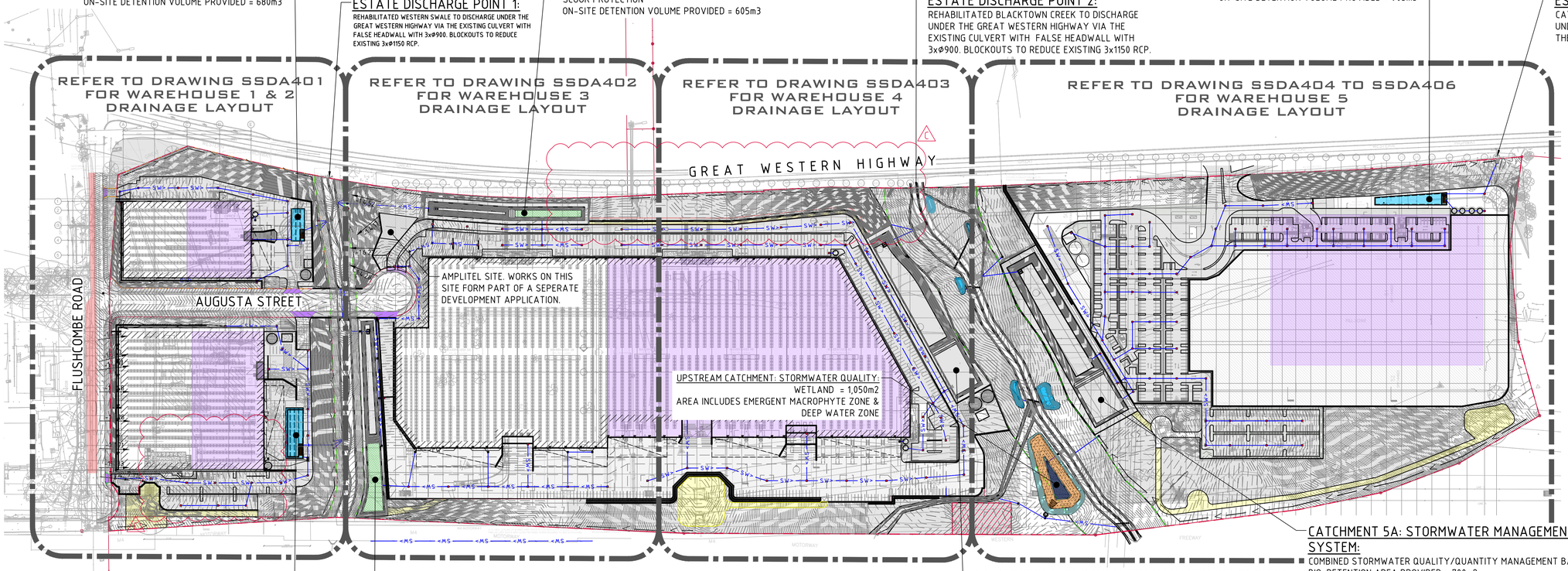
ESTATE DISCHARGE POINT 1:
REHABILITATED WESTERN SWALE TO DISCHARGE UNDER THE GREAT WESTERN HIGHWAY VIA THE EXISTING CULVERT WITH FALSE HEADWALL WITH 3xø900. BLOCKOUTS TO REDUCE EXISTING 3xø1150 RCP.

CATCHMENT 3A: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 265m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
SURFACE AREA NOMINATED FOR BIO-RETENTION FILTRATION IS EXCLUSIVE OF SCOUR PROTECTION
ON-SITE DETENTION VOLUME PROVIDED = 605m3

CATCHMENT 5B: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT DEVICE
UNDERGROUND TANK WITH OCEAN PROTECT 690mm ZPG STORMFILTER UNITS
OR AN APPROVED EQUIVALENT WATER QUALITY TREATMENT DEVICE
NUMBER OF STORMFILTER CARTRIDGES = 45
ON-SITE DETENTION VOLUME PROVIDED = 905m3

ESTATE DISCHARGE POINT 2:
REHABILITATED BLACKTOWN CREEK TO DISCHARGE UNDER THE GREAT WESTERN HIGHWAY VIA THE EXISTING CULVERT WITH FALSE HEADWALL WITH 3xø900. BLOCKOUTS TO REDUCE EXISTING 3x1150 RCP.

ESTATE DISCHARGE POINT 3:
CATCHMENT 5B TO DISCHARGE UNDER THE GREAT WESTERN HIGHWAY VIA THE EXISTING ø700 RCP CULVERT



CATCHMENT 4: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 650m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
SURFACE AREA NOMINATED FOR BIO-RETENTION FILTRATION IS EXCLUSIVE OF SCOUR PROTECTION
ON-SITE DETENTION VOLUME PROVIDED = 3,150m3

CATCHMENT 5A: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 700m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
SURFACE AREA NOMINATED FOR BIO-RETENTION FILTRATION IS EXCLUSIVE OF SCOUR PROTECTION
ON-SITE DETENTION VOLUME PROVIDED = 2,960m3

CATCHMENT 2: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT DEVICE
UNDERGROUND TANK WITH OCEAN PROTECT 690mm ZPG STORMFILTER UNITS
OR AN APPROVED EQUIVALENT WATER QUALITY TREATMENT DEVICE
NUMBER OF STORMFILTER CARTRIDGES = 65
ON-SITE DETENTION VOLUME PROVIDED = 1150m3

CATCHMENT 3B: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 550m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
SURFACE AREA NOMINATED FOR BIO-RETENTION FILTRATION IS EXCLUSIVE OF SCOUR PROTECTION
ON-SITE DETENTION VOLUME PROVIDED = 1,555m3

STORMWATER DRAINAGE KEY PLAN
SCALE 1:1500

STORMWATER DRAINAGE NOTES:
1. ALL STORMWATER WORKS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500.3 PLUMBING AND DRAINAGE, PART 3: STORMWATER DRAINAGE.
2. THE MINOR (PIPED) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 20 YEAR ARI STORM EVENT AND THE MAJOR (OVERLAND) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 100 YEAR ARI STORM EVENT.
3. ALL FINISHED PAVEMENT LEVELS SHALL BE AS INDICATED ON FINISHED LEVELS PLANS C013904.03-SSDA501.
4. PIT SIZES SHALL BE AS INDICATED IN THE SCHEDULE WHILE PIPE SIZES AND DETAILS ARE PROVIDED ON PLAN.
5. EXISTING STORMWATER PIT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED BY SURVEY PRIOR TO COMMENCING WORKS ON SITE.
6. PUBLIC DOMAIN DRAINAGE TO BE MIN. CLASS 3 UNDER KERBS, AND CLASS 4 FOR PIPES CROSSING ROADS. ALL BEEING TO BLACKTOWN COUNCIL SPECIFICIATIONS OR MINIMUM HS2. MINIMUM SIZE 375mm.

7a. ALL PRIVATE STORMWATER PIPES ø375 OR GREATER SHALL BE CLASS 2 (WITH HS2 SUPPORT) REINFORCED CONCRETE WITH RUBBER RING JOINTS UNLESS NOTED OTHERWISE.

7b. ALL PRIVATE PIPES UP TO AND INCLUDING ø300 TO BE uPVC GRADE SN8 UNO.

8. PIPE CLASS NOMINATED ARE FOR IN-SERVICE LOADING CONDITIONS ONLY. CONTRACTOR IS TO MAKE ANY NECESSARY ADJUSTMENTS REQUIRED FOR CONSTRUCTION CONDITIONS.
9. ALL CONCRETE PITS GREATER THAN 1000mm DEEP SHALL BE REINFORCED USING N12-200 EACH WAY CENTERED IN WALL AND BASE. LAP MINIMUM 300mm WHERE REQUIRED. ALL CONCRETE FOR PITS SHALL BE F'c=25 MPa. PRECAST PITS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
10. IN ADDITION TO ITEM 9 ABOVE, ALL CONCRETE PITS GREATER THAN 3000mm DEEP SHALL HAVE WALLS AND BASE THICKNESS INCREASED TO 200mm.
11. PIPES SHALL BE LAID AS PER PIPE LAYING DETAILS. PARTICULAR CARE SHALL BE TAKEN TO ENSURE THAT THE PIPE IS FULLY AND EVENLY SUPPORTED. RAM AND PACK FILLING AROUND AND UNDER BACK OF PIPES AND PIPE FAUCETS, WITH NARROW EDGED RAMMERS OR OTHER SUITABLE TAMPING DETAILS.
12. CONCRETE PIPES UNDER, OR WITHIN THE ZONE OF INFLUENCE OF PAVED AREAS SHALL BE LAID USING HS2 TYPE SUPPORT, AS A MINIMUM, IN ACCORDANCE WITH AS 3725. AGGREGATE BACKFILL SHALL NOT BE USED FOR PIPE BEDDING AND OR HAUNCH/SIDE SUPPORT.
13. WHERE PIPE LINES ENTER PITS, PROVIDE 2m LENGTH OF STOCKING WRAPPED SLOTTED ø100 uPVC TO EACH SIDE OF PIPE.
14. ALL SUBSOIL DRAINAGE LINES SHALL BE ø100 SLOTTED uPVC WITH APPROVED FILTER WRAP LAID IN 300mm WIDE GRANULAR FILTER UNLESS NOTED OTHERWISE. LAY SUBSOIL LINES TO MATCH FALLS OF LAND AND/OR 1 IN 200 MINIMUM. PROVIDE CAPPED CLEANING EYE (RODDING POINT) AT UPSTREAM END OF LINE AND AT 30m MAX. CTS. PROVIDE SUBSOIL LINES TO ALL PAVEMENT/ LANDSCAPED INTERFACES, TO REAR OF RETAINING WALLS (AS NOMINATED BY STRUCTURAL ENGINEER) AND AS SHOWN ON PLAN.
15. WHERE SUBSOIL DRAINAGE PASSES UNDER A PAVEMENT OR A SLAB, UNSLOTTED UPVC ARE TO BE PROVIDED UNLESS NOTED OTHERWISE.
16. ALL PIPE GRADES 1 IN 200 MINIMUM UNO.
17. PROVIDE STEP IRONS IN PITS DEEPER THAN 1000mm.
18. MIN. 600 COVER TO PIPE OBVERT BENEATH ROADS & MIN. 400 COVER BENEATH LANDSCAPED AND PEDESTRIAN AREAS.
19. PIT COVERS IN TRAFFICABLE PAVEMENT SHALL BE CLASS D 'HEAVY DUTY', THOSE LOCATED IN NON-TRAFFICABLE AREAS SHALL BE CLASS B 'MEDIUM DUTY' U.N.O.
20. PROVIDE CLEANING EYES (RODDING POINTS) TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS ARE PRESENT.
21. DOWN PIPES (DP) TO BE AS PER HYDRAULIC ENGINEERS DETAILS WITH CONNECTOR TO MATCH DP SIZE U.N.O. ON PLAN. PROVIDE CLEANING EYE AT GROUND LEVEL.
22. PIPE LENGTHS NOMINATED ON PLAN OR LONGSECTIONS ARE MEASURED FROM CENTER OF PITS TO THE NEAREST 0.5m AND DO NOT REPRESENT ACTUAL LENGTH. THE CONTRACTOR IS TO ALLOW FOR THIS.
23. WHERE CONNECTION TO EXISTING INGROUND DRAINAGE SYSTEMS, OPEN SWALES, CHANNELS OR ANY OTHER EXISTING SYSTEM, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION AND INVERT ON SITE AT THE BEGINNING OF THE CONSTRUCTION PERIOD. REFER ANY VARIANCE FROM DOCUMENTATION OR SURVEYS TO THE ENGINEER FOR CLARIFICATION.

LEGEND:
LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- SW> PROPOSED DRAINAGE LINE
- SW> EXISTING DRAINAGE LINE
- DP ROOFWATER DOWNPIPE (INDICATIVE)
- RW> ROOFWATER LINE
- SS> SUBSOIL LINE
- OVERLAND FLOW DIRECTION
- 50.00 FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

LEVELS NOTE:
LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL	11.09.23	D
ADDITIONAL PARKING ADDED TO WH2, ACOUSTIC WALL & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

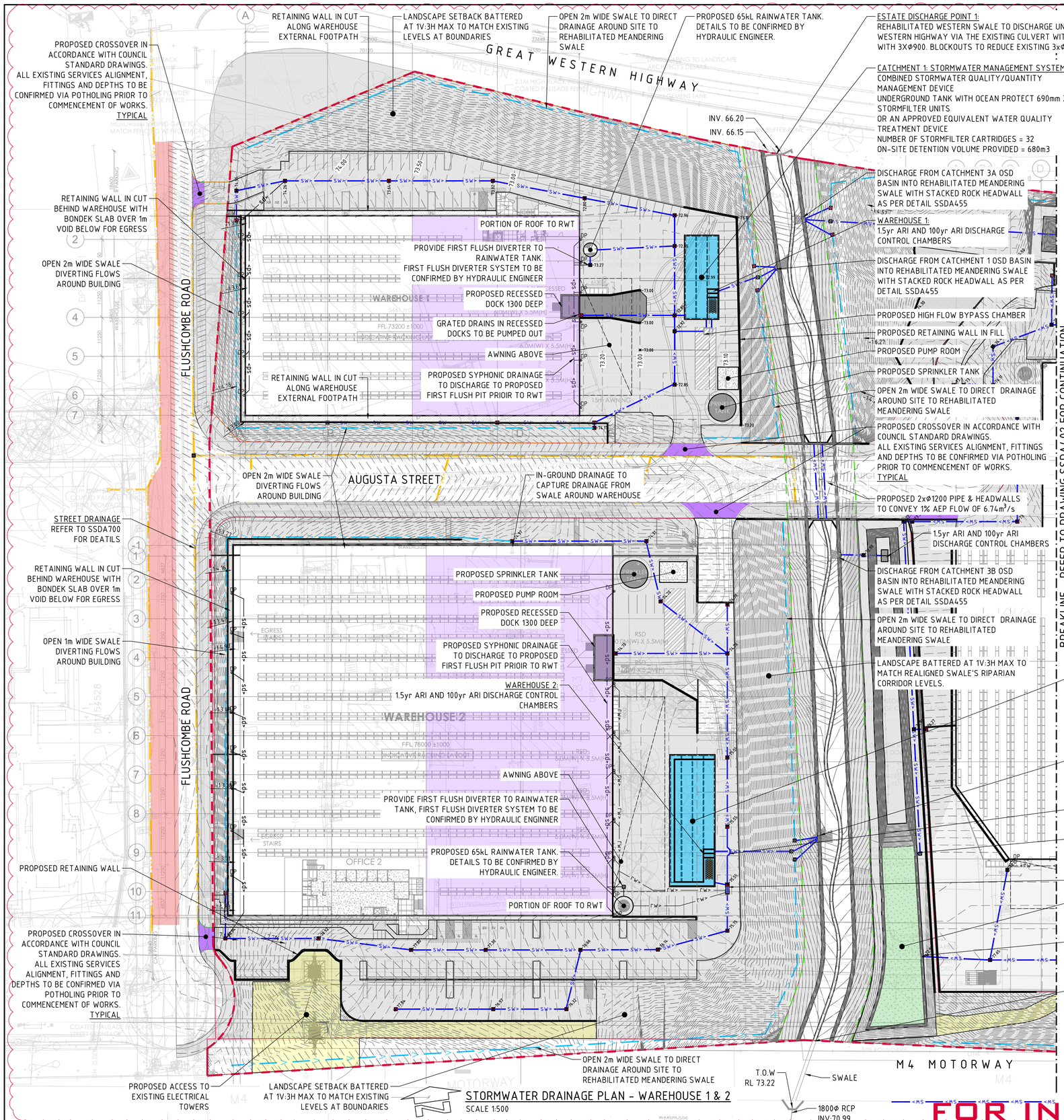
DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA400

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DRAWING TITLE: STORMWATER DRAINAGE KEY PLAN

DRAWING No: C013904.03-SSDA400 ISSUE: D



STORMWATER DRAINAGE PLAN - WAREHOUSE 1 & 2

SCALE 1:500

WAREHOUSE 1 NOTE:

PITS TO BE FITTED WITH OCEAN PROTECT 'OCEANGUARD OG200' INSERT. SHOWN THUS ◇
TOTAL NUMBER OF PIT INSERTS =25
REFER TO PIT SCHEDULE BELOW.

WAREHOUSE 2 NOTE:

PITS TO BE FITTED WITH OCEAN PROTECT 'OCEANGUARD OG200' INSERT. SHOWN THUS ◇
TOTAL NUMBER OF PIT INSERTS =55
REFER TO PIT SCHEDULE BELOW.

ROOFWATER NOTE:

ROOFWATER LINES TO HAVE NOMINAL 0.5% FALL TO PITS.
ENSURE MINIMUM 600 COVER IS MAINTAINED TO ALL PIPES.
REFER ALL CONCERN TO ENGINEER. TYPICAL

LEVELS NOTE:

LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

GENERAL NOTES:

SUBSOIL DRAINAGE TO BE INSTALLED ALONG ALL KERB AND LANDSCAPED INTERFACES.

LEGEND:

LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- SW> - PROPOSED DRAINAGE LINE
- SW> - EXISTING DRAINAGE LINE
- DP - ROOFWATER DOWNPIPE (INDICATIVE)
- RW> - ROOFWATER LINE
- SS> - SUBSOIL LINE
- SD> - SIPHONIC LINE
- <MS - OPEN SWALE
- OVERLAND FLOW DIRECTION
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- DENOTES PROPOSED BIORETENTION AREA

NOTES:

1. REFER TO DRAWING SSDA400 FOR STORMWATER DRAINAGE NOTES.

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

D

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL MASTERPLAN	11.09.23	D
ADDITIONAL PARKING TO WH2	10.07.23	C
REVISED AS CLOUDED	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS DATE ISSUE

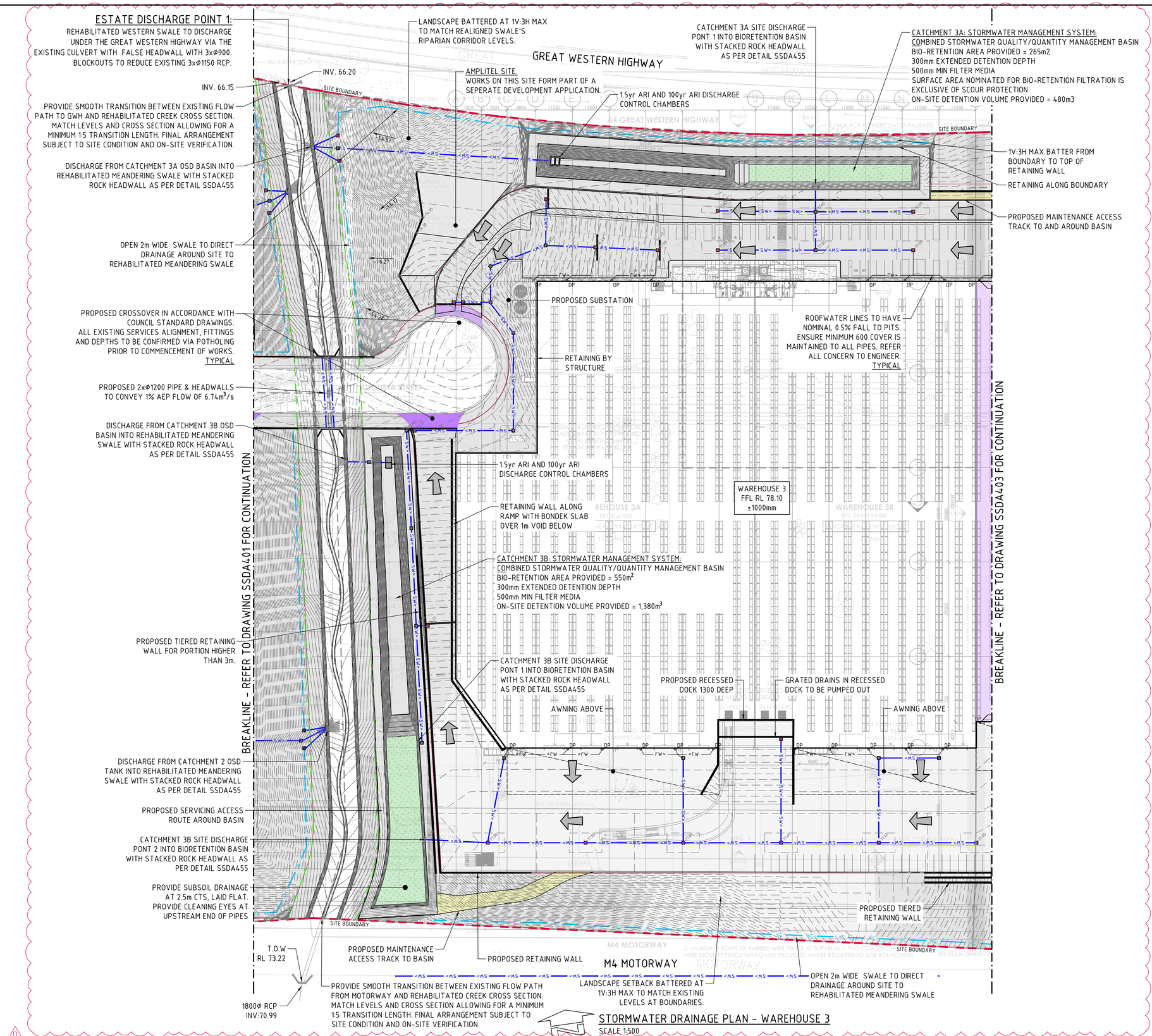
ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA401

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DRAWING TITLE: STORMWATER DRAINAGE PLAN WAREHOUSE 1 & 2
DRAWING No: C013904.03-SSDA401
ISSUE: D



NOTE:

PITS TO BE FITTED WITH OCEAN PROTECT 'OCEANGUARD OG200' INSERT. SHOWN THUS ◇
TOTAL NUMBER OF PIT INSERTS
REFER TO PIT SCHEDULE BELOW.

ROOFWATER NOTE:

ROOFWATER LINES TO HAVE NOMINAL 0.5% FALL TO PITS.
ENSURE MINIMUM 600 COVER IS MAINTAINED TO ALL PIPES.
REFER ALL CONCERN TO ENGINEER. TYPICAL

LEVELS NOTE:

LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

GENERAL NOTES:

SUBSOIL DRAINAGE TO BE INSTALLED ALONG ALL KERB AND LANDSCAPED INTERFACES.

NOTES:

1. REFER TO DRAWING SSDA400 FOR STORMWATER DRAINAGE NOTES.

LEGEND:

LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- PROPOSED DRAINAGE LINE
- EXISTING DRAINAGE LINE
- ROOFWATER DOWNPIPE (INDICATIVE)
- ROOFWATER LINE
- SUBSOIL LINE
- SIPHONIC LINE
- OPEN SWALE
- OVERLAND FLOW DIRECTION
- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- DENOTES PROPOSED BIORETENTION AREA

STORMWATER DRAINAGE PLAN - WAREHOUSE 3
SCALE 1:500

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL MASTERPLAN	11.09.23	D
ACOUSTIC BUNDING & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA402

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CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: STORMWATER DRAINAGE PLAN WAREHOUSE 3
DRAWING No: C013904.03-SSDA402
ISSUE: D

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

PROPOSED MAINTENANCE ACCESS TRACK TO AND AROUND BASIN

DISCHARGE FROM CATCHMENT 4 OSD BASIN INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROVIDE SMOOTH TRANSITION BETWEEN EXISTING FLOW PATH TO GWH AND REHABILITATED CREEK CROSS SECTION. MATCH LEVELS AND CROSS SECTION ALLOWING FOR A MINIMUM 1:5 TRANSITION LENGTH. FINAL ARRANGEMENT SUBJECT TO SITE CONDITION AND ON-SITE VERIFICATION.".

FALSE HEADWALL WITH 3x900ϕ BLOCKOUTS TO REDUCE EXISTING 3x1150ϕ RCP

ESTATE DISCHARGE POINT 2:
REHABILITATED BLACKTOWN CREEK TO DISCHARGE UNDER THE GREAT WESTERN HIGHWAY VIA THE EXISTING CULVERT WITH FALSE HEADWALL WITH 3x⌀900mm⌀. BLOCKOUTS TO REDUCE EXISTING 3x⌀1150 RCP.

GREAT WESTERN HIGHWAY

PROPOSED 1m HIGH WALL BEHIND ACCESS TRACK WITH A 2m WIDE 1V:2.5H MAC BATTER BEHIND WALL

PROPOSED ACOUSTIC FENCE ALONG GREAT WESTERN HIGHWAY BOUNDARY ON TOP OF BATTER SHOWN

SITE BOUNDARY

INV. 66.07

LOW FLOW DIVERSION ROCK WALL TO FROG POND

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

DISCHARGE FROM CATCHMENT 5A OSD BASIN INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROPOSED MAINTENANCE ACCESS TRACK AROUND BASIN

LOW FLOW DIVERSION ROCK WALL TO FROG POND

CATCHMENT 5: STORMWATER MANAGEMENT SYSTEM:
REFER TO DRAWING SSDA403

PROPOSED RETAINING WALL

ROOFWATER LINES TO HAVE NOMINAL 0.5% FALL TO PITS. ENSURE MINIMUM 600 COVER IS MAINTAINED TO ALL PIPES. REFER ALL CONCERN TO ENGINEER. TYPICAL

PROVIDE FIRST FLUSH DIVERTER TO RAINWATER TANK.
FIRST FLUSH DIVERTER SYSTEM TO BE CONFIRMED BY HYDRAULIC ENGINEER

PROPOSED 85KL RAINWATER TANK. DETAILS TO BE CONFIRMED BY HYDRAULIC ENGINEER.

PROPOSED RETAINING WALL

CATCHMENT 4: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 650m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
ON-SITE DETENTION VOLUME PROVIDED = 2,530m3

PORTION OF ROOF TO RWT

WAREHOUSE 4
FFL RL 78.10
±1000mm

LOW FLOW DIVERSION ROCK WALL TO FROG POND

PROPOSED SPRINKLER TANK

PROPOSED RETAINING WALL

CATCHMENT 4 SITE DISCHARGE POINT 1 INTO BIORETENTION BASIN WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROPOSED SYPHONIC DRAINAGE TO DISCHARGE TO PROPOSED FIRST FLUSH PIT PRIOIR TO RWT

PROPOSED RECESSED DOCK 1300 DEEP

GRATED DRAIN IN RECESSED DOCK TO BE PUMPED OUT

PROPOSED RECESSED DOCK 1300 DEEP

GRATED DRAIN IN RECESSED DOCK TO BE PUMPED OUT

PROPOSED 2x65KL RAINWATER TANK. DETAILS TO BE CONFIRMED BY HYDRAULIC ENGINEER.

PROVIDE FIRST FLUSH DIVERTER TO RAINWATER TANK.
FIRST FLUSH DIVERTER SYSTEM TO BE CONFIRMED BY HYDRAULIC ENGINEER

PROPOSED PUMP ROOM

AWNING ABOVE

AWNING ABOVE

AWNING ABOVE

DISCHARGE FROM OVERLAND FLOW CHANNEL INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

WETLAND EMERGENCY SPILLWAY

PROPOSED RETAINING WALL

DISCHARGE FROM WETLAND INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

RAMP UP TO HARDSTAND ABOVE

AREA OF HARDSTAND SET LOWER TO CLEAR OF OVERHEAD CABLES

LOW FLOW DIVERSION ROCK WALL TO GPT

WETLAND
REFER TO DRAWING SSDA410 FOR PLAN

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

BREAK IN KERB TO ALLOW OVERLAND FLOW TO ESCAPE IN THE EVENT OF BLOCKAGES IN DRAINAGE SYSTEM

OPEN SWALE DIVERTING OVERLAND FLOW FROM UPSTREAM CATCHMENT AROUND SITE ALONG SIMILAR ROUTE TO EXISTING

T.O.W
RL 76.16

900ϕ RCP
INV:74.80

GROSS POLLUTANT TRAP PRIOR TO DISCHARGE INTO WETLAND. OCEANPROTECT OCEANSAVE OR SIMILAR APPROVED

SITE BOUNDARY

M4 MOTORWAY

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

PROPOSED ACCESS TO EXISTING ELECTRICAL TOWERS

HERITAGE SITE SHOWN THUS. NO WORKS WITHIN HERITAGE ZONE. MATCH LEVELS AT BOUNDARY OF HERITAGE SITE.

BREAKLINE - REFER TO DRAWING SSDA402 FOR CONTINUATION

BREAKLINE - REFER TO DRAWING SSDA404 FOR CONTINUATION

STORMWATER DRAINAGE PLAN - WAREHOUSE 4
SCALE 1:500

LEVELS NOTE:
LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

ROOFWATER NOTE:
ROOFWATER LINES TO HAVE NOMINAL 0.5% FALL TO PITS.
ENSURE MINIMUM 600 COVER IS MAINTAINED TO ALL PIPES.
REFER ALL CONCERN TO ENGINEER. TYPICAL

NOTE:
PITS TO BE FITTED WITH OCEAN PROTECT 'OCEANGUARD OG200' INSERT. SHOWN THUS ◇
TOTAL NUMBER OF PIT INSERTS
REFER TO PIT SCHEDULE BELOW.

GENERAL NOTES:
SUBSOIL DRAINAGE TO BE INSTALLED ALONG ALL KERB AND LANDSCAPED INTERFACES.

NOTES:
1. REFER TO DRAWING SSDA400 FOR STORMWATER DRAINAGE NOTES.

LEGEND:
LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- PROPOSED DRAINAGE LINE
- EXISTING DRAINAGE LINE
- ROOFWATER DOWNPIPE (INDICATIVE)
- ROOFWATER LINE
- SUBSOIL LINE
- SIPHONIC LINE
- OPEN SWALE
- OVERLAND FLOW DIRECTION
- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- DENOTES PROPOSED BIORETENTION AREA

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL	11.09.23	D
ACOUSTIC BUNDING & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA403

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DRAWING TITLE: STORMWATER DRAINAGE PLAN WAREHOUSE 4
DRAWING No: C013904.03-SSDA403
ISSUE: D

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

ACCESS TO WAREHOUSE 5 FROM GWH DESIGNED BY ALTERNATE CONSULTANT. DESIGN DOCUMENTS REGARDING ACCESS FROM TFNSW ASSET TO FORM PART OF THE SSDA APPLICATION

GREAT WESTERN HIGHWAY

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

700ø RCP
INV: 74.06

ITE BOUNDARY

TOW: 76.04

ESTATE DISCHARGE POINT 2:
CATCHMENT 5B TO DISCHARGE UNDER THE GREAT WESTERN HIGHWAY VIA THE EXISTING 700mm ø RCP CULVERT

PROPOSED 2x65KL RAINWATER TANK. DETAILS TO BE CONFIRMED BY HYDRAULIC ENGINEER.

PROVIDE FIRST FLUSH DIVERTER TO RAINWATER TANK.
FIRST FLUSH DIVERTER SYSTEM TO BE CONFIRMED BY HYDRAULIC ENGINEER

SITE BOUNDARY

PROPOSED SPRINKLER TANK

PROPOSED COMBINED OSD AND STORMWATER QUALITY SYSTEM TO BE CONSTRUCTED BELOW THE SUSPENDED RAMP UP TO THE UPPER LEVELS. PORTION OF ROOF WATER AND RAMPS SHOWN TO DISCHARGE INTO TANK

CARPARK SET BELOW SUSPENDED WAREHOUSING ABOVE"

CATCHMENT 5A: STORMWATER MANAGEMENT SYSTEM:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 700m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
ON-SITE DETENTION VOLUME PROVIDED = 2,270m3

PROPOSED RETAINING WALL

PROPOSED HIGH FLOW/LOW FLOW SPLITTER PIT

CATCHMENT 5A SITE DISCHARGE POINT 1
INTO BIORETENTION BASIN WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PORTION OF ROOF TO RWT
INDICATIVELY SHOWN INDICATIVELY SHOWN TO BE DISCHARGED VIA SYPHONIC ROOF DRAINAGE TO PROPOSED FIRST FLUSH PIT PRIOIR TO RWT

CARPARK SET BELOW SUSPENDED WAREHOUSING ABOVE"

CULVERT OR SIMILAR BRIDGING STRUCTURE BELOW WAREHHOUSE TO EXTERNAL PARKING AREA

PROPOSED RETAINING WALL

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

PROPOSED RETAINING WALL

WETLAND EMERGENCY SPILLWAY

DISCHARGE FROM WETLAND INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROPOSED MAINTENANCE ACCESS TRACK AROUND BASIN

WETLAND
REFER TO DRAWING SSDA410 FOR PLAN

GROSS POLLUTANT TRAP PRIOR TO DISCHARGE INTO WETLAND. OCEANPROTECT OCEANSAVE OR SIMILAR APPROVED

LOW FLOW DIVERSION ROCK WALL TO GPT

TOW: 73.76

1800ø RCP
INV: 71.50

PROVIDE SMOOTH TRANSITION BETWEEN EXISTING FLOW PATH FROM MOTORWAY AND REHABILITATED CREEK CROSS SECTION. MATCH LEVELS AND CROSS SECTION ALLOWING FOR A MINIMUM 1:5 TRANSITION LENGTH. FINAL ARRANGEMENT SUBJECT TO SITE CONDITION AND ON-SITE VERIFICATION.

M4 MOTORWAY

PROPOSED ACCESS TO EXISTING ELECTRICAL TOWERS

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

BREAKLINE - REFER TO DRAWING SSDA403 FOR CONTINUATION

STORMWATER DRAINAGE PLAN - WAREHOUSE 5 GROUND FLOOR
SCALE 1:500

GENERAL NOTES:

SUBSOIL DRAINAGE TO BE INSTALLED ALONG ALL KERB AND LANDSCAPED INTERFACES.

NOTES:

1. REFER TO DRAWING SSDA400 FOR STORMWATER DRAINAGE NOTES.

LEGEND:

LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- sw> - PROPOSED DRAINAGE LINE
- sw> - EXISTING DRAINAGE LINE
- DP - ROOFWATER DOWNPIPE (INDICATIVE)
- rw> - ROOFWATER LINE
- ss> - SUBSOIL LINE
- sd> - SIPHONIC LINE
- OPEN SWALE
- OVERLAND FLOW DIRECTION
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- DENOTES PROPOSED BIORETENTION AREA

NOTE:

PITS TO BE FITTED WITH OCEAN PROTECT 'OCEANGUARD OG200' INSERT. SHOWN THUS ◇
TOTAL NUMBER OF PIT INSERTS
REFER TO PIT SCHEDULE BELOW.

LEVELS NOTE:

LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

ROOFWATER NOTE:

ROOFWATER LINES TO HAVE NOMINAL 0.5% FALL TO PITS.
ENSURE MINIMUM 600 COVER IS MAINTAINED TO ALL PIPES.
REFER ALL CONCERN TO ENGINEER. TYPICAL

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL	11.09.23	D
REVISED AS CLOUDED	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA404

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DRAWING TITLE: STORMWATER DRAINAGE PLAN WAREHOUSE 5 GROUND FLOOR

DRAWING No: C013904.03-SSDA404 ISSUE: D

DISCHARGE FROM CATCHMENT 4 OSD BASIN INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROVIDE SMOOTH TRANSITION BETWEEN EXISTING FLOW PATH TO GWH AND REHABILITATED CREEK CROSS SECTION. MATCH LEVELS AND CROSS SECTION ALLOWING FOR A MINIMUM 1:5 TRANSITION LENGTH. FINAL ARRANGEMENT SUBJECT TO SITE CONDITION AND ON-SITE VERIFICATION.".

FALSE HEADWALL WITH 3x900ϕ BLOCKOUTS TO REDUCE EXISTING 3x1150ϕ RCP

ESTATE DISCHARGE POINT 2:
REHABILITATED BLACKTOWN CREEK TO DISCHARGE UNDER THE GREAT WESTERN HIGHWAY VIA THE EXISTING CULVERT WITH FALSE HEADWALL WITH 3X 900mmϕ. BLOCKOUTS TO REDUCE EXISTING 3X 1150mmϕ RCP.

GREAT WESTERN HIGHWAY

GREAT WESTERN HI

SITE BOUNDARY

1% AEP FLOW
4.4m³/s

INV. 66.07

PERMANENT POND 2
10m X 5m APPROX.

LOW FLOW DIVERSION ROCK WALL TO FROG POND

DISCHARGE FROM CATCHMENT 5A OSD BASIN INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROPOSED MAINTENANCE ACCESS TRACK AROUND BASIN

LOW FLOW DIVERSION ROCK WALL TO FROG POND

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

PROPOSED RETAINING WALL

WAREHOUSE 5
REFER DRAWING
SSDA404 &
SSDA504

CATCHMENT 5: STORMWATER MANAGEMENT STRUCTURE:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 700m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
ON-SITE DETENTION VOLUME PROVIDED = 2,270m3

PROPOSED RETAINING WALL

CATCHMENT 4: STORMWATER MANAGEMENT STRUCTURE:
COMBINED STORMWATER QUALITY/QUANTITY MANAGEMENT BASIN
BIO-RETENTION AREA PROVIDED = 650m2
300mm EXTENDED DETENTION DEPTH
500mm MIN FILTER MEDIA
ON-SITE DETENTION VOLUME PROVIDED = 2,530m3

EPHEMERAL POND 2
10m X 5m APPROX.

WAREHOUSE 4
REFER DRAWING
SSDA403 &
SSDA503

PERMANENT POND 1
20m X 10m APPROX.

1% AEP FLOW
9.17m³/s

CATCHMENT 4 SITE DISCHARGE POINT 1 INTO BIORETENTION BASIN WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

CATCHMENT 5A SITE DISCHARGE PONT 1 INTO BIORETENTION BASIN WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

PROPOSED MAINTENANCE ACCESS TRACK TO AND AROUND BASIN

EPHEMERAL POND 1
20m X 5m APPROX.

LOW FLOW DIVERSION ROCK WALL TO FROG POND

EMERGENCY WETLAND SPILLWAY

DISCHARGE FROM OVERLAND FLOW CHANNEL INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

SHUT OFF VALVE

DISCHARGE FROM WETLAND INTO REHABILITATED BLACKTOWN CREEK WITH STACKED ROCK HEADWALL AS PER DETAIL SSDA455

LOW FLOW DIVERSION ROCK WALL TO GPT

BREAK IN KERB TO ALLOW OVERLAND FLOW TO ESCAPE IN THE EVENT OF BLOCKAGES IN DRAINAGE SYSTEM

1% AEP FLOW
7.60m³/s

LOW FLOW DIVERSION ROCK WALL TO GPT

PROPOSED WETLAND

OPEN SWALE DIVERTING OVERLAND FLOW FROM UPSTREAM CATCHMENT AROUND SITE ALONG SIMILAR ROUTE TO EXISTING.

1% AEP FLOW
1.75m³/s

T.O.W
RL 76.16

HERITAGE AREA

SITE BOUNDARY

900ϕ RCP
INV:74.80

M4 MOTORWAY

HERITAGE ZONE
REFER TO ARCHITECTS DRAWINGS

GROSS POLLUTANT TRAP PRIOR TO DISCHARGE INTO WETLAND. OCEANPROTECT OCEANSAVE OR SIMILAR APPROVED

PROVIDE SMOOTH TRANSITION BETWEEN EXISTING FLOW PATH FROM MOTORWAY AND REHABILITATED CREEK CROSS SECTION. MATCH LEVELS AND CROSS SECTION ALLOWING FOR A MINIMUM 1:5 TRANSITION LENGTH. FINAL ARRANGEMENT SUBJECT TO SITE CONDITION AND ON-SITE VERIFICATION.

M4 MOTORWAY

SITE BOUNDARY

BLACKTOWN CREEK REALIGNMENT PLAN
SCALE 1:500

LEGEND:

ECOLOGY INFORMATION PROVIDED BY TRAVERS BUSHFIRE & ECOLOGY REF No. 20CHH02 DATED 04.05.2021

- FULL REVEGETATION OF PCT 1071 FRESHWATER WETLAND
- FULL REVEGETATION OF PCT 1071 (EMERGENT ZONE)
- FULL REVEGETATION OF PCT 1071 (DEEP WATER ZONE)
- DENOTES BIO-RETENTION ZONE

LEGEND:

LEVELS DATUM IS AHD.

EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY LANDPARTNERS TITLED SY074904.002.2.2 DATED 04/03/2022.

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- GD, GRATED DRAIN (300W x 225D UNO)
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- EXISTING DRAINAGE LINE
- ROOFWATER DOWNPIPE (INDICATIVE)
- ROOFWATER LINE
- SUBSOIL LINE
- SIPHONIC LINE
- OPEN SWALE
- OVERLAND FLOW DIRECTION
- FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- DENOTES PROPOSED BIORETENTION AREA

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

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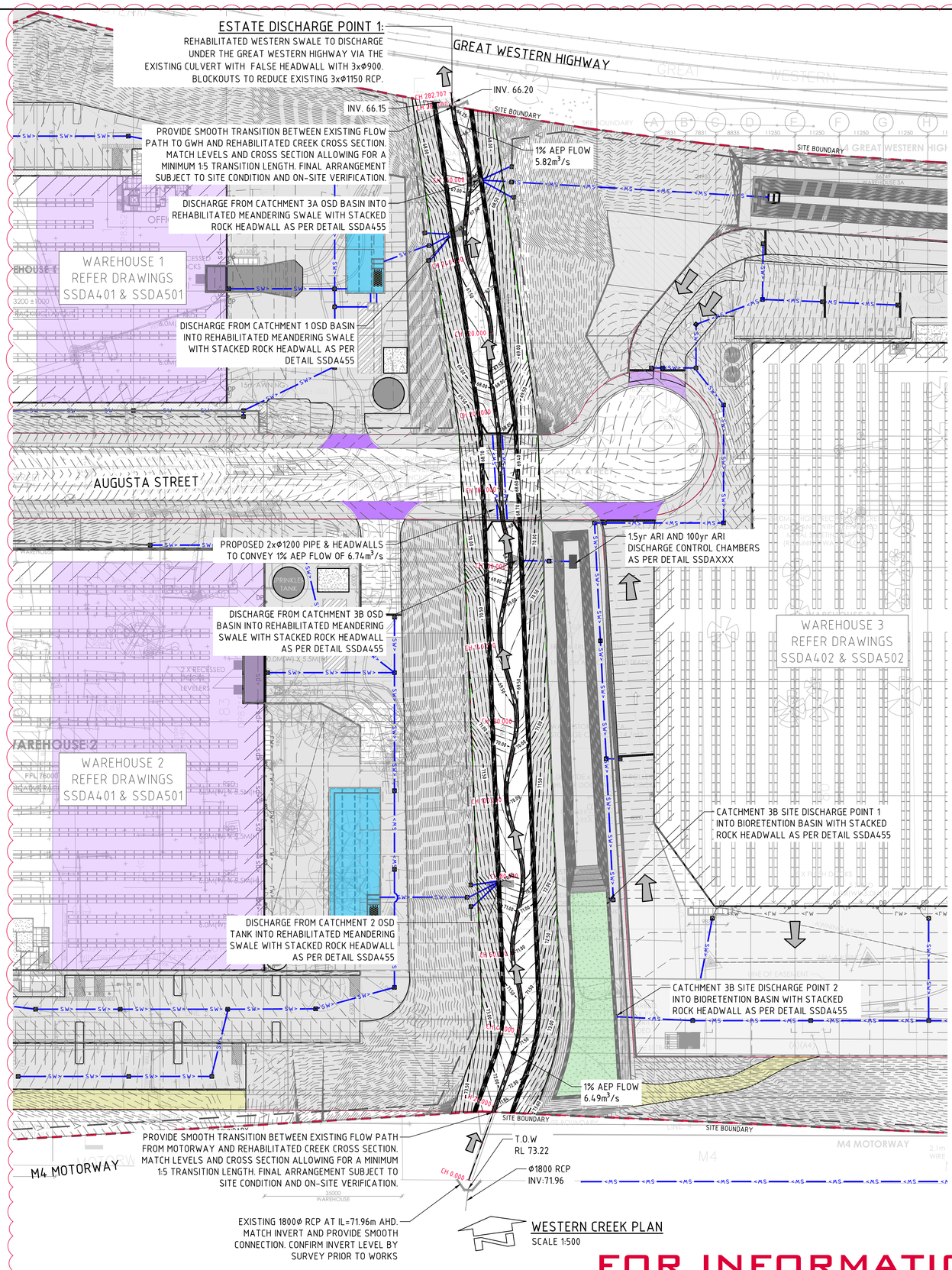
ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA410

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DRAWING TITLE: BLACKTOWN CREEK REALIGNMENT PLAN
DRAWING No: C013904.03-SSDA410
ISSUE: D



WESTERN CREEK PLAN
SCALE 1:500

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

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ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS

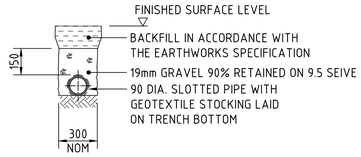
PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA415

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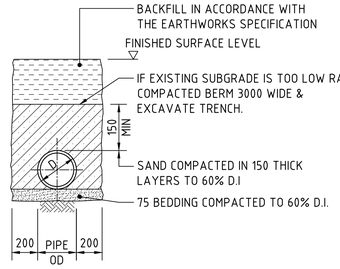
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DRAWING TITLE: WESTERN CREEK PLAN
DRAWING No: C013904.03-SSDA415
ISSUE: D



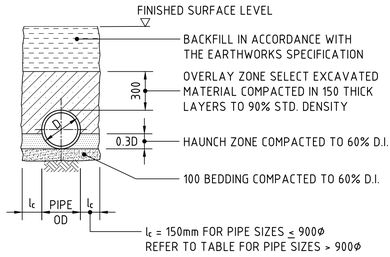
SUPPORT TO AGRICULTURAL DRAIN

SCALE 1:20



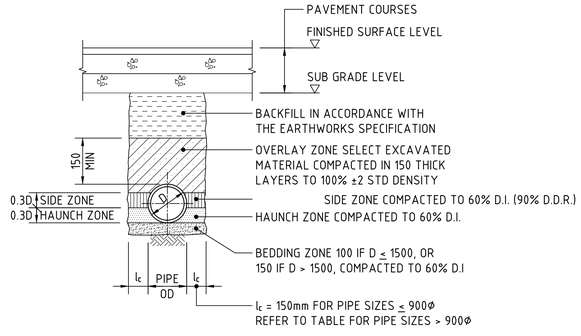
SUPPORT TO uPVC PIPES

SCALE 1:20



TYPE H1 SUPPORT TO CONCRETE PIPES AT LANDSCAPED AREAS

SCALE 1:20

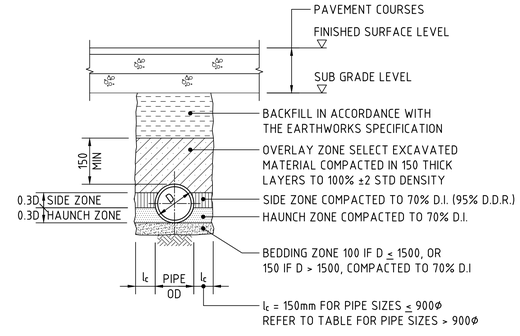


TYPE HS2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT

SCALE 1:20

D ≤ 1350, MAX FILL = 4.0m

D > 1350, MAX FILL = 3.0m

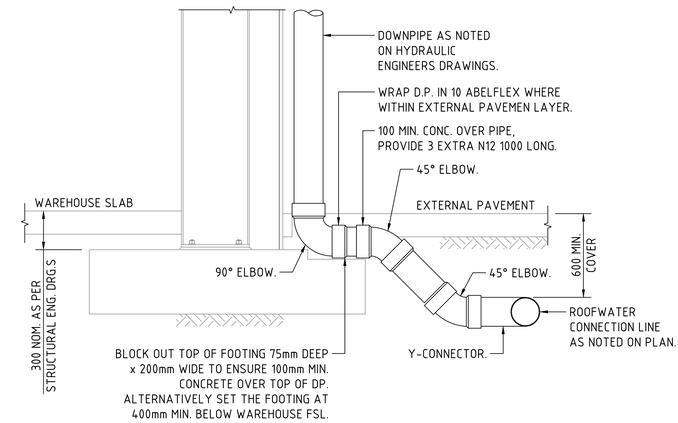


TYPE HS3 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT

SCALE 1:20

D ≤ 1050, MAX FILL = 6.0m

D > 1050, MAX FILL = 4.8m



DOWNPIPE TURN-UP DETAIL A

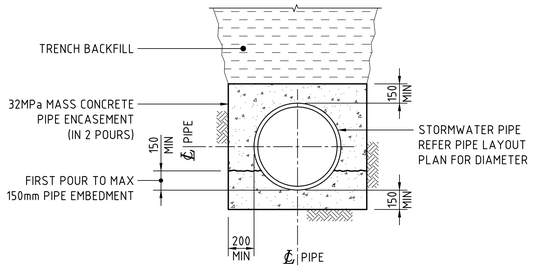
(AT FOOTING LOCATION)

SCALE 1:20

BEDDING & HAUNCH MATERIAL GRADING	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SIDE ZONE WIDTH	
PIPE SIZE (mm)	l_c (mm)
≤ 900Ø	150
1050Ø	175
1200Ø	200
1350Ø	225
1500Ø	250
1650Ø	275
1800Ø	300
ENGINEER TO SPECIFY TRENCH WIDTHS FOR PIPE SIZES GREATER THAN 1800Ø	

SIDE ZONE MATERIAL GRADING	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
9.5	100 TO 50
2.6	100 TO 30
0.60	50 TO 15
0.075	25 TO 0
SELECT FILL MATERIAL IN ACCORDANCE WITH TABLE 1 AS 3725	

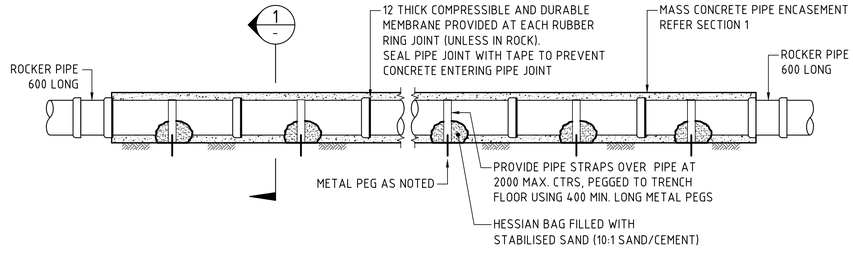


SECTION 1:20 — 1 / –

TYPICAL ACROSS PIPE

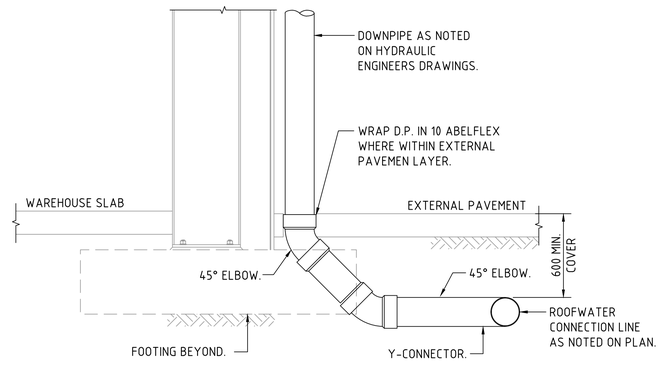
NOTE :

DURING THE ENCASEMENT PROCESS THE CONTRACTOR IS TO PROVIDE SUPPORT TO THE PIPE TO PREVENT PIPE MOVEMENT AND/OR FLOAT. CONCRETE ENCASEMENT TO BE INSTALLED IN 2 POURS.



STORMWATER PIPE CONCRETE ENCASEMENT TYPICAL DETAIL

SCALE 1:50



DOWNPIPE TURN-UP DETAIL B

(CLEAR OF FOOTING)

SCALE 1:20

200mm 0 500 1000 1500 2000mm

SCALE 1:20 AT B1 SIZE SHEET

FOR INFORMATION

ISSUED FOR INFORMATION	16.06.23	A
AMENDMENTS	DATE	ISSUE

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AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

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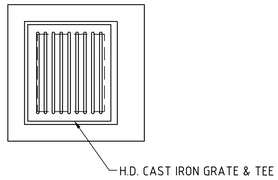
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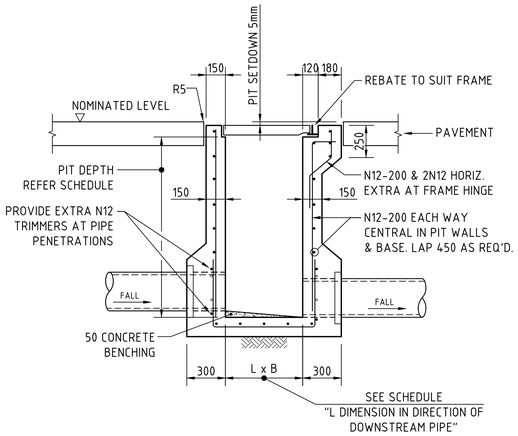
DRAWING TITLE: STORMWATER DRAINAGE DETAILS SHEET 1

DRAWING No: C013904.03-SSDA450

ISSUE: A

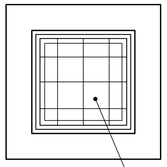


PLAN
SCALE 1:20

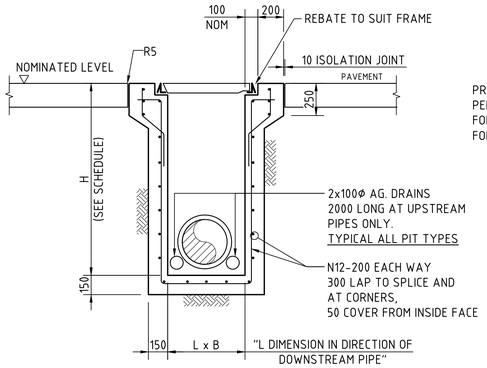


SECTION
SCALE 1:20

SINGLE GRATED GULLY PIT - SGGP

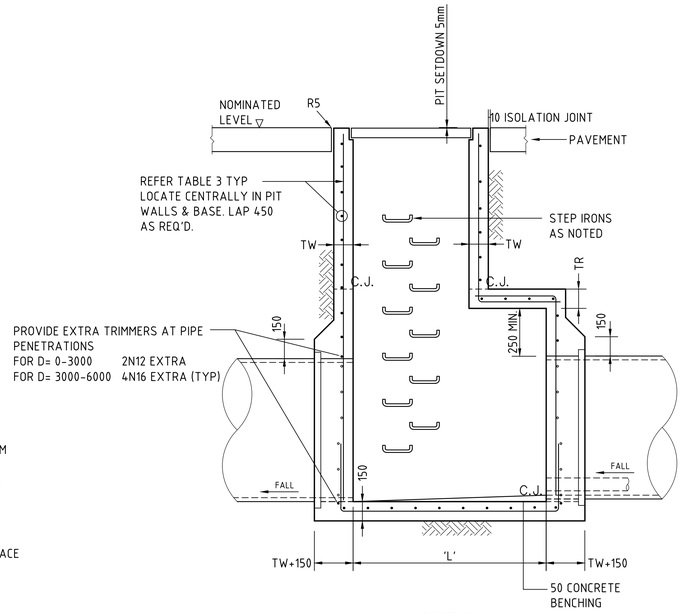


PLAN
SCALE 1:20

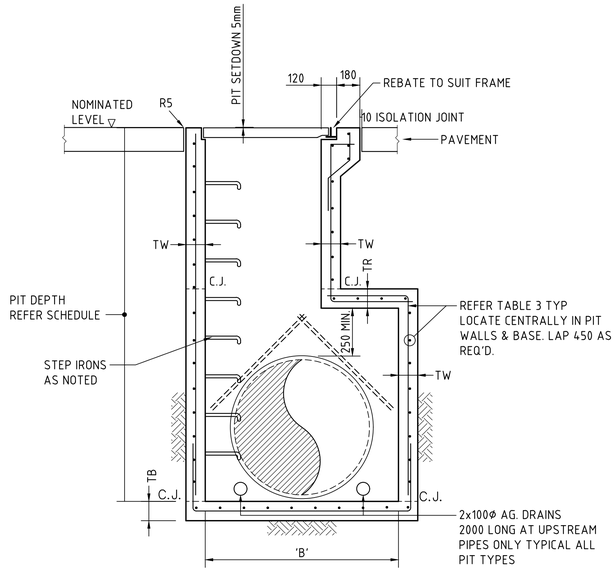


SECTION
SCALE 1:20

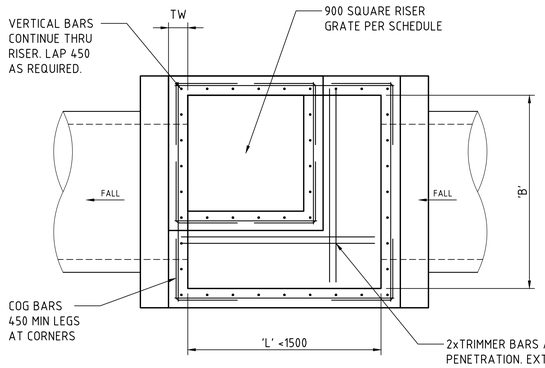
SEALED JUNCTION PIT - SJP



SECTION
SCALE 1:20



SECTION
SCALE 1:20

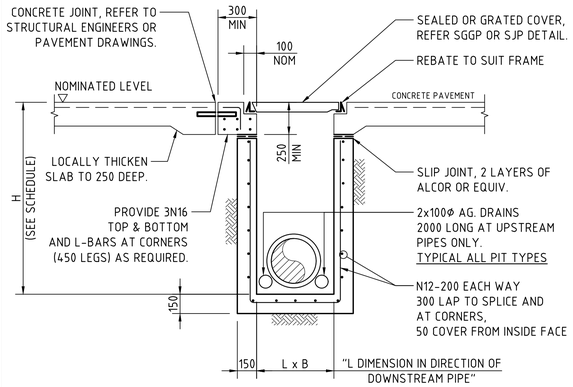


PLAN
SCALE 1:20

TAPERED SINGLE GRATED GULLY PIT - SGGP

SUBSOIL NOT SHOWN
FOR CLARITY.

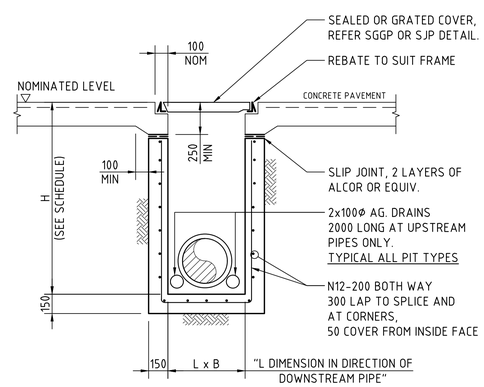
TABLE 3 - TAPERED CLASS D PIT REINFORCEMENT & WALL THICKNESS						
DEPTH 'H'	WALL THICKNESS 'TW'	WALL REINFORCEMENT	ROOF THICKNESS 'TR'	ROOF REINFORCEMENT	BASE THICKNESS 'TB'	BASE REINFORCEMENT
<1.5m	150mm	N12-200 EACH WAY	150mm	N12-200 EACH WAY	150mm	N12-200 EACH WAY
1.5m-3.0m	150mm	N12-200 EACH WAY	150mm	N12-200 EACH WAY	150mm	N12-200 EACH WAY
3.0m-4.5m	200mm	N16-200 EACH WAY	200mm	N16-200 EACH WAY	200mm	N12-200 EACH WAY
4.5-6.0	250mm	N16-200 EACH WAY	250mm	N16-200 EACH WAY	250mm	N16-200 EACH WAY



SECTION
SCALE 1:20

SJP/CIS & SGGP/CIS (CAST IN SLAB) PIT DETAIL GRATE/COVER SUPPORT CAST-INTO PAVEMENT SLAB

(ADOPT IN CONCRETE PAVEMENT FOR SGGP's & SJP's, WHERE PITS ARE LOCATED IN THE CORNER OF SLAB PANELS OR ADJACENT TO SLAB PANEL JOINTS)



SECTION
SCALE 1:20

SJP/CIS & SGGP/CIS (CAST IN SLAB) PIT DETAIL GRATE/COVER SUPPORT CAST-INTO PAVEMENT SLAB

(ADOPT IN CONCRETE PAVEMENTS FOR SGGP's & SJP's, WHERE JOINTS ARE NOT LOCATED WITHIN PROXIMITY OF THE GRATE)

FOR INFORMATION

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT B1 SIZE SHEET

ISSUED FOR INFORMATION	16.06.23	A	
AMENDMENTS	DATE	ISSUE	

AMENDMENTS	DATE	ISSUE

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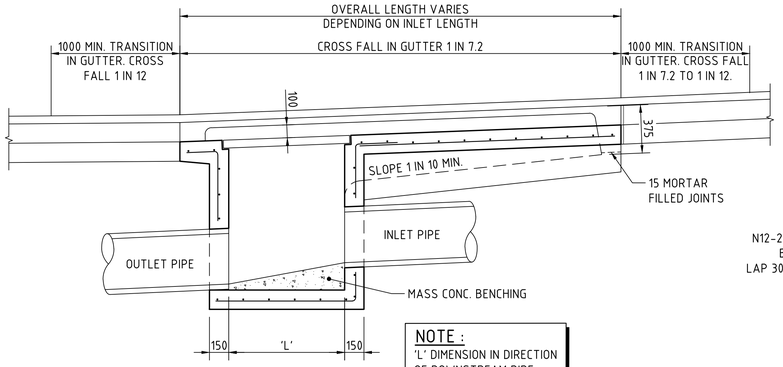
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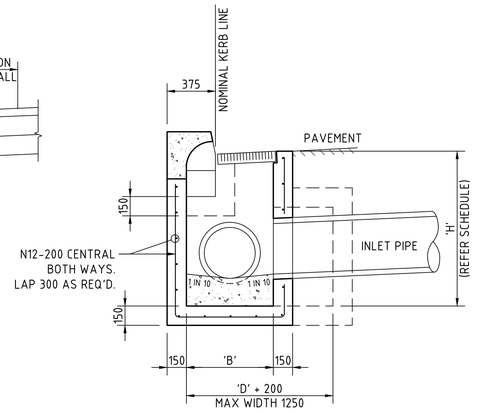
COSTIN ROE CONSULTING — CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: STORMWATER DRAINAGE DETAILS SHEET 2
DRAWING No: C013904.03-SSDA451
ISSUE: A

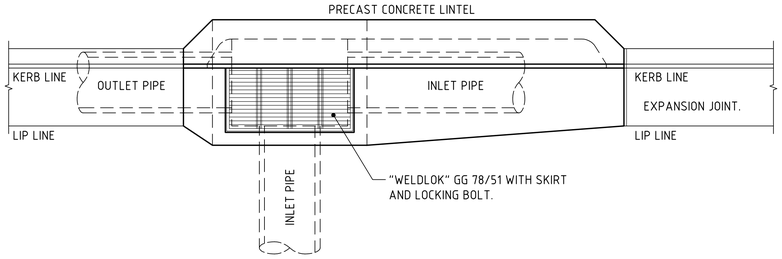


NOTE :
'L' DIMENSION IN DIRECTION OF DOWNSTREAM PIPE

LONG SECTION
SCALE 1:20



CROSS SECTION
SCALE 1:20

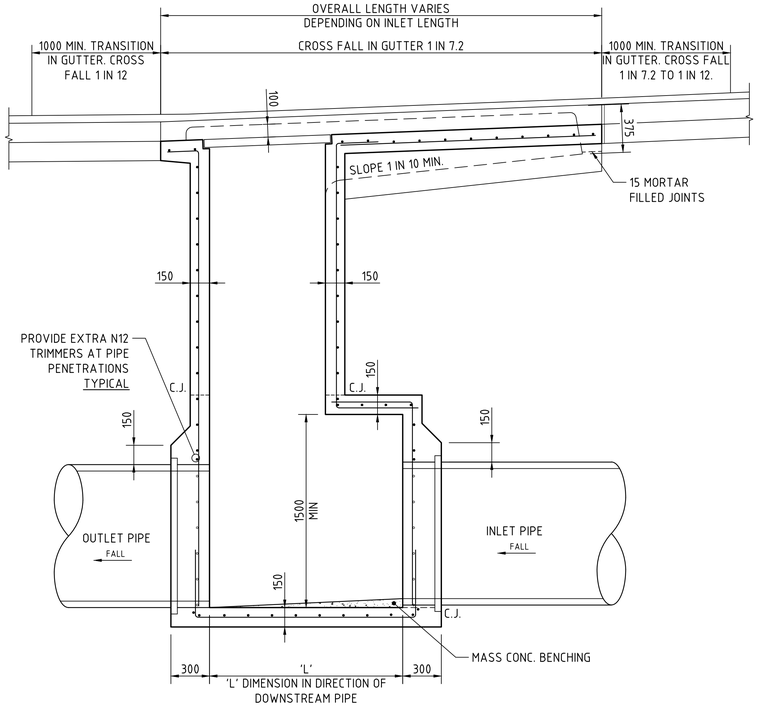


PLAN
SCALE 1:20

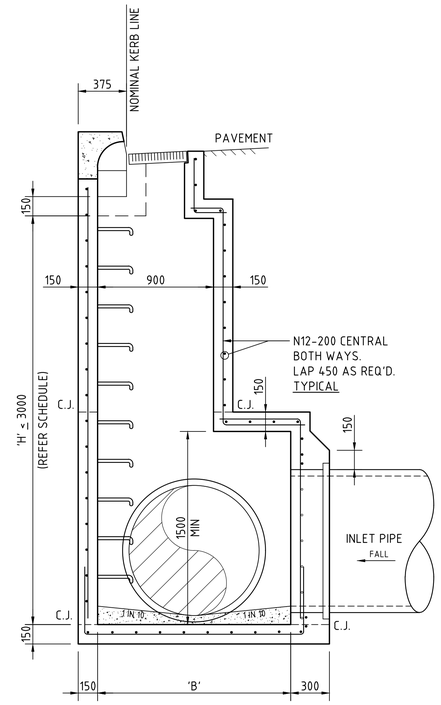
CONCRETE QUALITY					
ELEMENT	SLUMP	AGGREGATE (MAX. SIZE)	CEMENT TYPE	ADMIXTURE	F'c (MPa)
PIT	80	20	GP	NIL	32

NOTE :

1. WHERE GULLY PIT IS LOCATED ON KERB RETURNS OR BULB OF CUL-DE-SACS PROVIDE CURVED PRECAST CONCRETE LINTELS.
2. SAG PITS SHALL HAVE LINTEL PLACED CENTRALLY ABOUT THE GRATE.
3. ALL REINFORCING TO HAVE 30 MIN. CLAER CONCRETE COVER.
4. FOR PITS DEEPER THAN 1000mm CLIMB RAILS SHALL BE PROVIDED.

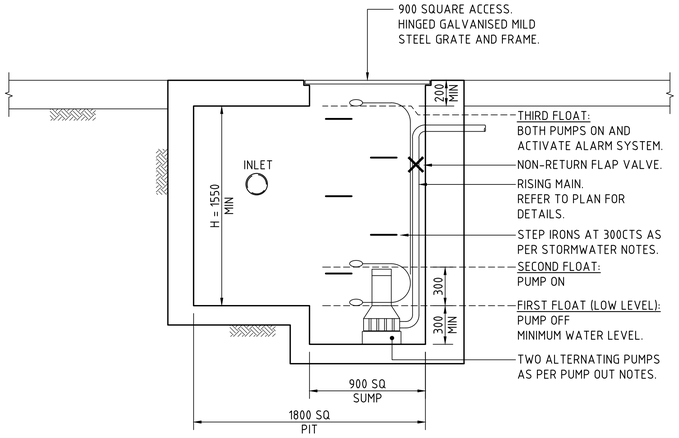


LONG SECTION
SCALE 1:20



CROSS SECTION
SCALE 1:20

KERB INLET PIT - KIP



PUMP OUT PIT DETAIL
SCALE 1:20
REFER TYPICAL PIT DETAILS FOR ALL ITEMS NOT LABELED.

BASEMENT PUMP OUT NOTES:

PUMP SYSTEM IS TO CONSIST OF DUAL ALTERNATING PUMPS. THE PUMP OUT SYSTEM SHALL BE DESIGNED TO BE OPERATED IN THE FOLLOWING MANNER:

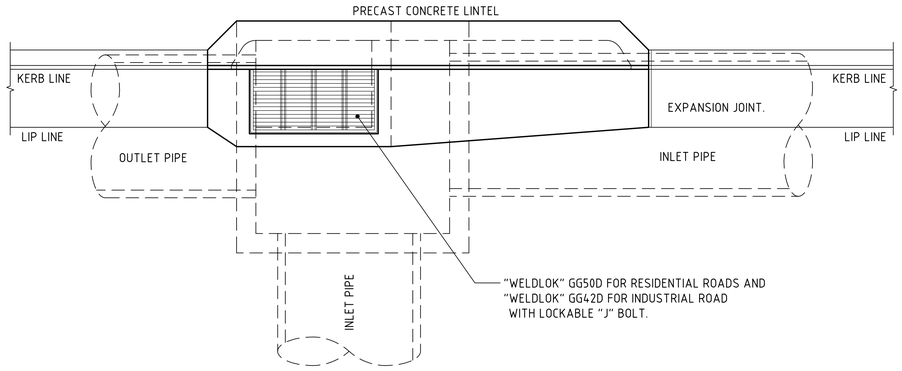
Q PUMP = 25 L/s VOLUME = 5.0 m^3 (MIN.)
THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATIVELY SO AS TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.

A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE PIT . IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.

A SECOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE AND DRAIN THE PIT TO THE LEVEL OF THE LOW-LEVEL FLOAT.

A THIRD FLOAT SHALL BE PROVIDED AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE TOP LEVEL OF THE PIT. THIS FLOAT SHOULD START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.

AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT AND A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.



PLAN
SCALE 1:20

TAPERED KERB INLET PIT - KIP

SUBSOIL NOT SHOWN FOR CLARITY

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT B1 SIZE SHEET

FOR INFORMATION

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AMENDMENTS	DATE	ISSUE

AMENDMENTS	DATE	ISSUE

ARCHITECT
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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA452

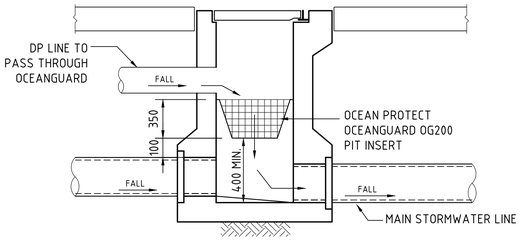
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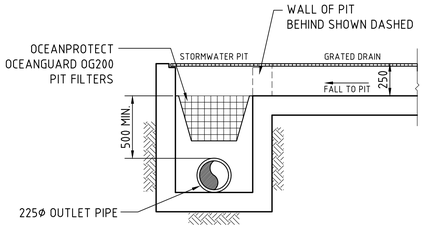
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DRAWING TITLE
STORMWATER DRAINAGE DETAILS SHEET 3

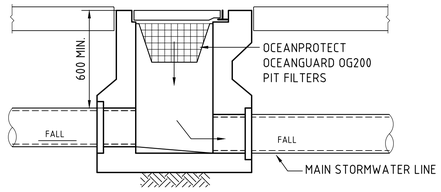
DRAWING No C013904.03-SSDA452
ISSUE A



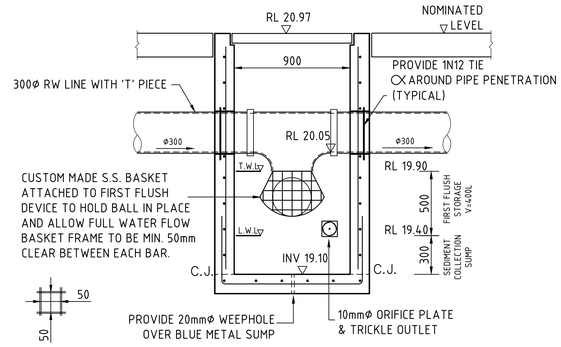
ROOFWATER/STORMWATER PIT WITH
OCEANGUARD CONFIGURATION
SCALE 1:20



GRATED DRAIN/STORMWATER PIT WITH OCEANPROTECT
OCEANGUARD OG200 PIT CONFIGURATION
SCALE 1:20

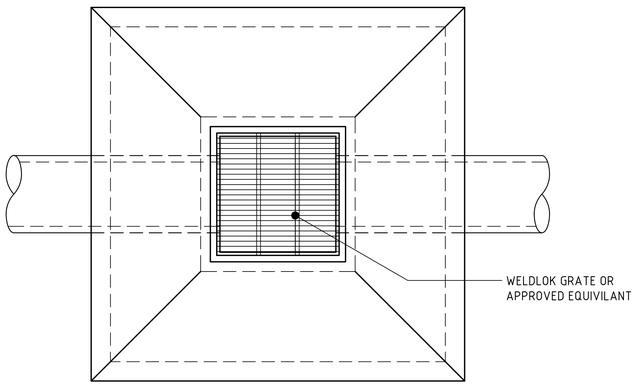


STORMWATER PIT WITH OCEANPROTECT
OCEANGUARD OG200 PIT CONFIGURATION
SCALE 1:20

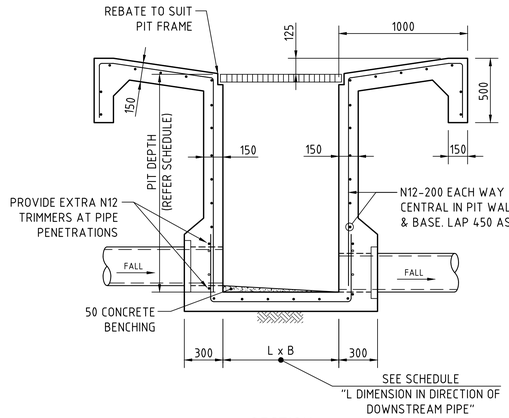


FIRST FLUSH PIT DETAIL
SCALE 1:20

OCEANGUARD OG200 PIT CONFIGURATION



PLAN
SCALE 1:20



SECTION
SCALE 1:20

FIELD INLET PIT - FIP

FOR INFORMATION

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT B1 SIZE SHEET

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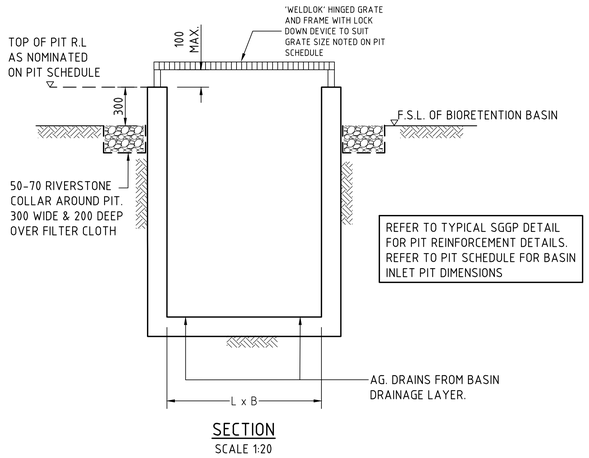
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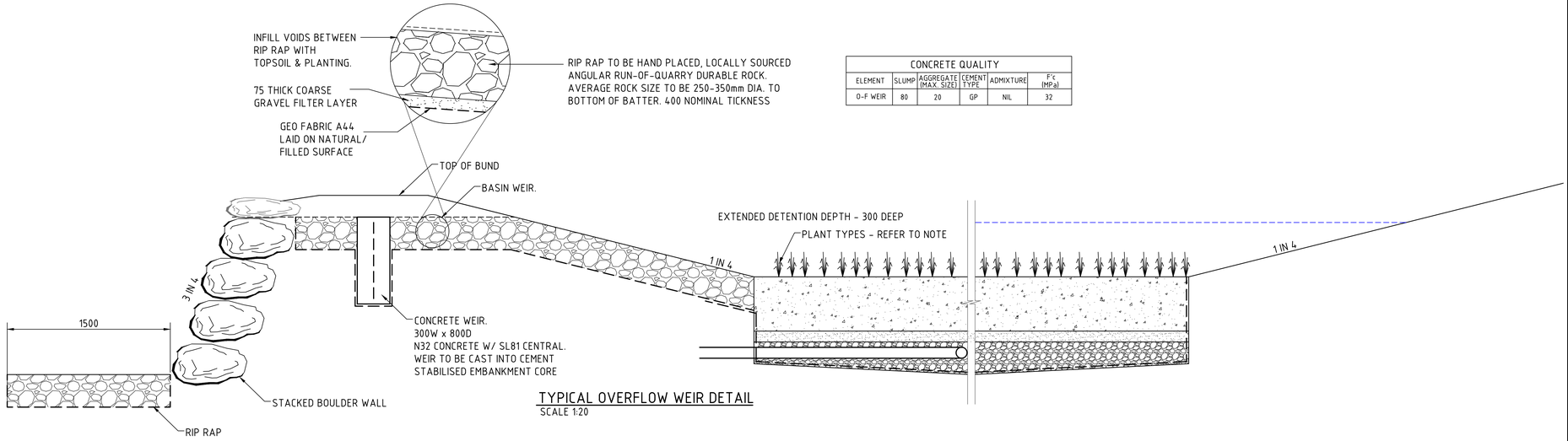
DRAWING TITLE
STORMWATER DRAINAGE DETAILS
SHEET 4

DRAWING No C013904.03-SSDA453
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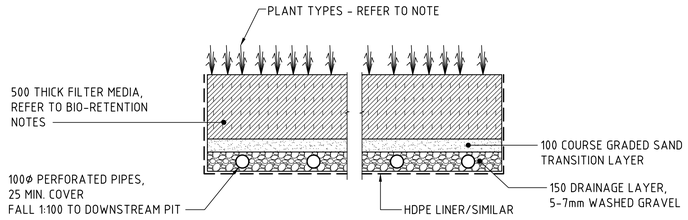
SECTION
SCALE 1:20

BASIN INLET PIT - BIP

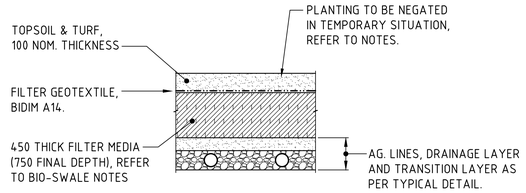


CONCRETE QUALITY					
ELEMENT	SLUMP	AGGREGATE (MAX. SIZE)	CEMENT TYPE	ADMIXTURE	F'c (MPa)
O-F WEIR	80	20	GP	NIL	32

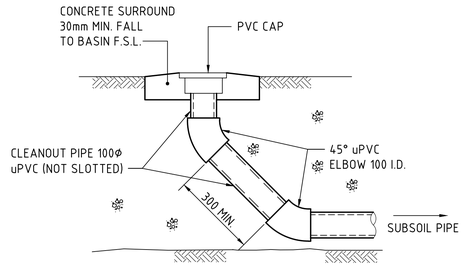
TYPICAL OVERFLOW WEIR DETAIL
SCALE 1:20



TYPICAL BIO-RETENTION DETAIL
SCALE 1:20

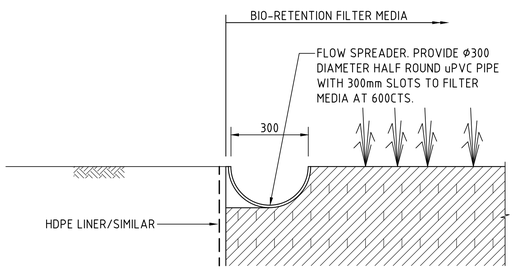


TEMPORARY BIO-RETENTION PROTECTION DETAIL
SCALE 1:20
TEMPORARY CONSTRUCTION REQUIREMENT DETAIL -
REFER TO NOTES FOR IMPLEMENTATION PERIODS.



BIORETENTION CLEANOUT EYE ELEVATION
SCALE 1:20
DENOTED C.E. ON PLAN

BIO-RETENTION BASIN DETAILS



TYPICAL HALF-ROUND FLOW SPREADER DETAIL
SCALE 1:10

BIO-RETENTION NOTES :

FILTER MEDIA TO BE LOAMY SAND WITH A PERMEABILITY NOT LESS THAN 200mm/hr. FILTER MEDIA TO BE FREE OF RUBBISH, DELETERIOUS MATERIAL, TOXICANTS, DECLARED PLANTS AND LOCAL WEEDS, AND IS TO NOT BE HYDROPHOBIC.

FILTER MEDIA TO HAVE THE FOLLOWING COMPOSITION RANGE:

CLAY & SILT (<0.05mm)	<3%
VERY FINE SAND (0.05-0.15mm)	5-30%
FINE SAND (0.15-0.25mm)	10-30%
MEDIUM TO COARSE SAND (0.25-1.00mm)	40-60%
COARSE SAND (1.0-2.0mm)	7-10%
FINE GRAVEL (2.0-3.4mm)	<3%

FILTER MEDIA THAT DOES NOT MEET THE FOLLOWING CRITERIA SHALL BE REJECTED:

a. ORGANIC MATTER CONTENT TO BE IDEALLY WITHIN 1% TO 3% (W/W) AND TO BE NO GREATER THAN 5%(W/W).
b. PH TO BE BETWEEN 5.5 AND 7.5
c. PHOSPHOROUS CONTENT TO BE NO GREATER THAN 35mg/kg

FILTER MEDIA TO BE ASSESSED BY QUALIFIED HORTICULTURALIST TO ENSURE CAPABILITY OF SUPPORTING PLANT LIFE.

DRAINAGE LAYER TO BE CLEAN GRAVEL 5-7mm.

PLANTS TO BE IN ACCORDANCE WITH PENRITH CITY COUNCIL REQUIREMENTS.

PROVIDE 100mm TOPSOIL AND TEMPORARY EROSION PROTECTION (JUTEMASTER OR EQUIV) TO SWALE BATTER SLOPES AND ADJACENT LANDSCAPED AREAS. NOTE THAT NO TOPSOIL IS TO BE PLACED OVER FILTRATION MEDIA. PROVIDE SILT FENCE TO TOP OF BANK UNTIL SUCH TIME AS THIS STABILISING AND VEGETATION HAS BEEN COMPLETED.

BIO-RETENTION TO BE PARTIALLY INSTALLED, FOLLOWING COMPLETION OF ROADWORKS, WITH THE TOP 75-100mm OF FILTER MEDIA REPLACED WITH A FINE TO COARSE SAND UNDERLAIN WITH A GEOTEXTILE LAYER (REFER TO DETAIL). FOLLOWING COMPLETION OF THE UPSTREAM DEVELOPMENT AND SITE STABILISATION, THE SAND IS TO BE REMOVED, REPLACED WITH FILTER MATERIAL AND PLANTED OUT. REFER TO TEMPORARY BIO-BASIN DETAIL

PRIOR TO PLANTING, THE TOP 100mm OF THE BIORETENTION FILTER MEDIA IS TO BE AMELIORATED WITH APPROPRIATE ORGANIC MATTER, FERTILISER AND TRACE ELEMENTS TO AID PLANT ESTABLISHMENT AS PER THE TABLE BELOW:

TABLE: RECIPE FOR AMELIORATING TOP 100mm OF BIORETENTION FILTER MEDIA

CONSTITUENT	QUANTITY (kg/m2 OF FILTER AREA)
GRANULATED POULTRY MANURE FINES	50
SUPERPHOSPHATE	2
MAGNESIUM SULPHATE	3
POTASSIUM SULPHATE	2
TRACE ELEMENT MIX	1
FERTILISER NPK (16.4.14)	4
LIME	20

100mm 0 200 400 600 800 1000mm
SCALE 1:10 AT B1 SIZE SHEET

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT B1 SIZE SHEET

FOR INFORMATION

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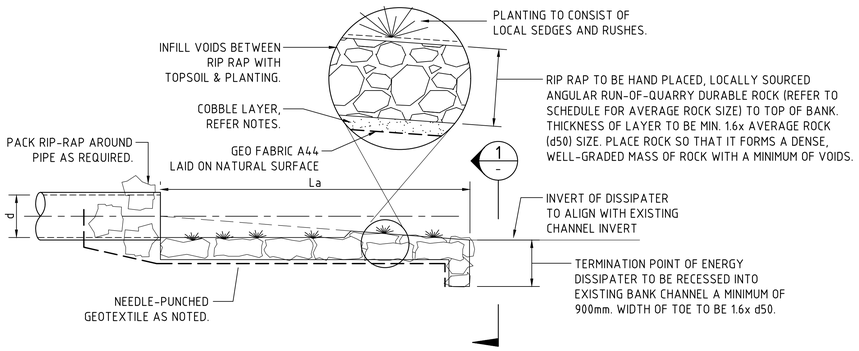
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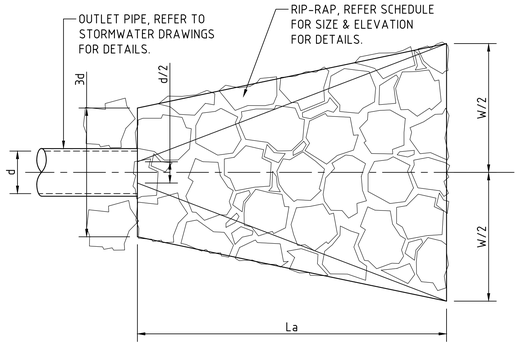
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DRAWING TITLE
STORMWATER DRAINAGE DETAILS
SHEET 5

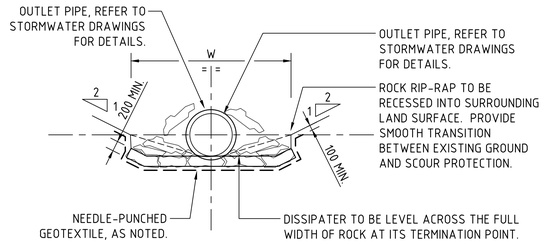
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ISSUE A



ELEVATION
SCALE 1:50



PLAN
SCALE 1:50



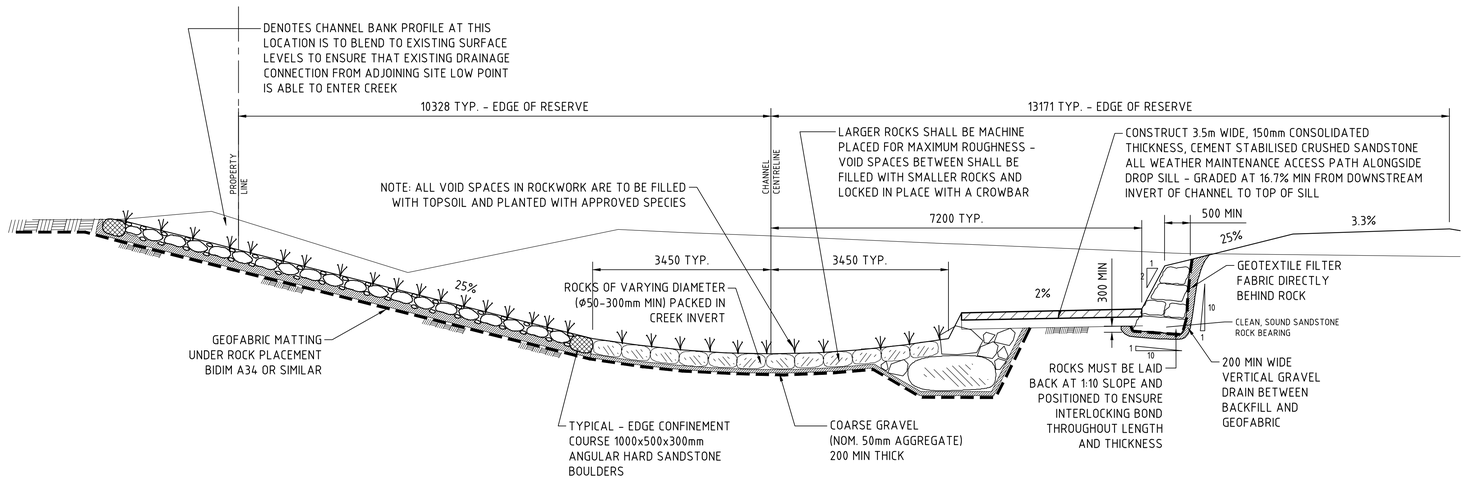
SECTION 1:50 (1)

DISSIPATER NOTES:

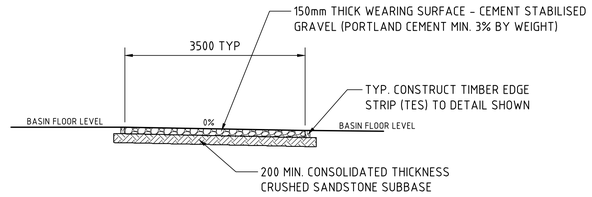
1. ALIGN STRUCTURE EVENLY WITH BANK.
2. LOCATE STRUCTURE AT INVERT LEVEL OF STREAM AND POINT IN A DOWNSTREAM DIRECTION.
3. PIPE TO REST ON, AND BE PACKED IN, BY RIP-RAP (SIZE AS NOTED).
4. DISCHARGE INTO STREAM WHERE BEDROCK IS PRESENT, OTHERWISE SCOUR PROTECT AS REQUIRED.
5. SCOUR PROTECT THE OPPOSITE BANK AS REQUIRED. SCOUR PROTECTION TO BE PROVIDED WHERE OPPOSITE BANK IS WITHIN 12-14 TIMES THE PIPE DIAMETER.
6. RIP-RAP TO CONSIST OF ANGULAR RUN-OF-QUARRY ROCK (d50= 150mm MINIMUM) AS NOTED IN THE SCHEDULE. RIP-RAP TO BE MINIMUM THICKNESS OF RIP-RAP LAYER TO BE 1.6x AVERAGE ROCK SIZE (d50).
7. RIP-RAP IS TO BE PLACED OVER A 200mm LAYER OF 140mm COBBLES OVER NEEDLE-PUNCHED GEOFAB A44.
8. PLACE ROCK SO THAT IT FORMS A DENSE, WELL-GRADED MASS OF ROCK WITH A MINIMUM OF VOIDS. THE FINISHED RIP-RAP SURFACE SHOULD BE FREE OF POCKETS OF SMALL ROCK OR CLUSTERS OF LARGE ROCKS.
9. GAPS IN RIP-RAP TO BE HAND PACKED WITH TOPSOIL & PLANTED WITH NATIVE SEDGES & RUSHES TO PROVIDE. THE INTENT IS FOR THERE TO BE NO VOIDS BETWEEN RIP-RAP BOULDERS.
10. ENSURE THE FINISHED ROCK SURFACE BLENDS WITH THE SURROUNDING GROUND LEVELS. NO OVERFALL OR PROTRUSION OF ROCK SHOULD BE APPARENT.
11. ENSURE THAT STORMWATER FROM SURROUNDING GROUND IS FREE TO ENTER THE STRUCTURE WITHOUT CAUSING UNDESIRABLE PONDING OR SCOUR.

DISSIPATER SCHEDULE				
DISCHARGE POINT	d	La	W	RIP-RAP (d50)
OUTLET B	852ø	5000	3000	300

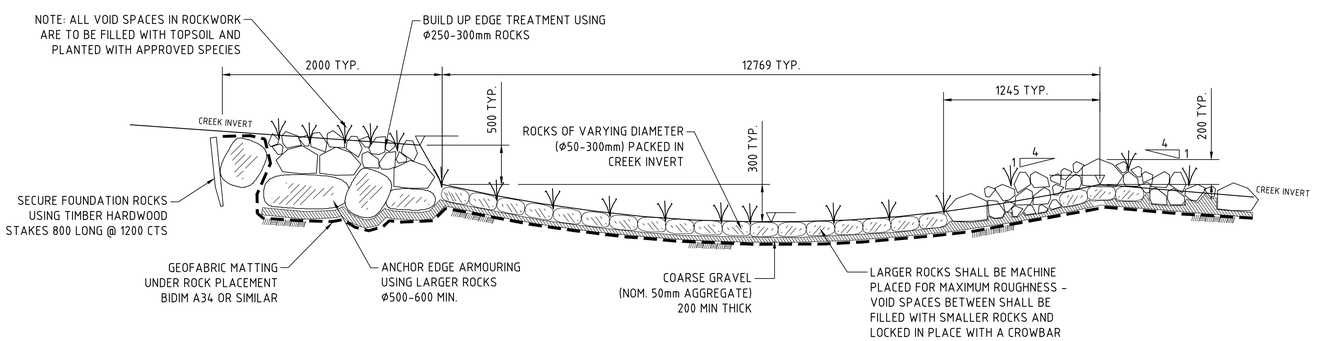
STORMWATER OUTLET DISSIPATER



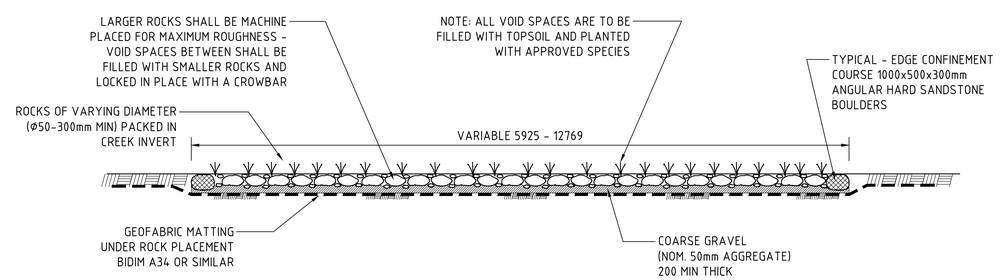
TYPICAL SECTION - PLUNGE POOL
SCALE 1:50



TYPICAL DETAIL - MAINTENANCE ACCESS DRIVE PAVEMENT CONSTRUCTION
SCALE 1:50



TYPICAL DETAIL - PLUNGE POOL AND WEIR
SCALE 1:50



TYPICAL DETAIL - BATTER STABILISATION SCOUR PROTECTION
SCALE 1:50

500mm 0 1 2 3 4 5m
SCALE 1:50 AT B1 SIZE SHEET

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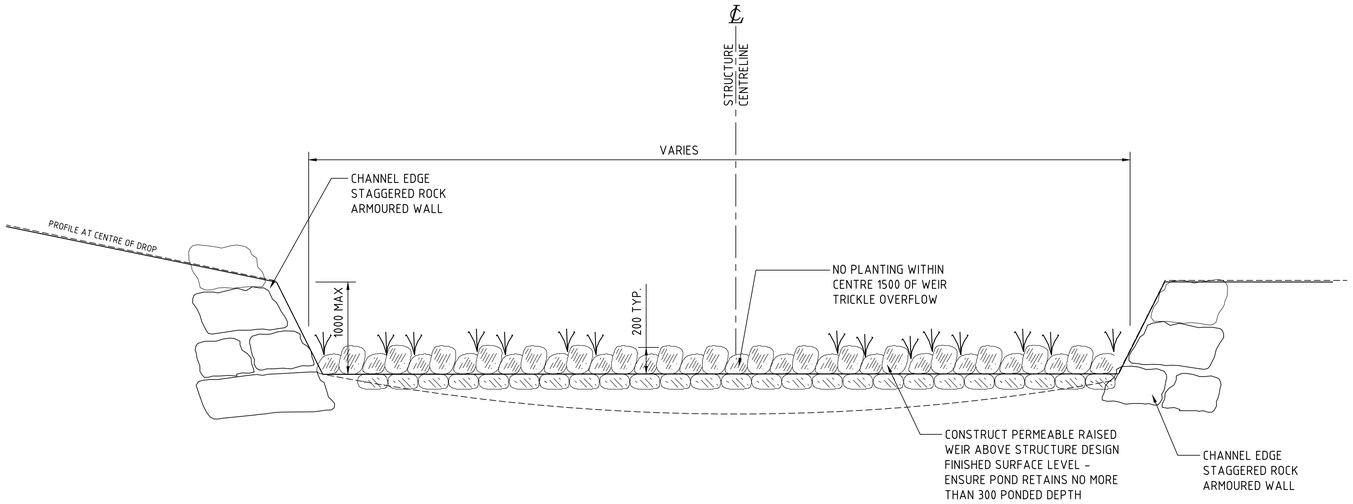
ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

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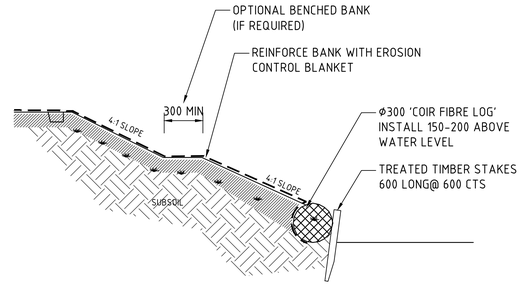
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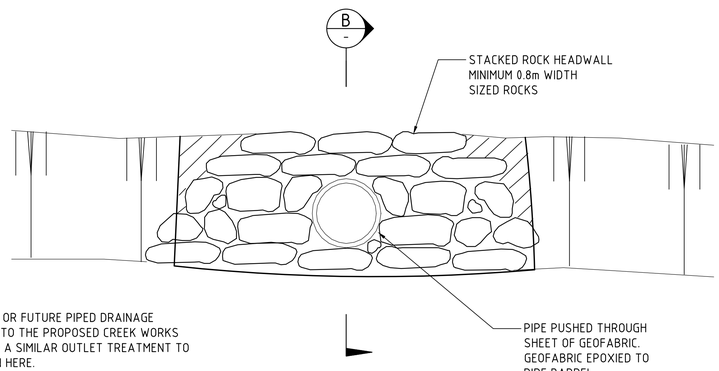
DRAWING TITLE: STORMWATER DRAINAGE DETAILS SHEET 6
DRAWING No: C013904.03-SSDA455
ISSUE: A



TYPICAL DETAIL - ROCK DROP SILL AND WEIR
SCALE 1:20



TYPICAL DETAIL - COIR FIBRE LOG PLACEMENT ANY LOCATION
SCALE 1:20

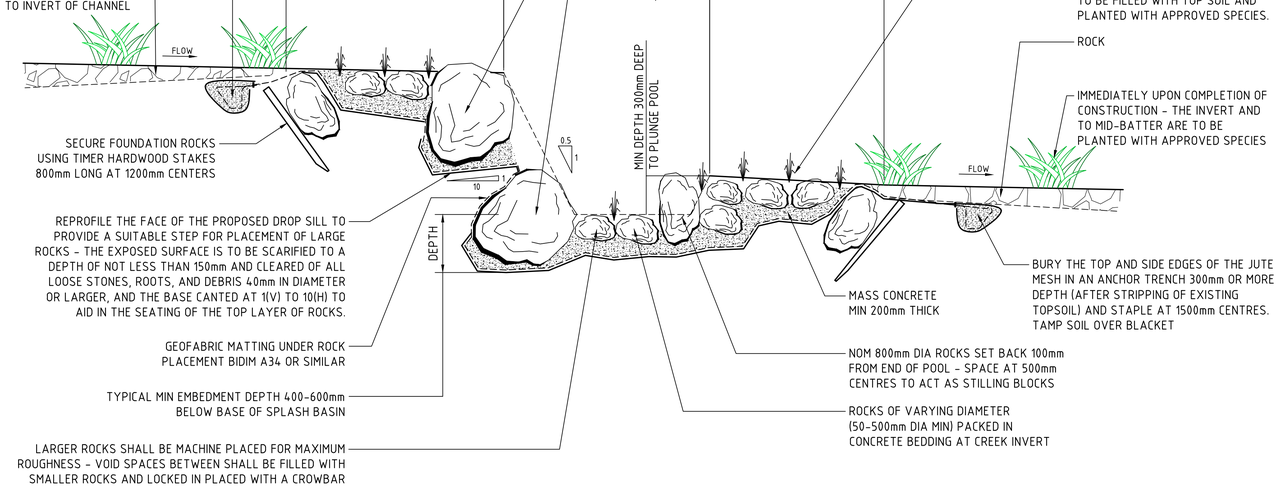


APPLICABILITY:

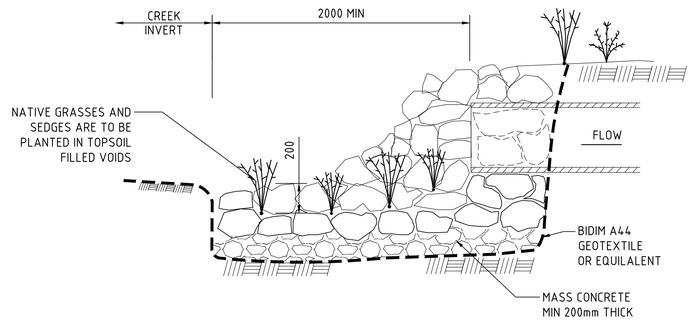
1) ALL PROPOSED OR FUTURE PIPED DRAINAGE CONNECTIONS TO THE PROPOSED CREEK WORKS SHOULD HAVE A SIMILAR OUTLET TREATMENT TO THOSE SHOWN HERE.

2) MIN. ROCK SIZE IN OUTLET DEPRESSED APRON SHOULD BE Φ500-600mm.

TYPICAL STACKED ROCK HEADWALL TREATMENT
SCALE 1:20



TYPICAL DETAIL - ROCK DROP SILL AND WEIR
SCALE 1:20



SECTION 1:20 B

FOR INFORMATION

200mm 0 500 1000 1500 2000mm
SCALE 1:20 AT B1 SIZE SHEET

ISSUED FOR INFORMATION	16.06.23	A
AMENDMENTS	DATE	ISSUE

AMENDMENTS	DATE	ISSUE

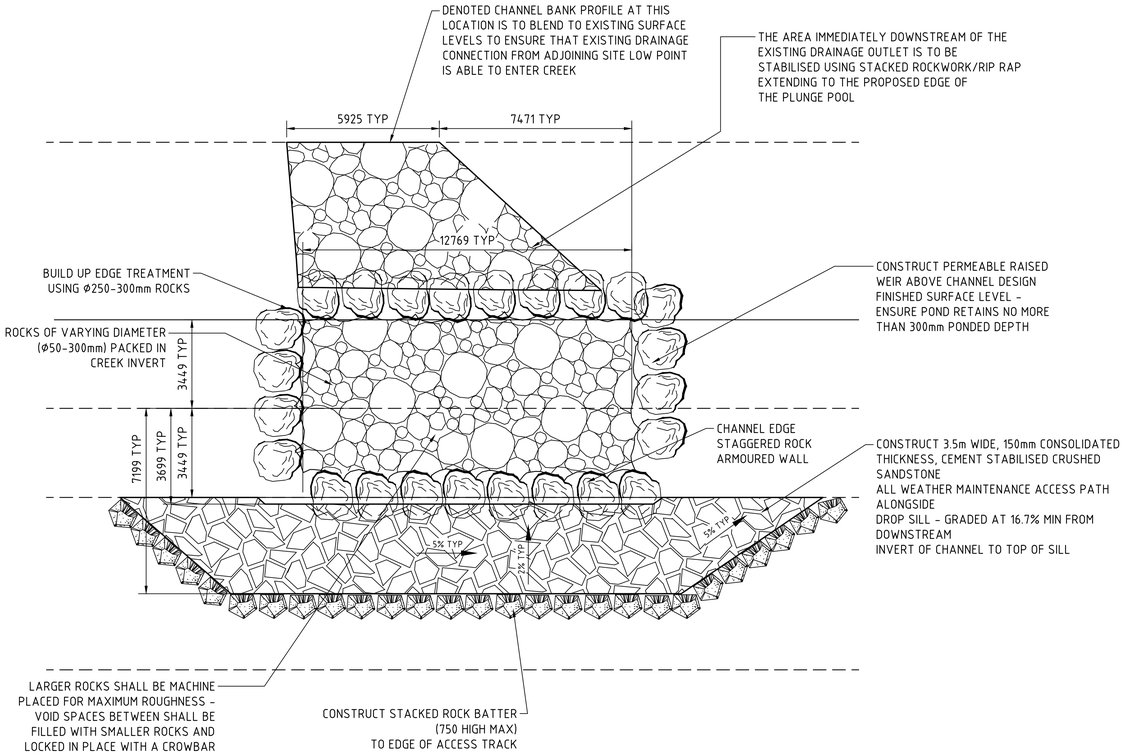
ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA456

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DRAWING TITLE: STORMWATER DRAINAGE DETAILS SHEET 7
DRAWING No: C013904.03-SSDA456
ISSUE: A



TYPICAL PLAN - PLUNGE POOL
SCALE 1:100

FOR INFORMATION

1m 0 1 2 3 4 5 6 7 8 9 10m
SCALE 1:100 AT B1 SIZE SHEET

ISSUED FOR INFORMATION	16.06.23	A	
AMENDMENTS	DATE	ISSUE	

AMENDMENTS	DATE	ISSUE

ARCHITECT
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PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

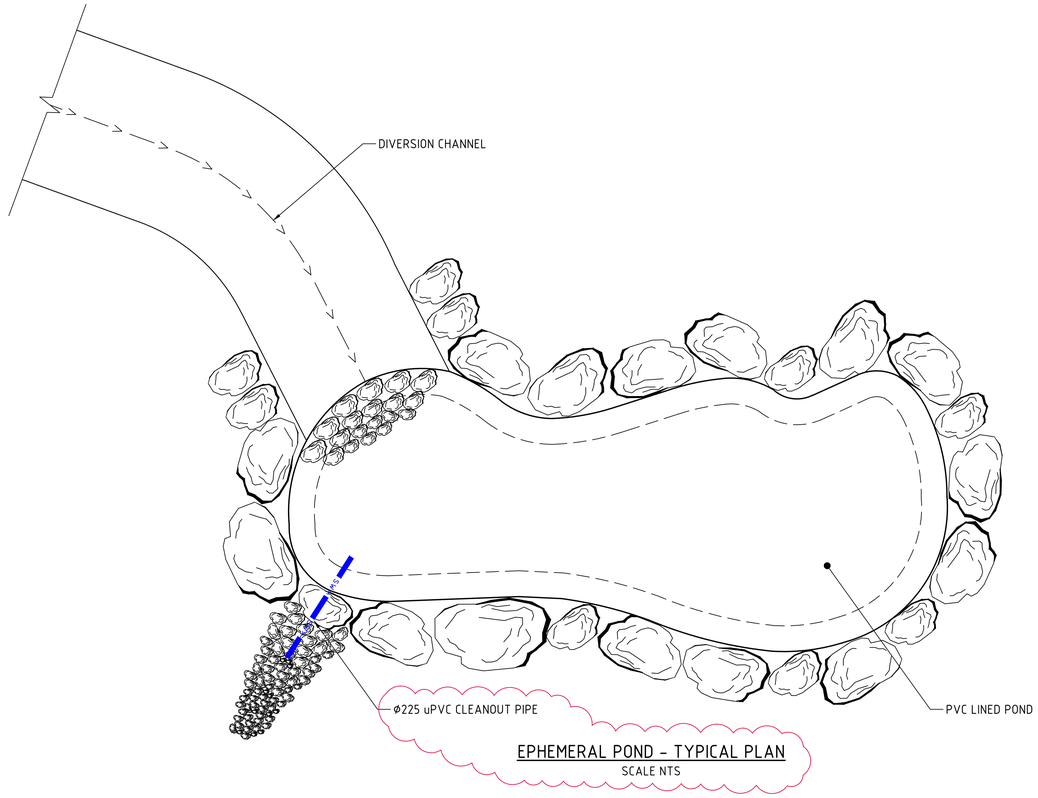
DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA457

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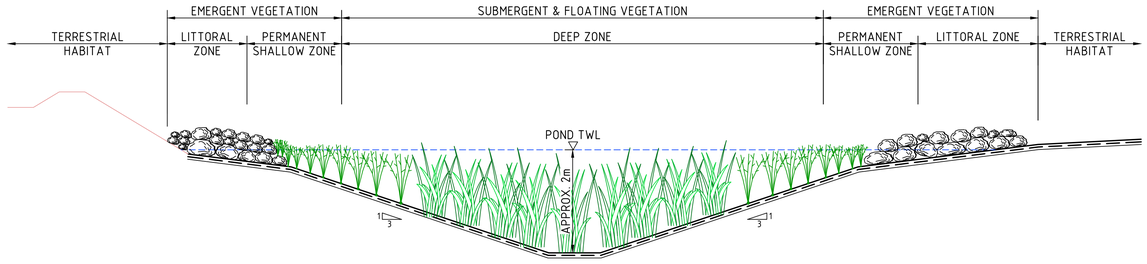
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DRAWING TITLE
STORMWATER DRAINAGE DETAILS
SHEET 8

DRAWING No C013904.03-SSDA457
ISSUE A



EPHEMERAL POND – TYPICAL PLAN
SCALE NTS



EPHEMERAL POND – TYPICAL SECTION
SCALE 1:50

500mm 0 1 2 3 4 5m
SCALE 1:50 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA458

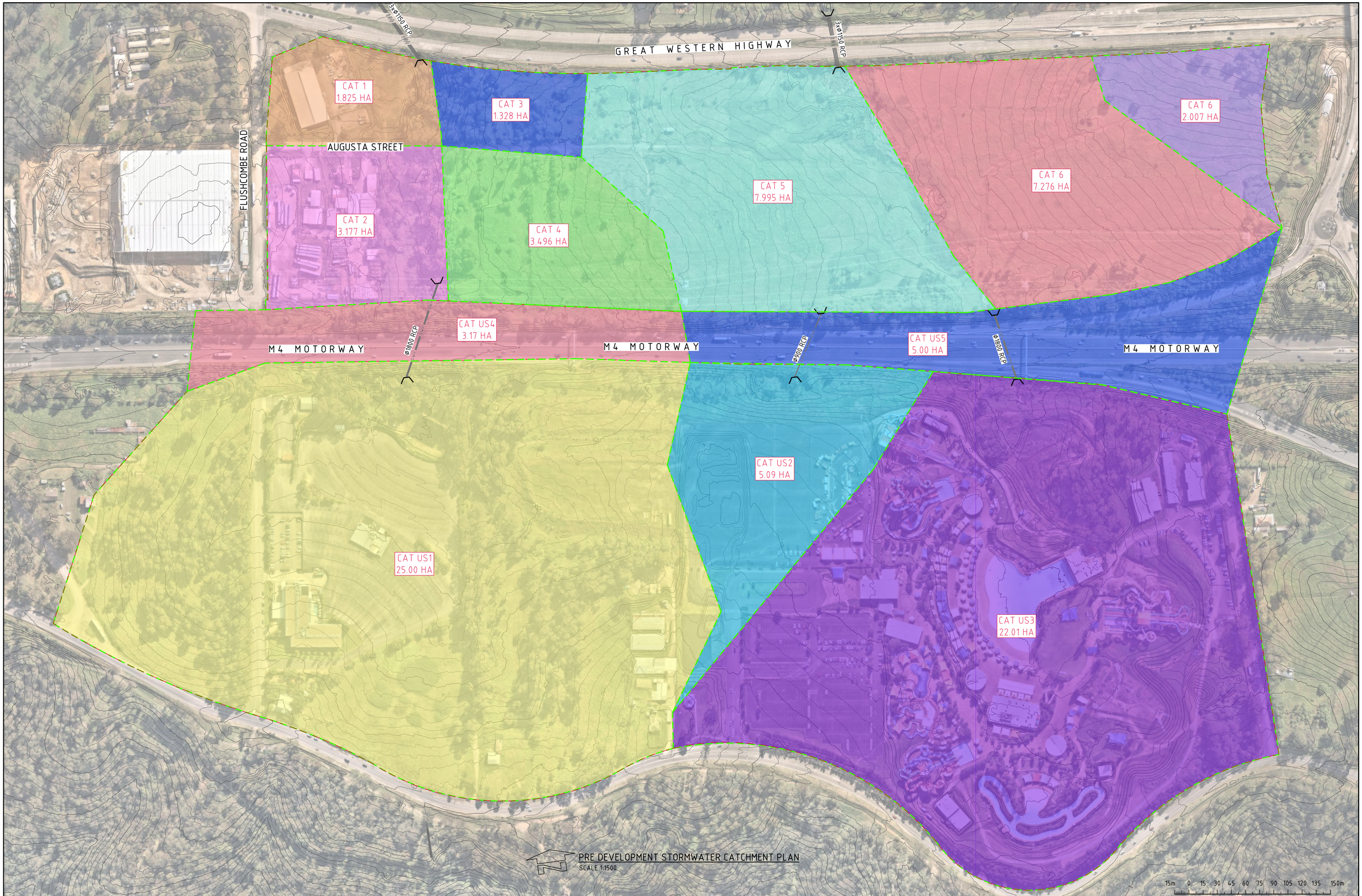
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DRAWING TITLE
STORMWATER DRAINAGE DETAILS
SHEET 9

DRAWING No C013904.03-SSDA458
ISSUE B



PRE DEVELOPMENT STORMWATER CATCHMENT PLAN
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA470

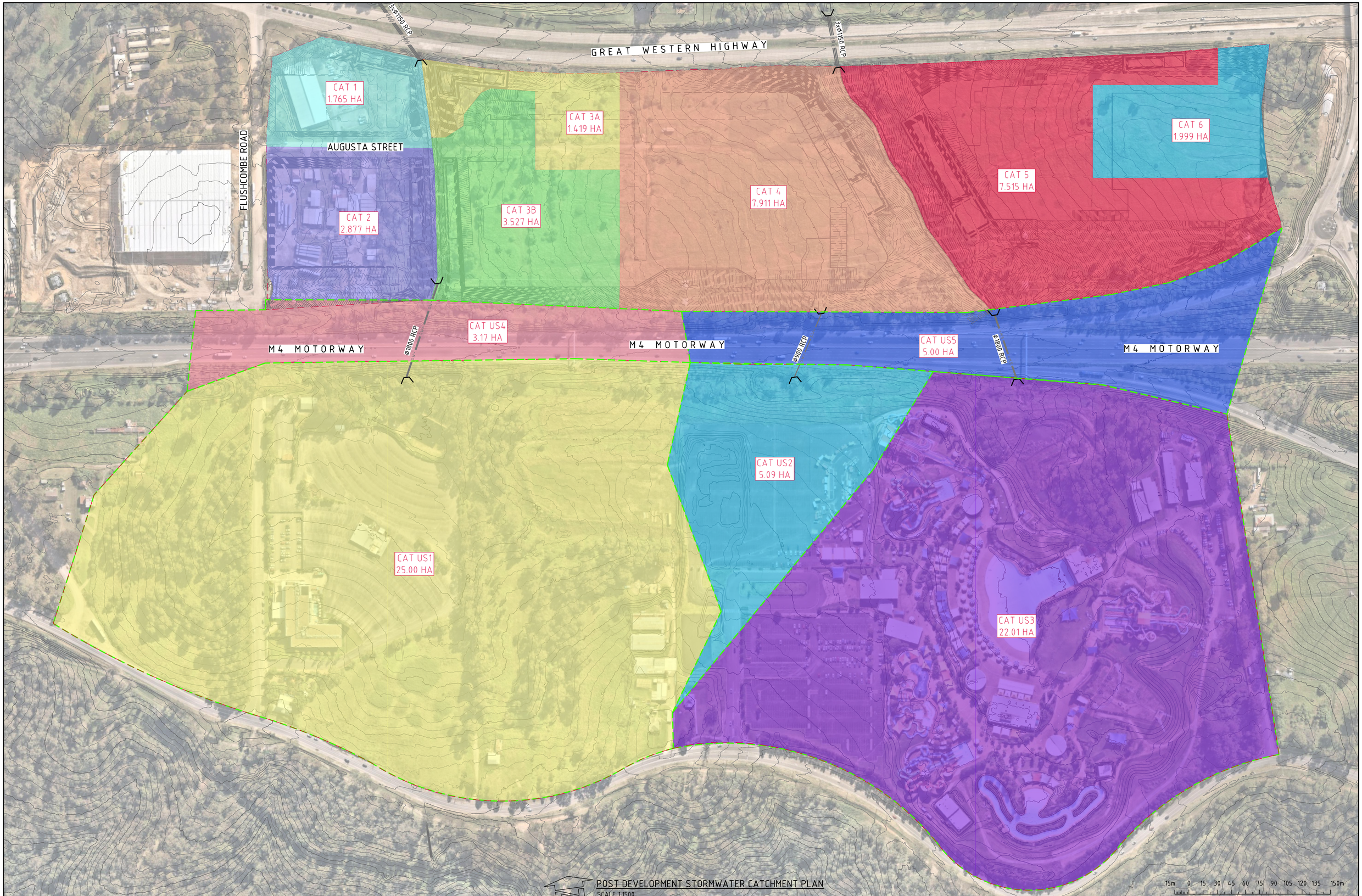
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DRAWING TITLE
PRE DEVELOPMENT STORMWATER CATCHMENT PLAN

DRAWING No C013904.03-SSDA470
ISSUE B



POST DEVELOPMENT STORMWATER CATCHMENT PLAN
SCALE 1:1500

FOR INFORMATION

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

AMENDMENTS	DATE	ISSUE
REVISED AS CLOUDED	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

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LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA471

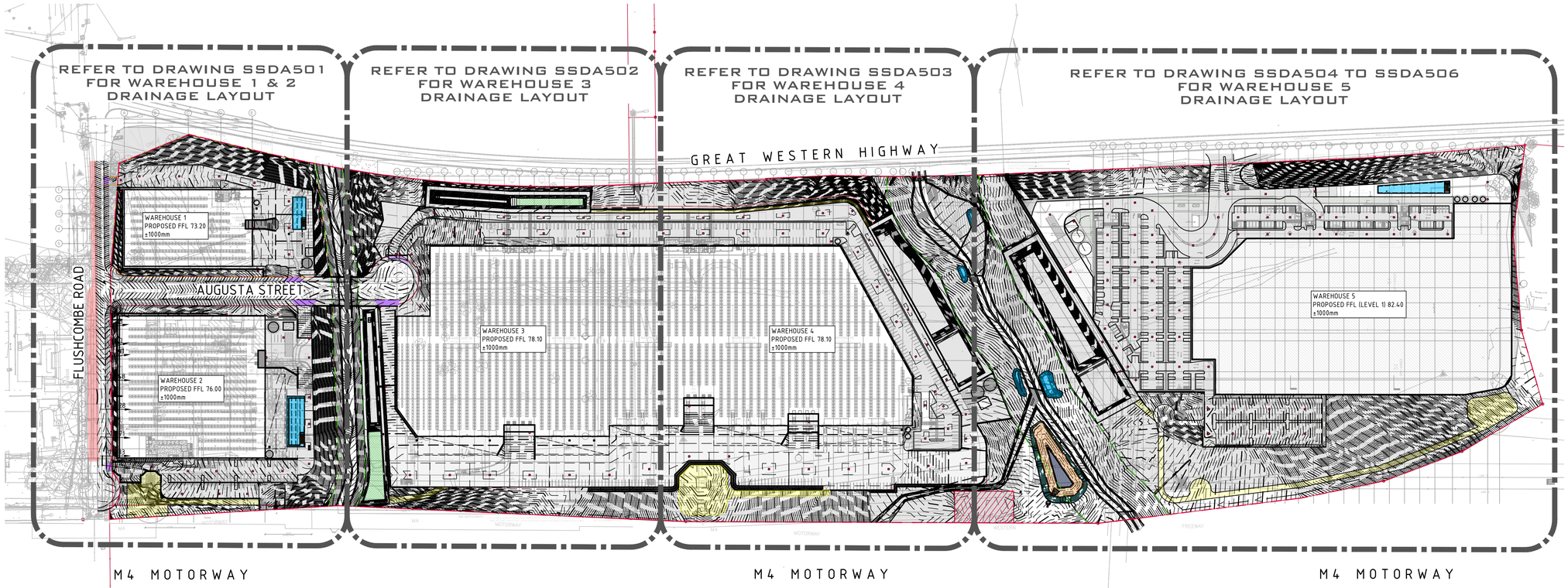
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DRAWING TITLE
POST DEVELOPMENT STORMWATER CATCHMENT PLAN

DRAWING No C013904.03-SSDA471
ISSUE B



FINISHED LEVELS PLAN NOTES:

1. LEVELS DATUM IS AUSTRALIAN HEIGHT DATUM (A.H.D.).
2. GRADING REQUIREMENTS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS2890.1, AS2890.2 AND AS2890.6.
3. ALL CONTOUR LINES & SPOT LEVELS INDICATE FINISHED PAVEMENT LEVELS U.N.O. ON PLAN.
4. CONTOUR INTERVALS
   - THE MINOR CONTOUR INTERVAL IS 0.1m.
   - THE MAJOR CONTOUR INTERVAL IS 0.5m.
5. HARDSTAND GRADING
   - MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%).
   - GRADING OF ON-GRADE DOCKS TO BE 1:100 (1%) FALL AWAY FROM THE DOCK FACE FOR A LENGTH OF 15m U.N.O.
   - GRADING OF TRUCK CIRCULATION ZONES TO BE MINIMUM AS NOTED ABOVE, 3-4% NOMINAL AND MAX. 5%.
6. CAR PARKING AREA GRADES
   - MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%), DESIRABLE MINIMUM GRADE 1:50 (2%).
   - MAXIMUM PAVEMENT GRADE IS TO BE 1:20 (5%) N CARPARKING AREAS AND 1:25 (4%) ELSEWHERE.
   - DISABLED ACCESS PARKING ZONES AND SHARED SPACE TO BE MAXIMUM OF 1:33 (3%) IN ASPHALT PAVEMENT AND MAXIMUM OF 1:40 (2.5%) IN CONCRETE PAVEMENT.
   - CARPARK RAMP GRADES TO BE MAX 1:5 WITH 2.5m SMOOTH TRANSITION AT TOP AND BOTTOM U.N.O.
7. TRUCK RAMP GRADES
   - MAXIMUM B-DOUBLE OR 19.0m AV RAMP GRADES ARE TO BE 1:8.3 (12%) U.N.O. ON PLAN
   - PROVIDE MINIMUM 4.0m LONG TRANSITION WHERE CHANGES OF GRADE EXCEED 1:20 (5%) AT A CREST U.N.O.
   - PROVIDE MINIMUM 3.0m LONG TRANSITION WHERE CHANGE OF GRADE EXCEED 1:20 (5%) AT A SAG U.N.O.
   - TRANSITIONS ARE TO PROVIDE A SMOOTH CONTINOUS CIRCULAR AND TANGENTIAL CHANGE IN GRADE TO ENSURE NO SHARP OR ACUTE CHANGES IN GRADE ARE PRESENT.
8. WHERE FIRE BRIGADE ACCESS IS REQUIRED, MAXIMUM RAMP GRADIENTS ARE TO BE 1:6 (16.6%), DESIRABLE RAMP GRADIENTS ARE TO BE 1:8 (12.5%) WITH 7m TRANSITION TOP AND BOTTOM U.N.O. ON PLAN.
9. PERMANENT BATTER SLOPES ARE TO HAVE A MAXIMUM GRADE OF 1V:3H U.N.O. BASED ON GEOTECHNICAL ASSESSMENT. PROVIDE MINIMUM 0.5m BERM BETWEEN THE BACK OF KERB OR PAVEMENT EDGES AND THE TOP OR TOE OF A BATTER.
10. ALL BATTER SLOPE WITH GRADES AT OR EXCEEDING 1V:6H ARE TO BE TURFED IMMEDIATELY OR APPROPRIATE EROSION CONTROL IS TO BE PROVIDED TO THE SATISFACTION OF THE ENGINEER.
11. ALL FOOTPATHS ARE TO FALL AWAY FROM THE BUILDING AT 2.5% NOMINAL. GRADE.
12. ALL PAVEMENTS ARE TO BE SET AT 30mm BELOW THE FINISHED FLOOR LEVEL OF THE WAREHOUSE AND OFFICE AREAS. PROVIDE LOCAL FEATHERING AT DOORWAYS OR ROLLER SHUTTERS TO PROVIDE FLUSH FINISH AS REQUIRED.
13. WHERE NEW AND EXISTING INTERFACING IS REQUIRED, MATCH EXISTING LEVELS AND PROVIDE SMOOTH INTERFACE BETWEEN NEW AND EXISTING GRADIENTS. REFER ANY CONCERNS TO THE ENGINEER.

FINISHED LEVELS KEY PLAN
SCALE 1:1500

LEVELS NOTE:
LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

LEGEND:
LEVELS DATUM IS AHD.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- 50.00 – FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 – FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
UPDATED ARCHITECTURAL MASTERPLAN	11.09.23	D
ADDITIONAL PARKING ADDED TO WH2, ACOUSTIC WALL & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA500

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DRAWING TITLE: FINISHED LEVELS KEY PLAN
DRAWING No: C013904.03-SSDA500
ISSUE: D

RAMP WITH MAX GRADE AS SHOWN AND TRANSITIONS TOP AND BOTTOM PER NOTE 7.

RETAINING WALL IN CUT ALONG WAREHOUSE EXTERNAL FOOTPATH

PROPOSED CROSSOVER IN ACCORDANCE WITH COUNCIL STANDARD DRAWINGS. ALL EXISTING SERVICES ALIGNMENT, FITTINGS AND DEPTHS TO BE CONFIRMED VIA POTHOLING PRIOR TO COMMENCEMENT OF WORKS. TYPICAL

RETAINING WALL IN CUT BEHIND WAREHOUSE WITH BONDEK SLAB OVER 1m VOID BELOW FOR EGRESS

FLUSHCOME ROAD REFER TO DRAWING SSDA711 FOR DETAILS

STREET DRAINAGE REFER TO SSDA700 FOR DEATILS

AUGUSTA STREET REFER TO DRAWING SSDA712 FOR DETAILS

PROPOSED CROSSOVER IN ACCORDANCE WITH COUNCIL STANDARD DRAWINGS. ALL EXISTING SERVICES ALIGNMENT, FITTINGS AND DEPTHS TO BE CONFIRMED VIA POTHOLING PRIOR TO COMMENCEMENT OF WORKS. TYPICAL

PROPOSED ACCESS TO EXISTING ELECTRICAL TOWERS

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

GREAT WESTERN HIGHWAY

M4 MOTORWAY

FLUSHCOMBE ROAD

AUGUSTA STREET

SITE BOUNDARY

OFFICE 1

OFFICE 2

WAREHOUSE 1

WAREHOUSE 2

PROPOSED RECESSED DOCK 1300 DEEP

RAMP WITH MAX GRADE AS SHOWN AND TRANSITIONS TOP AND BOTTOM PER NOTE 7.

AWNING ABOVE

PROPOSED RETAINING WALL IN FILL

PROPOSED RETAINING WALL

PROPOSED PUMP ROOM

PROPOSED SPRINKLER TANK

WESTERN CREEK REFER TO DRAWING SSDA415 FOR DETAILS

FINISHED LEVELS PLAN - WAREHOUSE 1 & 2

SCALE 1:500

LEVELS NOTE:

LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN. FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

LEGEND:

LEVELS DATUM IS AHD.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS
- EXISTING ROAD PAVEMENT
- NEW ASPHALT ROAD PAVEMENT
- FOOTPATH
- NEW VEHICLE CROSSING

NOTES:

1. REFER TO DRAWING SSDA500 FOR FINISHED LEVELS NOTES.

5m 0 10 20 30 40 50m

SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL MASTERPLAN	11.09.23	D
ADDITIONAL PARKING SHOWN TO WH2	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

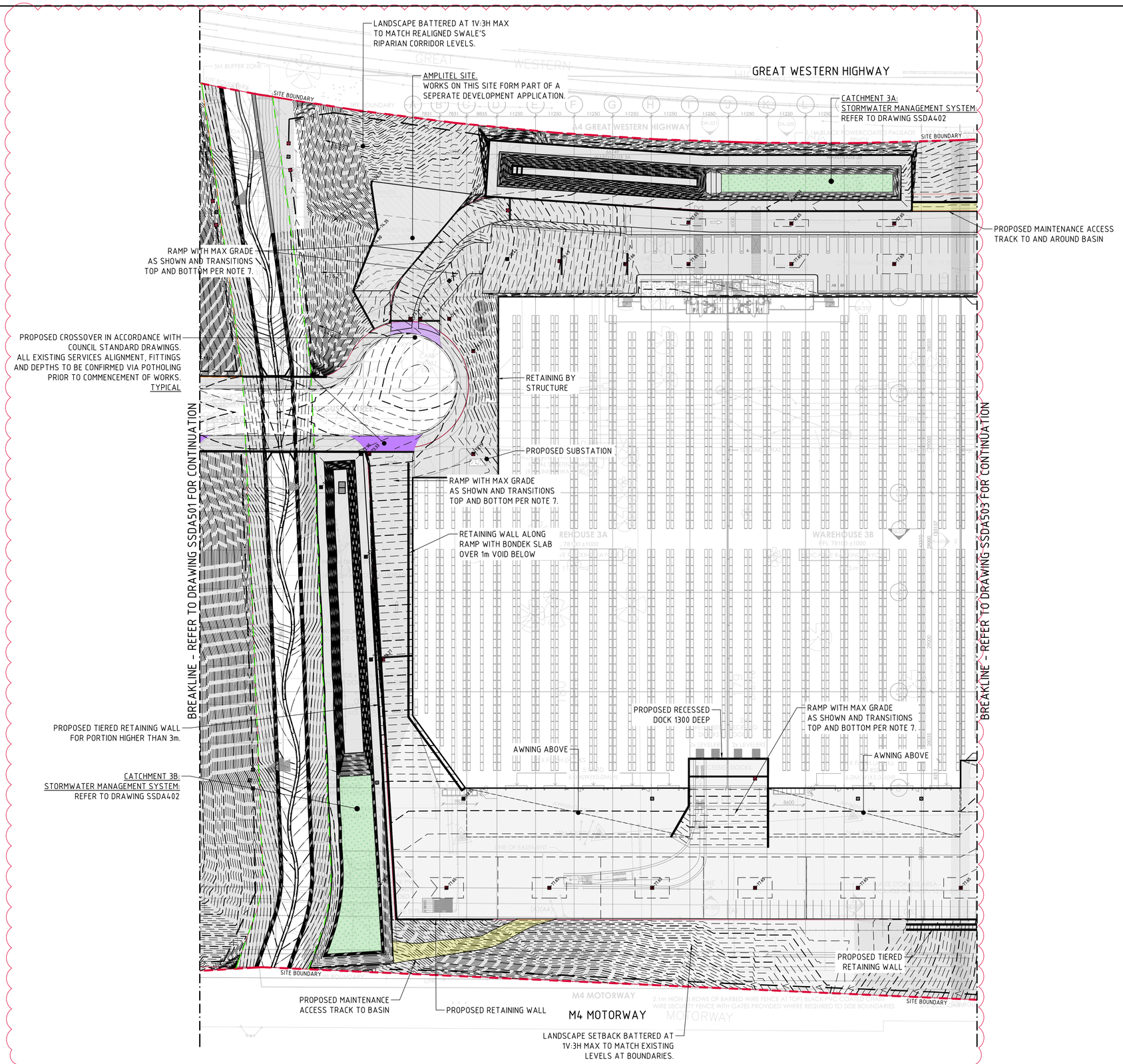
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DRAWING TITLE: FINISHED LEVELS PLAN WAREHOUSE 1 & 2

DRAWING No: C013904.03-SSDA501 ISSUE: D



LEVELS NOTE:

LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

LEGEND:

LEVELS DATUM IS AHD.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

NOTES:

1. REFER TO DRAWING SSDA500 FOR FINISHED LEVELS NOTES.

D

FINISHED LEVELS PLAN - WAREHOUSE 3
SCALE 1:500

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL MASTERPLAN	11.09.23	D
ACOUSTIC FENCE ADDED TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
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DRAWING TITLE: FINISHED LEVELS PLAN WAREHOUSE 3
DRAWING No: C013904.03-SSDA502
ISSUE: D

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

PROPOSED MAINTENANCE ACCESS TRACK TO AND AROUND BASIN

GREAT WESTERN HIGHWAY

PROPOSED 1m HIGH WALL BEHIND ACCESS TRACK WITH A 2m WIDE 1V:2.5H MAC BATTER BEHIND WALL

PROPOSED ACOUSTIC FENCE ALONG GREAT WESTERN HIGHWAY BOUNDARY ON TOP OF BATTER SHOWN

PROVIDE SMOOTH TRANSITION BETWEEN EXISTING FLOW PATH TO GWH AND REHABILITATED CREEK CROSS SECTION. MATCH LEVELS AND CROSS SECTION ALLOWING FOR A MINIMUM 1:5 TRANSITION LENGTH. FINAL ARRANGEMENT SUBJECT TO SITE CONDITION AND ON-SITE VERIFICATION.".

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

"2.1m HIGH BLACK POWDER COATED PALISADE FENCING TO STREET FRONTAGE"

SITE BOUNDARY

PROPOSED RETAINING WALL

PROPOSED RETAINING WALL

CATCHMENT 5:
STORMWATER MANAGEMENT SYSTEM:
REFER TO DRAWING SSDA403

BREAKLINE – REFER TO DRAWING SSDA502 FOR CONTINUATION

BREAKLINE - REFER TO DRAWING SSDA504 FOR CONTINUATION

WAREHOUSE 4A FFL 78150 ±1000

WAREHOUSE 4B FFL 78150 ±1000

WAREHOUSE 4C FFL 78100 ±1000

PROPOSED RETAINING WALL

CATCHMENT 4:
STORMWATER MANAGEMENT SYSTEM:
REFER TO DRAWING SSDA403

PROPOSED RECESSED DOCK 1300 DEEP

RAMP WITH MAX GRADE AS SHOWN AND TRANSITIONS TOP AND BOTTOM PER NOTE 7.

AWNING ABOVE

PROPOSED RECESSED DOCK 1300 DEEP

RAMP WITH MAX GRADE AS SHOWN AND TRANSITIONS TOP AND BOTTOM PER NOTE 7.

AWNING ABOVE

AWNING ABOVE

PROPOSED PUMP ROOM

PROPOSED SPRINKLER TANK

PROPOSED TIERED RETAINING WALL

SITE BOUNDARY

M4 MOTORWAY

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

PROPOSED ACCESS TO EXISTING ELECTRICAL TOWERS

SITE BOUNDARY

M4 MOTORWAY

HERITAGE SITE SHOWN THUS. NO WORKS WITHIN HERITAGE ZONE. MATCH LEVELS AT BOUNDARY OF HERITAGE SITE.

WETLAND
REFER TO DRAWING SSDA410

FINISHED LEVELS PLAN – WAREHOUSE 4
SCALE 1:500

LEVELS NOTE:
LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN. FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

LEGEND:
LEVELS DATUM IS AHD.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- 50.00 – FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 – FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

NOTES:
1. REFER TO DRAWING SSDA500 FOR FINISHED LEVELS NOTES.

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL	11.09.23	D
ACOUSTIC BUNDING & WALL TO WH3	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA503

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DRAWING TITLE: FINISHED LEVELS PLAN WAREHOUSE 4

DRAWING No: C013904.03-SSDA503 ISSUE: D

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

ACCESS TO WAREHOUSE 5 FROM GWH DESIGNED BY ALTERNATE CONSULTANT. DESIGN DOCUMENTS REGARDING ACCESS FROM TFNSW ASSET TO FORM PART OF THE SSDA APPLICATION

GREAT WESTERN HIGHWAY

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

SITE BOUNDARY

PROPOSED SPRINKLER TANK

PROPOSED COMBINED OSD AND STORMWATER QUALITY SYSTEM: REFER TO DRAWING SSDA404

CARPARK SET BELOW SUSPENDED WAREHOUSING ABOVE"

CATCHMENT 5A:
STORMWATER MANAGEMENT SYSTEM:
REFER TO DRAWING SSDA404

PROPOSED RETAINING WALL

PROPOSED RECESSED DOCK 1300 DEEP

PROPOSED RECESSED DOCK 1300 DEEP

AWNING ABOVE

AWNING ABOVE

PROPOSED TIERED RETAINING WALL FOR PORTION HIGHER THAN 3m

CARPARK SET BELOW SUSPENDED WAREHOUSING ABOVE"

CULVERT OR SIMILAR BRIDGING STRUCTURE BELOW WAREHHOUSE TO EXTERNAL PARKING AREA

PROPOSED RETAINING WALL

PROPOSED RETAINING WALL

SITE BOUNDARY

M4 MOTORWAY

PROPOSED ACCESS TO EXISTING ELECTRICAL TOWERS

LANDSCAPE SETBACK BATTERED AT 1V:3H MAX TO MATCH EXISTING LEVELS AT BOUNDARIES

WETLAND
REFER TO DRAWING SSDA410

BREAKLINE - REFER TO DRAWING SSDA503 FOR CONTINUATION

LEVELS NOTE:

LEVELS SHOWN TO BE +/-1000mm FROM THOSE SHOWN.
FINAL LEVELS SUBJECT TO FINAL GEOTECHNICAL INVESTIGATIONS, ARCHITECTURAL LAYOUT AND ACHIEVING A CUT TO FILL EARTHWORKS BALANCE OVER THE PROPERTY.

LEGEND:

LEVELS DATUM IS AHD.

- SGGP, SINGLE GRATED GULLY PIT
- SJP, SEALED JUNCTION PIT
- KIP, KERB INLET PIT
- GD, GRATED DRAIN (300W x 225D UNO)
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR) 0.1m INTERVALS

NOTES:

1. REFER TO DRAWING SSDA500 FOR FINISHED LEVELS NOTES.

FINISHED LEVELS PLAN - WAREHOUSE 5 GROUND FLOOR
SCALE 1:500

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL MASTERPLAN	11.09.23	D
REVISED AS CLOUDED	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA504

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DRAWING TITLE
FINISHED LEVELS PLAN
WAREHOUSE 5 GROUND FLOOR

DRAWING No: C013904.03-SSDA504
ISSUE: C

GREAT WESTERN HIGHWAY

GREAT WESTERN HIGHWAY

FLUSHCOMBE ROAD

LIMIT OF WORKS

TIE IN OF FLUSHCOMBE ROAD TO BE COORDINATED WITH MUGROUP DESIGN OF THE GREAT WESTERN HIGHWAY & FLUSHCOMBE ROAD INTERSECTION

DRIVEWAY ACCESS FROM FLUSHCOMBE ROAD TO BE CONSTRUCTED IN ACCORDANCE WITH BLACKTOWN COUNCIL. TYPICAL HATCHED.

WAREHOUSE 1
REFER TO DRAWING SSDA401

DRIVEWAY ACCESS FROM AUGUSTA STREET TO BE CONSTRUCTED IN ACCORDANCE WITH BLACKTOWN COUNCIL. TYPICAL HATCHED.

DRIVEWAY ACCESS FROM AUGUSTA STREET TO BE CONSTRUCTED IN ACCORDANCE WITH BLACKTOWN COUNCIL. TYPICAL HATCHED.

CUL-DE-SAC DESIGNED TO HUNTINGWOOD PRECINCT DCP REQUIREMENTS.

REFER TO SSDA712

AUGUSTA STREET

AUGUSTASTREET ROAD WIDTH TO BE CONSTRUCTED AS PER TYPICAL CROSS SECTION SHOWN ON DRAWING SSDA750.

HEADWALL DESIGN TO BE CONFIRMED DURING DETAILED DIESGN STAGE.

PROPOSED 2xØ1200 PIPE & HEADWALLS

REFER TO SSDA711

FLUSHCOMBE ROAD

WAREHOUSE 2
REFER TO DRAWING SSDA401

LOCATION OF EXISTING SERVICES TO BE CONFIRMED BEFORE CONSTRUCTION

FLUSHCOMBE ROAD HALF WIDTH TO BE CONSTRUCTED AS PER TYPICAL CROSS SECTION SHOWN ON DRAWING SSDA750.

DRIVEWAY ACCESS FROM FLUSHCOMBE ROAD TO BE CONSTRUCTED IN ACCORDANCE WITH BLACKTOWN COUNCIL. TYPICAL HATCHED.

WAREHOUSE 3A

WAREHOUSE 3B

ROADWORKS GENERAL ARRANGEMENT PLAN
SCALE 1:500

5m 0 10 20 30 40 50m
SCALE 1:500 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED ARCHITECTURAL	11.09.23	D
REVISED AS CLOUDED	10.07.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
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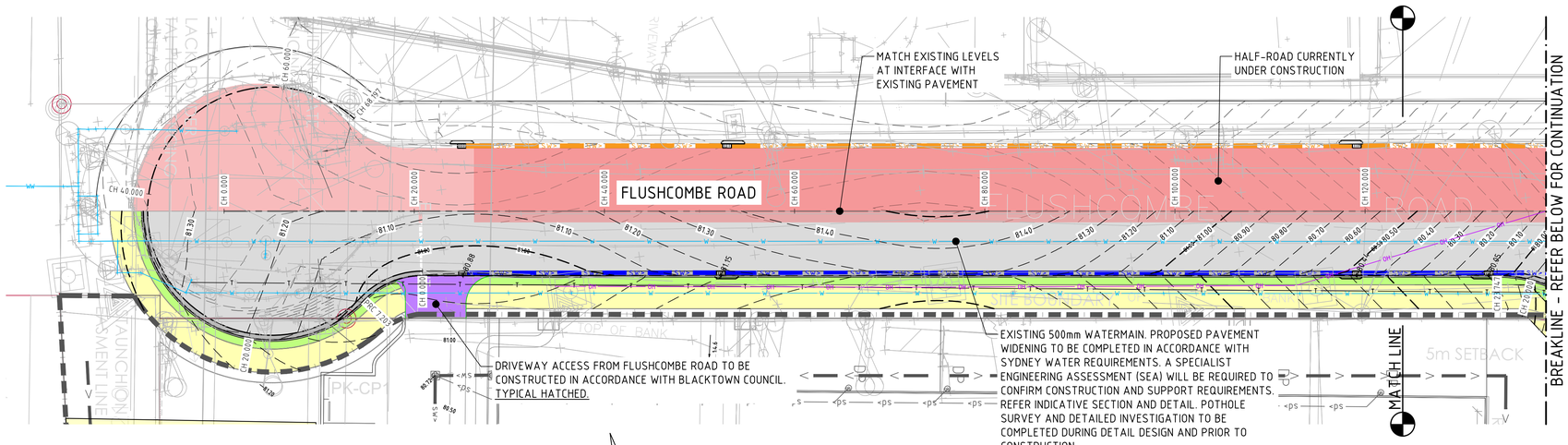
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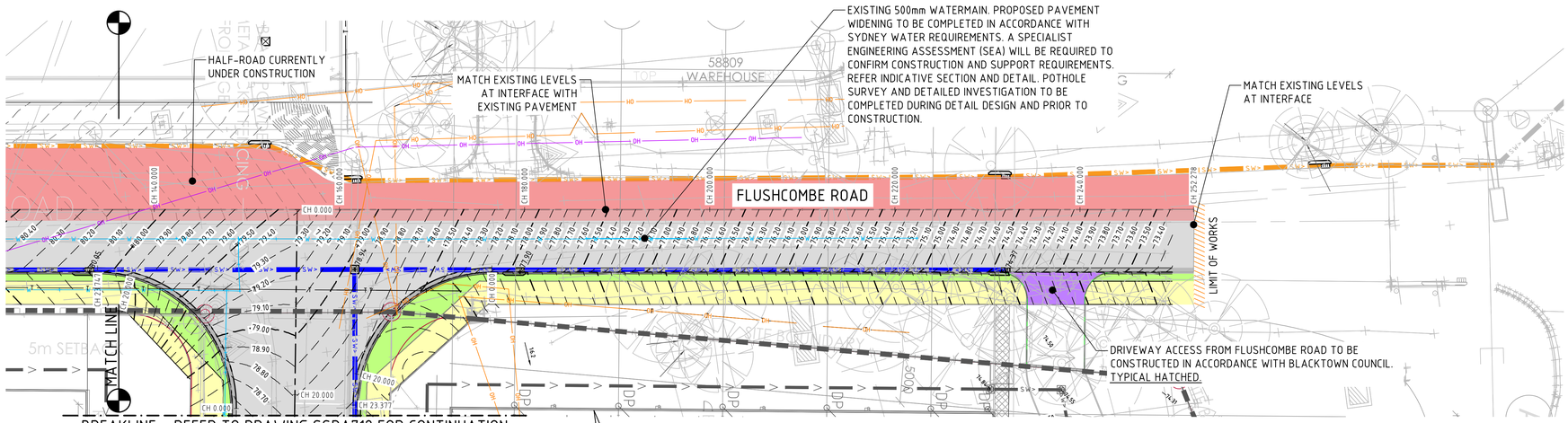
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DRAWING TITLE: ROADWORKS GENERAL ARRANGEMENT PLAN

DRAWING No: C013904.03-SSDA700 ISSUE: D



FLUSHCOMBE ROAD GENERAL ARRANGEMENT & FINISHED LEVELS PLAN
SCALE 1:250



FLUSHCOMBE ROAD GENERAL ARRANGEMENT & FINISHED LEVELS PLAN
SCALE 1:250

LEGEND:

- EXISTING ROAD PAVEMENT
- NEW ASPHALT ROAD PAVEMENT
- FOOTPATH
- NEW VEHICLE CROSSING
- NEW KERB INLET PIT
- EXISTING KERB INLET PIT
- NEW STORMWATER PIPE
- EXISTING STORMWATER PIPE
- EXISTING WATERMAIN PIPE

NOTE:

REFER TO C013904.03-SSDA721 FOR LONG-SECTIONS
REFER TO C013904.03-SSDA750 FOR TYPICAL SECTIONS
REFER TO C013904.03-SSDA755 FOR TYPICAL DETAILS

2m 0 5 10 15 20 25m
SCALE 1:250 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS

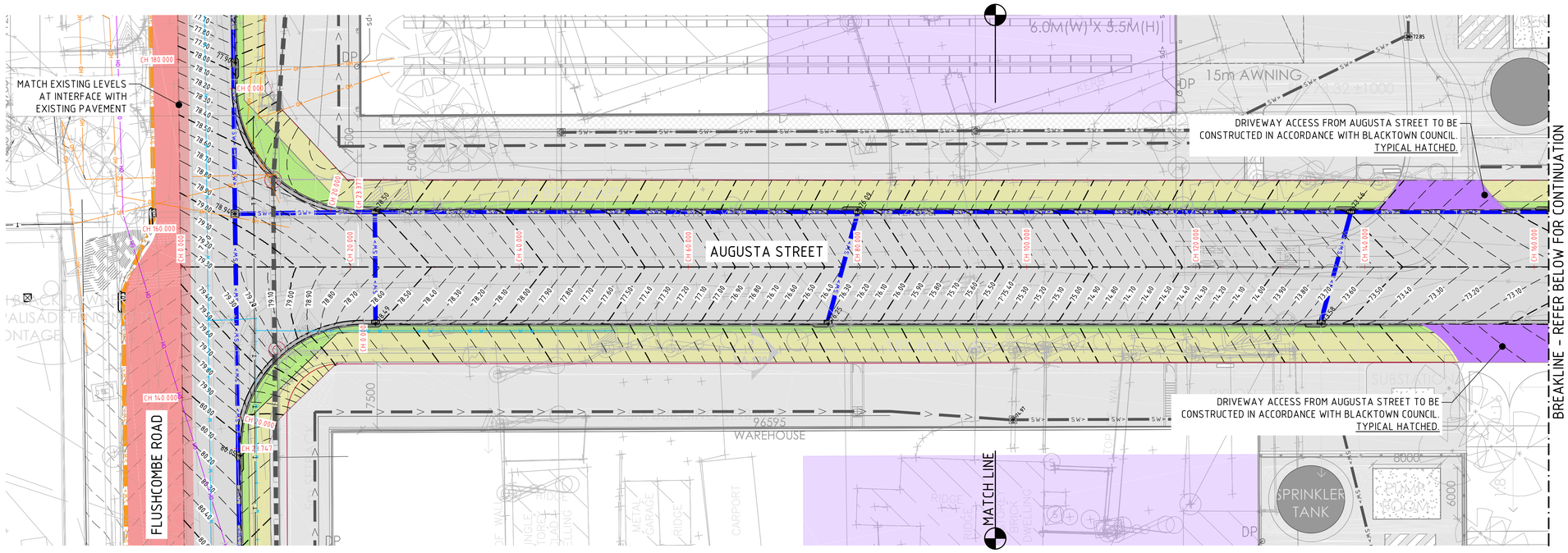
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA 711

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DRAWING TITLE: ROADWORKS CIVIL WORKS PLAN SHEET 1
DRAWING No: C013904.03-SSDA711
ISSUE: B



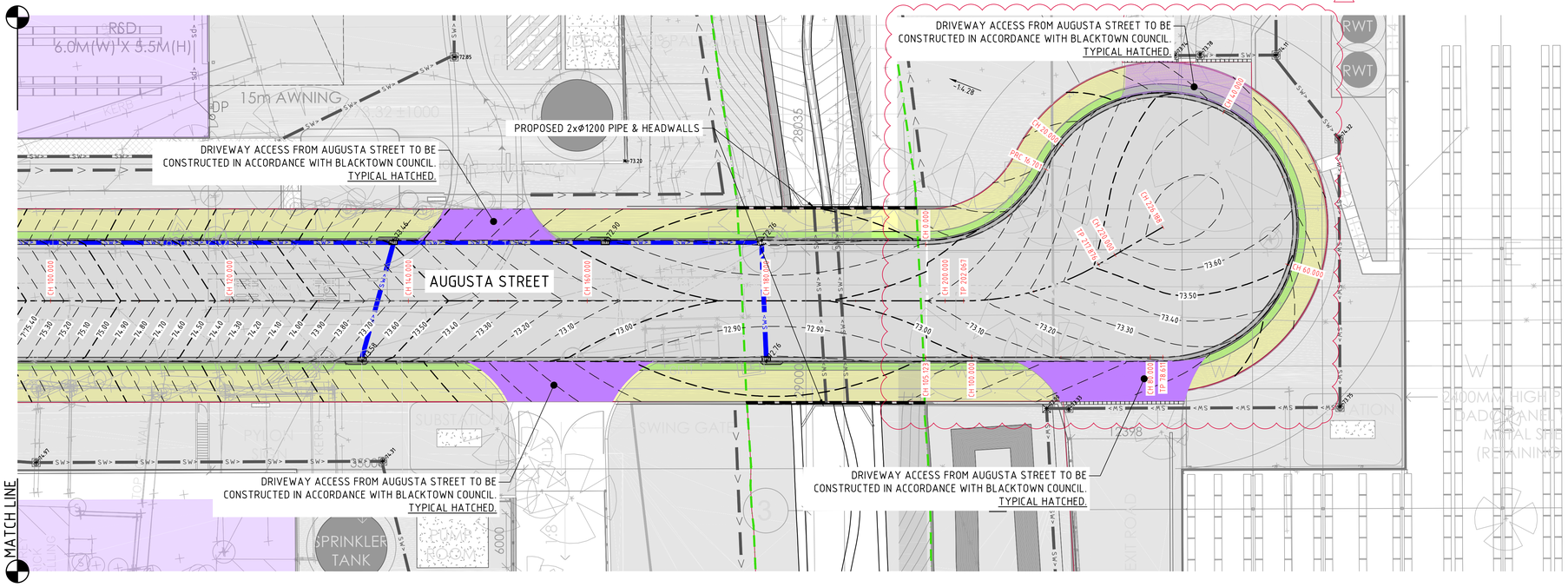
AUGUSTA STREET GENERAL ARRANGEMENT & FINISHED LEVELS PLAN
SCALE 1:250

LEGEND:

- EXISTING ROAD PAVEMENT
- NEW ASPHALT ROAD PAVEMENT
- FOOTPATH
- NEW VEHICLE CROSSING
- NEW KERB INLET PIT
- EXISTING KERB INLET PIT
- NEW STORMWATER PIPE
- EXISTING STORMWATER PIPE

NOTE:

REFER TO C013904.03-SSDA721 FOR LONG-SECTIONS
REFER TO C013904.03-SSDA750 FOR TYPICAL SECTIONS
REFER TO C013904.03-SSDA755 FOR TYPICAL DETAILS



AUGUSTA STREET GENERAL ARRANGEMENT & FINISHED LEVELS PLAN
SCALE 1:250

2m 0 5 10 15 20 25m
SCALE 1:250 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	11.09.23	C
ISSUED FOR INFORMATION	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

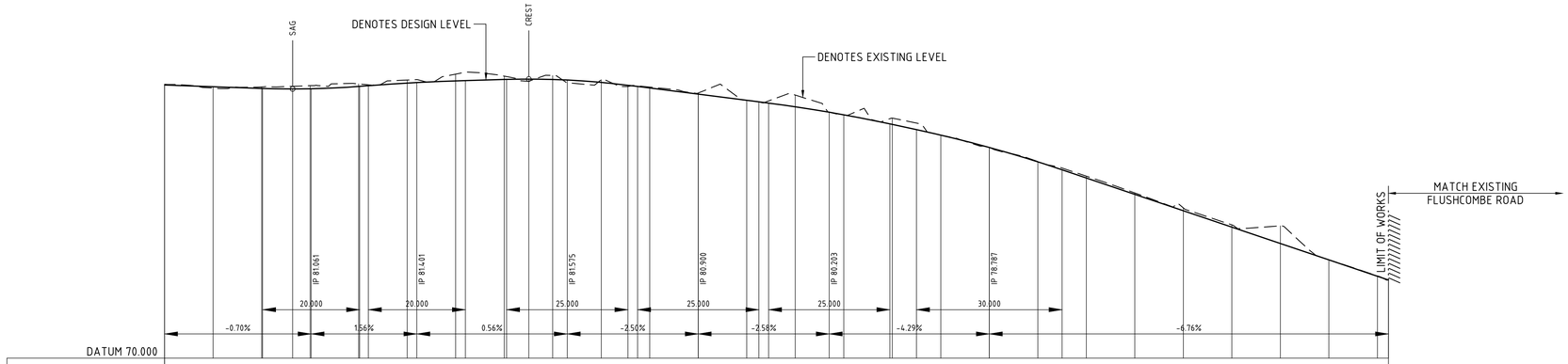
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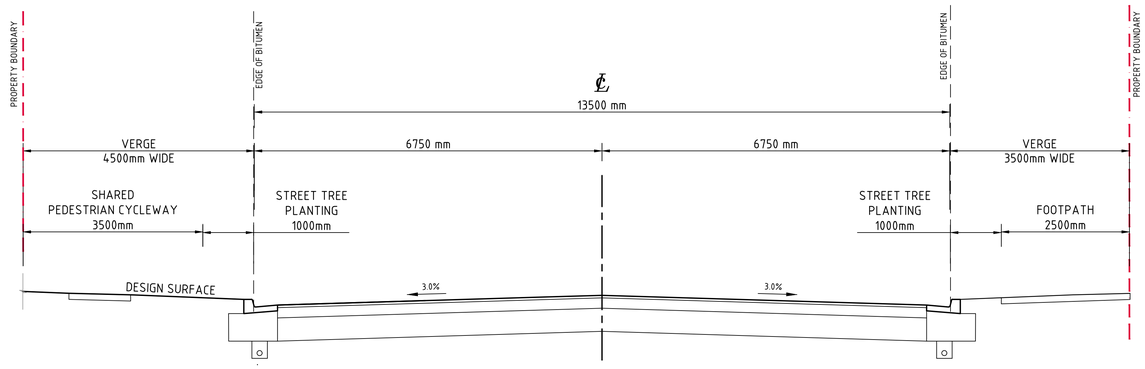
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DRAWING TITLE: ROADWORKS CIVIL WORKS PLAN SHEET 2
DRAWING No: C013904.03-SSDA712
ISSUE: C

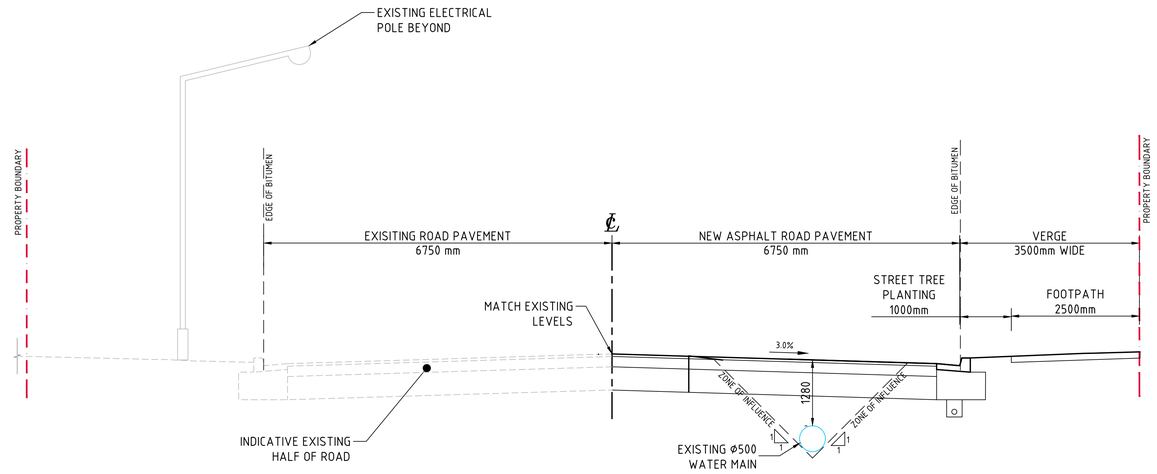

SAG
DENOTES DESIGN LEVEL
CREST
DENOTES EXISTING LEVEL
MATCH EXISTING
FLUSHCOMBE ROAD
LIMIT OF WORKS
IP 81.061
IP 81.401
IP 81.575
IP 80.900
IP 80.203
IP 78.787
20.000
20.000
25.000
25.000
25.000
30.000
-0.70%
1.56%
0.56%
-2.50%
-2.58%
-4.29%
-6.76%

| | | |



AUGUSTA STREET TYPICAL SECTION

SCALE 1:50



FLUSHCOMBE ROAD TYPICAL SECTION

SCALE 1:50

500mm 0 1 2 3 4 5m

SCALE 1:50 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
REVISED AS CLOUDED	30.06.23	B
ISSUED FOR INFORMATION	16.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA750

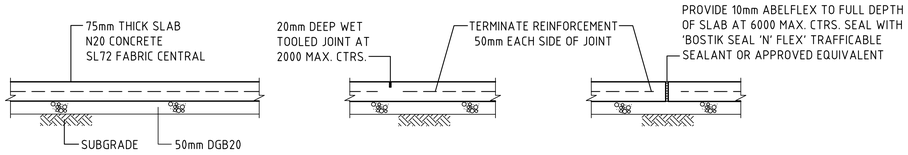
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DRAWING TITLE
ROADWORKS TYPICAL SECTIONS

DRAWING No: C013904.03-SSDA750

ISSUE: B

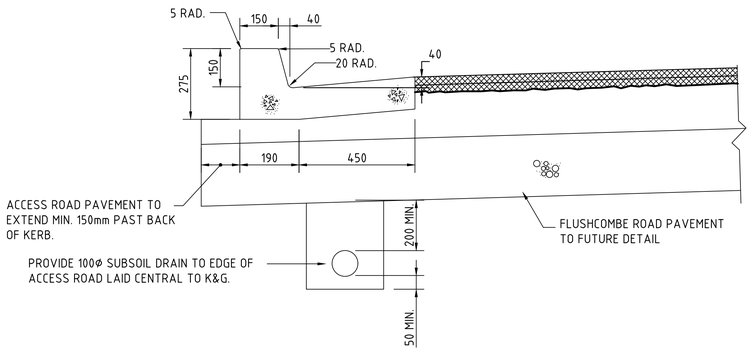


PEDESTRIAN SLAB PROFILE DETAIL | WET TOOLED JOINT | BUTT JOINT

PEDESTRIAN SLAB DETAILS

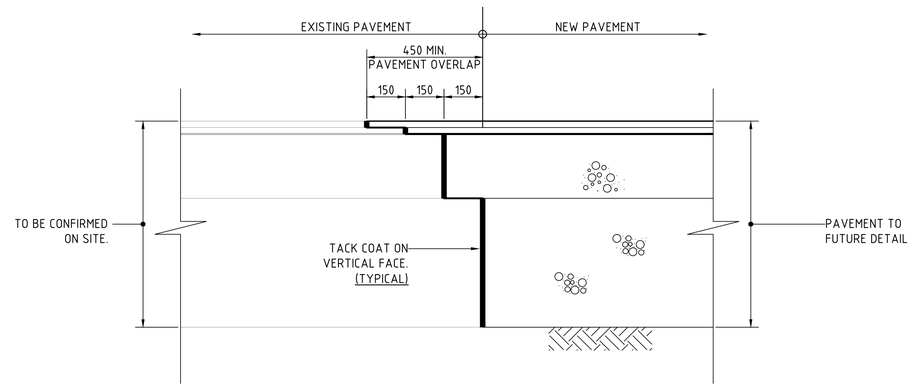
SCALE 1:10

CONCRETE QUALITY					
ELEMENT	SLUMP	AGGREGATE (MAX. SIZE)	CEMENT TYPE	ADMIXTURE	F'c (MPa)
PEDESTRIAN SLABS	80	20	SL	NIL	25



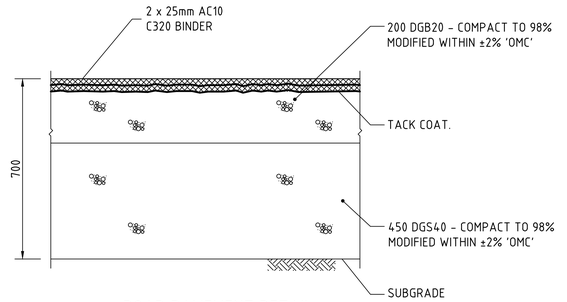
KERB & GUTTER (K&G) & SUBSOIL DETAIL

SCALE 1:10



TYPICAL NEW / EXISTING PAVEMENT INTERFACE DETAIL

SCALE 1:10



ROAD PAVEMENT DETAIL

SCALE 1:10

DESIGN TRAFFIC OF 1 x 10^7 ESA's
DESIGN CBR VALUE OF 3.0%
CBR OF SUBGRADE TO BE CONFIRMED TO ENGINEER FOR FINAL PAVEMENT OPTIMISATION AND DESIGN.
CBR OF SELECT FILL TO BE CONFIRMED PRIOR TO CONSTRUCTION OF ANY SUBSEQUENT PAVEMENT LAYER

NOTE:

CONFIRMATION OF PAVEMENT DESIGN THROUGH FLUSHCOMBE ROAD SUBJECT TO COUNCIL APPROVAL & CONFIRMATION OF EXISTING FLUSHCOMBE PAVEMENT.

500mm 0 1 2 3 4 5m

SCALE 1:50 AT B1 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION	16.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-SSDA755

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DRAWING TITLE: ROADWORKS TYPICAL DETAILS

DRAWING No: C013904.03-SSDA755 | ISSUE: A

Appendix B

MUSIC MODEL CONFIGURATION & PARAMETERS

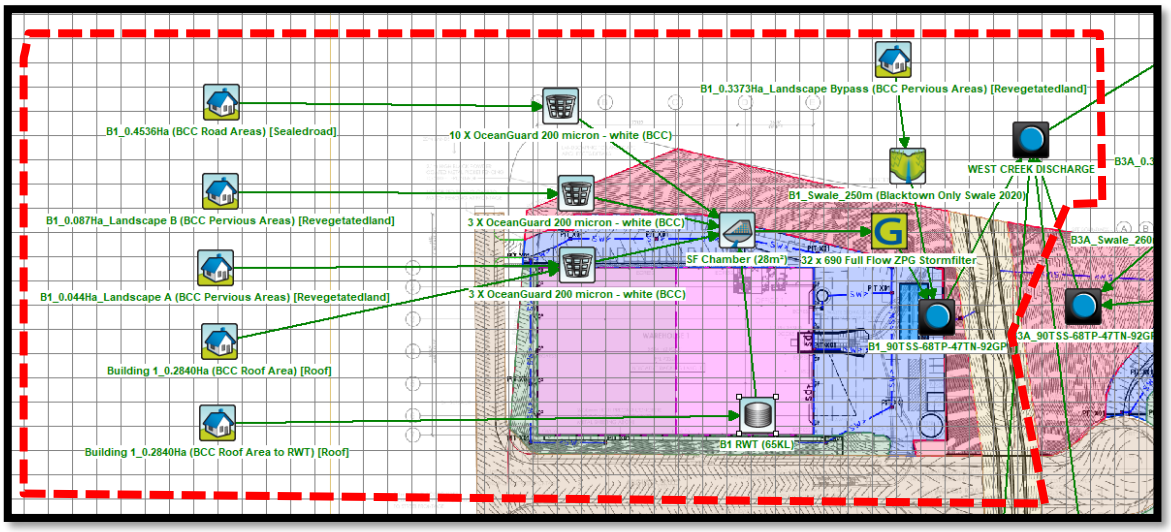


Figure 6.1. MUSIC model layout (Catchment 1)

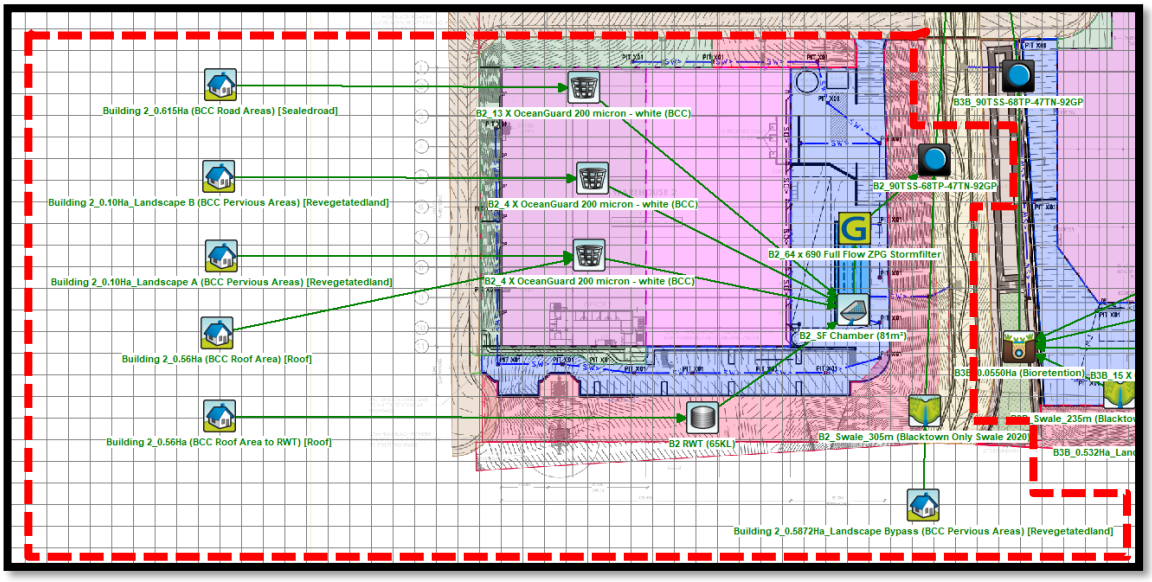


Figure 6.2. MUSIC model layout (Catchment 2)

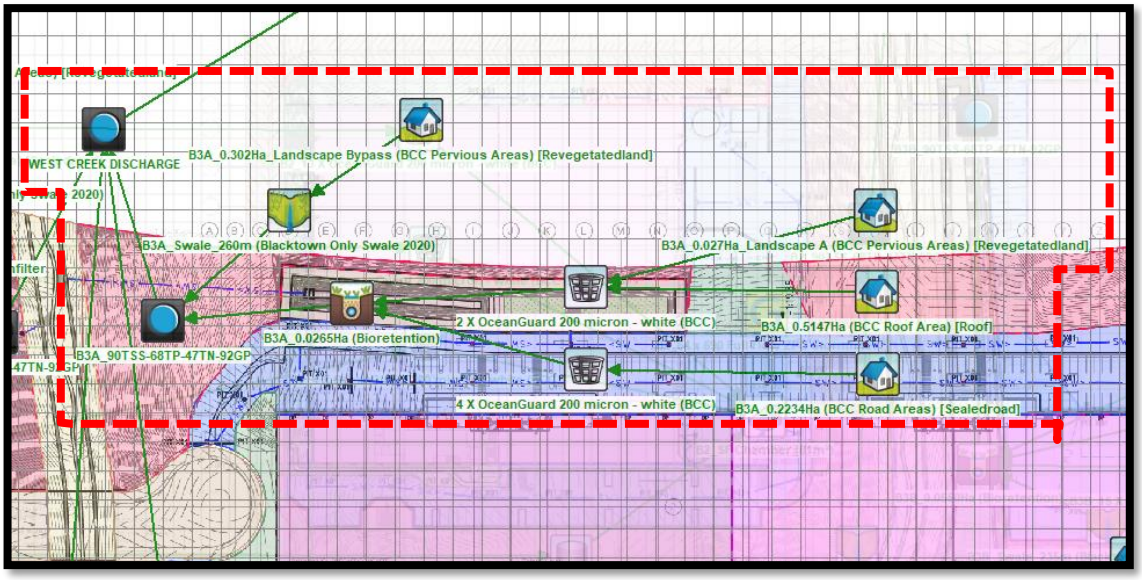


Figure 6.3. MUSIC model layout (Catchment 3A)

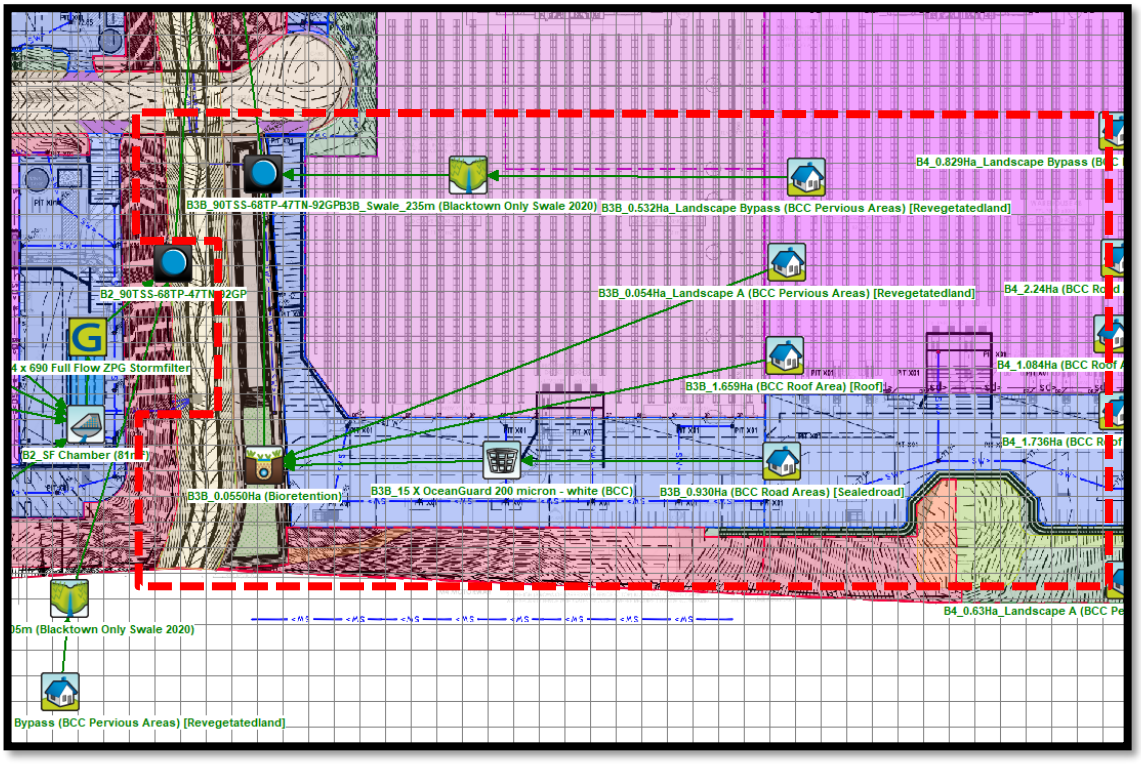


Figure 6.4. MUSIC model layout (Catchment 3B)

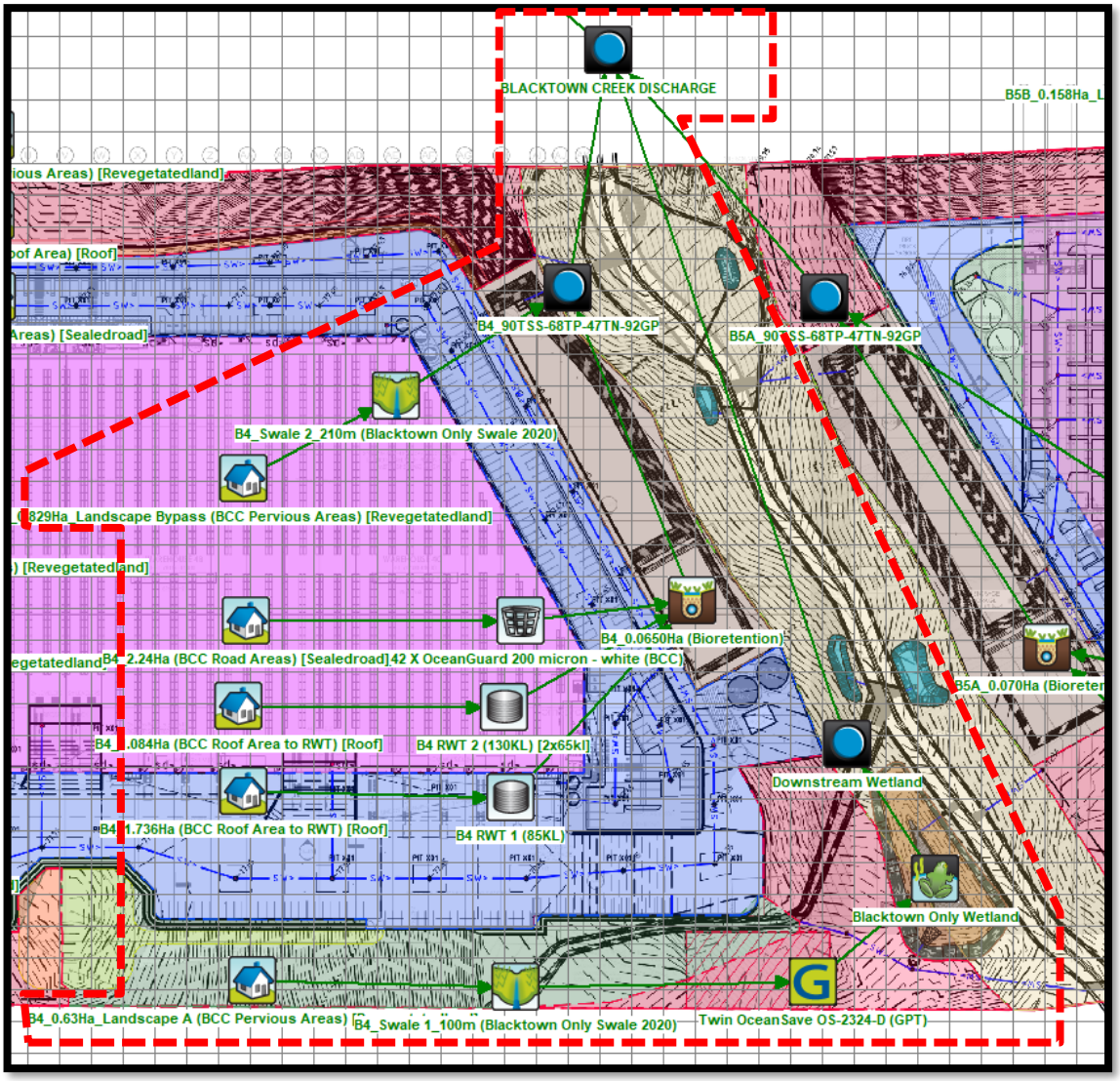


Figure 6.5. MUSIC model layout (Catchment 4)

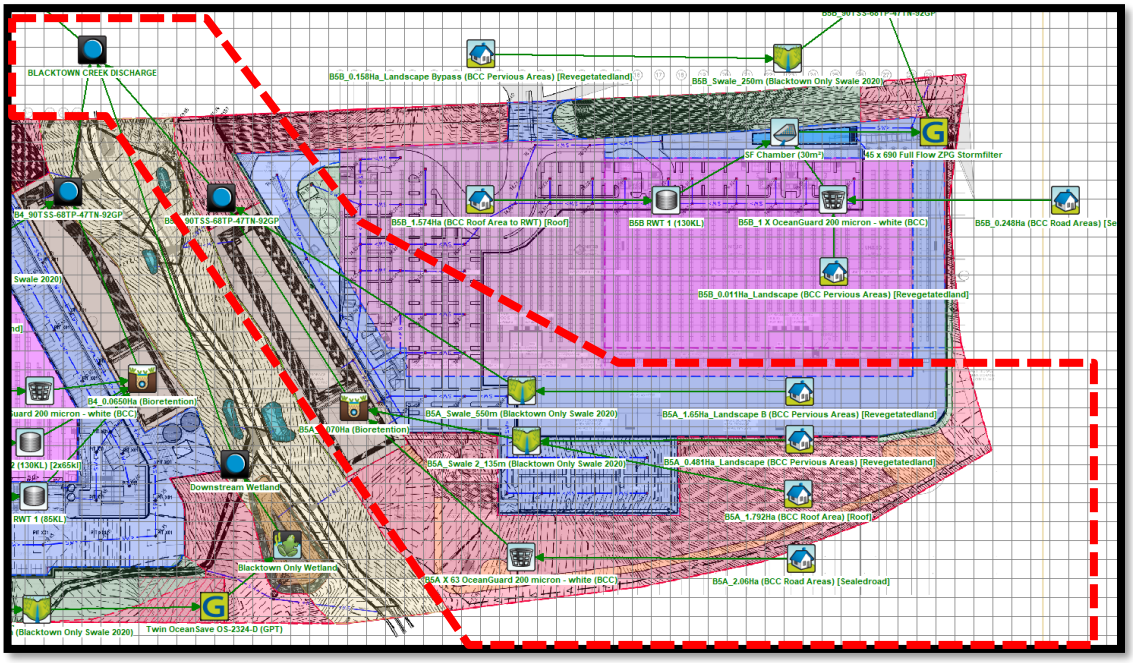


Figure 6.6. MUSIC model layout (Catchment 5A)

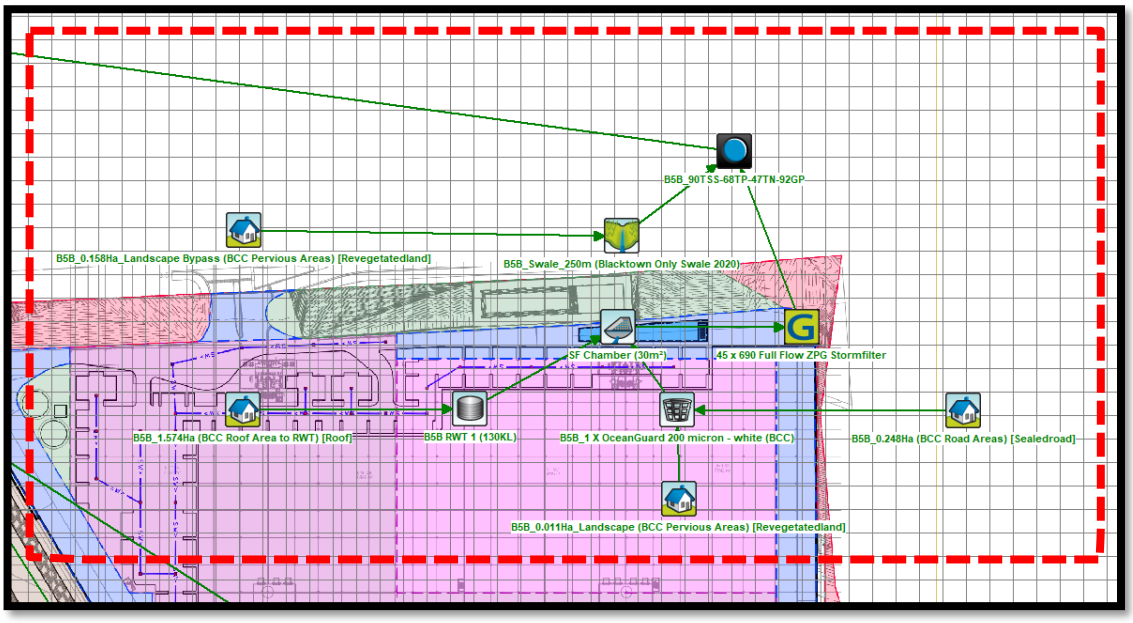


Figure 6.7. MUSIC model layout (Catchment 5B)

B.1 Introduction

The MUSIC modelling software was chosen to model water quality. This model has been released by the Cooperative Research Centre for Catchment Hydrology (CRCCH) and is a standard industry model for this purpose. MUSIC (the Model for Urban Stormwater Improvement Conceptualisation) is suitable for simulating catchment areas of up to 100 km^2 and utilises a continuous simulation approach to model water quality.

By simulating the performance of stormwater management systems, MUSIC can be used to predict if these proposed systems and changes to land use are appropriate for their catchments and are capable of meeting specified water quality objectives (CRC 2002). The water quality constituents modelled in MUSIC and of relevance to this report include Total Suspended Solids (TSS), Total Phosphorus (TP) and Total Nitrogen (TN).

The pollutant retention criteria set out in Blacktown City Council's Huntingwood Precinct DCP and nominated in **Section 4.1** of this report were used as a basis for assessing the effectiveness of the selected treatment trains.

The MUSIC model "*Co13904_03_Huntingwood Precinct_REV03.sqz*" was set up to examine the effectiveness of the water quality treatment train and to predict if council requirements have been achieved. The model was set up using the latest Blacktown City Council *MUSICLINK* parameters for clay soil and the layout of the MUSIC model is presented in this **Appendix B** and **Section 3** of the report.

Modelling parameters used are based on the latest Blacktown City Council *MUSICLINK* parameters.

B.2 Rainfall Data

As per the recommendation of Council, six-minute pluviographic data for the Sydney Meteorological Office Station was sourced from the Bureau of Meteorology (BOM) as nominated below. Evapo-transpiration data for the period was sourced from the Sydney Monthly Areal PET data set supplied with the MUSIC software.

Input	**Data Used**
Rainfall Station	67035 Liverpool (Whitlam)
Rainfall Period	1 January 1967 – 31 December 1976
	(10 years)
Mean Annual Rainfall (mm)	857
Evapotanspiration	Sydney Monthly Areal PET
Model Timestep	6 minutes

B.3 Rainfall Runoff Parameters

Parameter	**Value**
Rainfall Threshold	1.40
Soil Storage Capacity (mm)	170

Initial Storage (% capacity)	30
Field Capacity (mm)	70
Infiltration Capacity Coefficient a	210
Infiltration Capacity exponent b	4.7
Initial Depth (mm)	10
Daily Recharge Rate (%)	50
Daily Baseflow Rate (%)	4
Daily Seepage Rate (%)	0

B.4 Pollutant Concentrations & Source Nodes

Pollutant concentrations for source nodes are based on parameters adopted by the SCA as per **Table B.1**.

Flow Type	Surface Type	TSS (log_{10} values)		TP (log_{10} values)		TN (log_{10} values)	
		Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
Baseflow	Roof	1.20	0.17	-0.85	0.19	0.11	0.12
	Roads	1.20	0.17	-0.85	0.19	0.11	0.12
	Landscaping	1.2	0.17	-0.85	0.19	0.11	0.12
Stormflow	Roof	1.30	0.32	-0.89	0.25	0.30	0.19
	Roads	2.43	0.32	-0.30	0.25	0.34	0.19
	Landscaping	2.15	0.32	-0.6	0.25	0.30	0.19

Table B.1. Pollutant Concentrations

The MUSIC model has been setup with a treatment train approach based on the pollutant concentrations in **Table B.1** above and using the Blacktown Council specific MUSIC nodes. The MUSIC-Link generated report can be found attached to the end of this Appendix B, showing the relevant stormwater catchment nodes and sizes and their configuration within the MUSIC model.

B.5 Treatment Nodes

Gross Pollutant Trap and Siphon-Actuated Filtration device treatment nodes have been used in the modelling of the development as provided by the suppliers of the products based on testing completed by the product manufacturers. Detention basin nodes were also introduced to the model using typical parameters contained in MUSIC modelling guidelines.

Gross Pollutant Trap

Parameter	**Value**
Treatable Flow	0.020m^3/s (per OceanGuard)
Pollutant Reductions	
Per Ocean Protect Technical Guidelines	

Filtration Device (Ocean Protect StormFilters)

Parameter	**Value**
Treatable Flow	0.0016m^3/s (per ZPG Cartridge)
Pollutant Reductions	
Per Ocean Protect Technical Guidelines	

B.6 Results

Table B.2 shows the results of the MUSIC analysis. The reduction rate is expressed as a percentage and compares the post-development pollutant loads without treatment versus post-development loads with treatment.

	Source	Residual Load	% Reduction
Total Suspended Solids (kg/yr) (TSS)	20300	2010	90.1
Total Phosphorus (kg/yr) (TP)	42.9	12.5	71.1
Total Nitrogen (kg/yr) (TN)	300	142	53.1
Gross Pollutants (kg/yr) (GP)	3190	0	100

Table B.2. MUSIC analysis results

The model results indicate that, through the use of the STM in the treatment train, pollutant load reductions for Total Suspended Solids, Total Phosphorous, Total Nitrogen and Gross Pollutants will meet the requirements of Council's *DCP* on an overall catchment basis.

B.7 Modelling Discussion

MUSIC modelling has been performed to assess the effectiveness of the selected treatment trains and to ensure that the pollutant retention requirements of Council have been met.

The MUSIC modelling has shown that the proposed treatment train of STM will provide stormwater treatment which will meet Council's requirements in an effective and economical manner.

Hydrocarbon and oil & grease removal cannot be modelled with MUSIC software. As an industrial estate with users for individual development sites not known, the exact levels of hydrocarbons would not be known however given the expected use of the site as a warehouse distribution centre these pollutants would not be expected to be large. Potential sources of hydrocarbons and/or oil & grease which drain to the stormwater system would be limited to leaking engine sumps or for accidental fuel spills/leaks and leaching of bituminous pavements (car parking only). The potential for these pollutants is low and published data from the CSIRO indicates that average concentrations from industrial sites are in the order of 10mg/L and we would expect source loading from this site to be near to or below this concentration. Hydrocarbon pollution would also be limited to surface areas which will be treated via OceanProtect OceanGuard absorbent material which are predicted to reduce this pollutant.

Further, the provision of an oil baffle within the treatment system which captures and contains hydrocarbons and oils has been included. This is considered a deemed to comply solution by Blacktown City Council.

Given the expected low source loadings of hydrocarbons and oil/grease and removal efficiencies of the treatment devices and filtration systems we consider that the requirements of the Council have been met.

MUSIC-*link* Report

Project Details		Company Details	
Project:	SSD-36138263: AUGUSTA STREET WAREHOUSE & DISTRIBUTION CENTRE	**Company:**	Costin Roe Consulting
Report Export Date:	11/09/2023	**Contact:**	Lourens de Villiers
Catchment Name:	Co13904_03_Huntingwood Precinct_REV04	**Address:**	
Catchment Area:	22.747ha	**Phone:**	
Impervious Area*:	73.93%	**Email:**	lourens.devilliers@costinroe.com.au
Rainfall Station:	67035 LIVERPOOL(WHITLAM		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1967 - 31/12/1976 11:54:00 PM		
Mean Annual Rainfall:	857mm		
Evapotranspiration:	1261mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.34		
Study Area:	Blacktown		
Scenario:	Blacktown Development		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: 90TSS-68TP-47TN-92GP	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	8.64%	Swale Node	9	Urban Source Node	33
TSS	90.1%	Wetland Node	1		
TP	70.8%	Sedimentation Basin Node	3		
TN	52.8%	Rain Water Tank Node	5		
GP	100%	Bio Retention Node	4		
		Generic Node	4		
		GPT Node	12		

Comments

All nodes are set to Blacktown City Council's requirements. Roof Nodes incorrectly showing errors on the MUSIC Link report

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Bio	B3A_0.0265Ha (Bioretention)	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	B3A_0.0265Ha (Bioretention)	PET Scaling Factor	2.1	2.1	2.1
Bio	B3B_0.0550Ha (Bioretention)	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	B3B_0.0550Ha (Bioretention)	PET Scaling Factor	2.1	2.1	2.1
Bio	B4_0.0650Ha (Bioretention)	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	B4_0.0650Ha (Bioretention)	PET Scaling Factor	2.1	2.1	2.1
Bio	B5A_0.070Ha (Bioretention)	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	B5A_0.070Ha (Bioretention)	PET Scaling Factor	2.1	2.1	2.1
GPT	10 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.2
GPT	2 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.04
GPT	3 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.06
GPT	3 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.06
GPT	4 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.08
GPT	B2_13 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.26
GPT	B2_4 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.08
GPT	B2_4 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.08
GPT	B3B_15 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.3
GPT	B3B_42 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.84
GPT	B5A X 63 OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	1.26
GPT	B5B_1 X OceanGuard 200 micron - white (BCC)	Hi-flow bypass rate (cum/sec)	None	None	0.02
Rain	B1 RWT (65KL)	% Reuse Demand Met	80	None	84.04
Rain	B2 RWT (65KL)	% Reuse Demand Met	80	None	81.36
Rain	B4 RWT 1 (85KL)	% Reuse Demand Met	80	None	82.15
Rain	B4 RWT 2 (130KL) [2x65kl]	% Reuse Demand Met	80	None	80.39
Rain	B5B RWT 1 (130KL)	% Reuse Demand Met	80	None	80.90
Receiving	90TSS-68TP-47TN-92GP	% Load Reduction	None	None	8.64
Receiving	90TSS-68TP-47TN-92GP	GP % Load Reduction	90	None	100
Receiving	90TSS-68TP-47TN-92GP	TN % Load Reduction	45	None	52.8
Receiving	90TSS-68TP-47TN-92GP	TP % Load Reduction	65	None	70.8
Receiving	90TSS-68TP-47TN-92GP	TSS % Load Reduction	85	None	90.1
Sedimentation	B2_SF Chamber (81m)	Exfiltration Rate (mm/hr)	0	0	0
Sedimentation	B2_SF Chamber (81m)	High Flow Bypass Out (ML/yr)	None	None	0
Sedimentation	B2_SF Chamber (81m)	Notional Detention Time (hrs)	None	None	0.117
Sedimentation	SF Chamber (28m)	Exfiltration Rate (mm/hr)	0	0	0
Sedimentation	SF Chamber (28m)	High Flow Bypass Out (ML/yr)	None	None	0
Sedimentation	SF Chamber (28m)	Notional Detention Time (hrs)	None	None	0.0745
Sedimentation	SF Chamber (30m)	Exfiltration Rate (mm/hr)	0	0	0
Sedimentation	SF Chamber (30m)	High Flow Bypass Out (ML/yr)	None	None	0
Sedimentation	SF Chamber (30m)	Notional Detention Time (hrs)	None	None	0.0522
Swale	B1_Swale_250m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Swale	B2_Swale_305m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B3A_Swale_260m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B3B_Swale_235m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B4_Swale 1_100m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B4_Swale 2_210m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B5A_Swale 2_135m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B5A_Swale_550m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Swale	B5B_Swale_250m (Blacktown Only Swale 2020)	Bed slope	0.005	0.01	0.005
Urban	B1_0.044Ha_Landscape A (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B1_0.044Ha_Landscape A (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.044
Urban	B1_0.044Ha_Landscape A (BCC Pervious Areas)	Total Area (ha)	None	None	0.044
Urban	B1_0.087Ha_Landscape B (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B1_0.087Ha_Landscape B (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.087
Urban	B1_0.087Ha_Landscape B (BCC Pervious Areas)	Total Area (ha)	None	None	0.087
Urban	B1_0.3373Ha_Landscape Bypass (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B1_0.3373Ha_Landscape Bypass (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.337
Urban	B1_0.3373Ha_Landscape Bypass (BCC Pervious Areas)	Total Area (ha)	None	None	0.337
Urban	B1_0.4536Ha (BCC Road Areas)	Area Impervious (ha)	None	None	0.454
Urban	B1_0.4536Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0
Urban	B1_0.4536Ha (BCC Road Areas)	Total Area (ha)	None	None	0.454
Urban	B3A_0.027Ha_Landscape A (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B3A_0.027Ha_Landscape A (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.027
Urban	B3A_0.027Ha_Landscape A (BCC Pervious Areas)	Total Area (ha)	None	None	0.027
Urban	B3A_0.2234Ha (BCC Road Areas)	Area Impervious (ha)	None	None	0.223
Urban	B3A_0.2234Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0
Urban	B3A_0.2234Ha (BCC Road Areas)	Total Area (ha)	None	None	0.223
Urban	B3A_0.302Ha_Landscape Bypass (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B3A_0.302Ha_Landscape Bypass (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.302
Urban	B3A_0.302Ha_Landscape Bypass (BCC Pervious Areas)	Total Area (ha)	None	None	0.302
Urban	B3A_0.5147Ha (BCC Roof Area)	Area Impervious (ha)	None	None	0.515
Urban	B3A_0.5147Ha (BCC Roof Area)	Area Pervious (ha)	None	None	0
Urban	B3A_0.5147Ha (BCC Roof Area)	Total Area (ha)	None	None	0.515
Urban	B3B_0.054Ha_Landscape A (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B3B_0.054Ha_Landscape A (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.054
Urban	B3B_0.054Ha_Landscape A (BCC Pervious Areas)	Total Area (ha)	None	None	0.054
Urban	B3B_0.532Ha_Landscape Bypass (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B3B_0.532Ha_Landscape Bypass (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.532
Urban	B3B_0.532Ha_Landscape Bypass (BCC Pervious Areas)	Total Area (ha)	None	None	0.532
Urban	B3B_0.930Ha (BCC Road Areas)	Area Impervious (ha)	None	None	0.93
Urban	B3B_0.930Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	B3B_0.930Ha (BCC Road Areas)	Total Area (ha)	None	None	0.93
Urban	B3B_1.659Ha (BCC Roof Area)	Area Impervious (ha)	None	None	1.659
Urban	B3B_1.659Ha (BCC Roof Area)	Area Pervious (ha)	None	None	0
Urban	B3B_1.659Ha (BCC Roof Area)	Total Area (ha)	None	None	1.659
Urban	B4_0.63Ha_Landscape A (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B4_0.63Ha_Landscape A (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.63
Urban	B4_0.63Ha_Landscape A (BCC Pervious Areas)	Total Area (ha)	None	None	0.63
Urban	B4_0.829Ha_Landscape Bypass (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B4_0.829Ha_Landscape Bypass (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.829
Urban	B4_0.829Ha_Landscape Bypass (BCC Pervious Areas)	Total Area (ha)	None	None	0.829
Urban	B4_1.084Ha (BCC Roof Area to RWT)	Area Impervious (ha)	None	None	1.084
Urban	B4_1.084Ha (BCC Roof Area to RWT)	Area Pervious (ha)	None	None	0
Urban	B4_1.084Ha (BCC Roof Area to RWT)	Total Area (ha)	None	None	1.084
Urban	B4_1.736Ha (BCC Roof Area to RWT)	Area Impervious (ha)	None	None	1.736
Urban	B4_1.736Ha (BCC Roof Area to RWT)	Area Pervious (ha)	None	None	0
Urban	B4_1.736Ha (BCC Roof Area to RWT)	Total Area (ha)	None	None	1.736
Urban	B4_2.24Ha (BCC Road Areas)	Area Impervious (ha)	None	None	2.24
Urban	B4_2.24Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0
Urban	B4_2.24Ha (BCC Road Areas)	Total Area (ha)	None	None	2.24
Urban	B5A_0.481Ha_Landscape (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B5A_0.481Ha_Landscape (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.481
Urban	B5A_0.481Ha_Landscape (BCC Pervious Areas)	Total Area (ha)	None	None	0.481
Urban	B5A_1.65Ha_Landscape B (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B5A_1.65Ha_Landscape B (BCC Pervious Areas)	Area Pervious (ha)	None	None	1.65
Urban	B5A_1.65Ha_Landscape B (BCC Pervious Areas)	Total Area (ha)	None	None	1.65
Urban	B5A_1.792Ha (BCC Roof Area)	Area Impervious (ha)	None	None	1.792
Urban	B5A_1.792Ha (BCC Roof Area)	Area Pervious (ha)	None	None	0
Urban	B5A_1.792Ha (BCC Roof Area)	Total Area (ha)	None	None	1.792
Urban	B5A_2.06Ha (BCC Road Areas)	Area Impervious (ha)	None	None	2.06
Urban	B5A_2.06Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0
Urban	B5A_2.06Ha (BCC Road Areas)	Total Area (ha)	None	None	2.06
Urban	B5B_0.011Ha_Landscape (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B5B_0.011Ha_Landscape (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.011
Urban	B5B_0.011Ha_Landscape (BCC Pervious Areas)	Total Area (ha)	None	None	0.011
Urban	B5B_0.158Ha_Landscape Bypass (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	B5B_0.158Ha_Landscape Bypass (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.158
Urban	B5B_0.158Ha_Landscape Bypass (BCC Pervious Areas)	Total Area (ha)	None	None	0.158
Urban	B5B_0.248Ha (BCC Road Areas)	Area Impervious (ha)	None	None	0.248
Urban	B5B_0.248Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0
Urban	B5B_0.248Ha (BCC Road Areas)	Total Area (ha)	None	None	0.248

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	B5B_1.574Ha (BCC Roof Area to RWT)	Area Impervious (ha)	None	None	1.574
Urban	B5B_1.574Ha (BCC Roof Area to RWT)	Area Pervious (ha)	None	None	0
Urban	B5B_1.574Ha (BCC Roof Area to RWT)	Total Area (ha)	None	None	1.574
Urban	Building 1_0.2840Ha (BCC Roof Area to RWT)	Area Impervious (ha)	None	None	0.284
Urban	Building 1_0.2840Ha (BCC Roof Area to RWT)	Area Pervious (ha)	None	None	0
Urban	Building 1_0.2840Ha (BCC Roof Area to RWT)	Total Area (ha)	None	None	0.284
Urban	Building 1_0.2840Ha (BCC Roof Area)	Area Impervious (ha)	None	None	0.284
Urban	Building 1_0.2840Ha (BCC Roof Area)	Area Pervious (ha)	None	None	0
Urban	Building 1_0.2840Ha (BCC Roof Area)	Total Area (ha)	None	None	0.284
Urban	Building 2_0.10Ha_Landscape A (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	Building 2_0.10Ha_Landscape A (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.1
Urban	Building 2_0.10Ha_Landscape A (BCC Pervious Areas)	Total Area (ha)	None	None	0.1
Urban	Building 2_0.10Ha_Landscape B (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	Building 2_0.10Ha_Landscape B (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.1
Urban	Building 2_0.10Ha_Landscape B (BCC Pervious Areas)	Total Area (ha)	None	None	0.1
Urban	Building 2_0.56Ha (BCC Roof Area to RWT)	Area Impervious (ha)	None	None	0.56
Urban	Building 2_0.56Ha (BCC Roof Area to RWT)	Area Pervious (ha)	None	None	0
Urban	Building 2_0.56Ha (BCC Roof Area to RWT)	Total Area (ha)	None	None	0.56
Urban	Building 2_0.56Ha (BCC Roof Area)	Area Impervious (ha)	None	None	0.56
Urban	Building 2_0.56Ha (BCC Roof Area)	Area Pervious (ha)	None	None	0
Urban	Building 2_0.56Ha (BCC Roof Area)	Total Area (ha)	None	None	0.56
Urban	Building 2_0.5872Ha_Landscape Bypass (BCC Pervious Areas)	Area Impervious (ha)	None	None	0
Urban	Building 2_0.5872Ha_Landscape Bypass (BCC Pervious Areas)	Area Pervious (ha)	None	None	0.587
Urban	Building 2_0.5872Ha_Landscape Bypass (BCC Pervious Areas)	Total Area (ha)	None	None	0.587
Urban	Building 2_0.615Ha (BCC Road Areas)	Area Impervious (ha)	None	None	0.615
Urban	Building 2_0.615Ha (BCC Road Areas)	Area Pervious (ha)	None	None	0
Urban	Building 2_0.615Ha (BCC Road Areas)	Total Area (ha)	None	None	0.615
Wetland	Blacktown Only Wetland	% Reuse Demand Met	None	None	0

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	B3A_0.5147Ha (BCC Roof Area)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	B3A_0.5147Ha (BCC Roof Area)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	B3A_0.5147Ha (BCC Roof Area)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	B3B_1.659Ha (BCC Roof Area)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	B3B_1.659Ha (BCC Roof Area)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	B3B_1.659Ha (BCC Roof Area)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	B4_1.084Ha (BCC Roof Area to RWT)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	B4_1.084Ha (BCC Roof Area to RWT)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	B4_1.084Ha (BCC Roof Area to RWT)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	B4_1.736Ha (BCC Roof Area to RWT)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	B4_1.736Ha (BCC Roof Area to RWT)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	B4_1.736Ha (BCC Roof Area to RWT)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	B5A_1.792Ha (BCC Roof Area)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	B5A_1.792Ha (BCC Roof Area)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	B5A_1.792Ha (BCC Roof Area)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	B5B_1.574Ha (BCC Roof Area to RWT)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	B5B_1.574Ha (BCC Roof Area to RWT)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	B5B_1.574Ha (BCC Roof Area to RWT)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	Building 1_0.2840Ha (BCC Roof Area to RWT)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	Building 1_0.2840Ha (BCC Roof Area to RWT)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	Building 1_0.2840Ha (BCC Roof Area to RWT)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	Building 1_0.2840Ha (BCC Roof Area)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	Building 1_0.2840Ha (BCC Roof Area)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	Building 1_0.2840Ha (BCC Roof Area)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	Building 2_0.56Ha (BCC Roof Area to RWT)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	Building 2_0.56Ha (BCC Roof Area to RWT)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	Building 2_0.56Ha (BCC Roof Area to RWT)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2
Urban	Building 2_0.56Ha (BCC Roof Area)	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.11
Urban	Building 2_0.56Ha (BCC Roof Area)	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.85
Urban	Building 2_0.56Ha (BCC Roof Area)	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.2

Only certain parameters are reported when they pass validation

Appendix C

STORMWATER SYSTEM

DRAFT MAINTENANCE SCHEDULE

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
SWALES/ LANDSCAPED AREAS			
Check density of vegetation and ensure minimum height of 150mm is maintained. Check for any evidence of weed infestation	Six monthly	Maintenance Contractor	Replant and/or fertilise, weed and water in accordance with landscape consultant specifications
Inspect swale for excessive litter and sediment build up	Six monthly	Maintenance Contractor	Remove sediment and litter and dispose in accordance with local authorities' requirements.
Check for any evidence of channelisation and erosion	Six monthly/ After Major Storm	Maintenance Contractor	Reinstate eroded areas so that original, designed swale profile is maintained
Weed Infestation	Three Monthly	Maintenance Contractor	Remove any weed infestation ensuring all root ball of weed is removed. Replace with vegetation where required.
Inspect swale surface for erosion	Six Monthly	Maintenance Contractor	Replace topsoil in eroded area and cover and secure with biodegradable fabric. Cut hole in fabric and revegetate.
INLET & JUNCTION PITS			
Inside of pits	Six Monthly	Maintenance Contractor	Remove grate and inspect internal walls and base, repair where required. Remove any collected sediment, debris, litter.

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Outside of pits	Four Monthly/ After Major Storm	Maintenance Contractor	Clean grate of collected sediment, debris, litter and vegetation.
PROPRIETARY TREATMENT DEVICES (OceanGuards & StormFilters)			
Refer to Manufacturers Operation and Maintenance Manual	Annually	Maintenance Contractor	Refer to Manufacturers Operation and Maintenance Manual
RAINWATER TANK			
Check for any clogging and blockage of the first flush device	Monthly	Maintenance Contractor	First flush device to be cleaned out
Check for any clogging and blockage of the tank inlet -leaf/litter screen	Six monthly	Maintenance Contractor	Leaves and debris to be removed from the inlet leaf/litter screen
Check the level of sediment within the tank	Every two years	Maintenance Contractor	Sediment and debris to be removed from rainwater tank floor if sediment level is greater than the maximum allowable depth as specified by the hydraulic consultant
STORMWATER SYSTEM			
General Inspection of complete stormwater drainage system	Bi-annually	Maintenance Contractor	Inspect all drainage structures noting any dilapidation in structures and carry out required repairs.
TANKS			

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Inspect and remove any blockage from orifice	Six Monthly	Maintenance Contractor/ Owner	Remove grate and screen to inspect orifice.
Inspect trash screen and clean	Six Monthly	Maintenance Contractor/ Owner	Remove grate and screen if required to clean it.
Inspect flap valve and remove any blockage.	Six Monthly	Maintenance Contractor/ Owner	Remove grate. Ensure flap valve moves freely and remove any blockages or debris.
Inspect pit sump for damage or blockage.	Six Monthly	Maintenance Contractor/ Owner	Remove grate & screen. Remove sediment/ sludge build up and check orifice and flap valve are clear.
Inspect storage areas and remove debris/ mulch/ litter etc likely to block screens/ grates.	Six Monthly	Maintenance Contractor/ Owner	Remove debris and floatable materials.
Check attachment of orifice plate and screen to wall of pit	Annually	Maintenance Contractor	Remove grate and screen. Ensure plate or screen mounted securely, tighten fixings if required. Seal gaps if required.
Check orifice diameter is correct and retains sharp edge.	Five yearly	Maintenance Contractor	Compare diameter to design (see Work-as-Executed) and ensure edge is not pitted or damaged.
Check screen for corrosion	Annually	Maintenance Contractor	Remove grate and screen and examine for rust or corrosion, especially at corners or welds.

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Inspect overflow weir and remove any blockage	Six monthly	Maintenance Contractor/ Owner	Ensure weir is free of blockage.
Inspect walls for cracks or spalling	Annually	Maintenance Contractor	Remove grate to inspect internal walls, repair as necessary.
Check step irons	Annually	Maintenance Contractor	Ensure fixings are secure and irons are free from corrosion.

Appendix D

DRAFT SOIL AND WATER MANAGEMENT PLAN

C.1 Introduction

An erosion and sediment control plan (ESCP) is shown on drawing **Co13904.03-SSDA200** with details on **SSDA250**. These are conceptual plans only providing sufficient detail to clearly show that the works can proceed without undue pollution to receiving waters. A detailed plan will be prepared once consent is given and before works start.

The ESCP considers initial site establishment, requirements during construction of the development, and completion of development.

C.2 General Conditions

1. The ESCP will be read in conjunction with the engineering plans, and any other plans or written instructions that may be issued in relation to development at the subject site.
2. Contractors will ensure that all soil and water management works are undertaken as instructed in this specification and constructed following the guidelines stated in *Managing Urban Stormwater, Soils and Construction (2004) "The Blue Book"* and Cumberland City Council specifications.
3. All subcontractors will be informed of their responsibilities in minimising the potential for soil erosion and pollution to down slope areas.

C.3 Land Disturbance

1. Where practicable, the soil erosion hazard on the site will be kept as low as possible and as recommended in Table C.1.

Land Use	Limitation	Comments
Construction areas	Limited to 5 (preferably 2) metres from the edge of any essential construction activity as shown on the engineering plans.	All site workers will clearly recognise these areas that, where appropriate, are identified with barrier fencing (upslope) and sediment fencing (downslope), or similar materials.
Access areas	Limited to a maximum width of 5 metres	The site manager will determine and mark the location of these zones onsite. They can vary in position so as to best conserve existing vegetation and protect downstream areas while being considerate of the needs of efficient works activities. All site workers will clearly recognise these boundaries.

Remaining lands	Entry prohibited except for essential management works	

Table C.1 Limitations to access

C.4 Erosion Control Conditions

1. Clearly visible barrier fencing shall be installed as shown on the plan and elsewhere at the discretion of the site superintendent to ensure traffic control and prohibit unnecessary site disturbance. Vehicular access to the site shall be limited to only those essential for construction work and they shall enter the site only through the stabilised access points.
2. Soil materials will be replaced in the same order they are removed from the ground. It is particularly important that all subsoils are buried and topsoils remain on the surface at the completion of works.
3. Where practicable, schedule the construction program so that the time from starting land disturbance to stabilisation has a duration of less than six months.
4. Notwithstanding this, schedule works so that the duration from the conclusion of land shaping to completion of final stabilisation is less than 20 working days.
5. Land recently established with grass species will be watered regularly until an effective cover has properly established and plants are growing vigorously. Further application of seed might be necessary later in areas of inadequate vegetation establishment.
6. Where practical, foot and vehicular traffic will be kept away from all recently established areas
7. Earth batters shall be constructed in accordance with the Geotechnical Engineers Report or with as law a gradient as practical but not steeper than:

Unit	Temporary	Permanent
SOIL UNITS, e.g. ENGINEERED FILL / NATURAL SOIL	2H : 1V	2.5H : 1V
BEDROCK A	1.5H : 1V	2.0H : 1V
BEDROCK B	0.5H : 1V	1H : 1V

8. All earthworks, including waterways/drains/spillways and their outlets, will be constructed to be stable in at least the design storm event.
9. During windy weather, large, unprotected areas will be kept moist (not wet) by sprinkling with water to keep dust under control. In the event water is not available in sufficient quantities, soil binders and/or dust retardants will be used or the surface will be left in a cloddy state that resists removal by wind.

C.5 Pollution Control Conditions

1. Stockpiles will not be located within 5 metres of hazard areas, including likely areas of high velocity flows such as waterways, paved areas and driveways. Silt/ sediment fences and appropriate stabilisation of stockpiles are to be provided as detailed on the drawings.
2. Sediment fences will:
    a) Be installed where shown on the drawings, and elsewhere at the discretion of the site superintendent to contain the coarser sediment fraction (including aggregated fines) as near as possible to their source.
    b) Have a catchment area not exceeding 720 square meters, a storage depth (including both settling and settled zones) of at least 0.6 meters, and internal dimensions that provide maximum surface area for settling, and
    c) Provide a return of 1 metre upslope at intervals along the fence where catchment area exceeds 720 square meters, to limit discharge reaching each section to 10 litres/second in a maximum 20-year t_c discharge.
3. Sediment removed from any trapping device will be disposed in locations where further erosion and consequent pollution to down slope lands and waterways will not occur.
4. Water will be prevented from directly entering the permanent drainage system unless it is relatively sediment free (i.e. the catchment area has been permanently landscaped and/or likely sediment has been treated in an approved device). Nevertheless, stormwater inlets will be protected.
5. Temporary soil and water management structures will be removed only after the lands they are protecting are stabilised.

C.6 Waste Management Conditions

Acceptable bind will be provided for any concrete and mortar slurries, paints, acid washings, lightweight waste materials and litter. Clearance service will be provided at least weekly.

C.7 Site Inspection and Maintenance

1. A self-auditing program will be established based on a Check Sheet. A site inspection using the Check Sheet will be made by the site manager:
    - At least weekly.
    - Immediately before site closure.
    - Immediately following rainfall events in excess of 5mm in any 24-hour period.

The self-audit will include:

- Recording the condition of every sediment control device
- Recording maintenance requirements (if any) for each sediment control device
- Recording the volumes of sediment removed from sediment retention systems, where applicable

- Recording the site where sediment is disposed
- Forwarding a signed duplicate of the completed Check Sheet to the project manager/developer for their information

2. In addition, a suitably qualified person will be required to oversee the installation and maintenance of all soil and water management works on the site. The person shall be required to provide a short monthly written report. The responsible person will ensure that:
   - The plan is being implemented correctly
   - Repairs are undertaken as required
   - Essential modifications are made to the plan if and when necessary

The report shall carry a certificate that works have been carried out in accordance with the plan.

3. Waste bins will be emptied as necessary. Disposal of waste will be in a manner approved by the Site Superintendent.
4. Proper drainage will be maintained. To this end drains (including inlet and outlet works) will be checked to ensure that they are operating as intended, especially that,
   - No low points exist that can overtop in a large storm event
   - Areas of erosion are repaired (e.g. lined with a suitable material) and/or velocity of flow is reduced appropriately through construction of small check dams of installing additional diversion upslope.
   - Blockages are cleared (these might occur because of sediment pollution, sand/soil/spoil being deposited in or too close to them, breached by vehicle wheels, etc.).
5. Sand/soil/spoil materials placed closer than 2 meters from hazard areas will be removed. Such hazard areas include and areas of high velocity water flows (e.g. waterways and gutters), paved areas and driveways.
6. Recently stabilised lands will be checked to ensure that erosion hazard has been effectively reduced. Any repairs will be initiated as appropriate.
7. Excessive vegetation growth will be controlled through mowing or slashing.
8. All sediment detention systems will be kept in good, working condition. In particular, attention will be given to:
   a) Recent works to ensure they have not resulted in diversion of sediment laden water away from them
   b) Degradable products to ensure they are replaced as required, and
   c) Sediment removal, to ensure the design capacity or less remains in the settling zone.
9. Any pollutants removed from sediment basins or litter traps will be disposed of in areas where further pollution to down slope lands and waterways should not occur.
10. Additional erosion and/or sediment control works will be constructed as necessary to ensure the desired protection is given to down slope lands and waterways, i.e. make ongoing changes to the plan where it proves inadequate in practice or is subjected to changes in conditions at the work site or elsewhere in the catchment.

11. Erosion and sediment control measures will be maintained in a functioning condition until all earthwork activities are completed and the site stabilised
12. Litter, debris and sediment will be removed from the gross pollutant traps and trash racks as required.

EROSION AND SEDIMENT CONTROL
WEEKLY SITE INSPECTION SHEET

LOCATION . . . . . .
INSPECTION OFFICER . . . . . **DATE** . . . . . .
SIGNATURE . . . . . .

Legend: □ OK □ Not OK N/A Not applicable

Item	Consideration	Assessment
1	Public roadways clear of sediment.	. . . . .
2	Entry/exit pads clear of excessive sediment deposition.	. . . . .
3	Entry/exit pads have adequate void spacing to trap sediment.	. . . . .
4	The construction site is clear of litter and unconfined rubbish.	. . . . .
5	Adequate stockpiles of emergency ESC materials exist on site.	. . . . .
6	Site dust is being adequately controlled.	. . . . .
7	Appropriate drainage and sediment controls have been installed prior to new areas being cleared or disturbed.	. . . . .
8	Up-slope "clean" water is being appropriately diverted around/through the site.	. . . . .
9	Drainage lines are free of soil scour and sediment deposition.	. . . . .
10	No areas of exposed soil are in need of erosion control.	. . . . .
11	Earth batters are free of "rill" erosion.	. . . . .
12	Erosion control mulch is not being displaced by wind or water.	. . . . .
13	Long-term soil stockpiles are protected from wind, rain and stormwater flow with appropriate drainage and erosion controls.	. . . . .
14	Sediment fences are free from damage.	. . . . .
15	Sediment-laden stormwater is not simply flowing "around" the sediment fences or other sediment traps.	. . . . .
16	Sediment controls placed up-slope/around stormwater inlets are appropriate for the type of inlet structure.	. . . . .
17	All sediment traps are free of excessive sediment deposition.	. . . . .
18	The settled sediment layer within a sediment basin is clearly visible through the supernatant prior to discharge such water.	. . . . .
19	All reasonable and practicable measures are being taken to control sediment runoff from the site.	. . . . .
20	All soil surfaces are being appropriately prepared (i.e. pH, nutrients, roughness and density) prior to revegetation.	. . . . .
21	Stabilised surfaces have a minimum 70% soil coverage.	. . . . .
22	The site is adequately prepared for imminent storms.	. . . . .
23	All ESC measures are in proper working order.	. . . . .

Appendix E

PLANNING SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

SSDA-36138263 (2 August 2022)

Planning Secretary's Environmental Assessment Requirements

Warehouses and distribution centres

Development details

Application number	SSD-36138263
Project name	Augusta Street Warehouse and Distribution Centre
Location	Augusta Street, Blacktown within Blacktown
Property Description	Lots 218-219 DP457024, Lot 2151 DP135859, Lot 2 DP516449, Lot 163-164, 168-188 and 216 DP8716, Lot 4 DP585492, Lot 1 DP119616, Lots 4-6 DP226294, Lot 1 DP835264, Lots 50-52 DP1144623, Lot 7 DP803359, Lots 6-10 DP801210, Lot 4 DP585492, Lot 4 DP5853442 and Lot 2 DP1263824
Applicant	The Trustee for Huntingwood Property Trust
Date of issue	02/08/2022

Content and guidance

Any Environmental Impact Statement (EIS) must meet the minimum form and content requirements as prescribed by Part 8 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) and the *State Significant Development Guidelines*.

Relevant policies and guidelines can be found at https://www.planningportal.nsw.gov.au/major-projects/assessment/policies-and-guidelines.

Key issues and documentation

Issue and Assessment Requirements	Documentation
1. Statutory Context • Address all relevant legislation, environmental planning instruments (EPIs) (including drafts), plans, policies and guidelines. • Identify compliance with applicable development standards and provide a detailed justification for any non-compliances. • If the development is only partly State significant development (SSD) declared under Chapter 2 of SEPP (Planning Systems) 2021, provide an explanation of how the remainder of the development is sufficiently related to the component that is SSD. • Address the requirements of any approvals applying to the site, including any concept approval or recommendation from any Gateway determination.	• Address in EIS
2. Capital Investment Value and Employment	• Cost Summary

Issue and Assessment Requirements	Documentation
• Provide a detailed calculation of the capital investment value (CIV) of the development, prepared by a qualified quantity surveyor in accordance with planning circular *Calculation of Capital Investment Value (PS 21-020)*. • Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the development, including details of the methodology to determine the figures provided.	Report

3. Design Quality
• Demonstrate how the development will achieve:
  ○ design excellence in accordance with any applicable EPI provisions.
  ○ good design in accordance with the seven objectives for good design in *Better Placed*.
• Where required by an EPI or concept approval, demonstrate that the development has been subject to a competitive design process, or reviewed by the State Design Review Panel (SDRP) consistent with the *NSW SDRP: Guidelines for Project Teams*. Recommendations are to be addressed prior to lodgement.
	• Address in EIS
	If required:
	• Design Review Report (where the project has been reviewed by the SDRP)
	• Design Excellence Strategy (where design excellence is required by an EPI)
	• Competition Report (where a competitive design process has been held)

4. Built Form and Urban Design • Explain and illustrate the proposed built form, including a detailed site and context analysis to justify the proposed site planning and design approach. • Demonstrate how the proposed built form (layout, height, bulk, scale, separation, setbacks, interface and articulation) addresses and responds to the context, site characteristics, streetscape and existing and future character of the locality. • Demonstrate how the building design will deliver a high-quality development, including consideration of façade design, articulation, materials, finishes, colours, any signage and integration of services. • Assess how the development complies with the relevant accessibility requirements.	• Architectural drawings • Design Report • Survey Plan • Building Code of Australia Compliance Report • Accessibility Report
5. Visual Impact • Provide a visual analysis of the development from key viewpoints, including photomontages or perspectives showing the proposed and likely future	• Visual Analysis • Visual Impact Assessment

Issue and Assessment Requirements	Documentation
development. • Where the visual analysis has identified potential for significant visual impact, provide a visual impact assessment that addresses the impacts of the development on the existing catchment.	
6. Traffic, Transport and Accessibility • Provide a transport and accessibility impact assessment, which includes: ○ details of all traffic types and volumes likely to be generated during construction and operation, including a description of key access and haul routes. ○ an assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts on existing performance levels of nearby intersections (using industry standard modelling). ○ plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network. ○ details and plans of any proposed internal road network, loading dock provision and servicing, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards. ○ swept path analysis for the largest vehicle requiring access to the development. ○ details of road upgrades, infrastructure works, or new roads or access points required for the development if necessary. • Provide a Construction Traffic Management Plan detailing predicted construction vehicle, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.	• Transport and Accessibility Impact Assessment • Construction Traffic Management Plan • Green Travel Plan or equivalent
7. Trees and Landscaping • Provide a detailed site-wide landscape plan, that: ○ identifies the number and location of trees to be removed and retained, and how opportunities to retain significant trees have been explored and/or informs the plan. ○ details the proposed site planting, including location, number and species of plantings, heights of trees at maturity and proposed canopy coverage (as a percentage of the site area).	• Landscape Plan

Issue and Assessment Requirements	Documentation
○ demonstrates how the proposed development would: ▪ contribute to long term landscape setting in respect of the site and streetscape. ▪ mitigate the urban heat island effect and ensure appropriate comfort levels on-site. ▪ contribute to the objective of increased urban tree canopy cover. ▪ maximise opportunities for green infrastructure, consistent with *Greener Places* and having regard to any bush fire risk.	
8. Ecologically Sustainable Development (ESD) • Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development. • Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards. • Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.	• ESD Report
9. Biodiversity • Assess any biodiversity impacts associated with the development in accordance with the *Biodiversity Conservation Act 2016* and the *Biodiversity Assessment Method 2020*, including the preparation of a Biodiversity Development Assessment Report (BDAR), unless a waiver is granted, or the site is on biodiversity certified land. • If the development is on biodiversity certified land, provide information to identify the site (using associated mapping) and demonstrate the proposed development is consistent with the relevant biodiversity measure conferred by the biodiversity certification.	• Biodiversity Development Assessment Report or BDAR Waiver
10. Air Quality • Identify significant air emission sources at the proposed development (during construction and operation), assess their potential to cause adverse off-site impacts, and detail proposed management and mitigation measures that would be implemented. Where air emissions during operation have the potential to cause adverse off-site impacts, provide a quantitative air quality impact assessment prepared in accordance with the relevant NSW	• Address in EIS If required: • Air Quality Impact Assessment

Issue and Assessment Requirements	Documentation
Environment Protection Authority (EPA) guidelines.	
11. Noise and Vibration • Provide a noise and vibration assessment prepared in accordance with the relevant EPA guidelines. The assessment must detail construction and operational noise and vibration impacts on nearby sensitive receivers and structures and outline the proposed management and mitigation measures that would be implemented.	• Noise and Vibration Impact Assessment

12. Ground and Water Conditions
• Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site, including soil erosion, salinity and acid sulfate soils.
• Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on:
  ○ surface water resources (quality and quantity) including related infrastructure, hydrology, dependent ecosystems, drainage lines, downstream assets and watercourses.
  ○ groundwater resources in accordance with the *Groundwater Guidelines*.
	• Geotechnical Assessment
	• Surface and Groundwater Impact Assessment
	• Salinity Management Plan and/or Acid Sulfate Soils Management Plan

13. Water Management
• Provide an Integrated Water Management Plan for the development that:
  ○ is prepared in consultation with the local council and any other relevant drainage or water authority.
  ○ outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision).
  ○ details the proposed drainage design (stormwater and wastewater) for the site including any on-site detention facilities, water quality management measures and nominated discharge points, on-site sewage management, and measures to treat, reuse or dispose of water.
  ○ demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts.
• Where water and drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.
	• Integrated Water Management Plan

Issue and Assessment Requirements	Documentation
14. Flooding Risk • Identify any flood risk on-site having regard to adopted flood studies, the potential effects of climate change, and any relevant provisions of the *NSW Floodplain Development Manual*. • Assess the impacts of the development, including any changes to flood risk on-site or off-site, and detail design solutions and operational procedures to mitigate flood risk where required.	• Flood Risk Assessment
15. Hazards and Risks • Where there are dangerous goods and hazardous materials associated with the development provide a preliminary risk screening in accordance with Chapter 3 of SEPP (Resilience and Hazards) 2021. • Where required by SEPP (Resilience and Hazards) 2021, provide a Preliminary Hazard Analysis prepared in accordance with *Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis* and *Multi-Level Risk Assessment*. • If the development is adjacent to or on land in a pipeline corridor, report on consultation outcomes with the operator of the pipeline, and prepare a hazard analysis.	• Preliminary Hazard Analysis If required: • Hazard Analysis (Pipeline)
16. Contamination and Remediation • In accordance with Chapter 4 of SEPP (Resilience and Hazards) 2021, assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable (or will be suitable, after remediation) for the development.	• Preliminary Site Investigation If required: • Detailed Site Investigation • Remedial Action Plan • Preliminary Long-term Environmental Management Plan
17. Waste Management • Identify, quantify and classify the likely waste streams to be generated during construction and operation. • Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. • Identify appropriate servicing arrangements for the site. • If buildings are proposed to be demolished or altered, provide a hazardous	• Waste Management Plan • Hazardous Material Survey

Issue and Assessment Requirements	Documentation
materials survey.	
18. Aboriginal Cultural Heritage • Provide an Aboriginal Cultural Heritage Assessment Report prepared in accordance with relevant guidelines, identifying, describing and assessing any impacts on any Aboriginal cultural heritage values on the land.	• Aboriginal Cultural Heritage Assessment Report
19. Environmental Heritage • Where there is potential for direct or indirect impacts on the heritage significance of environmental heritage, provide a Statement of Heritage Impact and Archaeological Assessment (if potential impacts to archaeological resources are identified), prepared in accordance with the relevant guidelines, which assesses any impacts and outlines measures to ensure they are minimised and mitigated.	• Statement of Heritage Impact • Archaeological Assessment
20. Social Impact • Provide a Social Impact Assessment prepared in accordance with the *Social Impact Assessment Guidelines for State Significant Projects*.	• Social Impact Assessment
21. Infrastructure Requirements and Utilities • In consultation with relevant service providers: o assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. o identify any infrastructure required on-site and off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. o provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development.	• Infrastructure Delivery, Management and Staging Plan
22. Bush Fire Risk • If the development is on bush fire prone land, or a bush fire threat is identified on or adjoining the site, provide a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with *Planning for Bush Fire Protection*.	• Bush Fire Assessment

Issue and Assessment Requirements	Documentation
23. Construction, Operation and Staging • If staging is proposed, provide details of how construction and operation would be managed and any impacts mitigated.	• Address in EIS
24. Contributions and Public Benefit • Address the requirements of any relevant contribution plan(s), planning agreement or EPI requiring a monetary contribution, dedication of land and/or works-in-kind and include details of any proposal for further material public benefit. • Where the development proposes alternative public benefits or a departure from an existing contributions framework, the local council, the Department and relevant State agencies are to be consulted prior to lodgement and details, including how comments have been addressed, are to be provided.	• Address in EIS
25. Engagement • Detail engagement undertaken and demonstrate how it was consistent with the *Undertaking Engagement Guidelines for State Significant Projects*. Detail how issues raised and feedback provided have been considered and responded to in the project. In particular, applicants must consult with: o the relevant Department assessment team. o any relevant local councils. o any relevant agencies (including the Western Parkland City Authority for development within the Western Parkland City). o the community. o if the development would have required an approval or authorisation under another Act but for the application of s 4.41 of the EP&A Act or requires an approval or authorisation under another Act to be applied consistently by s 4.42 of the EP&A Act, the agency relevant to that approval or authorisation.	• Engagement Report

Appendix G

BLACKTOWN COUNCIL CORESPONDENCE

E-MAIL DATED 25 March 2022 (Mr Christophe Ferguson)

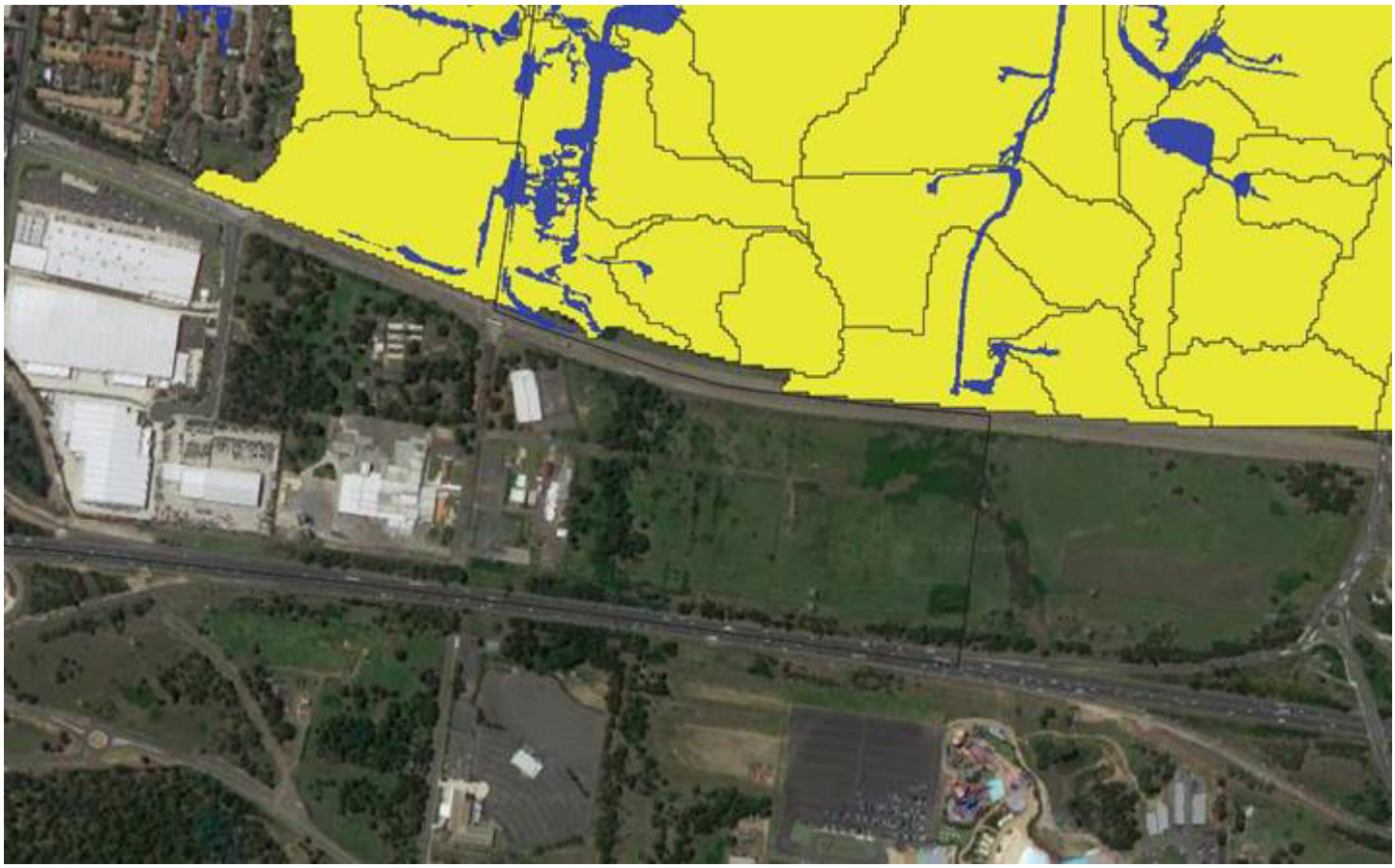
Referenced: *Augusta Street Blacktown - Flood Information*

Lourens de Villiers

From: Christophe Ferguson <Christophe.Ferguson@blacktown.nsw.gov.au>
Sent: Friday, 25 March 2022 4:11 PM
To: Lourens de Villiers
Cc: Flood Advice
Subject: Augusta Street Blacktown - Flood Information

Hi Lourens

The area in question does fall within the catchment of the UPRCT, however our Overland Flow Study flood extents (shown in blue below) and XP-RAFTS catchments (shown in yellow) do not cover your site. We would be happy to provide our latest Lidar data to assist you in the preparation of your own hydrologic and hydraulic assessment. Please note that with regards to flood related assessments, Blacktown Council requires new assessments to be undertaken using ARR 2019. If you would like to request LiDAR/ALS tiles, please email floodadvice@blacktown.nsw.gov.au



Kind Regards

Christophe Ferguson | Floodplain Officer
Blacktown City Council | PO Box 63 Blacktown NSW 2148
P. (02) 9839 6350 | E. Christophe.Ferguson@blacktown.nsw.gov.au |
W. www.blacktown.nsw.gov.au

From: Christophe Ferguson
Sent: Monday, 21 March 2022 4:31 PM
To: Lourens de Villiers <lourens.devilliers@costinroe.com.au>
Subject: RE: Flood Hydrograph information and Flood Advice Letter: Augusta Street, Blacktown, NSW, 2148

Hi Lourens,

Thank you for your patience.

I have directed this request to my supervisor as they have the proper expertise to best try and satisfy your initial request. We shall respond in due course.

Kind Regards

Christophe Ferguson | Floodplain Officer
Blacktown City Council | PO Box 63 Blacktown NSW 2148
P. (02) 9839 6350 | E. Christophe.Ferguson@blacktown.nsw.gov.au |
W. www.blacktown.nsw.gov.au

From: Flood Advice
Sent: Wednesday, 16 March 2022 12:18 PM
To: Lourens de Villiers <lourens.devilliers@costinroe.com.au>
Cc: Christophe Ferguson <Christophe.Ferguson@blacktown.nsw.gov.au>
Subject: RE: Flood Hydrograph information and Flood Advice Letter: Augusta Street, Blacktown, NSW, 2148

Hi Lourens,

Thank you for your email and for your time on the phone earlier.

As Christophe has been looking after your request unfortunately, I am unable to assist further with providing the information in his absence.

However, please be advised that I will follow up your query with Christophe upon his return next week.

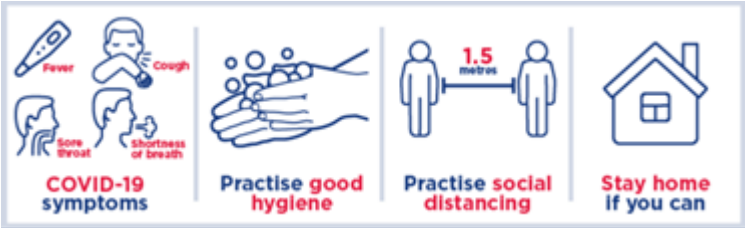
Kind Regards,

Amanda Schembri
Floodplain Support Officer

9839 6362

Amanda.Schembri@blacktown.nsw.gov.au
PO Box 63 Blacktown NSW 2148
blacktown.nsw.gov.au

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From: Lourens de Villiers <lourens.devilliers@costinroe.com.au>
Sent: Monday, 14 March 2022 10:54 AM
To: Christophe Ferguson <Christophe.Ferguson@blacktown.nsw.gov.au>; Amanda Schembri <Amanda.Schembri@blacktown.nsw.gov.au>
Subject: RE: Flood Hydrograph information and Flood Advice Letter: Augusta Street, Blacktown, NSW, 2148

Good Morning Amanda,

Kindly refer to my e-mail below.

I have spoken to Lee Toscan last week, who confirmed that Christophe have received my e-mail below and was busy obtaining the information. Would you be able to assist me in Christophe's absence?

Kind Regards

Best Regards,

Lourens de Villiers
Civil Design Engineer

Costin Roe Consulting Pty Ltd
ABN 50 003 696 446
Level 4, 8 Windmill Street, Walsh Bay
PO Box N419, Sydney, NSW 1220 Australia
tel: +61 2 9251 7699 fax: +61 2 9241 3731 mobile: 0488 448 277
email: lourens.devilliers@costinroe.com.au
web: www.costinroe.com.au

Postal address: PO Box N419, Sydney NSW 1220
Phone: 02-9251 7699 Fax: 02-9241 3731
Email: mail@costinroe.com.au Email: mail@strataeng.com.au Web: www.costinroe.com.au

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From: Lourens de Villiers
Sent: Monday, 14 March 2022 10:49 AM
To: 'Christophe.Ferguson@blacktown.nsw.gov.au' <Christophe.Ferguson@blacktown.nsw.gov.au>
Subject: RE: Flood Hydrograph information and Flood Advice Letter: Augusta Street, Blacktown, NSW, 2148

Good morning Christophe,

This is just a friendly follow up on the below request. Could you kindly give me an indication of when we could expect this information, to plan my outputs for the week around this date.

Thank you

From: Lourens de Villiers
Sent: Monday, 7 March 2022 8:31 AM
To: 'Christophe.Ferguson@blacktown.nsw.gov.au' <Christophe.Ferguson@blacktown.nsw.gov.au>
Subject: Flood Hydrograph information and Flood Advice Letter: Augusta Street, Blacktown, NSW, 2148 [Filed 07 Mar 2022 08:31]

Good morning, Christophe,

I spoke to Fay Buttler this morning, who referred me to you wrt the below information. I have also sent an e-mail to floodadvice@blacktown.nsw.gov.au on Friday, 25 Feb 2022, requesting this information, but have not yet received any feedback or direction to obtain this information.

I am in the process of obtaining stormwater and flood information for a site located as shown on the figure 1 below, and I am hoping you could kindly assist me with this information or directing me to the correct person who could assist me with obtaining this data.

I am specifically looking for the following information:

1. To obtain the 1% AEP and PMF hydrographs around this site (locations A-F shown on the figure below)
2. To obtain information on flooding and flood levels

Site Information:
Address: Augusta Street, Blacktown, NSW, 2148.
Coordinate: 33°48'8.23"S, 150°54'24.95"E
Google Maps link: https://goo.gl/maps/Jdpciz7Z5tBJSvEL9



Figure 1 - Location of Site and locations where flood hydrographs are required

Looking forward to hearing from you, and please do not hesitate to let me know if you require more information from my side. I will give you a call a bit later this afternoon to discuss this request if needed.

Thank you in advance.

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Appendix H

BLACKTOWN COUNCIL CORESPONDENCE

E-MAIL DATED 9 May 2022 (Flood Advice at Blacktown City Council)

Referenced: *Hyder Stormwater Report Augusta Street Blacktown*

Lourens de Villiers

From: Flood Advice <floodadvice@blacktown.nsw.gov.au>
Sent: Monday, 9 May 2022 11:42 AM
To: Lourens de Villiers
Subject: Hyder Stormwater Report Augusta Street Blacktown

Hi Lourens,

Thank you for your email.

The "*Hyder Consulting. 2007. Huntingwood East Precinct Civil Infrastructure and Stormwater Report*" was prepared by **Hyder Consulting** for **DBL Property Pty Ltd**.

As the report is not a Council document, we kindly suggest contacting either *Hyder Consulting* or *DBL Property Pty Ltd* to obtain.

We hope this has provided some clarification.

Kind Regards

Flood Advice at Blacktown City Council
Blacktown City Council | PO Box 63 Blacktown NSW 2148
P. (02) 9839 6350 | E. floodadvice@blacktown.nsw.gov.au |
W. www.blacktown.nsw.gov.au

From: Lourens de Villiers <lourens.devilliers@costinroe.com.au>
Sent: Monday, 9 May 2022 11:07 AM
To: Amanda Schembri <Amanda.Schembri@blacktown.nsw.gov.au>
Subject: FW: Hyder Stormwater Report: Augusta Street, Blacktown, NSW, 2148

Good morning Amanda,

With reference to our telephonic conversation last week regarding the below "*Hyder Consulting. 2007. Huntingwood East Precinct Civil Infrastructure and Stormwater Report*", could you kindly confirm that for whom this report was completed?

You mentioned that it was completed for DPI, could you confirm whether this is the Dept. of Primary Industries or a different private company?

Thank you

From: Lourens de Villiers
Sent: Tuesday, 3 May 2022 9:55 AM
To: floodadvice@blacktown.nsw.gov.au

Cc: Hiroshi Ueki <hiroshi.ueki@costinroe.com.au>; Xavier Cure <Xavier.Cure@costinroe.com.au>
Subject: Hyder Stormwater Report: Augusta Street, Blacktown, NSW, 2148

Good morning,

Thank you for taking my call this morning.

As discussed, we are busy doing an internal flood study of the sites along Augusta Street in the Blacktown LGA, within the Huntingwood Precinct. Your Huntingwood Precinct DCP (together with various other available reports) make several references to a Stormwater report for this Huntingwood Precinct completed by Hyder Consulting.

The report that we are looking for is referenced as "*Hyder Consulting. 2007. Huntingwood East Precinct Civil Infrastructure and Stormwater Report*" in the Huntingwood Precinct DCP, but there are also mention of this report as being completed in January 2010.

Could you kindy assist us with obtaining access to this report?

Please refer to our historical e-mail below for details about the location of the site.

Thank you in advance.

From: Lourens de Villiers
Sent: Monday, 7 March 2022 8:31 AM
To: 'Christophe.Ferguson@blacktown.nsw.gov.au' <Christophe.Ferguson@blacktown.nsw.gov.au>
Subject: Flood Hydrograph information and Flood Advice Letter: Augusta Street, Blacktown, NSW, 2148 [Filed 07 Mar 2022 08:31]

Good morning, Christophe,

I spoke to Fay Buttler this morning, who referred me to you wrt the below information. I have also sent an e-mail to floodadvice@blacktown.nsw.gov.au on Friday, 25 Feb 2022, requesting this information, but have not yet received any feedback or direction to obtain this information.

I am in the process of obtaining stormwater and flood information for a site located as shown on the figure 1 below, and I am hoping you could kindly assist me with this information or directing me to the correct person who could assist me with obtaining this data.

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1. To obtain the 1% AEP and PMF hydrographs around this site (locations A-F shown on the figure below)
2. To obtain information on flooding and flood levels

Site Information:
Address: Augusta Street, Blacktown, NSW, 2148.
Coordinate: 33°48'8.23"S, 150°54'24.95"E
Google Maps link: https://goo.gl/maps/Jdpciz7Z5tBJSvEL9



Figure 1 - Location of Site and locations where flood hydrographs are required

Looking forward to hearing from you, and please do not hesitate to let me know if you require more information from my side. I will give you a call a bit later this afternoon to discuss this request if needed.

Thank you in advance.

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Appendix I

BLACKTOWN COUNCIL CORESPONDENCE

E-MAIL DATED 20 June 2022 (Mr Laith Almoil)

Referenced: *Blacktown City Council - OSD Deemed to Comply Tool*

Lourens de Villiers

From: Laith Almoil <Laith.Almoil@blacktown.nsw.gov.au>
Sent: Monday, 1 May 2023 10:20 AM
To: Lourens de Villiers
Subject: RE: Blacktown City Council - OSD Deemed to Comply Tool

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Lourens

For Huntingwood development it is the higher volume of:

1. Councils OSD spreadsheet as you have attached v1.9 is still suitable; or
2. Pre to post modelling with runoff volumes to be maintained.

Also please refer to Huntingwood DCP

Regards

Laith Almoil
Development Services Engineer
9839 6224

Blacktown City Council

PO Box 63 Blacktown NSW 2148
blacktown.nsw.gov.au

From: Lourens de Villiers <lourens.devilliers@costinroe.com.au>
Sent: Friday, 28 April 2023 3:41 PM
To: Laith Almoil <Laith.Almoil@blacktown.nsw.gov.au>
Subject: FW: Blacktown City Council - OSD Deemed to Comply Tool

Good afternoon Laith,

Could you kindly confirm the below would still apply for our proposed development within the Huntingwood Precinct.

1. the attached OSD Deemed to Comply tool version 1.9 is the spreadsheet that should be used for OSD calculations (rather than the latest 2.3.0 version) and
2. that this spreadsheet is to be used for a development's OSD calculations within the **Huntingwood Precinct Development** area.

Thank you kindly.

Lourens de Villiers
Civil Design Engineer

Costin Roe Consulting Pty Ltd
ABN 50 003 696 446
Level 4, 8 Windmill Street, Millers Point
PO Box N419, Sydney, NSW 1220 Australia
p: +61 2 9251 7699
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e: lourens.devilliers@costinroe.com.au
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From: Laith Almoil <Laith.Almoil@blacktown.nsw.gov.au>
Sent: Monday, February 27, 2023 11:00 AM
To: Italo Leardini <italo.leardini@costinroe.com.au>
Subject: RE: Blacktown City Council - OSD Deemed to Comply Tool

Hi Italo

Andrew Jones (CC'd) no longer works in Council. The latest OSD spreadsheet has a few glitches unfortunately.

So you can either design the OSD as per S3QM or use the attached spreadsheet.

Let me know if you run into any issues.

Regards

Laith Almoil
Development Services Engineer

9839 6224
Laith.Almoil@blacktown.nsw.gov.au
PO Box 63 Blacktown NSW 2148
blacktown.nsw.gov.au

From: Italo Leardini <italo.leardini@costinroe.com.au>
Sent: Monday, 27 February 2023 10:27 AM
To: Laith Almoil <Laith.Almoil@blacktown.nsw.gov.au>
Cc: Andrew.Jones@blacktown.nsw.gov.au
Subject: Blacktown City Council - OSD Deemed to Comply Tool

Good morning Laith,

Hope you are doing well.

Could you kindly confirm if the attached OSD Deemed to Comply tool version 2.3.0 is the latest spreadsheet available for OSD calculations? If not, Could you please provide the latest version?

Thank you very much.

Regards,
Italo Leardini
Design Engineer

CRC COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

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Appendix J

FLOOD ASSESSMENT

J.1. INTRODUCTION

J.1.1. Introduction

This Appendix is provided to confirm technical parameters adopted in the *Overland Flow Assessment*, as summarised in **Section 7** of this report, for the proposed industrial estate development. The *Study Area* has been identified by Blacktown City Council as being unaffected by overland flow through Blacktown Creek and the unnamed creek along the west of the site.
The scope and primary objectives of the overland flow assessment, are as follows:

- Determine the design flows generated by the contributing external catchments for the 1% AEP & PMF; Hydrology would be based on RAFTS modelling.
- Assess the pre-development overland flow path through the development site for the 1% AEP storm event;
- Assess the post-development levels on the effect of overland flow around the development site for the listed range of storms including 1% AEP storm event so that potential impacts on the development can be assessed and mitigated;
- Confirm that there is no adverse impact to upstream, downstream and adjacent properties as a result of the development; and
- Confirm flood planning levels applicable to the development.

Appendix J provides technical detail to the summary and conclusions discussed in the **Section 7** of this report.

J.1.2. Survey/DTM

Survey is required to define the physical attributes of the floodplain topography including the channel cross sections and the associated floodplain levels.
The pre-development scenario survey has been compiled based on a detail site survey for areas within the site, and for areas external to the site where detail survey is not available, digital terrain information has been obtained through government sources in the form of ALS survey. The on-ground survey information was completed in and around the study area to properly define the existing overland flow path cross section and features.
For assessment of the post-development scenario, the proposed development levels and drainage system (where appropriate) were then added to the pre-developed survey surface to create a post developed surface to use in the TUFLOW model and scenario modelling. This DTM was imported to the TUFLOW model to simulate land filling and proposed compensation areas in and around the flood affected land.
The surveys and design surfaces were used as the basis for the digital terrain model (DTM) used in the hydraulic modelling of the pre and post development scenario respectively.

J.1.3. Previous Studies

Hyder have undertaken a flood study of the the development site and the surrounding area in January 2010 (document ref: DN00214). The study was completed in support of a rezoning application for the Huntingwood East Precinct.
The site is located within the Industrial Zone and an excerpt of the flood model output is shown in **Figure J1.1**. Two creeks run through the development site, Blacktown Creek on the east, and an unnamed swale (hereon referred to as the Drainage Swale) to the west.

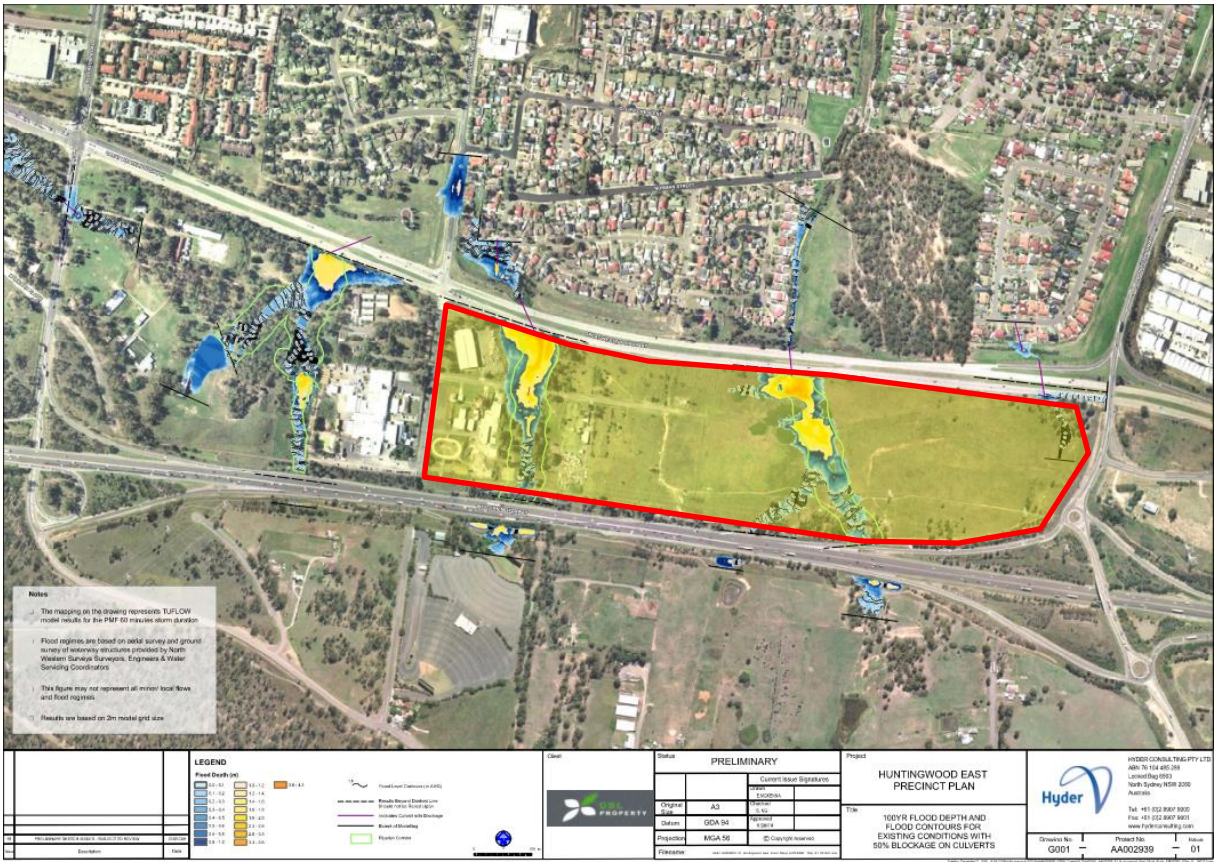


Figure J1.1. Excerpt of Drawing G001 of Hyder 2010 Study

J.2 CATCHMENT INVESTIGATION & HYDROLOGY

J.2.1. Contributing Catchment Definition

Three major upstream catchments on the southern side of the M4 Motorway contribute to the overland flows through the site. The contributing catchments comprises a combination of undeveloped and commercial land use, totalling approximately 55Ha.
Figure J2.1 & Figure J2.2 contains catchment breakdowns of the pre and post development conditions as defined in the flood model.

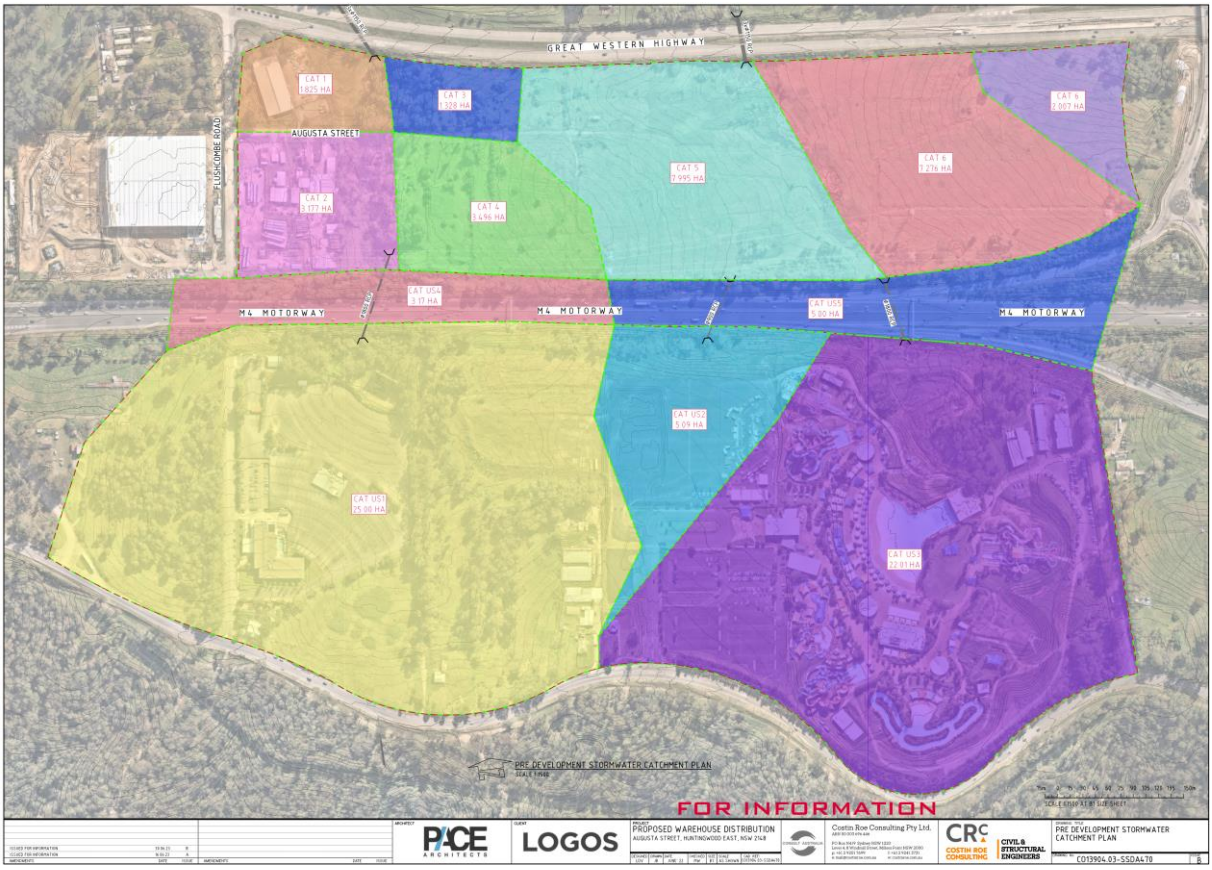


Figure J2.1. Pre-development Flood Model Catchment Plan.

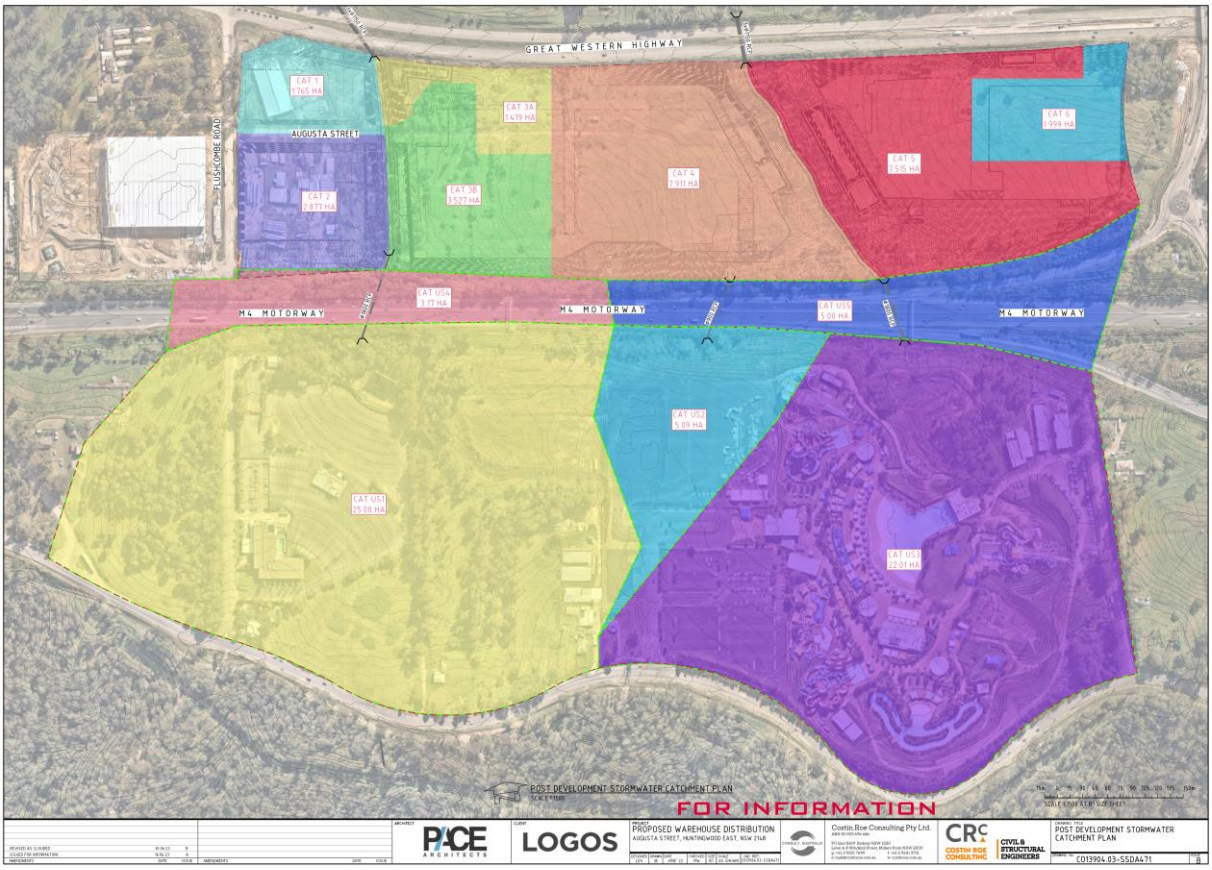


Figure J2.2 Post-development Flood Model Catchment Plan

J.2.2. Hydrological Assessment of Existing Catchment

Flood hydrographs were assessed using a DRAINS model based on the contributing catchments. The inflow hydrographs for catchments in the pre & post development conditions were extrapolated from the DRAINS model for the 1% AEP event. Inflow hydrographs for the upstream catchments on the opposite side of the M4 Motorway are shown in **Figure J2.3 to J2.5**. Hydrographs for the pre-developed site catchments for the 1% AEP event are provided in **Figures J2.6 to J2.11**. Hydrographs for the post-development site condition have taken into consideration the attenuation of discharge by the proposed OSD basins on each lot. These basins have been sized using the UPRCT Deemed-to-Comply spreadsheet, modelled in DRAINS, and hydrographs of their attenuated discharge have been extracted and shown in **Figure J2.12 to J2.17**.

Rainfall intensities and temporal patterns were derived from the Bureau of Meteorology online IFD tool and Australian Rainfall and Runoff. It was determined that the critical storm duration which produces peak flows for the contributing catchments is the 20 minute storm event.

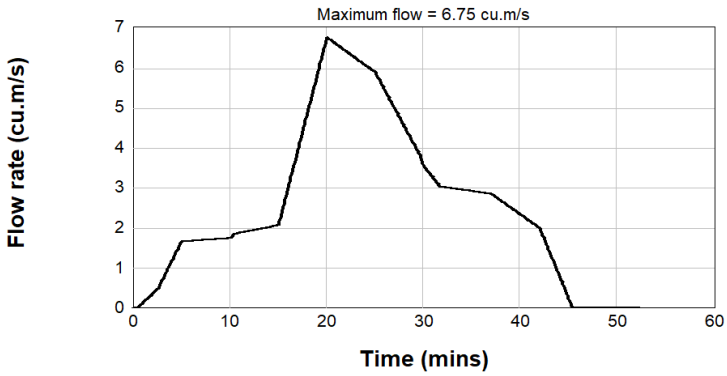


Figure J2.3. 1% AEP Inflow Hydrograph – USC 1.

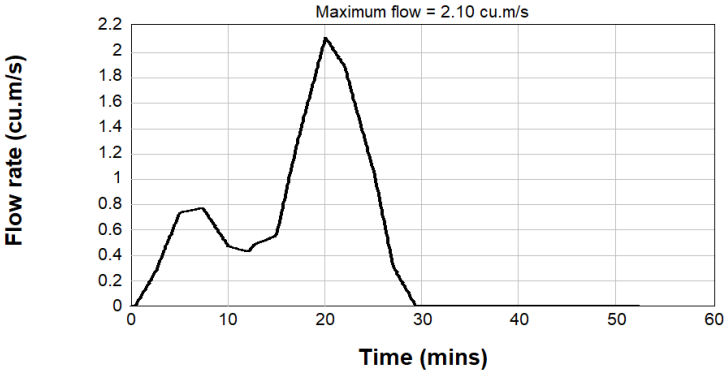


Figure J2.4. 1% AEP Inflow Hydrograph – USC 2.

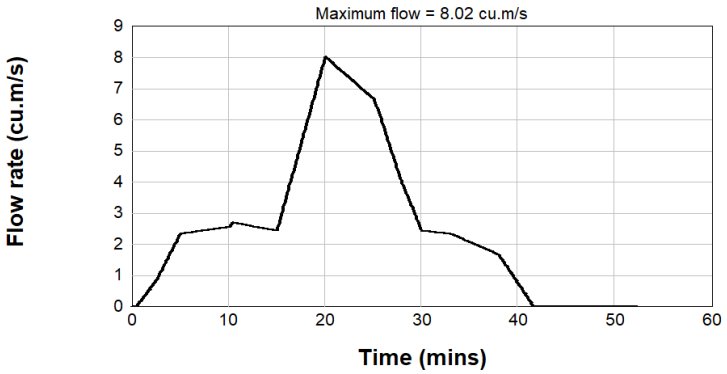


Figure J2.5. 1% AEP Inflow Hydrograph – USC 3.

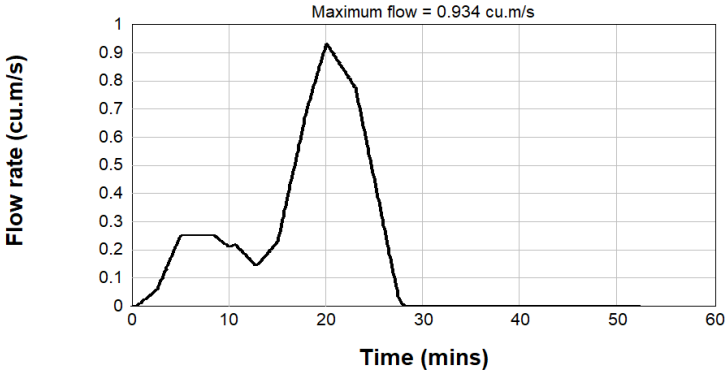


Figure J2.6. 1% AEP Inflow Hydrograph – Pre-dev Lot 1

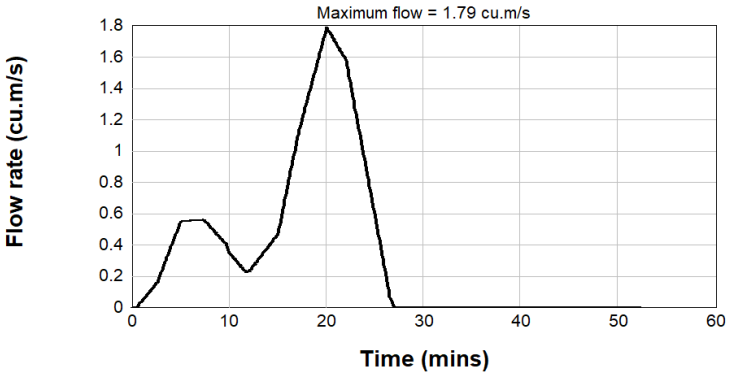


Figure F2.7. 1% AEP Inflow Hydrograph – Pre-dev Lot 2

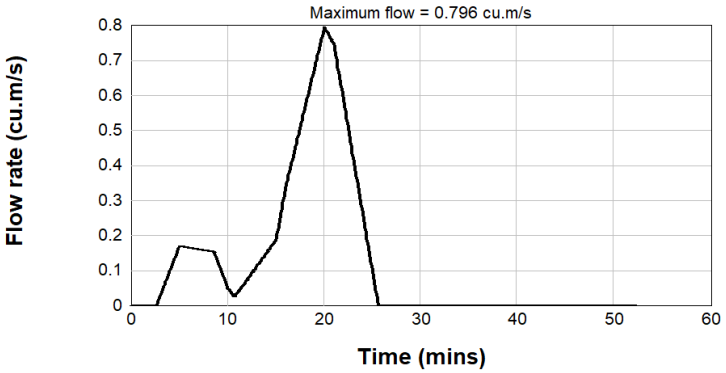


Figure J2.8. 1% AEP Inflow Hydrograph – Pre-dev Lot 3A

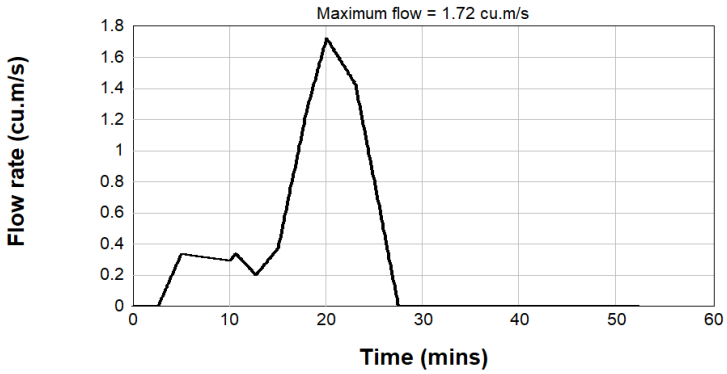


Figure J2.9 1% AEP Inflow Hydrograph – Pre-dev Lot 3B

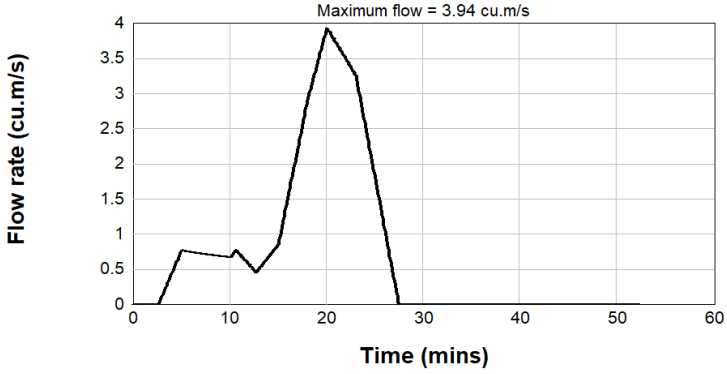


Figure J2.10 1% AEP Inflow Hydrograph – Pre-dev Lot 4

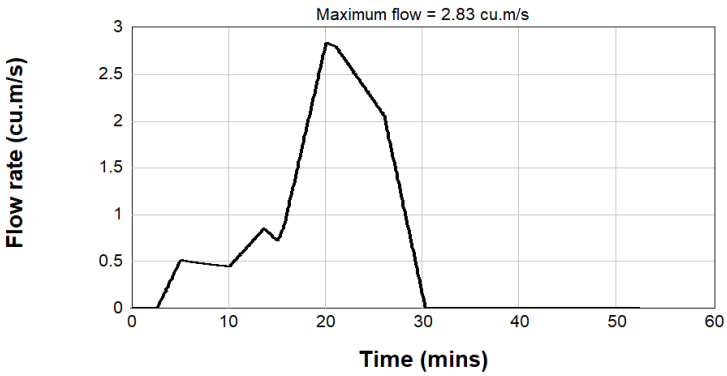


Figure J2.11 1% AEP Inflow Hydrograph – Pre-dev Lot 5A

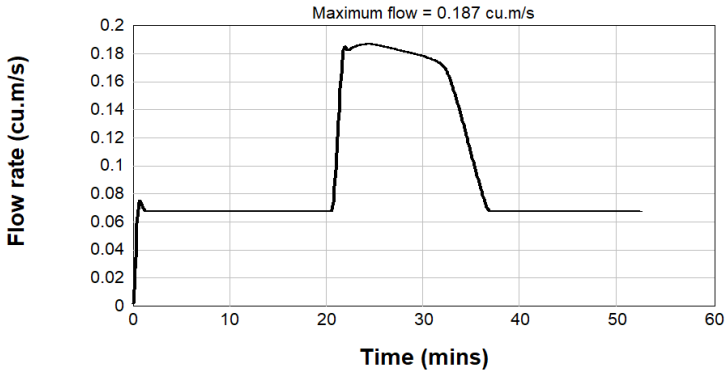


Figure J2.12 1% AEP Inflow Hydrograph – Post-dev Lot 1

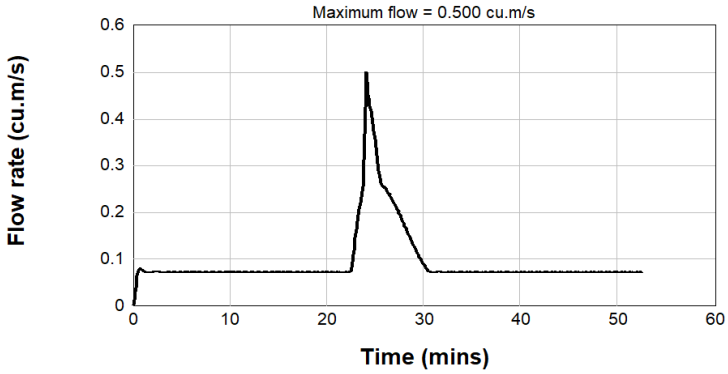


Figure J2.13 1% AEP Inflow Hydrograph – Post-dev Lot 2

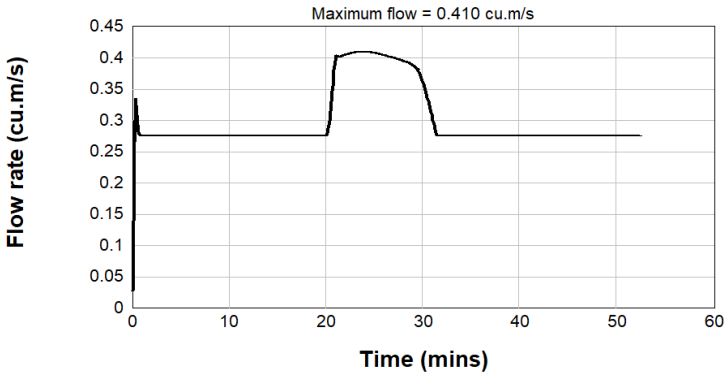


Figure J2.14 1% AEP Inflow Hydrograph – Post-dev Lot 3A

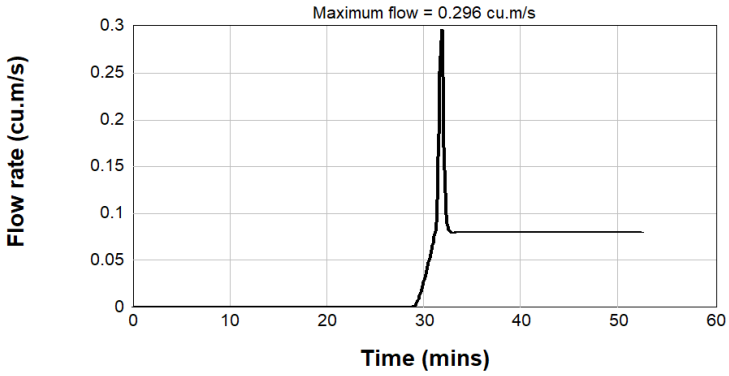


Figure J2.15 1% AEP Inflow Hydrograph – Post-dev Lot 3B

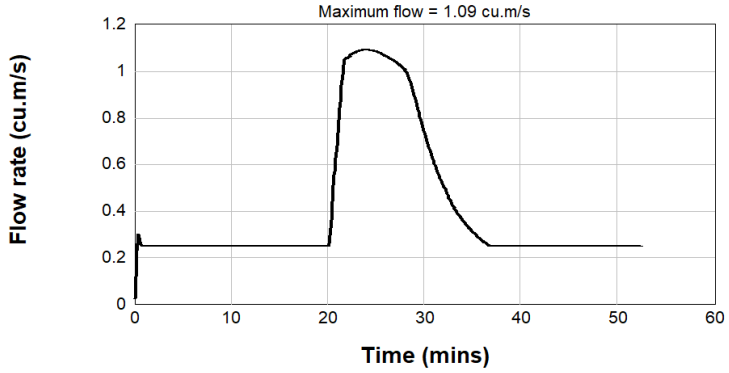


Figure J2.16 1% AEP Inflow Hydrograph – Post-dev Lot 4

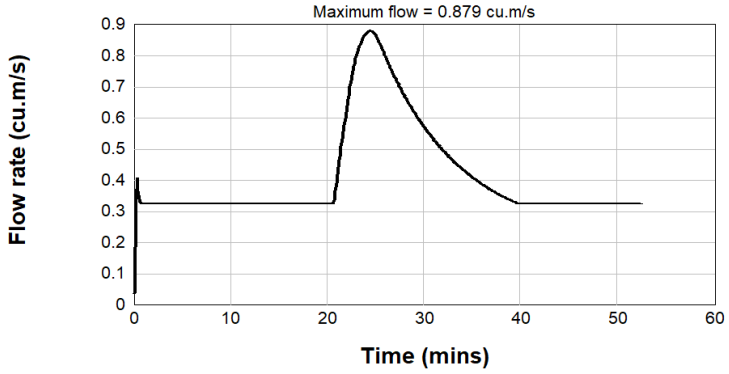


Figure J2.17 1% AEP Inflow Hydrograph – Post-dev Lot 5A

J.3 HYDRODYNAMIC MODEL DEVELOPMENT

J.3.1. Extent and Topography

The model extent is shown in **Figure J3.1** of this appendix. The model begins approximately 150m upstream of the development and extends approximately 300m downstream of the development site.

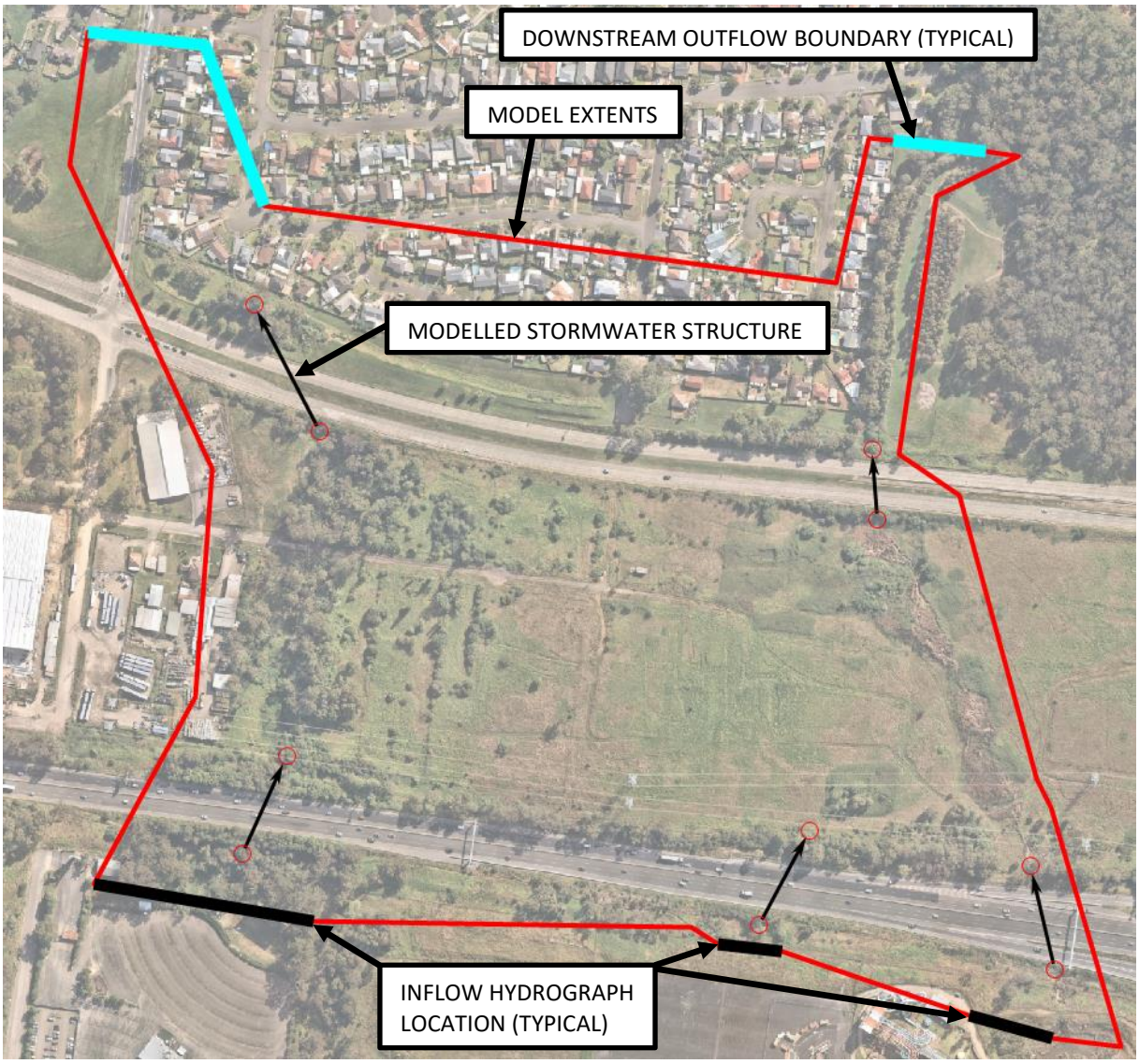


Figure J3.1: Model Extent and Model Boundary Locations

Inflow Boundaries

Design inflow hydrographs for the model have been included at the location approximately 150m upstream of the development site. Flows are based on hydrology as discussed in **Section J.2.2** of this Appendix.

The upstream boundary was located sufficiently upstream of the development to ensure the extent of predicted impacts from the development would be covered and any modelling iterations would be resolved clear of the development affectation zone.

Downstream Water Level Boundaries

The downstream water levels have been based on a normal outflow and design gradient of 1%.

Surrounding/ Modelled Stormwater Network

Modelling of the surrounding stormwater network has been based on survey information by North Western Surveys (document ref: 13989/005-01 dated November 2009) and Whelans (document ref: D336-002b dated April 2007).

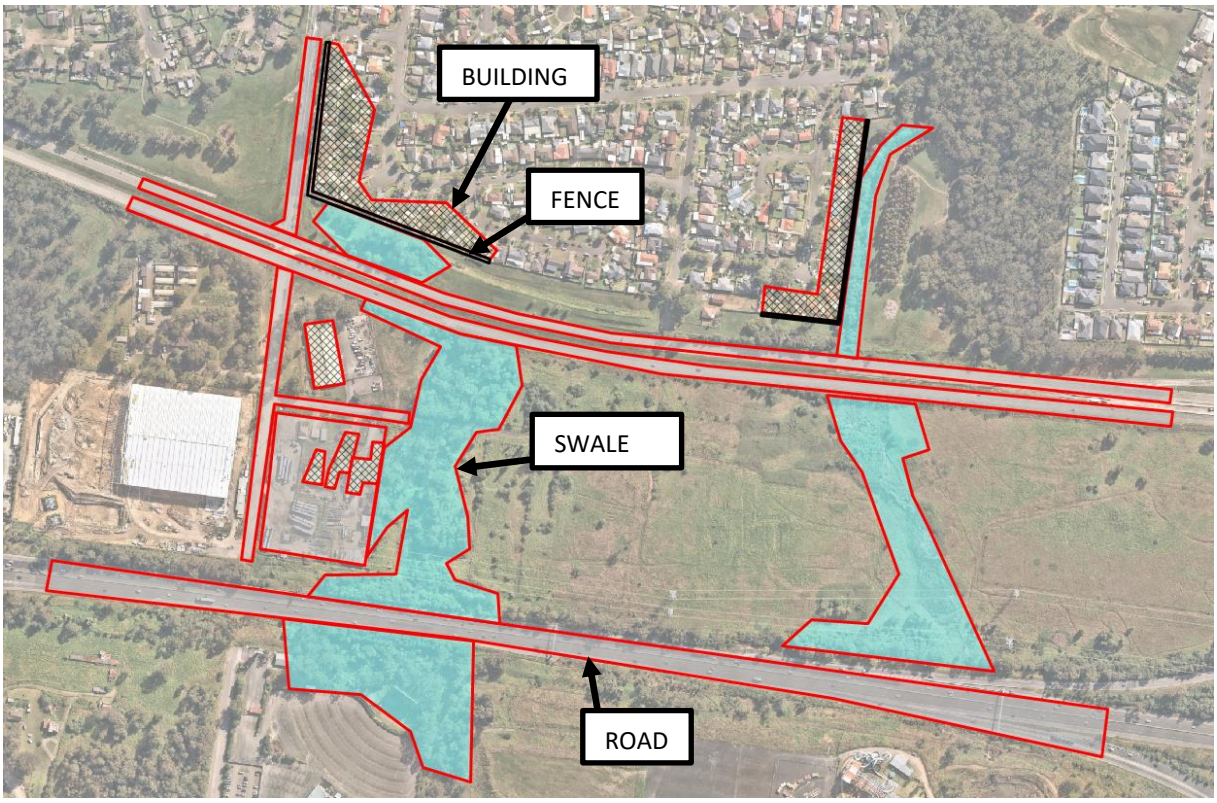
Several reinforced concrete pipes have been identified underneath the M4 Motorway and the Great Western Highway at the upstream and downstream ends of the site's creeks. Existing 2x900mm diameter reinforced concrete pipes have been modelled where the Drainage Swale crosses under Augusta Street in the pre-developed condition. As part of the proposed works, these pipes are to be replaced by 2x1200mm diameter pipes, which have been modelled in the post-development condition.

J.3.3. Channel and Floodplain Roughness

Roughness values adopted in the model are contained in **Table J2** below. These are generally consistent with previous studies completed within the Council area and have been adopted in this overland flow study. Refer to **Figure J3.2** for a breakdown of the adopted roughness values over the study area.

Table J2. Adopted TUFLOW Element Roughness Values

Model Element	Description	Roughness Parameter Value
1	Grassland (default)	0.035
2	Road	0.02
3	Swale	0.08
4	Building	0.1
5	Fence	2.0



F.3.4. Model Validation

Model validation has been completed by comparing results of the TUFLOW modelling against the results contained in the Hyder study from 2010. Model parameters were adjusted as required to achieve acceptable agreement between the model output. The process for the validation was as follows:

- Establish hydrology, peak flows and hydrograph for modelled events;
- Establish TUFLOW Model using defined parameters;
- Compare results of TUFLOW modelling with the Hyder Figures including flood depths, flood levels, flood extents and hydraulics. The comparison is made at the peak of the predicted parameters;

- Adjust roughness factors to align TUFLOW flood extent to align with the Hyder results.

Hydrology and peak flows were established as described in **Section J.2.2** of this report.
A number of trial models and iterations of the TUFLOW model were performed. Adjustment of roughness parameters were used to align the flood levels with those compiled in the Hyder figures.
The comparison of the flood level results shows general alignment of those produced in the TUFLOW model when compared with those of the council figures. The predicted flood extent is consistent between the two models for the flood event modelled.
Given the differences in modelling techniques, parameters, predicted model accuracy (+/- 0.2m) and model components these differences are considered acceptable for the base model and for continuation of post-developed scenario modelling.

J.3.5. Proposed Overland Flow Management Strategy

Flows from within the development sites have been only considered in the sizing of the stormwater system and erosion control for the development sites. The proposed buildings will be set at the 1% AEP level plus 0.5m freeboard per council policy.
Blacktown City Council require that overland flows from the upstream catchment to be conveyed through the site. Council also requires proof that the proposed development does not increase the flood risk to the surrounding properties. Further, the TUFLOW modelling and assessment confirms there is negligible impact on upstream, downstream and/ or adjoining sites as a result of the proposed developments.

J.4 MODEL OUTPUT

Model output for pre and post development conditions for the Catchment flooding events on site as discussed in earlier sections have been included in the following Figures.
We note the below figures represent predicted values at the peak of each event. The figures represent predicted values at the peak of the 1% AEP.

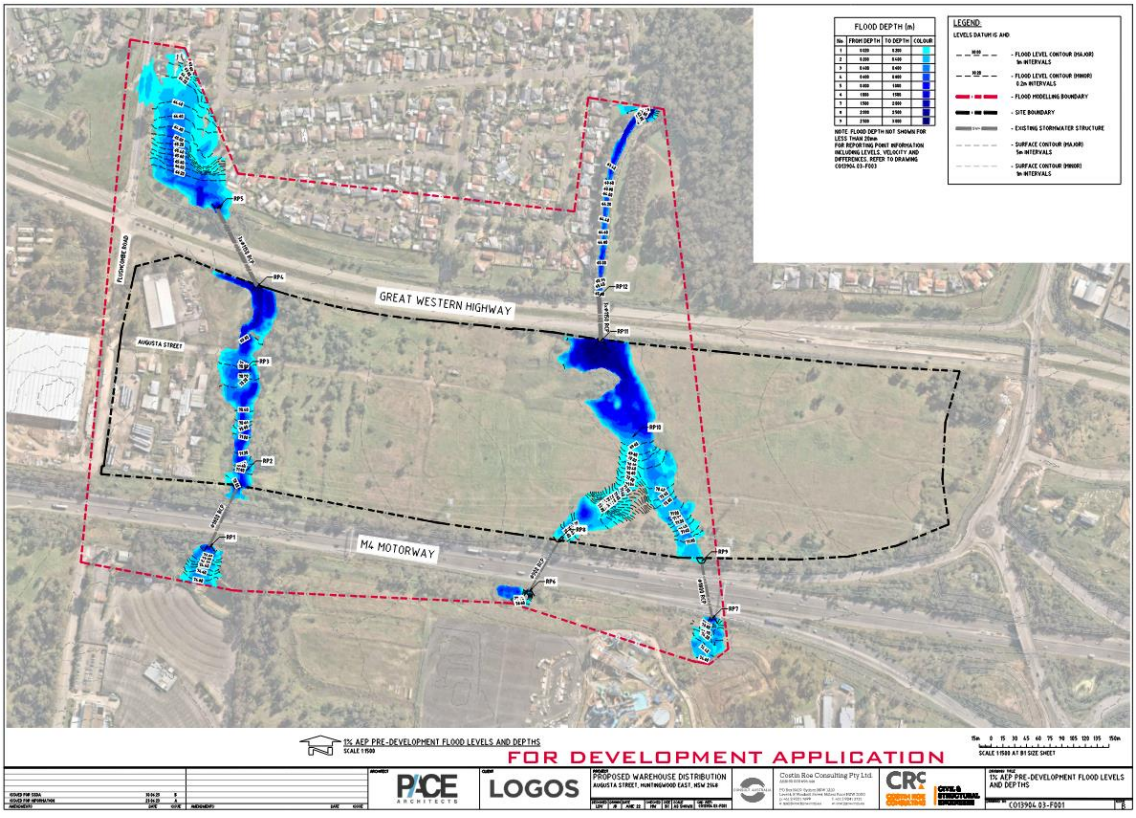


Figure J4.1: 1% AEP Flood Depths – Pre-Development

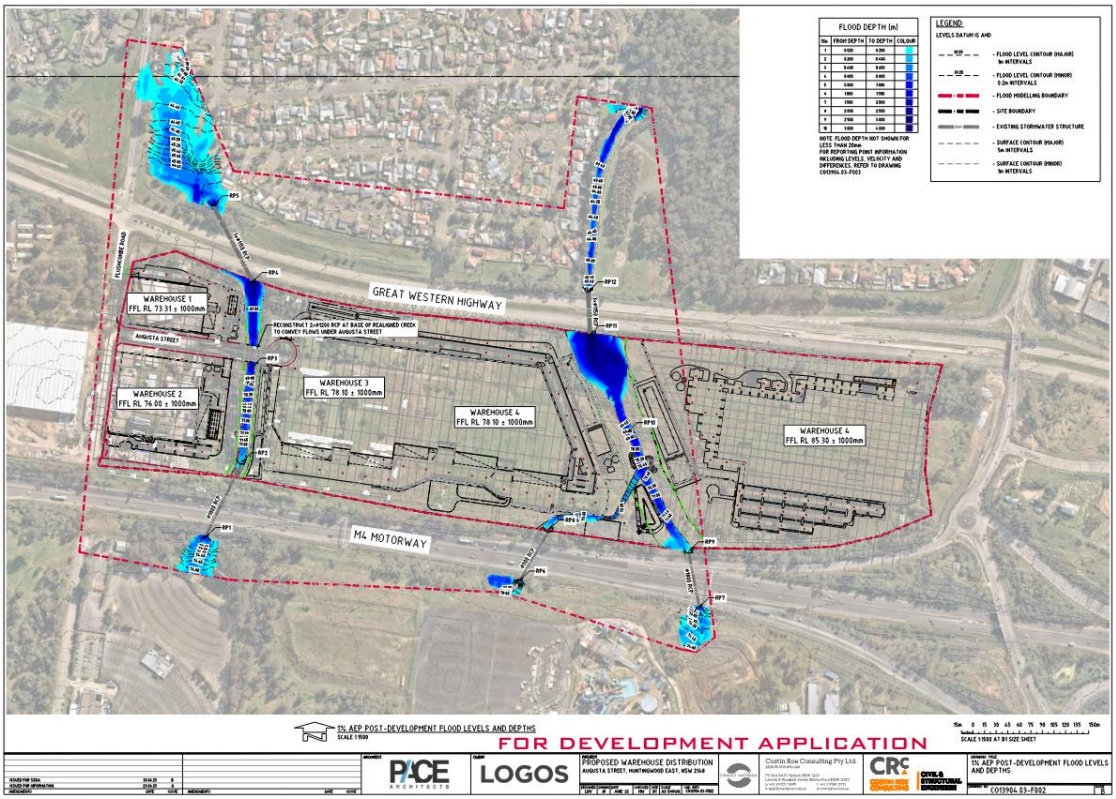


Figure J4.2: 1% AEP Flood Depths – Post Development

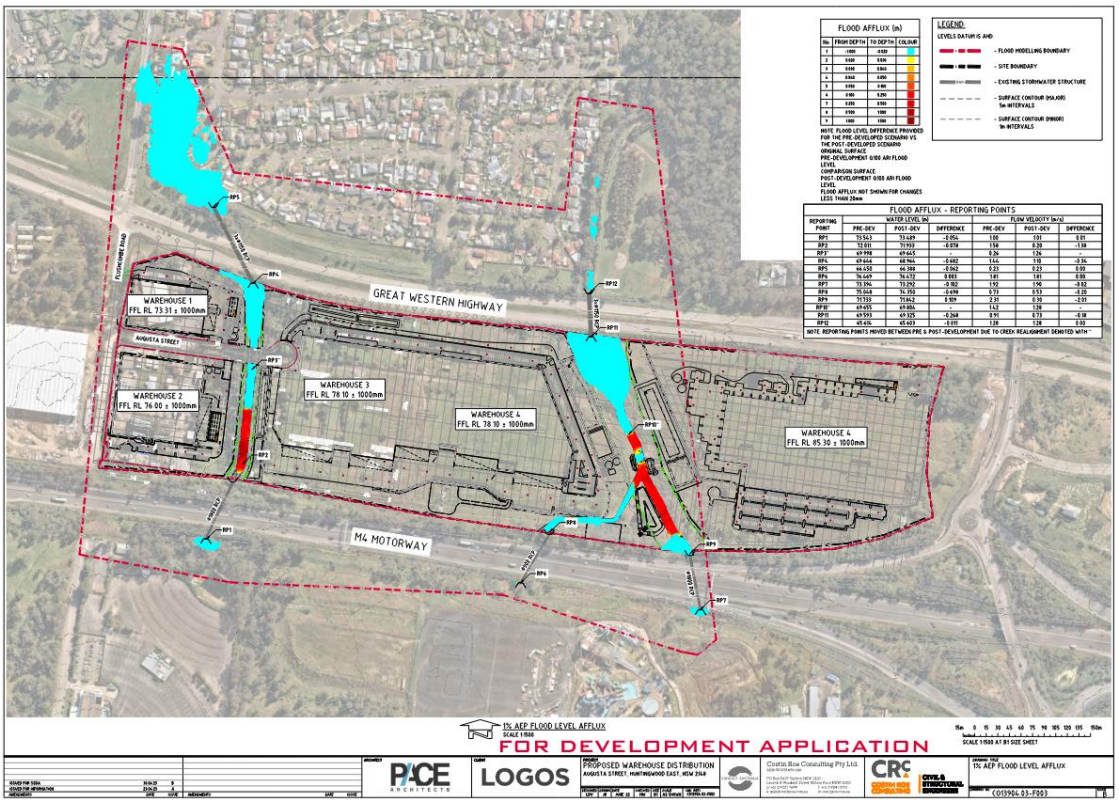


Figure J4.3: 1% AEP Flood Afflux Plan

F.1. FLOOD ASSESSMENT DISCUSSION

This Appendix to the *Civil Engineering Report* for Augusta Street Warehouse & Distribution Centre, NSW, has been prepared to assess the effect of flooding on the proposed development, and also to confirm no affectation on upstream downstream or adjoining properties.

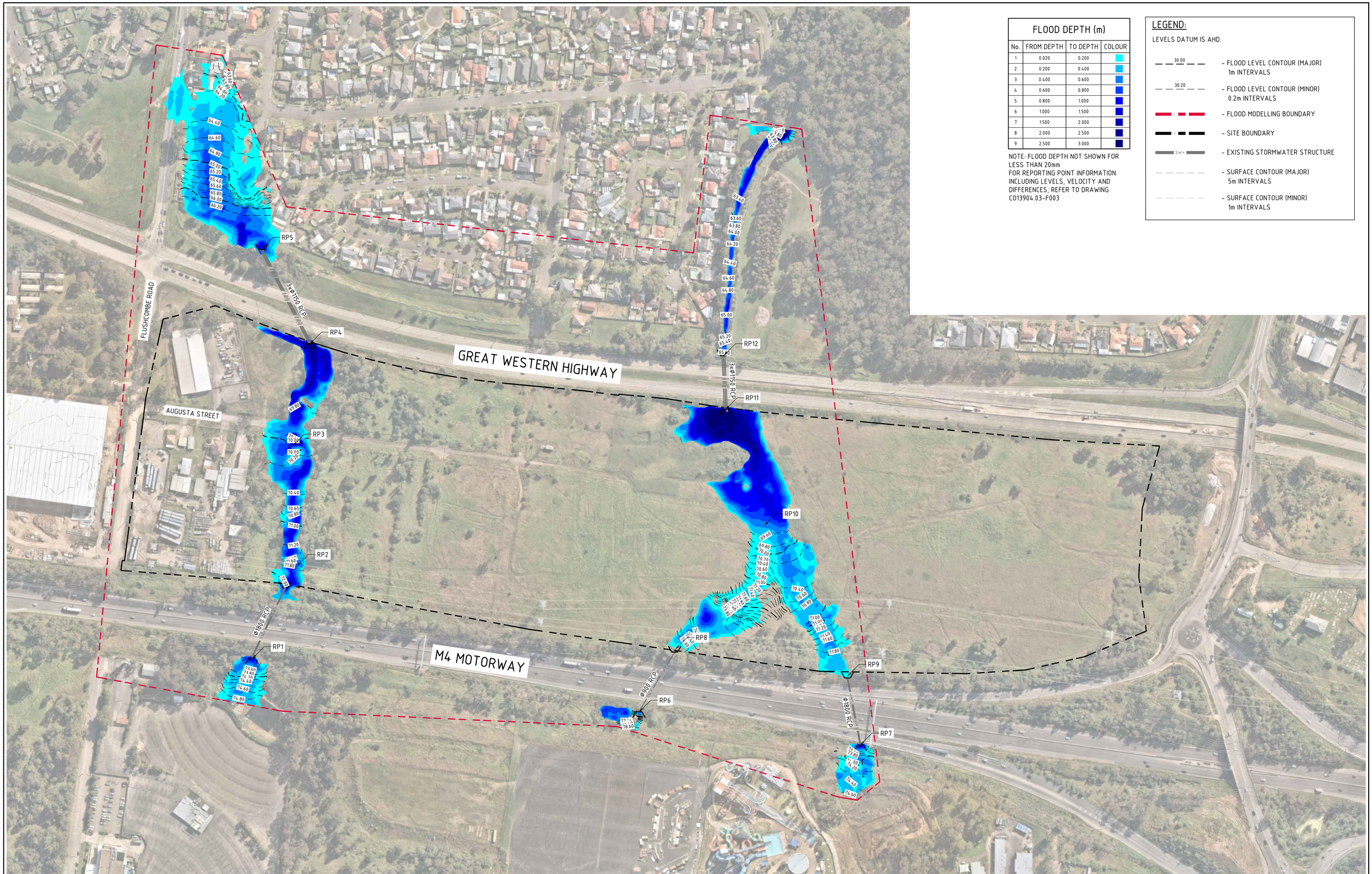
A TUFLOW hydrodynamic flood model has been completed and the pre and post development flood events assessed for the 1% AEP rainfall event.

The assessment shows a reduction in post development 1% AEP flood levels, hence meeting impact requirements.

The assessment shows the proposed building achieves flood planning and freeboard requirements. This Appendix confirms the technical input and detailed output completed as part of the assessment. **Appendix J** is to be read in conjunction with **Section 7** of this report.

Appendix J2

FLOOD ASSESSMENT FIGURES



FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm
FOR REPORTING POINT INFORMATION INCLUDING LEVELS, VELOCITY AND DIFFERENCES, REFER TO DRAWING C013904.03-F003

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

1% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	B
ISSUED FOR INFORMATION	23.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

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e: mail@costinroe.com.au w: costinroe.com.au
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DRAWING TITLE: 1% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS
DRAWING No: C013904.03-F001
ISSUE: B

FLOOD DEPTH (m)			
No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	
10	3.000	4.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm
FOR REPORTING POINT INFORMATION INCLUDING LEVELS, VELOCITY AND DIFFERENCES, REFER TO DRAWING C013904.03-F003

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

GREAT WESTERN HIGHWAY

M4 MOTORWAY

FLUSHCOMBE ROAD

AUGUSTA STREET

WAREHOUSE 1
FFL RL 73.31 ± 1000mm

WAREHOUSE 2
FFL RL 76.00 ± 1000mm

WAREHOUSE 3
FFL RL 78.10 ± 1000mm

WAREHOUSE 4
FFL RL 78.10 ± 1000mm

WAREHOUSE 5
FFL RL 85.30 ± 1000mm

RECONSTRUCT 2xØ1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET

3xØ1150 RCP

Ø1800 RCP

Ø900 RCP

RP1 RP2 RP3 RP4 RP5 RP6 RP7 RP8 RP9 RP10 RP11 RP12

1% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	C
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ISSUED FOR INFORMATION	23.06.23	A

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CLIENT: LOGOS

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AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE '22	MW	B1	AS SHOWN	C013904.03-F002

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FLOOD AFFLUX (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-1.000	-0.020	
2	0.020	0.030	
3	0.030	0.040	
4	0.040	0.050	
5	0.050	0.100	
6	0.100	0.250	
7	0.250	0.500	
8	0.500	1.000	
9	1.000	1.500	

NOTE: FLOOD LEVEL DIFFERENCE PROVIDED FOR THE PRE-DEVELOPED SCENARIO VS THE POST-DEVELOPED SCENARIO
ORIGINAL SURFACE:
PRE-DEVELOPMENT Q100 ARI FLOOD LEVEL
COMPARISON SURFACE:
POST-DEVELOPMENT Q100 ARI FLOOD LEVEL
FLOOD AFFLUX NOT SHOWN FOR CHANGES LESS THAN 20mm

LEGEND:

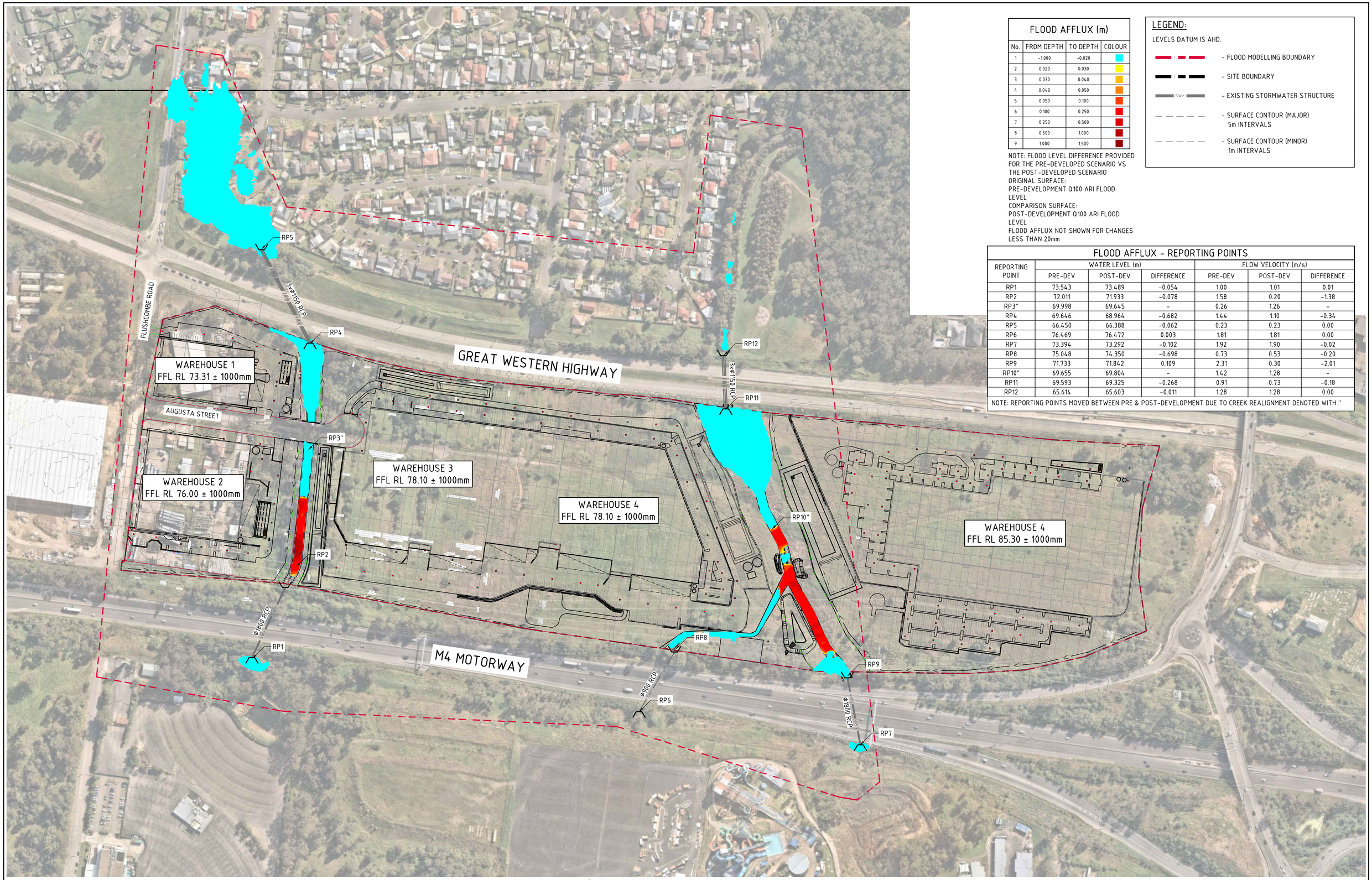
LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD AFFLUX - REPORTING POINTS

REPORTING POINT	WATER LEVEL (m)			FLOW VELOCITY (m/s)		
	PRE-DEV	POST-DEV	DIFFERENCE	PRE-DEV	POST-DEV	DIFFERENCE
RP1	73.543	73.489	-0.054	1.00	1.01	0.01
RP2	72.011	71.933	-0.078	1.58	0.20	-1.38
RP3"	69.998	69.645	-	0.26	1.26	-
RP4	69.646	68.964	-0.682	1.44	1.10	-0.34
RP5	66.450	66.388	-0.062	0.23	0.23	0.00
RP6	76.469	76.472	0.003	1.81	1.81	0.00
RP7	73.394	73.292	-0.102	1.92	1.90	-0.02
RP8	75.048	74.350	-0.698	0.73	0.53	-0.20
RP9	71.733	71.842	0.109	2.31	0.30	-2.01
RP10"	69.655	69.804	-	1.42	1.28	-
RP11	69.593	69.325	-0.268	0.91	0.73	-0.18
RP12	65.614	65.603	-0.011	1.28	1.28	0.00

NOTE: REPORTING POINTS MOVED BETWEEN PRE & POST-DEVELOPMENT DUE TO CREEK REALIGNMENT DENOTED WITH "



1% AEP FLOOD LEVEL AFFLUX
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

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LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F003

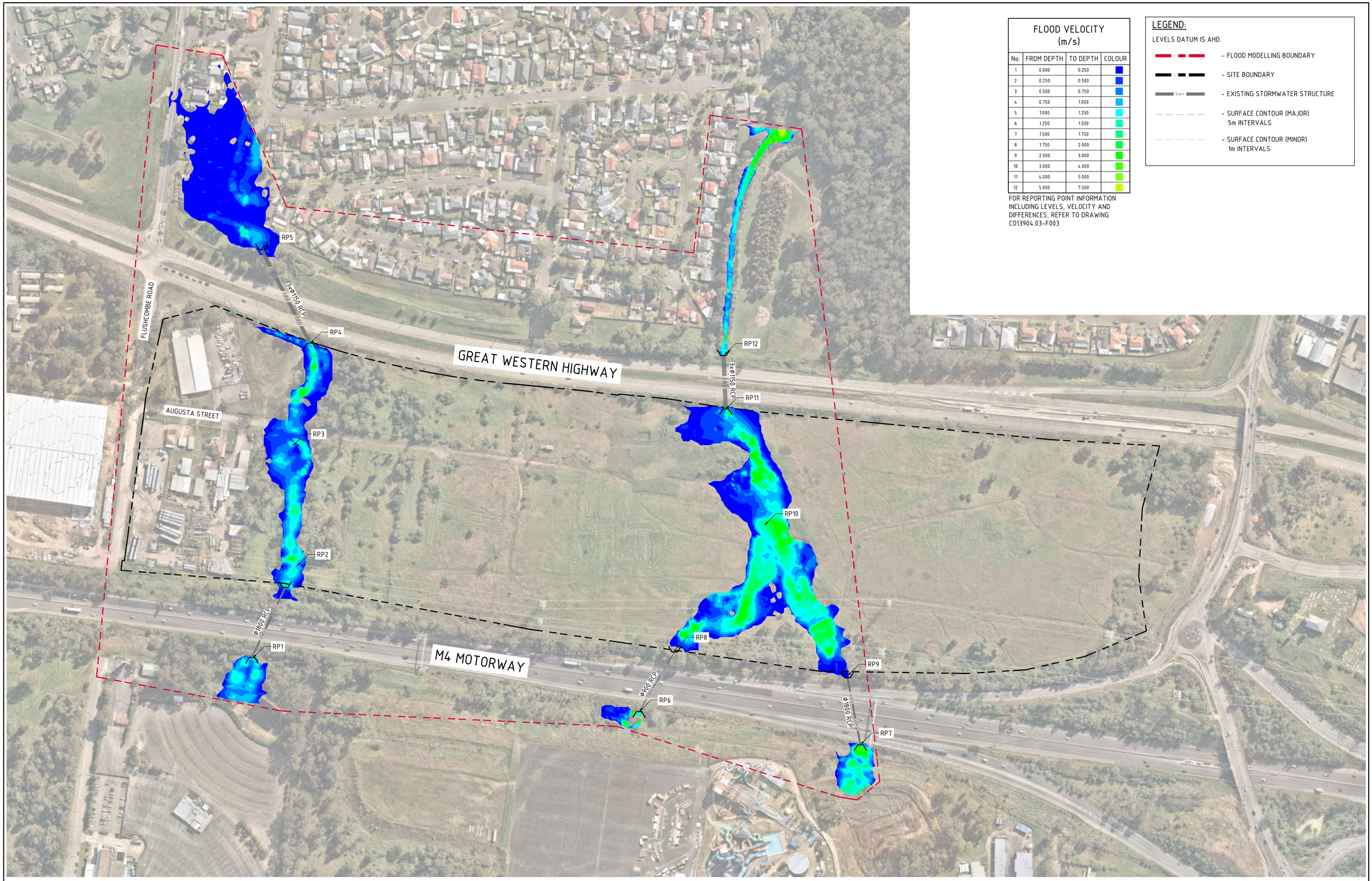
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FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

FOR REPORTING POINT INFORMATION INCLUDING LEVELS, VELOCITY AND DIFFERENCES, REFER TO DRAWING C013904.03-F003

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

1% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.26	B
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AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

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LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F004

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FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

FOR REPORTING POINT INFORMATION INCLUDING LEVELS, VELOCITY AND DIFFERENCES, REFER TO DRAWING C013904.03-F003

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

RP5
3x⌀1150 RCP
RP4
FLUSHCOMBE ROAD
GREAT WESTERN HIGHWAY
WAREHOUSE 1
FFL RL 73.31 ± 1000mm
AUGUSTA STREET
RECONSTRUCT 2x⌀1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET
RP3
WAREHOUSE 2
FFL RL 76.00 ± 1000mm
WAREHOUSE 3
FFL RL 78.10 ± 1000mm
WAREHOUSE 4
FFL RL 78.10 ± 1000mm
RP2
RP12
3x⌀1150 RCP
RP11
RP10
WAREHOUSE 5
FFL RL 85.30 ± 1000mm
⌀1800 RCP
RP1
M4 MOTORWAY
RP8
⌀900 RCP
RP6
RP9
⌀1800 RCP
RP7

1% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

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ISSUED FOR INFORMATION	23.06.23	A

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CLIENT: LOGOS

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LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F005

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FLOOD VELOCITY AFFLUX (m/s)

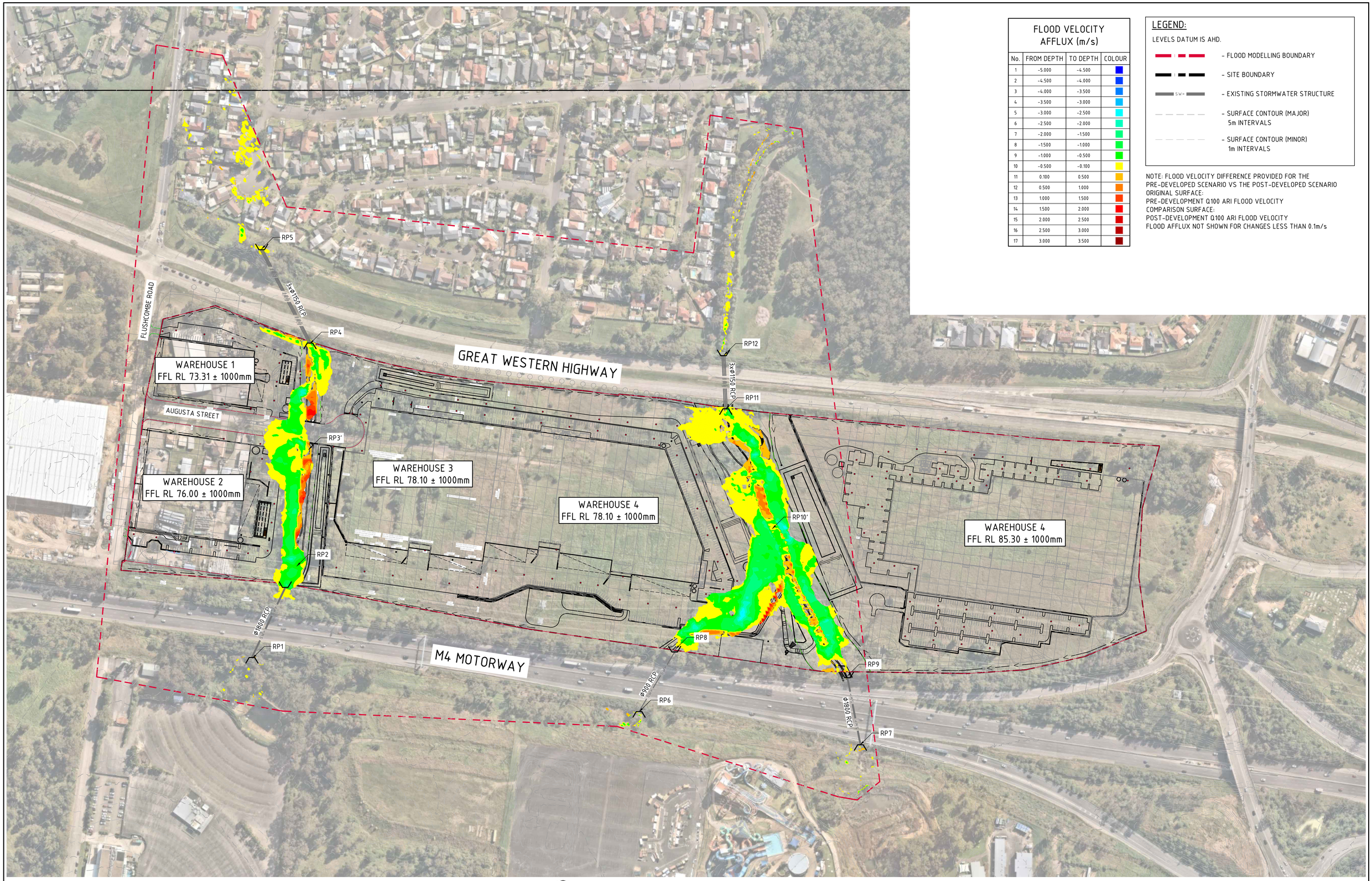
No.	FROM DEPTH	TO DEPTH	COLOUR
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2	-4.500	-4.000	
3	-4.000	-3.500	
4	-3.500	-3.000	
5	-3.000	-2.500	
6	-2.500	-2.000	
7	-2.000	-1.500	
8	-1.500	-1.000	
9	-1.000	-0.500	
10	-0.500	-0.100	
11	0.100	0.500	
12	0.500	1.000	
13	1.000	1.500	
14	1.500	2.000	
15	2.000	2.500	
16	2.500	3.000	
17	3.000	3.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW - EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

NOTE: FLOOD VELOCITY DIFFERENCE PROVIDED FOR THE PRE-DEVELOPED SCENARIO VS THE POST-DEVELOPED SCENARIO
ORIGINAL SURFACE:
PRE-DEVELOPMENT Q100 ARI FLOOD VELOCITY
COMPARISON SURFACE:
POST-DEVELOPMENT Q100 ARI FLOOD VELOCITY
FLOOD AFFLUX NOT SHOWN FOR CHANGES LESS THAN 0.1m/s



1% AEP FLOOD VELOCITY AFFLUX
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

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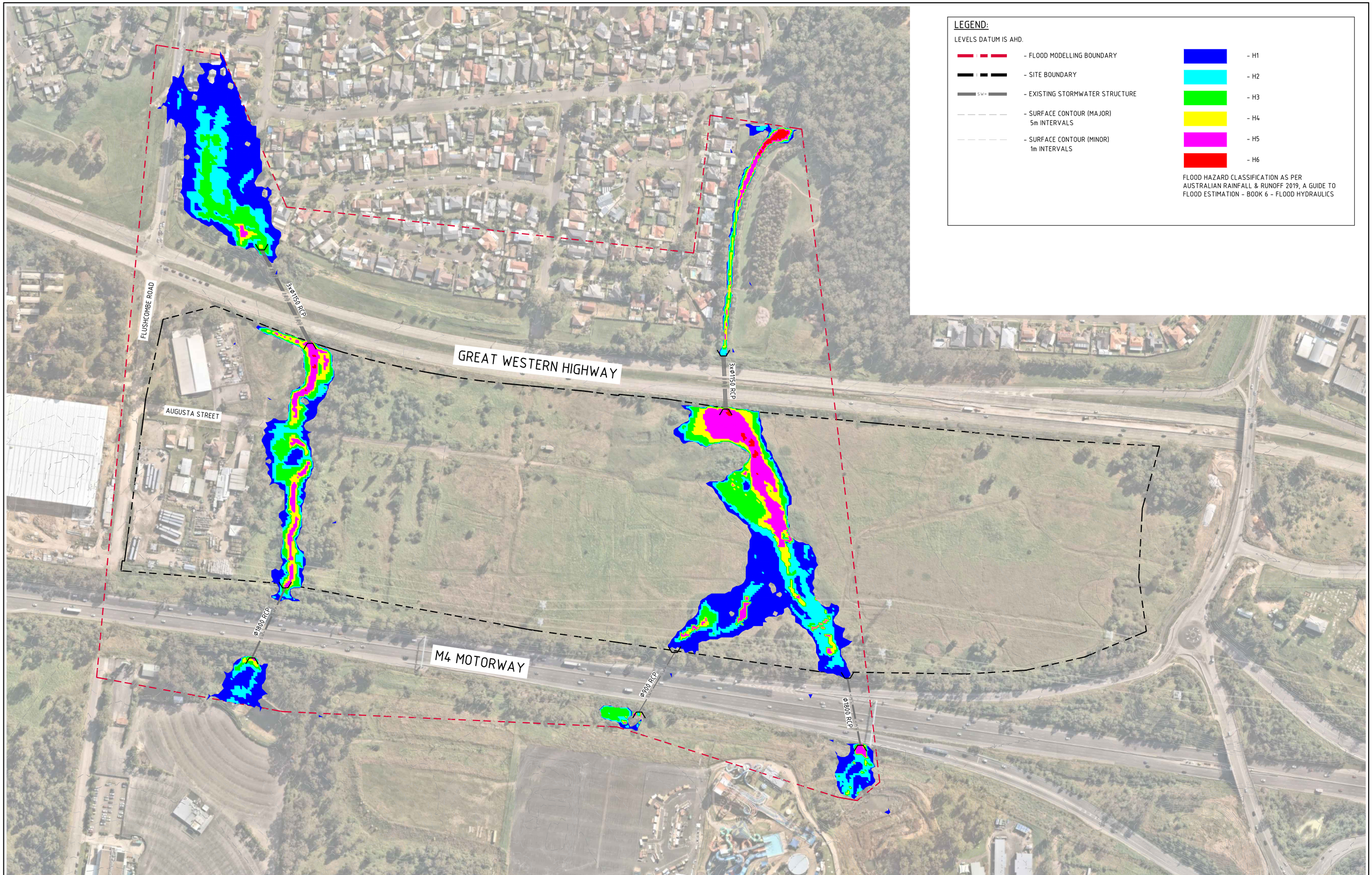
DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F006

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DRAWING TITLE: 1% AEP FLOOD VELOCITY AFFLUX
DRAWING No: C013904.03-F006
ISSUE: B



LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

1% AEP PRE-DEVELOPMENT FLOOD HAZARD

SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	B
ISSUED FOR INFORMATION	23.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F007

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DRAWING TITLE: 1% AEP PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No: C013904.03-F007

ISSUE: B

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

FLUSHCOMBE ROAD

GREAT WESTERN HIGHWAY

M4 MOTORWAY

AUGUSTA STREET

3xØ1150 RCP

3xØ1150 RCP

RECONSTRUCT 2xØ1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET

WAREHOUSE 1
FFL RL 73.31 ± 1000mm

WAREHOUSE 2
FFL RL 76.00 ± 1000mm

WAREHOUSE 3
FFL RL 78.10 ± 1000mm

WAREHOUSE 4
FFL RL 78.10 ± 1000mm

WAREHOUSE 5
FFL RL 85.30 ± 1000mm

Ø1800 RCP

Ø900 RCP

Ø1800 RCP

1% AEP POST-DEVELOPMENT FLOOD HAZARD
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	C
ISSUED FOR SSDA	30.06.23	B
ISSUED FOR INFORMATION	23.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F008

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DRAWING TITLE
1% AEP POST-DEVELOPMENT FLOOD HAZARD

DRAWING No C013904.03-F008 ISSUE C

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	
10	5.000	7.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	80.282
RP2	73.426
RP3"	72.525
RP4	72.516
RP5	66.685
RP6	78.388
RP7	76.576
RP8	75.406
RP9	73.830
RP10"	73.368
RP11	73.368
RP12	67.171

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 - FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 - FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> - EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

GREAT WESTERN HIGHWAY

M4 MOTORWAY

FLUSHCOMBE ROAD

AUGUSTA STREET

RP1 RP2 RP3 RP4 RP5 RP6 RP7 RP8 RP9 RP10 RP11 RP12

3x Ø1150 RCP

Ø1800 RCP

Ø900 RCP

PMF PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

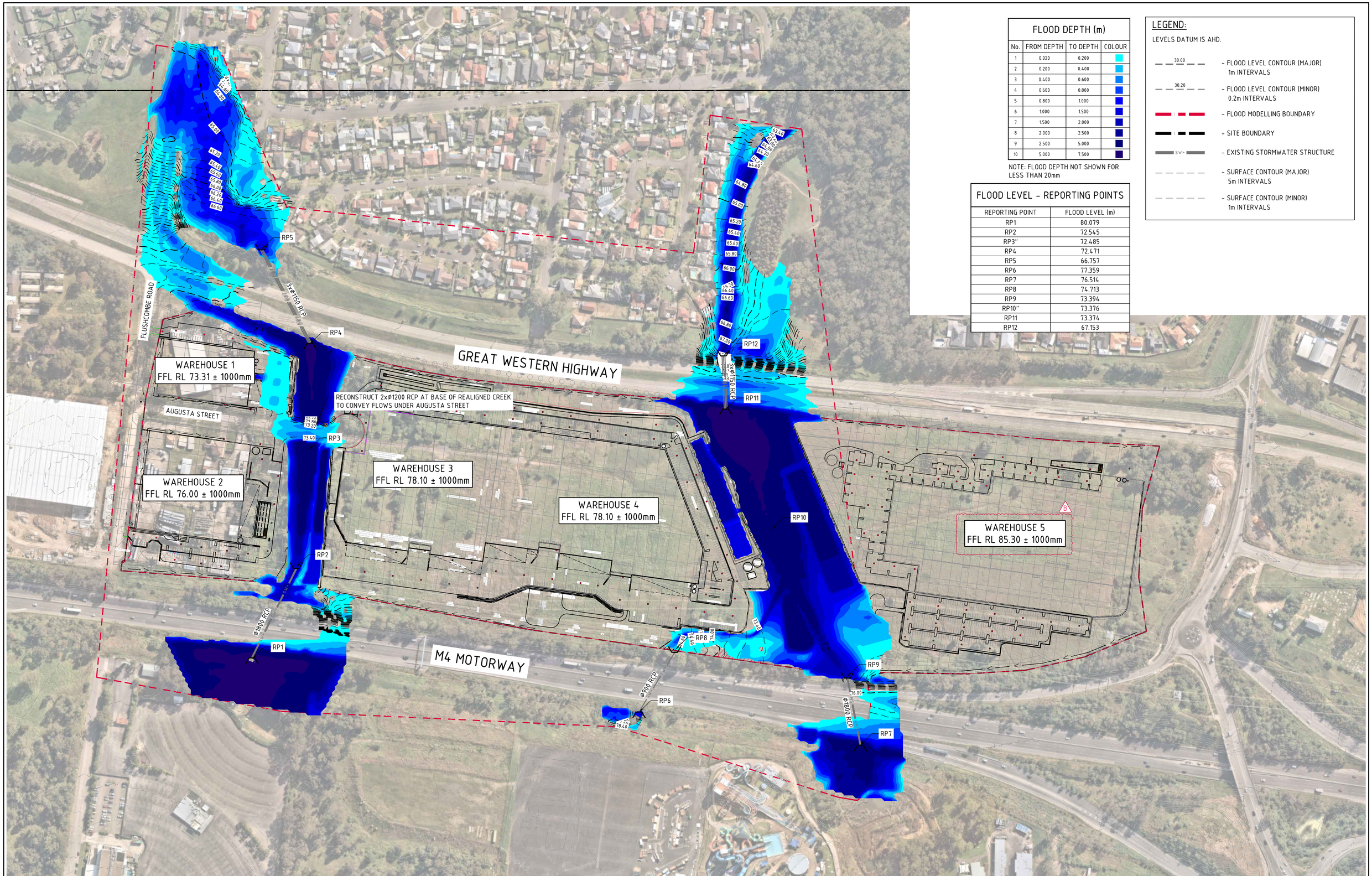
DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F010

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DRAWING TITLE: PMF PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

DRAWING No: C013904.03-F010 ISSUE: A



FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	5.000	
10	5.000	7.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	80.079
RP2	72.545
RP3"	72.485
RP4	72.471
RP5	66.757
RP6	77.359
RP7	76.514
RP8	74.713
RP9	73.394
RP10"	73.376
RP11	73.374
RP12	67.153

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

PMF POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

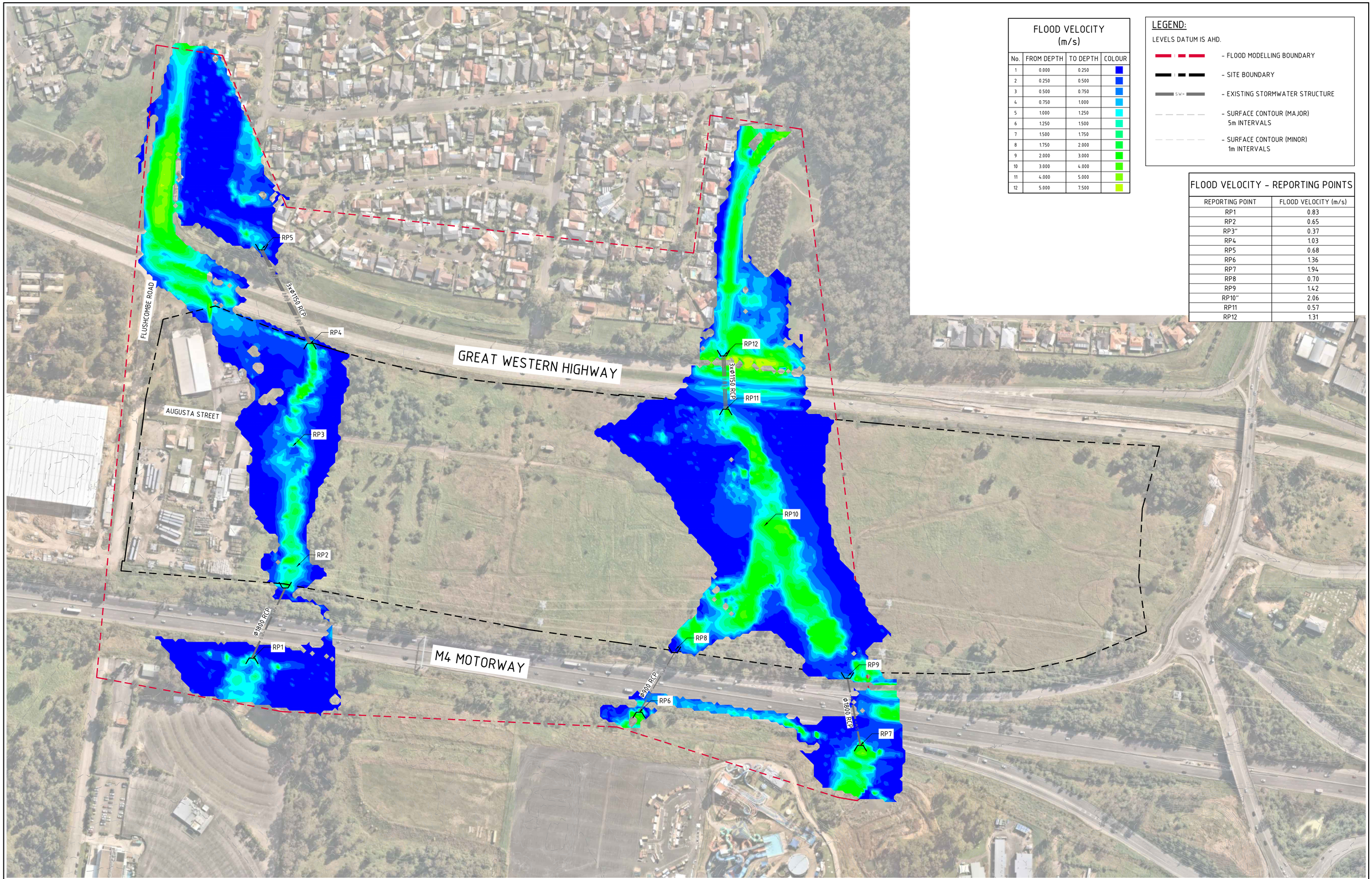
ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F011

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DRAWING TITLE: PMF POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
DRAWING No: C013904.03-F011
ISSUE: B



FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	0.83
RP2	0.65
RP3"	0.37
RP4	1.03
RP5	0.68
RP6	1.36
RP7	1.94
RP8	0.70
RP9	1.42
RP10"	2.06
RP11	0.57
RP12	1.31

PMF PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F012

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DRAWING TITLE: PMF PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C013904.03-F012 ISSUE: A

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

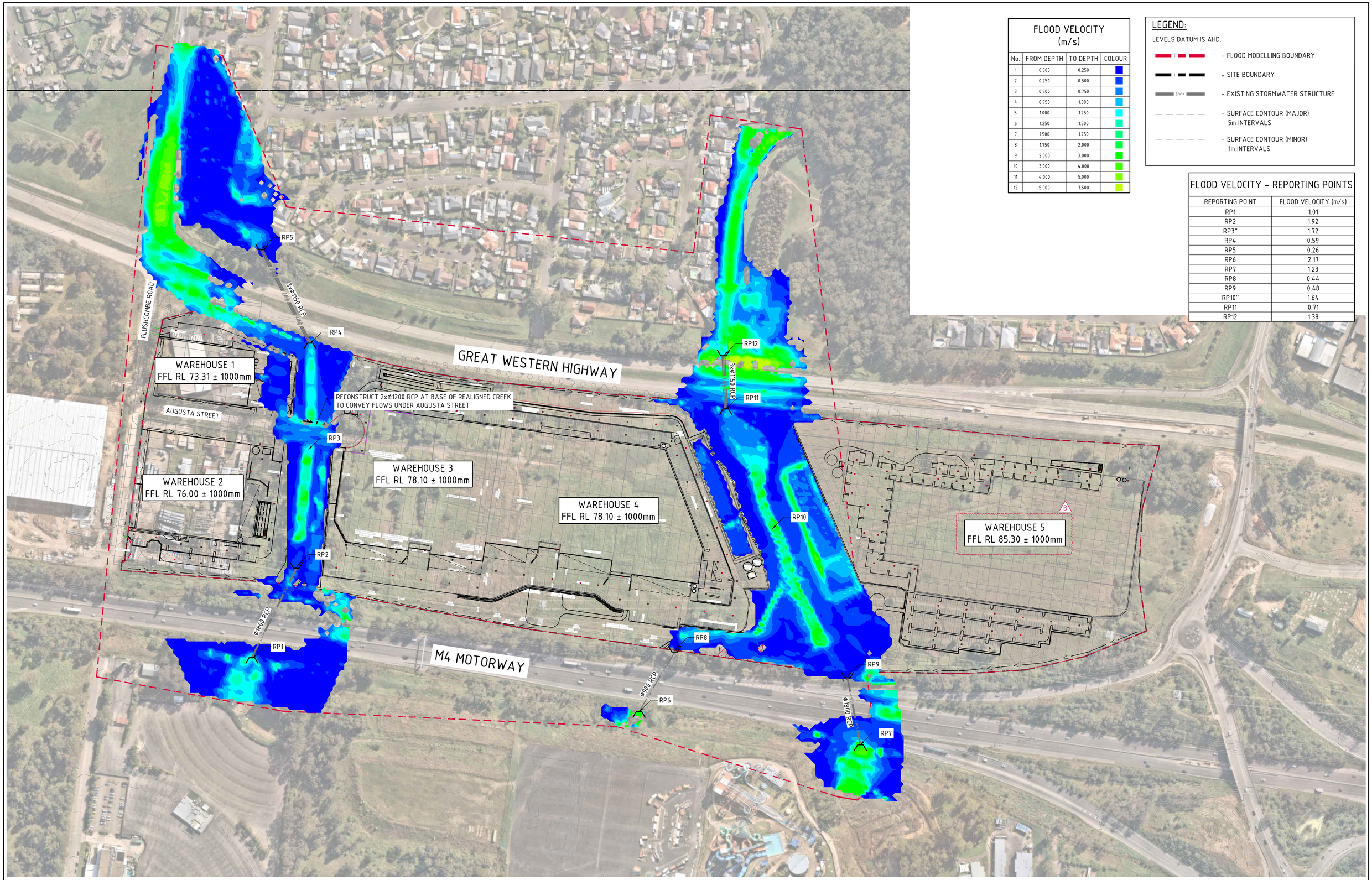
LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.01
RP2	1.92
RP3"	1.72
RP4	0.59
RP5	0.26
RP6	2.17
RP7	1.23
RP8	0.44
RP9	0.48
RP10"	1.64
RP11	0.71
RP12	1.38



PMF POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F013

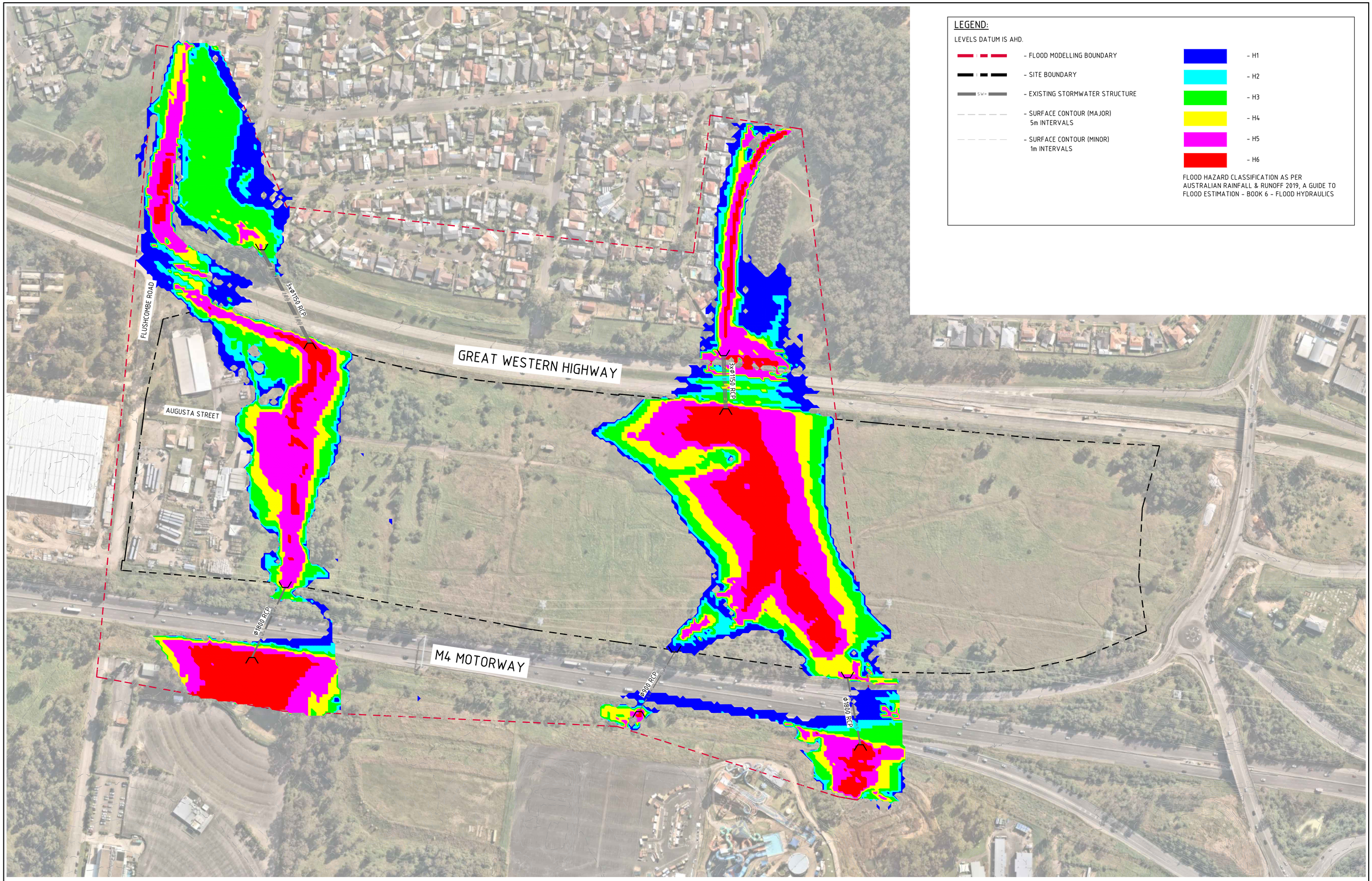
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DRAWING TITLE: PMF POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C013904.03-F013 ISSUE: B



LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

PMF PRE-DEVELOPMENT FLOOD HAZARD

SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F014

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DRAWING TITLE: PMF PRE-DEVELOPMENT FLOOD HAZARD

DRAWING No: C013904.03-F014

ISSUE: A

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

- H1
- H2
- H3
- H4
- H5
- H6

FLOOD HAZARD CLASSIFICATION AS PER AUSTRALIAN RAINFALL & RUNOFF 2019, A GUIDE TO FLOOD ESTIMATION - BOOK 6 - FLOOD HYDRAULICS

FLUSHCOMBE ROAD

GREAT WESTERN HIGHWAY

AUGUSTA STREET

M4 MOTORWAY

3x Ø1150 RCP

RECONSTRUCT 2xØ1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET

3x Ø1500 RCP

Ø1800 RCP

Ø900 RCP

2x Ø1800 RCP

WAREHOUSE 1
FFL RL 73.31 ± 1000mm

WAREHOUSE 2
FFL RL 76.00 ± 1000mm

WAREHOUSE 3
FFL RL 78.10 ± 1000mm

WAREHOUSE 4
FFL RL 78.10 ± 1000mm

WAREHOUSE 5
FFL RL 85.30 ± 1000mm

B

PMF POST-DEVELOPMENT FLOOD HAZARD
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
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AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F015

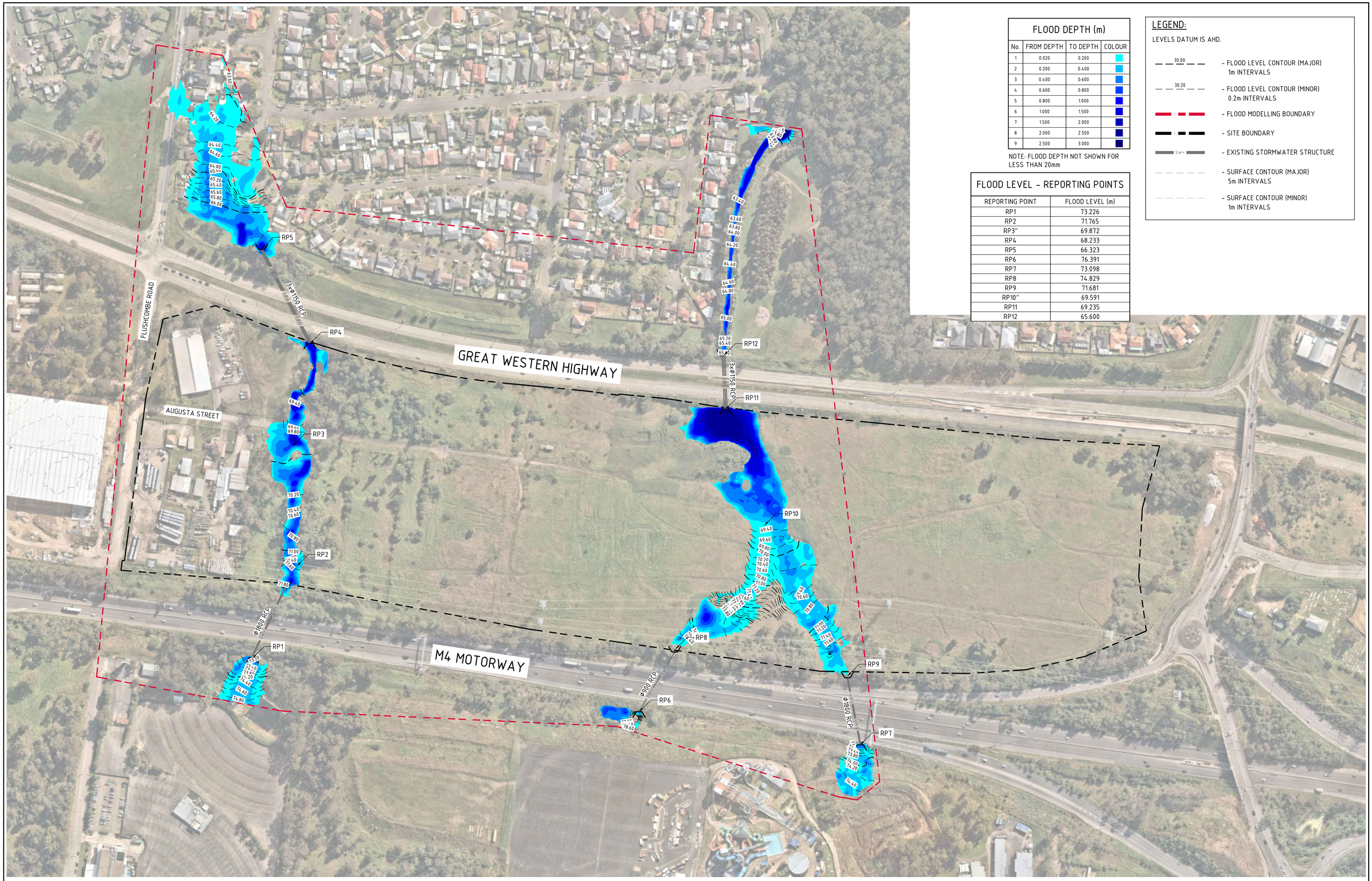
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DRAWING TITLE: PMF POST-DEVELOPMENT FLOOD HAZARD

DRAWING No: C013904.03-F015 ISSUE: B



FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	73.226
RP2	71.765
RP3"	69.872
RP4	68.233
RP5	66.323
RP6	76.391
RP7	73.098
RP8	74.829
RP9	71.681
RP10"	69.591
RP11	69.235
RP12	65.600

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

5% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F020

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DRAWING TITLE: 5% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

DRAWING No: C013904.03-F020

ISSUE: A

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	
10	3.000	4.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	73.258
RP2	71.828
RP3"	69.319
RP4	68.368
RP5	66.337
RP6	76.396
RP7	73.058
RP8	74.172
RP9	71.763
RP10"	69.638
RP11	68.203
RP12	65.575

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLUSHCOMBE ROAD
GREAT WESTERN HIGHWAY
AUGUSTA STREET
M4 MOTORWAY
WAREHOUSE 1 FFL RL 73.31 ± 1000mm
WAREHOUSE 2 FFL RL 76.00 ± 1000mm
WAREHOUSE 3 FFL RL 78.10 ± 1000mm
WAREHOUSE 4 FFL RL 78.10 ± 1000mm
WAREHOUSE 5 FFL RL 85.30 ± 1000mm
RECONSTRUCT 2xØ1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET
3xØ1150 RCP
Ø1800 RCP
Ø900 RCP
RP1
RP2
RP3"
RP4
RP5
RP6
RP7
RP8
RP9
RP10"
RP11
RP12

5% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS

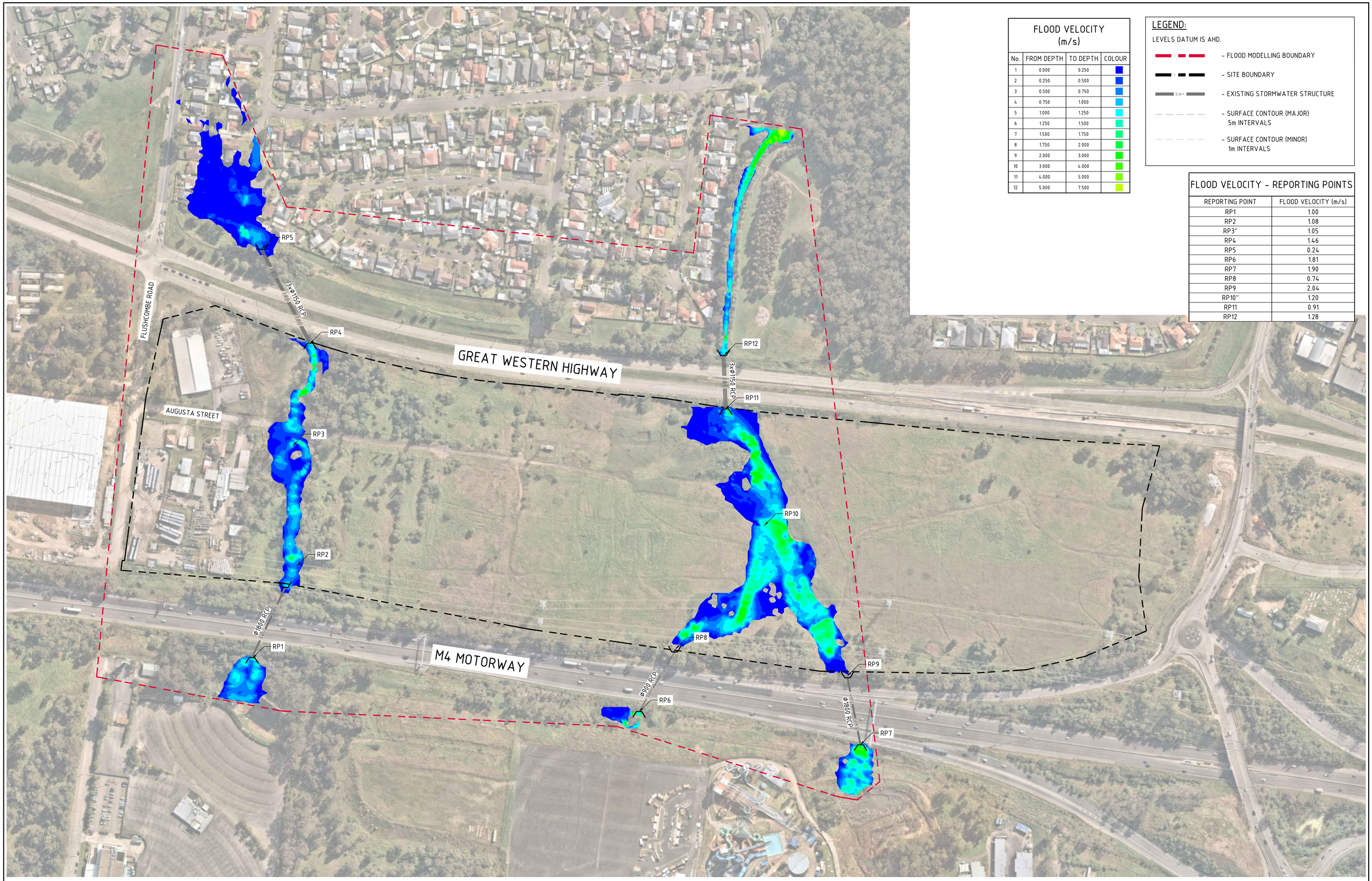
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F021

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COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: 5% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
DRAWING No: C013904.03-F021
ISSUE: B



FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.00
RP2	1.08
RP3"	1.05
RP4	1.46
RP5	0.24
RP6	1.81
RP7	1.90
RP8	0.74
RP9	2.04
RP10"	1.20
RP11	0.91
RP12	1.28

5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

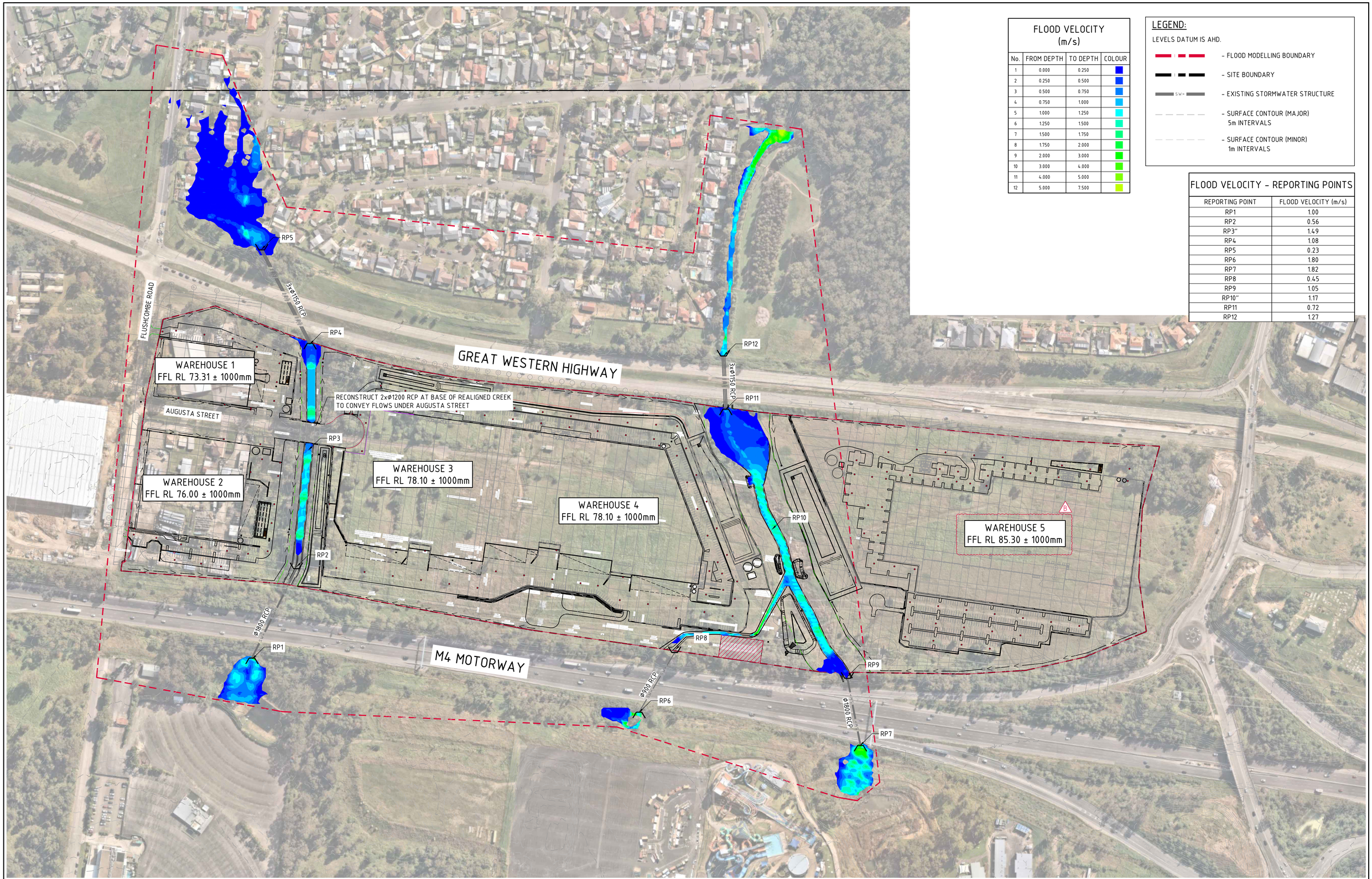
DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F022

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DRAWING TITLE: 5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C013904.03-F022 ISSUE: A



FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.00
RP2	0.56
RP3"	1.49
RP4	1.08
RP5	0.23
RP6	1.80
RP7	1.82
RP8	0.45
RP9	1.05
RP10"	1.17
RP11	0.72
RP12	1.27

5% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F023

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DRAWING TITLE
5% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C013904.03-F023
ISSUE: B

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	73.653
RP2	72.034
RP3"	70.091
RP4	69.821
RP5	66.469
RP6	76.476
RP7	73.469
RP8	75.093
RP9	71.747
RP10"	69.728
RP11	69.722
RP12	65.619

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLUSHCOMBE ROAD
AUGUSTA STREET
GREAT WESTERN HIGHWAY
M4 MOTORWAY
3x Ø1150 RCP
Ø1800 RCP
Ø900 RCP
RP1
RP2
RP3
RP4
RP5
RP6
RP7
RP8
RP9
RP10
RP11
RP12

0.5% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F030

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DRAWING TITLE: 0.5% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS
DRAWING No: C013904.03-F030
ISSUE: A

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	
10	3.000	5.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	73.567
RP2	72.092
RP3"	69.492
RP4	69.164
RP5	66.408
RP6	76.479
RP7	73.371
RP8	74.376
RP9	71.898
RP10"	69.838
RP11	69.519
RP12	65.610

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

GREAT WESTERN HIGHWAY

M4 MOTORWAY

FLUSHCOMBE ROAD

AUGUSTA STREET

WAREHOUSE 1
FFL RL 73.31 ± 1000mm

WAREHOUSE 2
FFL RL 76.00 ± 1000mm

WAREHOUSE 3
FFL RL 78.10 ± 1000mm

WAREHOUSE 4
FFL RL 78.10 ± 1000mm

WAREHOUSE 5
FFL RL 85.30 ± 1000mm

RECONSTRUCT 2xØ1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET

3xØ1150 RCP

Ø1800 RCP

Ø900 RCP

RP1 RP2 RP3 RP4 RP5 RP6 RP7 RP8 RP9 RP10 RP11 RP12

0.5% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

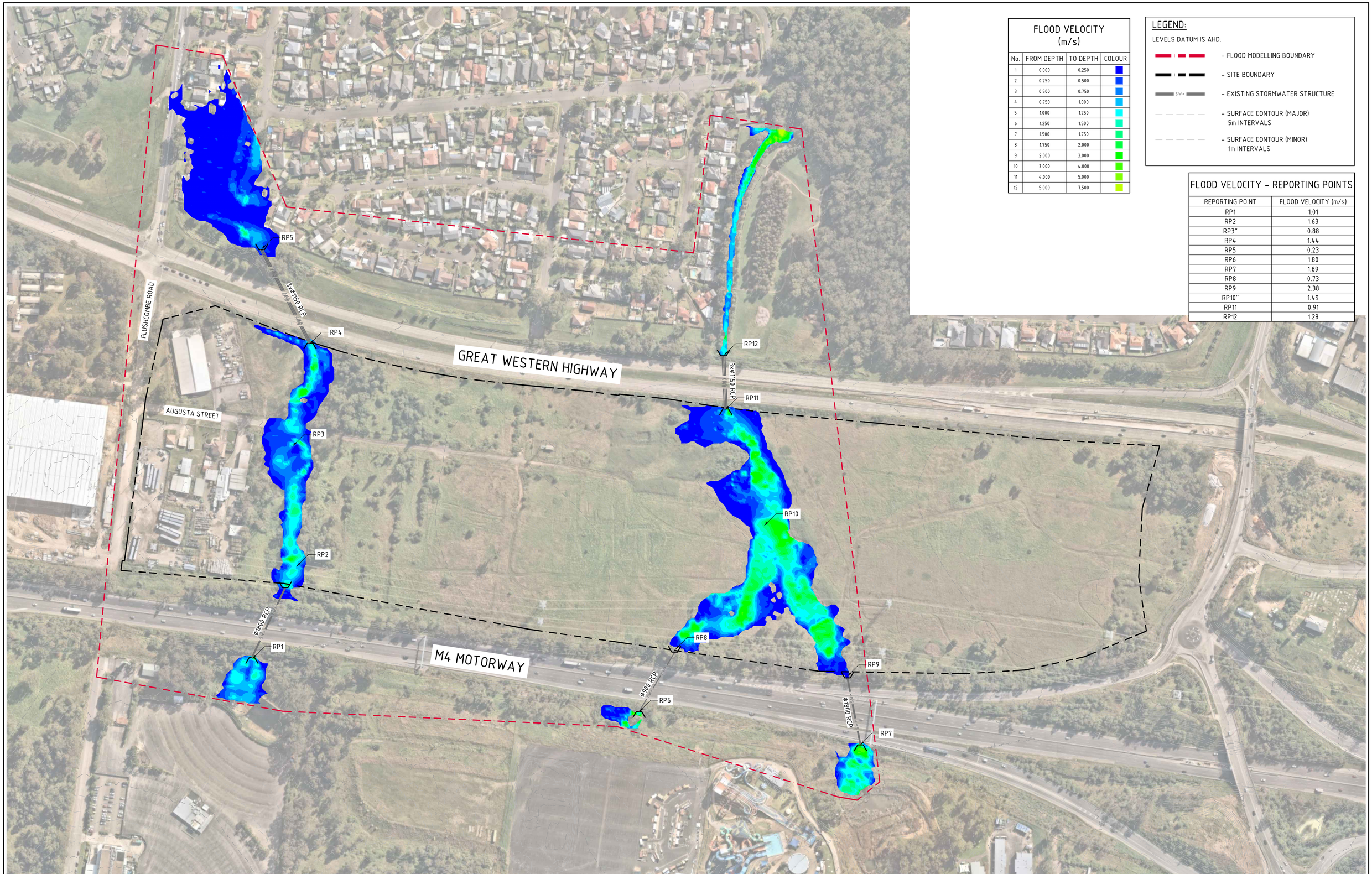
DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE '22	MW	B1	AS SHOWN	C013904.03-F031

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DRAWING TITLE: 0.5% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS

DRAWING No: C013904.03-F031 ISSUE: B



FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.01
RP2	1.63
RP3"	0.88
RP4	1.44
RP5	0.23
RP6	1.80
RP7	1.89
RP8	0.73
RP9	2.38
RP10"	1.49
RP11	0.91
RP12	1.28

0.5% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F032

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DRAWING TITLE
0.5% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C013904.03-F032 ISSUE A

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

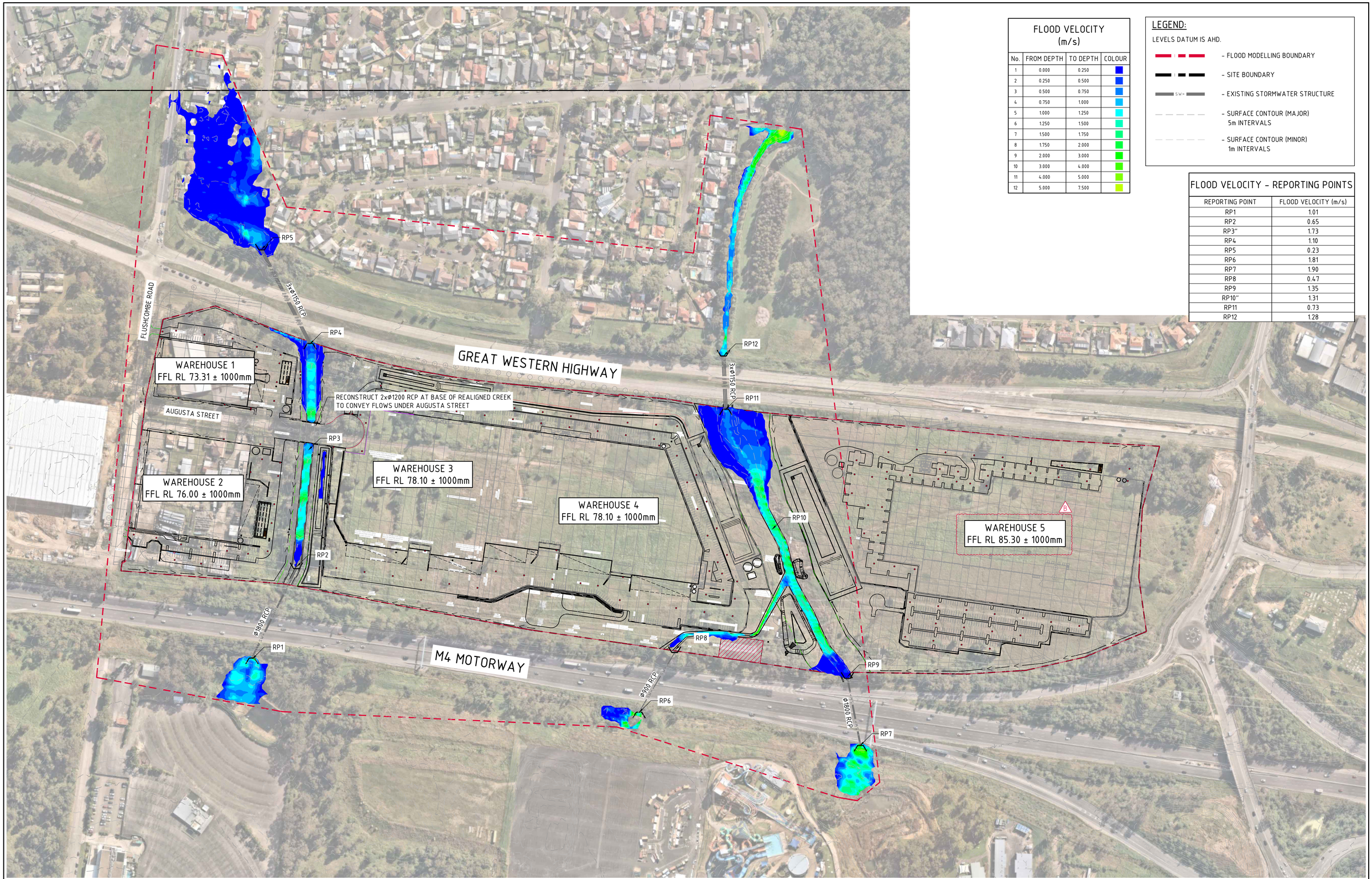
LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.01
RP2	0.65
RP3"	1.73
RP4	1.10
RP5	0.23
RP6	1.81
RP7	1.90
RP8	0.47
RP9	1.35
RP10"	1.31
RP11	0.73
RP12	1.28



0.5% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

ARCHITECT: PACE ARCHITECTS

CLIENT: LOGOS

PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F033

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DRAWING TITLE: 0.5% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C013904.03-F033 ISSUE: B

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.500	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	73.951
RP2	72.067
RP3"	70.132
RP4	70.055
RP5	66.492
RP6	76.504
RP7	73.661
RP8	75.182
RP9	71.775
RP10"	69.952
RP11	69.946
RP12	65.631

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

RP5 RP4 RP3 RP2 RP1 RP12 RP11 RP10 RP8 RP9 RP6 RP7

3x Ø1150 RCP

Ø1800 RCP

Ø900 RCP

FLUSHCOMBE ROAD

AUGUSTA STREET

GREAT WESTERN HIGHWAY

M4 MOTORWAY

0.2% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m

SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS DATE ISSUE

ARCHITECT: PACE ARCHITECTS

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PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F040

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DRAWING TITLE: 0.2% AEP PRE-DEVELOPMENT FLOOD LEVELS AND DEPTHS

DRAWING No: C013904.03-F040 ISSUE: B

FLOOD DEPTH (m)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.020	0.200	
2	0.200	0.400	
3	0.400	0.600	
4	0.600	0.800	
5	0.800	1.000	
6	1.000	1.500	
7	1.500	2.000	
8	2.000	2.500	
9	2.500	3.000	
10	3.000	4.000	

NOTE: FLOOD DEPTH NOT SHOWN FOR LESS THAN 20mm

FLOOD LEVEL - REPORTING POINTS

REPORTING POINT	FLOOD LEVEL (m)
RP1	73.770
RP2	72.187
RP3"	69.668
RP4	69.591
RP5	66.453
RP6	76.508
RP7	73.495
RP8	74.420
RP9	71.963
RP10"	69.898
RP11	69.847
RP12	65.628

LEGEND:

LEVELS DATUM IS AHD.

- 30.00 – FLOOD LEVEL CONTOUR (MAJOR) 1m INTERVALS
- 30.20 – FLOOD LEVEL CONTOUR (MINOR) 0.2m INTERVALS
- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- SW> – EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLUSHCOMBE ROAD
GREAT WESTERN HIGHWAY
M4 MOTORWAY
AUGUSTA STREET
WAREHOUSE 1 FFL RL 73.31 ± 1000mm
WAREHOUSE 2 FFL RL 76.00 ± 1000mm
WAREHOUSE 3 FFL RL 78.10 ± 1000mm
WAREHOUSE 4 FFL RL 78.10 ± 1000mm
WAREHOUSE 5 FFL RL 85.30 ± 1000mm
RECONSTRUCT 2xØ1200 RCP AT BASE OF REALIGNED CREEK TO CONVEY FLOWS UNDER AUGUSTA STREET
3xØ1150 RCP
Ø1800 RCP
Ø900 RCP
RP1
RP2
RP3
RP4
RP5
RP6
RP7
RP8
RP9
RP10
RP11
RP12

0.2% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

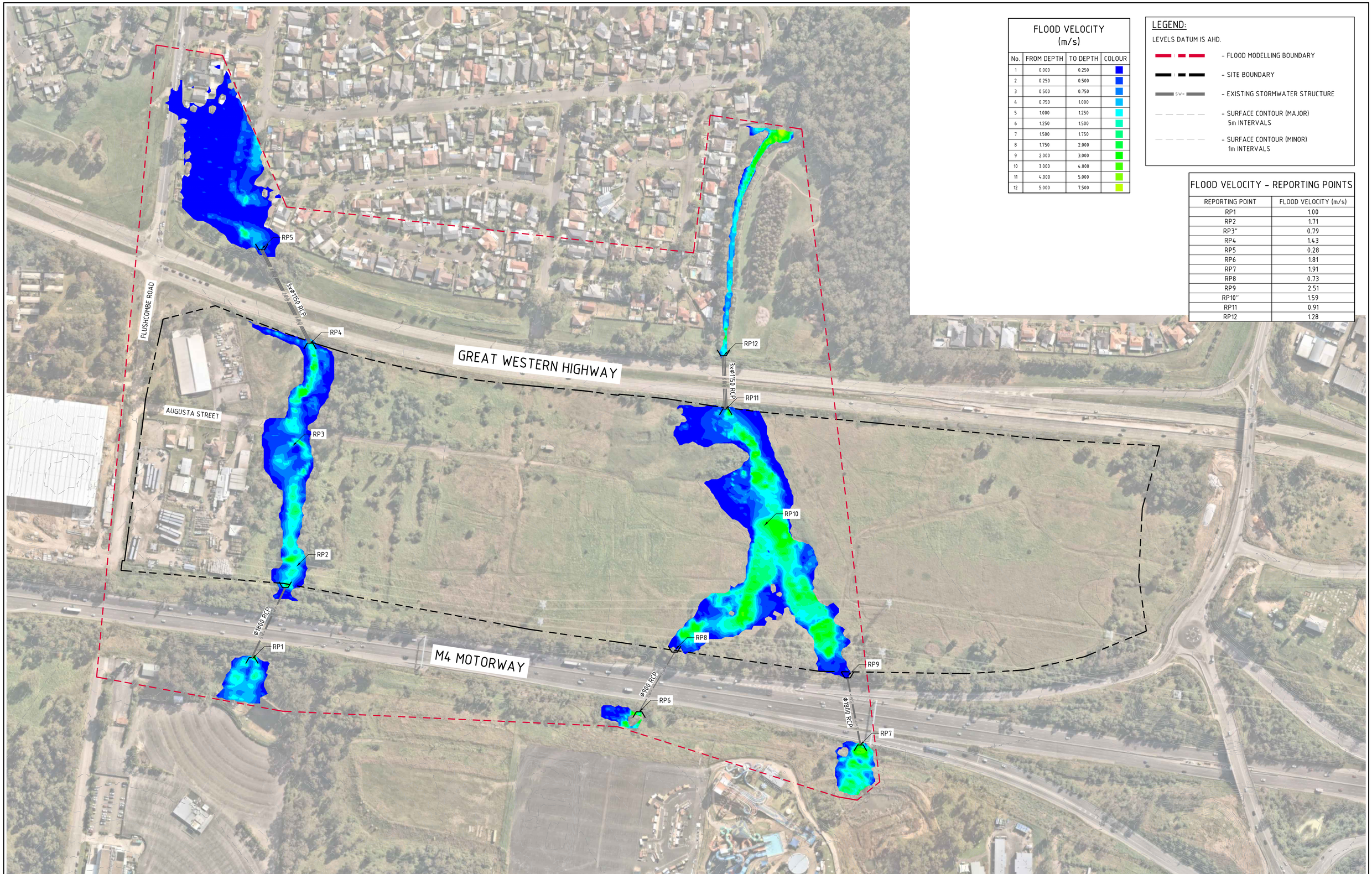
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CLIENT: LOGOS
PROJECT: PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE '22	MW	B1	AS SHOWN	C013904.03-F041

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COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: 0.2% AEP POST-DEVELOPMENT FLOOD LEVELS AND DEPTHS
DRAWING No: C013904.03-F041
ISSUE: B



FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.00
RP2	1.71
RP3"	0.79
RP4	1.43
RP5	0.28
RP6	1.81
RP7	1.91
RP8	0.73
RP9	2.51
RP10"	1.59
RP11	0.91
RP12	1.28

0.2% AEP PRE-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR SSDA	30.06.23	A

AMENDMENTS	DATE	ISSUE

ARCHITECT
PACE ARCHITECTS

CLIENT
LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F042

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DRAWING TITLE
0.2% AEP PRE-DEVELOPMENT FLOOD VELOCITY

DRAWING No C013904.03-F042
ISSUE A

FLOOD VELOCITY (m/s)

No.	FROM DEPTH	TO DEPTH	COLOUR
1	0.000	0.250	
2	0.250	0.500	
3	0.500	0.750	
4	0.750	1.000	
5	1.000	1.250	
6	1.250	1.500	
7	1.500	1.750	
8	1.750	2.000	
9	2.000	3.000	
10	3.000	4.000	
11	4.000	5.000	
12	5.000	7.500	

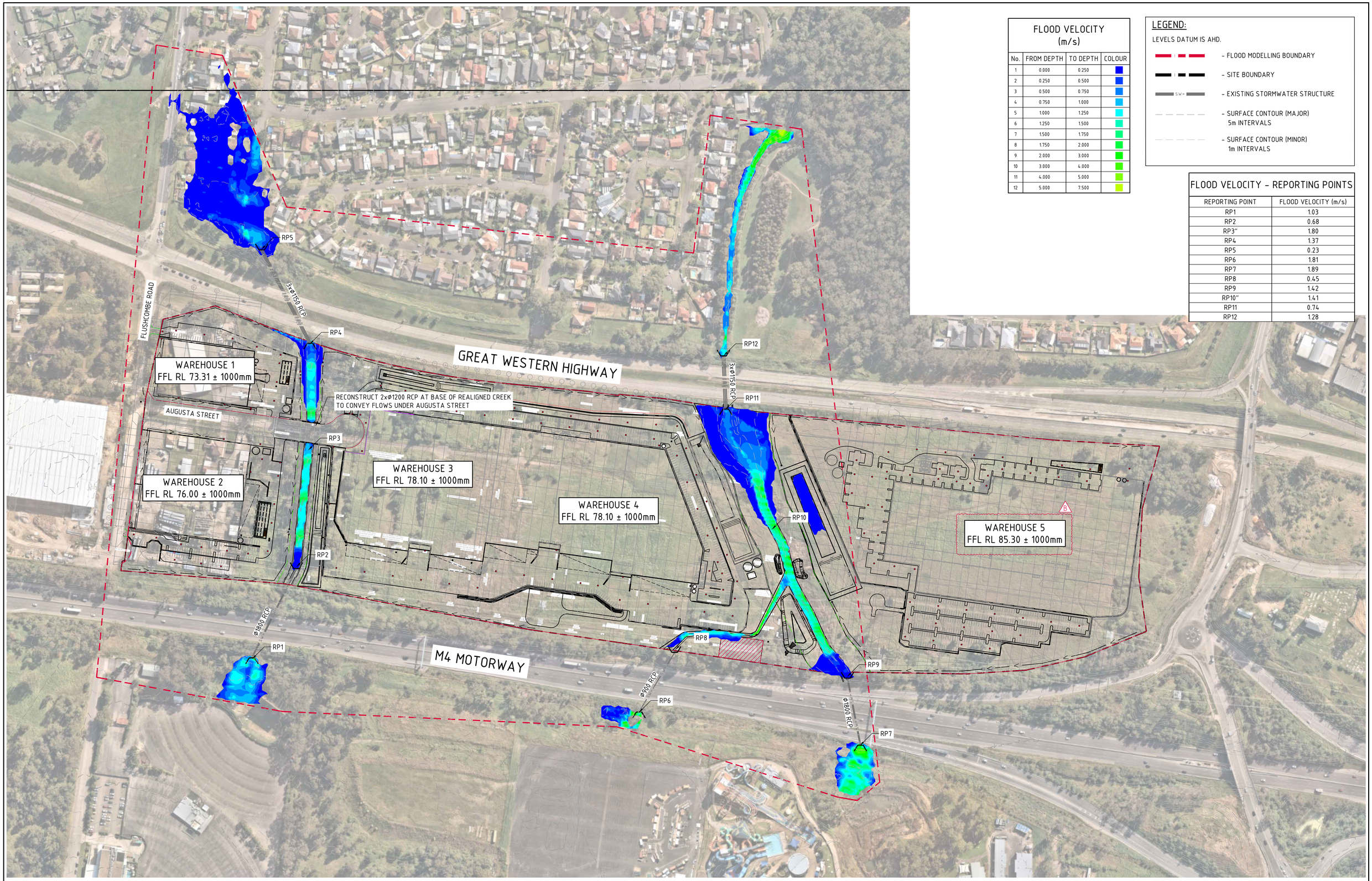
LEGEND:

LEVELS DATUM IS AHD.

- FLOOD MODELLING BOUNDARY
- SITE BOUNDARY
- EXISTING STORMWATER STRUCTURE
- SURFACE CONTOUR (MAJOR) 5m INTERVALS
- SURFACE CONTOUR (MINOR) 1m INTERVALS

FLOOD VELOCITY - REPORTING POINTS

REPORTING POINT	FLOOD VELOCITY (m/s)
RP1	1.03
RP2	0.68
RP3"	1.80
RP4	1.37
RP5	0.23
RP6	1.81
RP7	1.89
RP8	0.45
RP9	1.42
RP10"	1.41
RP11	0.74
RP12	1.28



0.2% AEP POST-DEVELOPMENT FLOOD VELOCITY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT B1 SIZE SHEET

FOR DEVELOPMENT APPLICATION

AMENDMENTS	DATE	ISSUE
CORRECTED WAREHOUSE 5's NUMBER, AS CLOUDED	10.07.23	B
ISSUED FOR SSDA	30.06.23	A

ARCHITECT: PACE ARCHITECTS
CLIENT: LOGOS

PROJECT
PROPOSED WAREHOUSE DISTRIBUTION
AUGUSTA STREET, HUNTINGWOOD EAST, NSW 2148

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	JB	JUNE' 22	MW	B1	AS SHOWN	C013904.03-F043

CONSULT AUSTRALIA

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DRAWING TITLE
0.2% AEP POST-DEVELOPMENT FLOOD VELOCITY

DRAWING No: C013904.03-F043
ISSUE: B

Appendix K

BLACKTOWN CITY COUNCIL – ON-SITE DETENTION DEEMED TO COMPLY TOOL - RESULTS

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 1
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	12135 m^2
Area Draining to OSD (m^2)	12085 m^2

On-Site Detention Data:

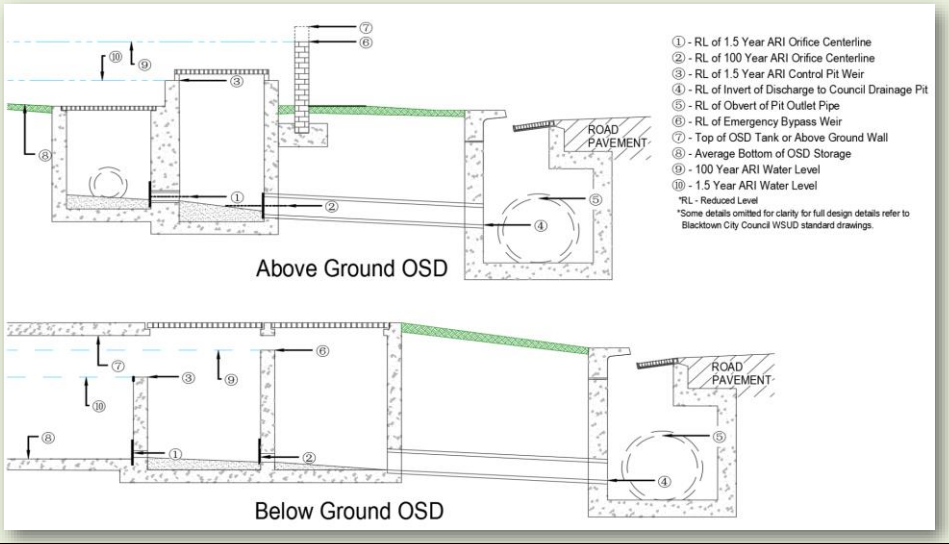
OSD Location	Below Ground
OSD Discharge Location	West Creek
RL of Bottom of OSD Storage Area	70.400
RL of Top of OSD Storage Area	72.700
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	Yes
Design flow from Filter Cartridges (L/s)	28.80 L/s
Filter Cartridges flow with 100 Year ARI Head (L/s)	83.77 L/s

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	70.350
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	70.150
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	70.000



Below Ground OSD Summary with calculated values	
Site:	
Site Area	12135 m^2
Site Area NOT Draining to OSD	50 m^2
Reduced Levels (AHD):	
RL of Top of Tank	72.7
RL of Bottom of OSD Tank	70.4
RL of 1.5 Year ARI Overflow Weir	71.775
RL of Emergency Overflow Weir	72.485
RL of 1.5 Year ARI Orifice Centerline	70.35
RL of 100 Year ARI Orifice Centreline	70.15
RL of Invert of Discharge to Council Drainage Pit	70
	0
Minium RL of Garage Floor	72.79
Minium RL of House Floor	72.89
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	364.1 m^3
Required Storage BELOW Emergency Overflow Weir	552.1 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	Yes
Discharge Location	West Creek
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	48.24 L/s
1.5 Year ARI Orifice Discharge	19.44 L/s
Maximum 100 Year ARI Site Discharge	227.77 L/s
100 Year ARI Orifice Discharge	144.00 L/s
Filter Cartridges design flow	28.80 L/s
Filter Cartridges Discharge with Additional Head	83.77 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	87.5 mm
100 Year ARI Orifice Size (mm)	210.5 mm
Notifications:	
Access grates to be provided such that the maximum reach from any point in the tank to the neaest grate is 4.0m.	

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 2
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	21800 m^2
Area Draining to OSD (m^2)	21540 m^2

On-Site Detention Data:

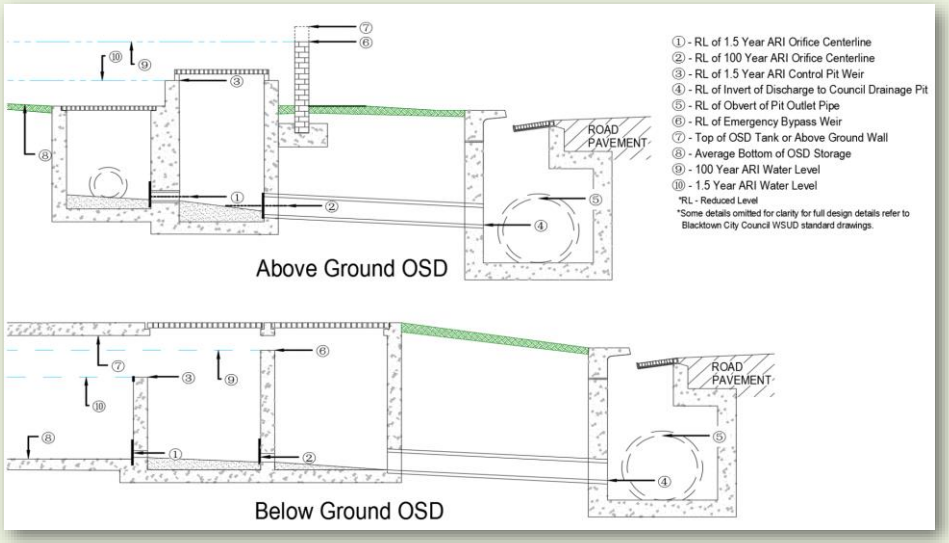
OSD Location	Below Ground
OSD Discharge Location	West Creek
RL of Bottom of OSD Storage Area	72.000
RL of Top of OSD Storage Area	75.400
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	Yes
Design flow from Filter Cartridges (L/s)	57.60 L/s
Filter Cartridges flow with 100 Year ARI Head (L/s)	205.19 L/s

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	71.950
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	71.750
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	71.600



Below Ground OSD Summary with calculated values

Site:	
Site Area	21800 m^2
Site Area NOT Draining to OSD	260 m^2
Reduced Levels (AHD):	
RL of Top of Tank	75.4
RL of Bottom of OSD Tank	72
RL of 1.5 Year ARI Overflow Weir	74.035
RL of Emergency Overflow Weir	75.09
RL of 1.5 Year ARI Orifice Centerline	71.95
RL of 100 Year ARI Orifice Centreline	71.75
RL of Invert of Discharge to Council Drainage Pit	71.6
	0
Minium RL of Garage Floor	75.49
Minium RL of House Floor	75.59
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	654.0 m^3
Required Storage BELOW Emergency Overflow Weir	991.9 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	Yes
Discharge Location	West Creek
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	85.64 L/s
1.5 Year ARI Orifice Discharge	28.04 L/s
Maximum 100 Year ARI Site Discharge	399.64 L/s
100 Year ARI Orifice Discharge	194.45 L/s
Filter Cartridges design flow	57.60 L/s
Filter Cartridges Discharge with Additional Head	205.19 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	95.5 mm
100 Year ARI Orifice Size (mm)	224.0 mm
Notifications:	
Access grates to be provided such that the maximum reach from any point in the tank to the neaest grate is 6.0m.	

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 3A
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	10260 m^2
Area Draining to OSD (m^2)	10260 m^2

On-Site Detention Data:

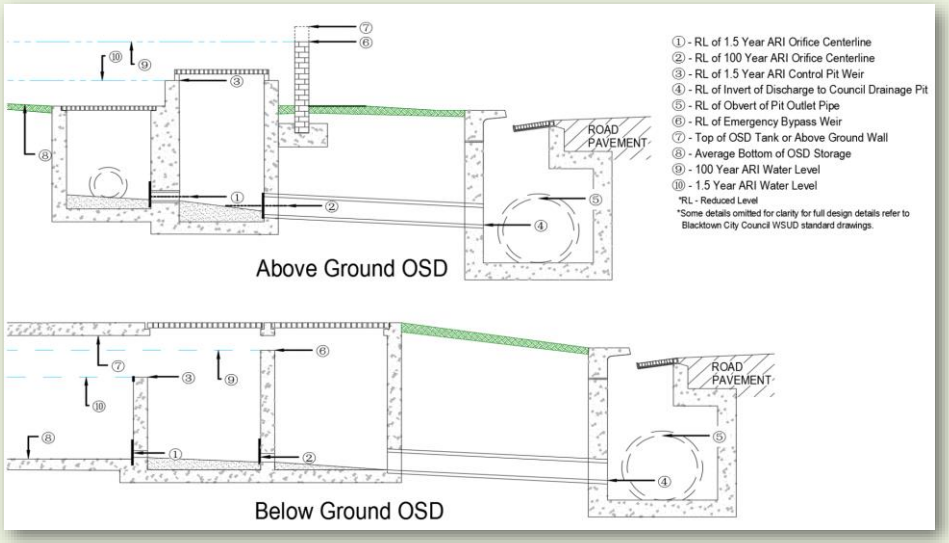
OSD Location	Above Ground
OSD Discharge Location	Council Drainage Pit
RL of Bottom of OSD Storage Area	74.300
RL of Top of OSD Storage Area	76.800
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	No

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	74.250
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	74.050
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	73.850
RL of obvert of Pit outlet pipe	74.000



Above Ground OSD Summary with calculated values

Site:	
Site Area	10260 m^2
Site Area NOT Draining to OSD	0 m^2
Reduced Levels (AHD):	
RL of Top of Tank	76.8
RL of Bottom of OSD Tank	74.3
RL of 1.5 Year ARI Overflow Weir	75.825
RL of Emergency Overflow Weir	76.61
RL of 1.5 Year ARI Orifice Centerline	74.25
RL of 100 Year ARI Orifice Centreline	74.05
RL of Invert of Discharge to Council Drainage Pit	73.85
RL of obvert of Pit outlet pipe	74
Minium RL of Garage Floor	76.89
Minium RL of House Floor	76.99
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	315.2 m^3
Required Storage BELOW Emergency Overflow Weir	478.0 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	No
Discharge Location	Council Drainage Pit
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	41.04 L/s
1.5 Year ARI Orifice Discharge	41.04 L/s
Maximum 100 Year ARI Site Discharge	194.94 L/s
100 Year ARI Orifice Discharge	194.94 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	124.0 mm
100 Year ARI Orifice Size (mm)	239.5 mm

Notifications:

Due to the Outlet Orifice being drowned by 3.6% during 100 ARI event an extra 2.4% of Storage volume has been added.

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 3B
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	29331 m^2
Area Draining to OSD (m^2)	29331 m^2

On-Site Detention Data:

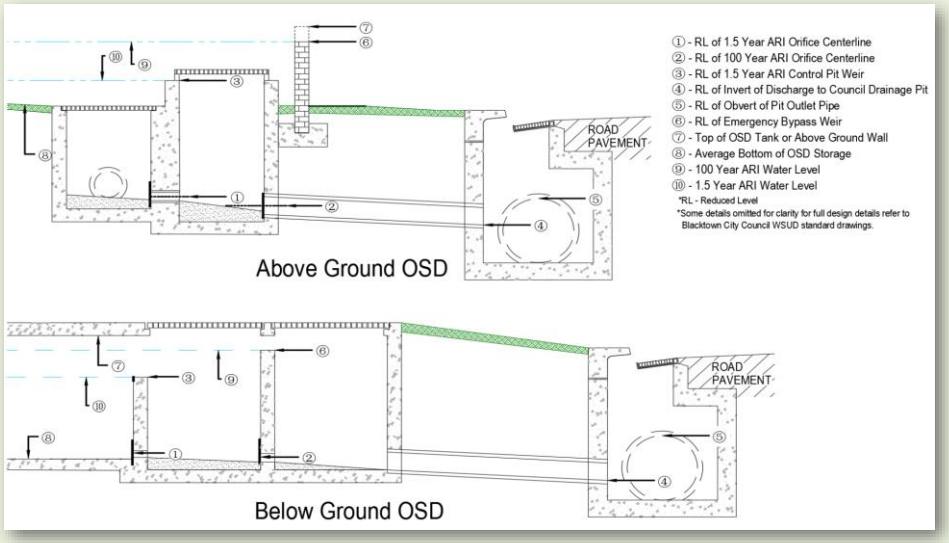
OSD Location	Above Ground
OSD Discharge Location	Council Drainage Pit
RL of Bottom of OSD Storage Area	70.100
RL of Top of OSD Storage Area	72.900
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	No

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	70.050
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	69.850
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	69.650
RL of obvert of Pit outlet pipe	69.950



Above Ground OSD Summary with calculated values

Site:	
Site Area	29331 m^2
Site Area NOT Draining to OSD	0 m^2
Reduced Levels (AHD):	
RL of Top of Tank	72.9
RL of Bottom of OSD Tank	70.1
RL of 1.5 Year ARI Overflow Weir	71.7
RL of Emergency Overflow Weir	72.525
RL of 1.5 Year ARI Orifice Centerline	70.05
RL of 100 Year ARI Orifice Centreline	69.85
RL of Invert of Discharge to Council Drainage Pit	69.65
RL of obvert of Pit outlet pipe	69.95
Minium RL of Garage Floor	72.99
Minium RL of House Floor	73.09
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	910.7 m^3
Required Storage BELOW Emergency Overflow Weir	1381.3 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	No
Discharge Location	Council Drainage Pit
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	117.32 L/s
1.5 Year ARI Orifice Discharge	117.32 L/s
Maximum 100 Year ARI Site Discharge	557.29 L/s
100 Year ARI Orifice Discharge	557.29 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	207.5 mm
100 Year ARI Orifice Size (mm)	400.5 mm

Notifications:

Due to the Outlet Orifice being drowned by 8.2% during 100 ARI event an extra 3.5% of Storage volume has been added.

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 4
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	54135 m^2
Area Draining to OSD (m^2)	54135 m^2

On-Site Detention Data:

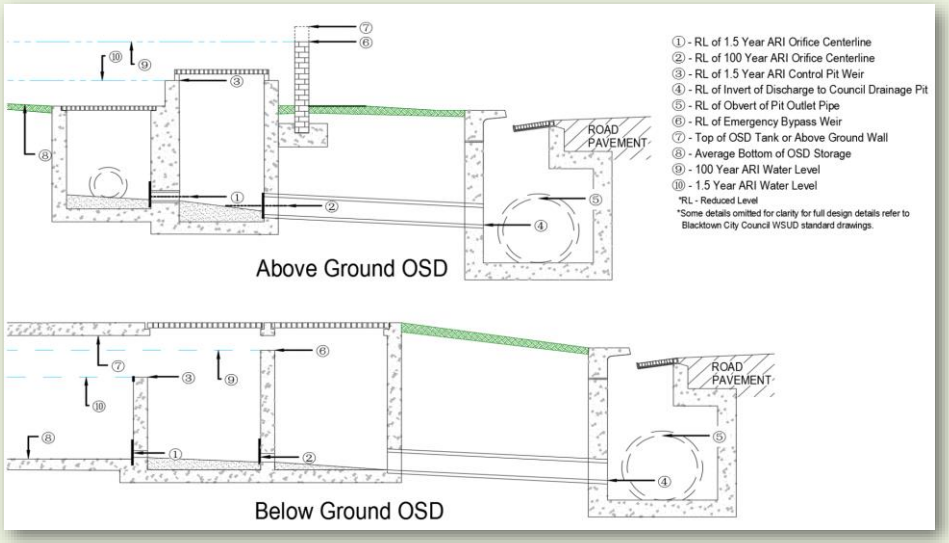
OSD Location	Above Ground
OSD Discharge Location	Council Drainage Pit
RL of Bottom of OSD Storage Area	71.000
RL of Top of OSD Storage Area	74.250
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	No

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	70.950
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	70.750
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	70.550
RL of obvert of Pit outlet pipe	70.750



Above Ground OSD Summary with calculated values

Site:	
Site Area	54135 m^2
Site Area NOT Draining to OSD	0 m^2
Reduced Levels (AHD):	
RL of Top of Tank	74.25
RL of Bottom of OSD Tank	71
RL of 1.5 Year ARI Overflow Weir	72.775
RL of Emergency Overflow Weir	73.69
RL of 1.5 Year ARI Orifice Centerline	70.95
RL of 100 Year ARI Orifice Centreline	70.75
RL of Invert of Discharge to Council Drainage Pit	70.55
RL of obvert of Pit outlet pipe	70.75
Minium RL of Garage Floor	74.34
Minium RL of House Floor	74.44
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	1666.3 m^3
Required Storage BELOW Emergency Overflow Weir	2527.2 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	No
Discharge Location	Council Drainage Pit
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	216.54 L/s
1.5 Year ARI Orifice Discharge	216.54 L/s
Maximum 100 Year ARI Site Discharge	1028.57 L/s
100 Year ARI Orifice Discharge	1028.57 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	275.0 mm
100 Year ARI Orifice Size (mm)	531.5 mm

Notifications:

Due to the Outlet Orifice being drowned by 4.3% during 100 ARI event an extra 2.6% of Storage volume has been added.

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 5A
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	48570 m^2
Area Draining to OSD (m^2)	47760 m^2

On-Site Detention Data:

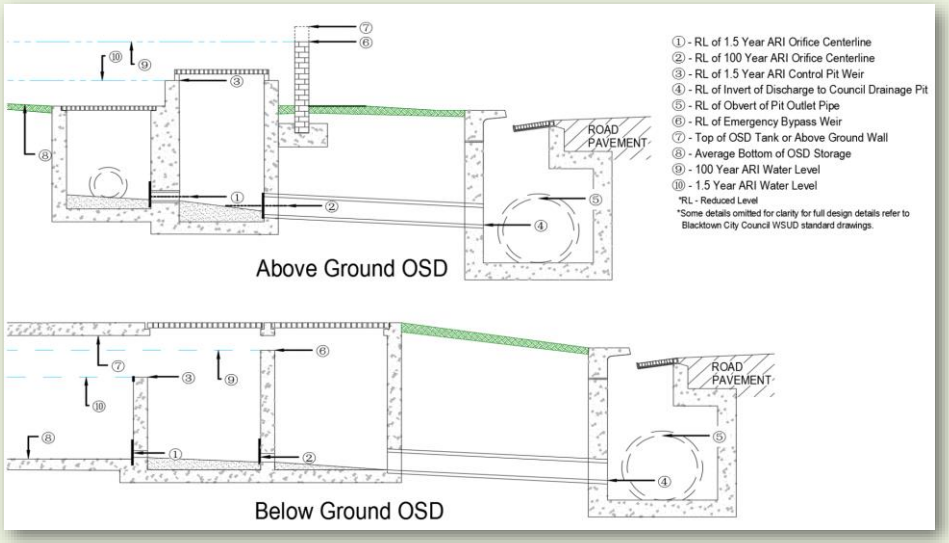
OSD Location	Above Ground
OSD Discharge Location	Council Drainage Pit
RL of Bottom of OSD Storage Area	69.800
RL of Top of OSD Storage Area	71.800
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	No

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	69.750
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	69.550
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	69.350
RL of obvert of Pit outlet pipe	69.500



Above Ground OSD Summary with calculated values

Site:	
Site Area	48570 m^2
Site Area NOT Draining to OSD	810 m^2
Reduced Levels (AHD):	
RL of Top of Tank	71.8
RL of Bottom of OSD Tank	69.8
RL of 1.5 Year ARI Overflow Weir	70.775
RL of Emergency Overflow Weir	71.275
RL of 1.5 Year ARI Orifice Centerline	69.75
RL of 100 Year ARI Orifice Centreline	69.55
RL of Invert of Discharge to Council Drainage Pit	69.35
RL of obvert of Pit outlet pipe	69.5
Minium RL of Garage Floor	71.89
Minium RL of House Floor	71.99
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	1496.4 m^3
Required Storage BELOW Emergency Overflow Weir	2269.6 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	No
Discharge Location	Council Drainage Pit
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	189.42 L/s
1.5 Year ARI Orifice Discharge	189.42 L/s
Maximum 100 Year ARI Site Discharge	877.47 L/s
100 Year ARI Orifice Discharge	877.47 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	297.0 mm
100 Year ARI Orifice Size (mm)	561.0 mm

Notifications:

Due to the Outlet Orifice being drowned by 4.4% during 100 ARI event an extra 2.7% of Storage volume has been added.

Blacktown City Council - On-site Detention Deemed to Comply Tool

Select project to Load or Delete:

v1.9

Project Details:

Project Title	WAREHOUSE 5B
Address	Augusta Street, Blacktown
Reference Number	SSD-36138263

General Site Data:

Site Area (m^2)	18950 m^2
Area Draining to OSD (m^2)	18950 m^2

On-Site Detention Data:

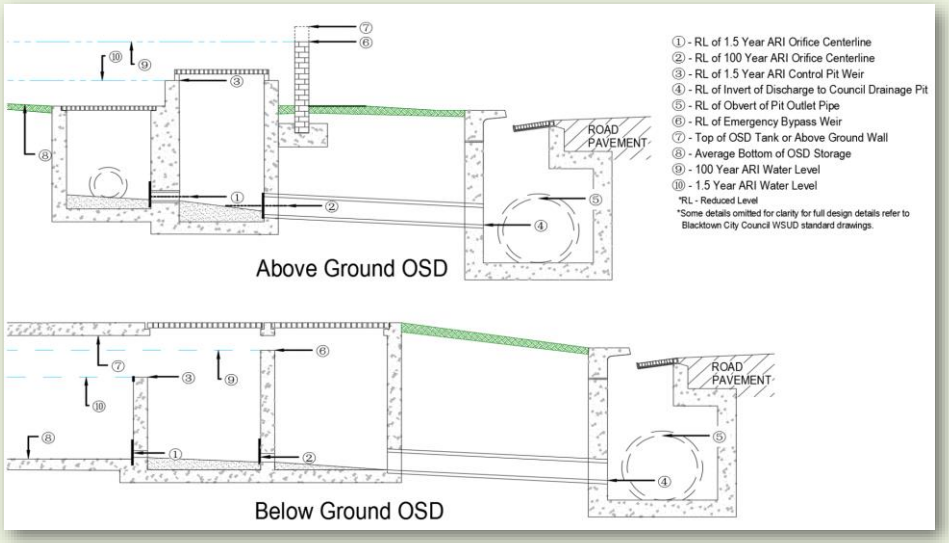
OSD Location	Above Ground
OSD Discharge Location	Council Drainage Pit
RL of Bottom of OSD Storage Area	75.800
RL of Top of OSD Storage Area	78.300
Length of Emergency Overflow Weir (m)	3.00 m

Filter Cartridges:

Will filter cartridges be used to manage water quality?	Yes
Design flow from Filter Cartridges (L/s)	40.50 L/s
Filter Cartridges flow with 100 Year ARI Head (L/s)	90.10 L/s

Discharge Data:

RL of 1.5 Year ARI Orifice Centreline	73.950
Number of Orifices	1
RL of 100 Year ARI Orifice Centreline	73.750
Number of Orifices	1
RL of Invert of Discharge to Council Drainage Pit	73.250
RL of obvert of Pit outlet pipe	73.500



Above Ground OSD Summary with calculated values

Site:	
Site Area	18950 m^2
Site Area NOT Draining to OSD	0 m^2
Reduced Levels (AHD):	
RL of Top of Tank	78.3
RL of Bottom of OSD Tank	75.8
RL of 1.5 Year ARI Overflow Weir	77.26
RL of Emergency Overflow Weir	78.015
RL of 1.5 Year ARI Orifice Centerline	73.95
RL of 100 Year ARI Orifice Centreline	73.75
RL of Invert of Discharge to Council Drainage Pit	73.25
RL of obvert of Pit outlet pipe	73.5
Minium RL of Garage Floor	78.39
Minium RL of House Floor	78.49
OSD Volume:	
Required Storage BELOW 1.5 Year ARI Overflow Weir	568.5 m^3
Required Storage BELOW Emergency Overflow Weir	862.2 m^3
Discharge Details:	
Using Filter Cartridges to Manage Water Quality	Yes
Discharge Location	Council Drainage Pit
Length of Emergency Overflow Weir	3.00 m
Maximum 1.5 Year ARI Site Discharge	75.80 L/s
1.5 Year ARI Orifice Discharge	35.30 L/s
Maximum 100 Year ARI Site Discharge	360.05 L/s
100 Year ARI Orifice Discharge	269.95 L/s
Filter Cartridges design flow	40.50 L/s
Filter Cartridges Discharge with Additional Head	90.10 L/s
Orifice Details:	
Number of 1.5 Year ARI Orifices	1
Number of 100 Year ARI Orifices	1
1.5 Year ARI Orifice Size (mm)	95.5 mm
100 Year ARI Orifice Size (mm)	248.0 mm
Notifications:	