GolfAustralia

Australian Golf Facilities Guidelines

A resource to create thriving and sustainable golf facilities for the whole community

SEPTEMBER 2022

Australian Golf acknowledges the Traditional Owners and custodians of the lands on which golf is played and managed throughout Australia.

We recognise the continuing connection to land, waters and culture of the Indigenous community and pay our respects to their Elders past, present and emerging.

Acknowledgements

Australian Golf wishes to thank a number of stakeholders for their significant contribution to the development of the Australian Golf Facilities Guidelines.

- The Victorian Government for their financial support and strategic guidance.
- Key golf industry stakeholders and strategic partners including Golf Australia, Professional Golfers Association of Australia, Women's Professional Golfers Association Tour of Australasia, Australian Sports Turf Managers Association, Golf Management Australia, Society of Australian Golf Course Architects, Sport Australia, and Parks and Leisure Australia.
- The members of the Project Working Group and Project Reference Group.
- Content contributors including Kate Torgersen – Environmental Golf Solutions Australia, Bruce Macphee – Australian Sports Turf Managers Association and Paul Jones – Ways With Water.
- SBP Advisory, OCM and The OCD for their consulting advice throughout the project.

Foreword

We are delighted to present the inaugural edition of the Australian Golf Facilities Guidelines. The Guidelines will be a dedicated national resource to benchmark, lead and support best practice planning, design, and development of golf facilities and infrastructure. It is hoped that the guidelines will assist the industry in transforming golf clubs and facilities to be modern, thriving and sustainable community hubs.

Until now, golf in Australia has not had a comprehensive set of facility guidelines that provide the guidance to golf club and facility owners, managers and operators about how to deliver facilities in line with industry best practice. Through an extensive consultation process and oversight by the Project Working Group and Project Reference Group (consisting of state and national representatives, club and facility operators, Local Government representatives, golf course architects, leaders from other sports, and turf managers), we have now developed the most comprehensive golf facility resource ever produced in Australia.

As we continually strive to achieve our purpose of encouraging more Australians to play more golf, the clubs and facilities that support our engagement with the game play a critical role. We must continually evolve our offer in line with shifting societal trends and expectations to ensure more participants are able to access the full range of facilities and formats that our game has to offer. The Guidelines will assist in providing direction to all stakeholders to ensure that we continue to drive greater diversity and innovation in the planning and development of golf facilities.

While we are very proud of this resource, we acknowledge that the Guidelines will need to be refined and updated over time as our sport evolves. We welcome feedback from those involved across all levels of our sport.

We look forward to your continued support as we work together to foster a fun, safe and welcoming environment, where all participants are empowered to try golf in all of its formats, achieve their personal goals, and ensure that all Australians can be golfers.

James Sutherland
CEO – Golf Australia

Karen Lunn
CEO – WPGA Tour of Australasia

Gavin Kirkman
CEO – PGA of Australia

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BACKGROUND AND CONTEXT

Golf Australia (GA) with the support of the Victorian Government, commissioned SBP with the assistance of subject matter experts to produce for the first time in Australia, a National Golf Facilities Guidelines resource to guide the future planning and development of golf facilities across the country.

Purpose

The Australian Golf Facilities Guidelines will be a dedicated national resource to benchmark, lead and support best practice planning, design, and development of golf facilities and infrastructure.

The guidelines provide recommended guiding principles to assist investment and direction for the planning and development of new facilities and redevelopment of existing golf facilities.

Target Audiences

This resource will cater for the diverse needs of a broad range of stakeholders, including:

- Golf Club and Facility Owners, Managers and Operators
- Club Boards and Committees
- Local Government Authorities
- State and Territory Governments
- Federal Government
- Land and Property Developers

Measures of Success

The aim of the guidelines is to:

- Transform golf clubs and facilities to be modern, thriving and sustainable community hubs
- Improve the sustainability and financial viability of clubs and facilities
- Drive greater diversity and innovation in the planning and development of golf facilities
- Increase investment into golf infrastructure projects

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The guidelines have been developed in ten sections.

1

Background and Context

Section 1 introduces the guidelines and provides useful information on how to use the guidelines and the relevant background and strategic context.

2

The Future of Golf

Section 2 focuses on the key elements that make a great golf facility and how we can re-think the game to ensure it continues to meet the needs of current and future participants.

3

Project Planning

Section 3 provides critical information to consider when planning a golf facility, including the overall planning process, site selection and feasibility.

4

Buildings and Amenities

Section 4 focuses on the built infrastructure of a golf facility and the key design considerations for a clubhouse and supporting buildings.

5

Course Design and Construction

Section 5 provides technical detail and key considerations for the design of a golf course.

6

Driving Ranges

Section 6 gives an overview of the key considerations when designing a driving range.

7

Mini Golf

Section 7 explores the origins of mini golf, key considerations for designing a mini golf course and the ancillary benefits it can provide to any golf facility.

8

Operational Considerations

Section 8 provides an overview of the key components of a golf facility operating model, as well as the key considerations when determining an operating model.

9

Case Studies

Section 9 delves into a series of case studies that demonstrate innovation and best practice projects with links to further reading.

10

References, Resources and Glossary of Terms

Section 10 includes a series of references, recommended resources and articles to assist with golf facility planning and development projects.

The guidelines are a key resource to support the recently launched first ever all-of-golf Australian Golf Strategy 2022-2025.

The Australian Golf Strategy is underpinned by 3P's:

- **Purpose**: More Australians playing more golf.
- **Philosophy**: All golf is golf and all of us can be golfers.
- **Positioning**: A sport for life and fun for all.

The strategy is built around three Strategic Pillars:

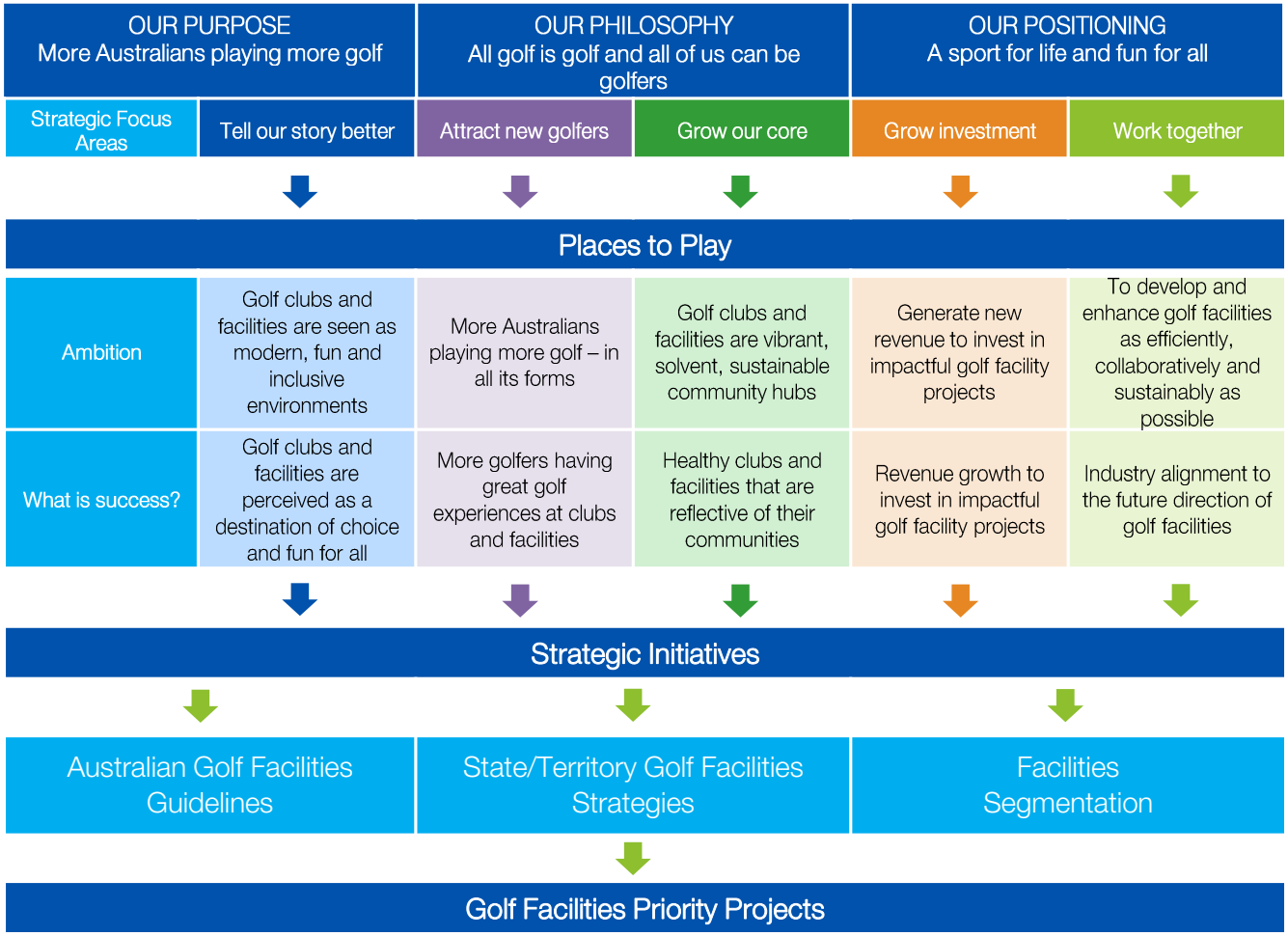
- Tell our story better,
- Attract new golfers,
- Grow our core;

And two Strategic Enablers:

- Attract new fans and grow revenue
- Work together

The facility guidelines are a key resource that support telling our story better, attracting new golfers and growing our core, and are critical to increasing all forms of golf participation by ensuring that Golf's "places to play" are aligned to the needs of current and future golfers.

The following diagram illustrates how the Facility Guidelines are a key component of the Strategic Initiatives that align with the Australian Golf Strategy.



The Australian Golf Facilities Guidelines are a dedicated national resource to lead best practice planning, design, development, management and maintenance of golf facilities and infrastructure. As there are no standard dimensions of play and the varying golf facility types that exist with unique site conditions – the guidelines are therefore not designed to be prescriptive but to provide key information, learnings, innovations, case studies and the latest emerging golf facility trends to assist the future planning of new or existing golf facilities.

Why they are important

The Guidelines are provided for clubs and facility operators, Local Government Authorities (LGA's), State and Federal Government departments, planners, architects, consultants, suppliers, developers, and other industry bodies.

The key role of the Guidelines is to assist stakeholders that are involved in the planning and design of golf facilities about the specific facility and infrastructure elements that can improve the participant experience and provide facilities that are:

- Welcoming and inclusive.
- Economically and environmentally sustainable.
- Designed to support innovative and non-traditional activities to grow participation.

Accessing the Guidelines

The Guidelines are a free resource that can be viewed, saved and downloaded.

Readers can access each section of the Guidelines individually depending on the specific information they are seeking.

Continuous Improvement

The Guidelines will be an evolving resource that are regularly reviewed and updated to ensure they remain relevant to shifting market conditions and trends across the golf industry.

Assumptions

It is important to note that as local regulations, and codes vary across Council and State jurisdictions, it is impractical for this document to provide the answers to all questions related to the specific local context of a facility.

The Guidelines contain comments and information of a general nature only and are not provided as a substitute for professional advice. Site specific research, technical assessment and local interpretation and implementation of the Guidelines will also be required.

Disclaimer

These guidelines are of a general nature only and are not intended to be relied upon as, nor as a substitute for, specific professional advice. The information in the guidelines is current as at August 2022. No responsibility is or will be accepted by Golf Australia for any:

- errors, omissions or inaccuracies in the information in these guidelines, or
- loss occasioned to any person doing anything as a result of any material in this publication.

The Australian Golf Facilities Guidelines have been developed to assist the facility planning and development process. It is important to ensure that smaller projects are integrated within a wider master plan for the overall facility. The sections of the guidelines may be used collectively or on their own as a standalone resource depending on the aims and objectives of your project.

Golf Facilities Guidelines are layered with complexities.

The quality, size, operating models and types of golf facilities vary greatly across the country.

The following considerations provide important context for the purpose and use of this resource.

- Unlike many sports, golf has no standard dimensions for the field of play.
- Golf courses are living and breathing ecosystems which are heavily reliant on and influenced by the local micro-climate.
- It is impossible to provide specific advice for each individual facility or course given the complexity of factors involved in decision-making.
- The information provided is intended to assist the industry to understand the key issues involved with building, running and maintaining golf facilities.
- In addition, key questions and considerations are provided throughout to assist golf facility operators with planning and decision making.

Boulia Golf Club, Outback Queensland

Source: Golf Australia

The National Golf Facilities Framework (NGFF) has been developed to assist golf clubs, facility operators, and all levels of government in the planning and developing of golf facilities. The framework will also support Australian Golf's ongoing advocacy for increased investment into new and existing golf facilities.

The purpose of the NGFF is to:

- Define the various golf facility types and categories that currently exist.
- Define the primary use for each type of facility.
- Understand the target audiences and potential market sizes of each type of golf facility.
- Influence the golf community, facility operators, developers, and government regarding the optimal mix of facilities to increase engagement within the sport and transition Australians along the golfing pathway.
- Enhance the perception of the sport and communication of the variety of ways to engage in the game.

For the purposes of the NGFF, each facility type is treated as unique. Therefore, a facility footprint which incorporates a golf course, driving range and mini golf would be classified three times.

The NGFF will also assist in identifying gaps in facility provision and guide future planning decisions to ensure that all Australians have equitable access to the sport.

The following table shows the current Australian golf groups of interest and market size according to research carried out in 2021 by the Australian Golf Industry Council.

Groups of Interest	National Market Size*	% of Population
Club Members	380,000	4.2%
Round Players	865,000	9.6%
Ball Hitters	295,000	3.3%
Alternative Players	1,645,000	18.3%
Not Engaged Yet	5,800,000	64.6%

**Source: AGIC Golf Landscape Research, 2021*

Facility Type	Category	Description	Primary Use	Target Audiences
Golf Course	Member Club	A golf course consisting of 9 holes, 18 holes, more than 18 holes or other configurations that may consist of a variety of par 3, par 4 and par 5 holes that and primarily exists as an entity for members of a club.	Playing Rounds	Club Members Round Players Ball Hitters
	Public	A golf course consisting of 9 holes, 18 holes, more than 18 holes or other configurations that may consist of a variety of par 3, par 4 and par 5 holes that is open to the public 7 days a week and is primarily accessed by a green fee. May be owned privately or by a Council/government authority.	Playing Rounds Learning	Round Players Ball Hitters
Short Course	Par 3	A short golf course consisting entirely of par 3 holes that does not meet the definition of a pitch & putt course.	Learning Playing Rounds	Not Engaged Yet Alternative Players
	Pitch & Putt	A short golf course with a maximum hole length of 90 metres and total course length of 1,200 metres for 18 holes that is designed to be played with a maximum of 3 clubs – one of which must be a putter, as defined by the Federation of International Pitch and Putt Associations (FIPPA).	Learning Playing Rounds	Not Engaged Yet Alternative Players
Driving Range	Entertainment	A driving range with undercover bays, multiple targets, ball tracking technology, automated tees and food and beverage services.	Entertainment	Not Engaged Yet Alternative Players
	Skill Development	A driving range with distance markers, multiple targets and may include ball and swing tracking technology.	Ball Hitting Learning Practicing	Not Engaged Yet Alternative Players
Mini Golf	Entertainment	A small putting course where each unique hole may involve negotiating an obstacle with a combination of elevation changes and surface types.	Entertainment	Not Engaged Yet Alternative Players
Simulator	Entertainment	Indoor hitting bays with a graphically simulated driving range or golf course that include ball tracking technology and food and beverage services.	Entertainment	Not Engaged Yet Alternative Players
	Skill Development	Indoor hitting bays with a graphically simulated driving range or golf course that include club fitting, ball and swing tracking technology.	Ball Hitting Learning Practicing	Not Engaged Yet Alternative Players

SECTION 2
THE FUTURE OF GOLF

Artist's impression of NextLinks Indoor Golf Concept
Source: Golf Course Architecture

The following key societal issues are impacting the way we participate in sport and leisure activities and should be considered when planning any golf facility project.

Societal Trends and Drivers of Change[1, 2]

Highly competitive sport and recreation market

People are looking for more flexible sport and recreation choices that fit around their busy lifestyle. The rise of unstructured recreation activities have provided Australians with more choices for active pursuits than ever before.

Facilities that have a diverse offer and a broad range of reasons to visit will have a clear point of difference in a cluttered market.

Increasingly time poor society

Prior to the COVID-19 pandemic, many people's lives were filled with work and social commitments. This drove the trend towards short, quick and fast sport participation products.

With competing demands on people's leisure time, golf must now compete with typical entertainment products (such as going to the cinema).

Cost of living and perceived cost of golf

The cost of sport in the current financial climate will likely remain a barrier while the impact of the pandemic affects the disposable income of Australian households.

To keep the cost of golf affordable for all, golf facilities should consider investing into infrastructure that generates additional revenue to off-set operating costs.

Rapidly changing world of technology

Technology is increasingly playing a more significant role in the way Australians engage in sport and recreation.

The use of digital platforms is projected to continue as Australians invest further in wearable fitness tech, at-home fitness equipment, and fitness apps.

Inactive children and youth

With the rise in digital technology, many children are spending their leisure time connected to electronic devices.

Facilities that offer a community hub environment with a diverse range of playing, entertainment and socialisation options, will appeal to a broader audience and encourage increased visitation.

What does this mean for golf and our facilities?

Establishing **customer-focused** golf facilities will assist in attracting a broader market segment including women, families, children, and multicultural communities.

Expanding the offer within golf facilities to focus more on **fun, social, short-format** and other **golf entertainment** offers will engage a wider audience.

Expanding golf clubs and facilities with **complementary services and amenities provides alternative revenue streams**, and improves the overall value proposition and customer experience within a golf facility.

Golf facilities need to continually look for best-practice and stay abreast of **emerging technology trends** to **provide exciting and contemporary experiences** that drive increased customer engagement.

Golf facilities are more than just a place to play sport, and provide a wide range of community benefits. Communicating the **health, social and environmental value** of the game more broadly will elevate the perception of golf within the wider community.

The following key societal issues are impacting the way we participate in sport and leisure activities and should be considered when planning any golf facility project.

Societal Trends and Drivers of Change

A changing climate

Australia has experienced years of ongoing drought, water restrictions, and extreme weather events. This provides additional challenges in the management of golf clubs and facilities, as well as the role they can play in adapting to the effects of climate change.

Population growth and urban sprawl

Green open space is at a premium in metropolitan areas, and there are limited options for land acquisition to service future population growth and demand.

Advocating the broader benefits that the game provides will be vital to retaining golf's footprint across Australia.

An ageing Population

Australia's population is ageing. Over the past two decades, the population aged 85 years and over increased by 110%, compared with the total population growth of 35%.

Continuing to offer participation options that enable people of all ages to experience golf will be vital to delivering improved health and wellbeing outcomes.

Increased diversity and multiculturalism

Australia has a rich mix of cultural backgrounds, with the number of who were born overseas continuing to increase. Over half (51%) of Australians were born overseas or have apparent that was born overseas.

Multicultural groups are typically under-represented in golf and present a significant growth opportunity for the sport.

Increased participation in sports by women & girls

Over the last 3-5 years, there has been a boom in female sports participation in Australia. The rapid growth in female sports participation has elevated awareness of the deficiencies in the existing provision of amenities and infrastructure to cater to the needs of women and girls. Female members make up only19% of all golfers.

What does this mean for golf and our facilities?

Golf clubs and facilities must be developed to **manage the impacts of climate change on future operations**, through climactic design, use of renewable energy, water and waste recycling, and carbon neutrality initiatives.

Identifying **innovative ways to participate in golf** when space is limited (i.e. simulators and enclosed driving ranges) will ensure ongoing access to the sport and assist in engaging new audiences.

Providing a **range of off-course offers outside of golf** such as bridge, cards and mahjong can keep older Australians engaged in club life – even when they can no longer enjoy a round of golf.

Eliminating the physical, societal and cultural barriers which prevent people from accessing or considering golf as a recreational or sporting activity will be critical to increasing engagement with people from diverse backgrounds.

Our clubs and facilities must be **safe and welcoming environments** that provide women and girls with equitable opportunities to participate – both on the course and in staff, board and management roles.

In the last ten years we have seen more golf innovations than ever before. This is partly a result of technological improvements but also in response to the evolving needs of modern golfers – and societies.

Community Golf Hubs and Multi-Use Facilities

Multi-Golf facilities are becoming more common and provide a diverse range of golf non-golf offerings which increase facility utilisation and expose a broader segment of the community to the game.

A Community Golf Hub provides a full golf experience for beginners through to seasoned golfers, as well as non-golfing activities to local residents and the broader community.

Creating facilities that have a diverse offering including mini golf, virtual golf and contemporary food and beverage can enable the whole family to 'come and try' different types of golf.

These facilities provide a diverse range of additional revenue streams by leveraging other activities and services to increase secondary spend. This also results in these type of facilities providing a greater return on investment compared to a traditional 'green grass' only facility.

Emergence of Technology

Technology advancements are changing the way that people play and engage with the game of golf. Ball tracking technology, augmented/virtual reality and golf simulators are providing the ability to experience golf without stepping onto a golf course.

Golf simulators provide realistic, fast and fun indoor golf experiences. Simulators have evolved and now enable golfers to measure every aspect of the golf swing – including the launch angle, ball speed, clubhead speed, club path, clubface orientation at impact, ball direction, spin rate and spin angle.

Ball tracking technology has changed the way fans consume, practice and engage with the sport of golf. Cameras and sensors build a three-dimensional image of a particular area, and in that space created, any golf ball that enters will be tracked.

Golf Entertainment

Driving ranges can be enhanced to appeal to beginner golfers, increase engagement with a younger demographic, and strengthen the overall entertainment offering within traditional golf facilities.

The rise in the popularity of products such as Topgolf has evolved golf into more of an entertainment offer. This has been enabled through technology advancements such as ball tracking. This technology also allows driving ranges to be built on smaller parcels of land, as the participant no longer needs to see the ball land to know how far it has travelled.

Similar to mini golf, driving ranges are viewed by many participants as an entertainment product, and therefore the overall experience needs to compete with other entertainment options available in the market.

Resurgence of Mini Golf

Mini Golf has existed for over 100 years, and its popularity continues today. As a game that all ages and abilities can play, it is a great social experience that can bring people together.

In recent years, mini golf has undergone a resurgence through the revitalisation of some larger golf complexes.

The creation of immersive and themed mini golf environments, along with the incorporation of lights, music and/or 3D obstacles has seen the game have a resurgence with the teenage crowd – as they seek out "instagrammable" moments.

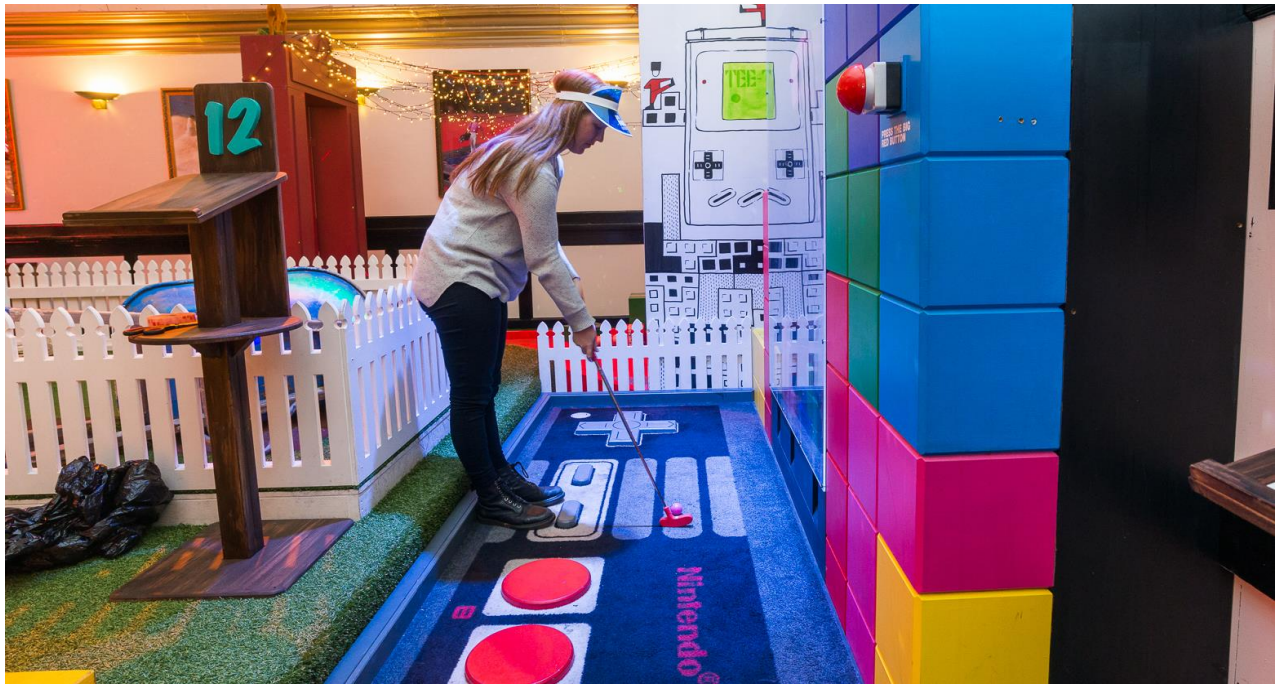
Some mini golf courses are also being designed to appeal to experienced golfers by being built to resemble a real golf course, inclusive of bunker-like hazards and dynamic course shaping.

- Driving ranges have existed for many years, as a popular way of enjoying the golf experience.
- Up until the early 2000's driving ranges were fairly simple venues with synthetic mats to hit from and play out to an open field with perhaps a handful of targets or flags to aim at.
- In the late 1990's Topgolf was formed, as entrepreneurs developed the idea to insert microchips into the golf ball as a way of plotting where shots finished, and therefore adding a new level of enjoyment to an otherwise fairly mundane exercise.
- It has since grow-in into a multi-million-dollar franchise with over 50 locations spread through the USA, Canada, England and now Australia.
- With music, food, lounge areas, waiters, mini golf and even a nightclub (at Las Vegas Topgolf), a night out to Topgolf is seen as a legitimate and popular alternative to a night out for dinner, bowling or a sports game.
- Topgolf has evolved the traditional driving range concept using new technology to offer a popular route for non-golfers to get into the game.

Example of a Topgolf Facility

Source: Topgolf

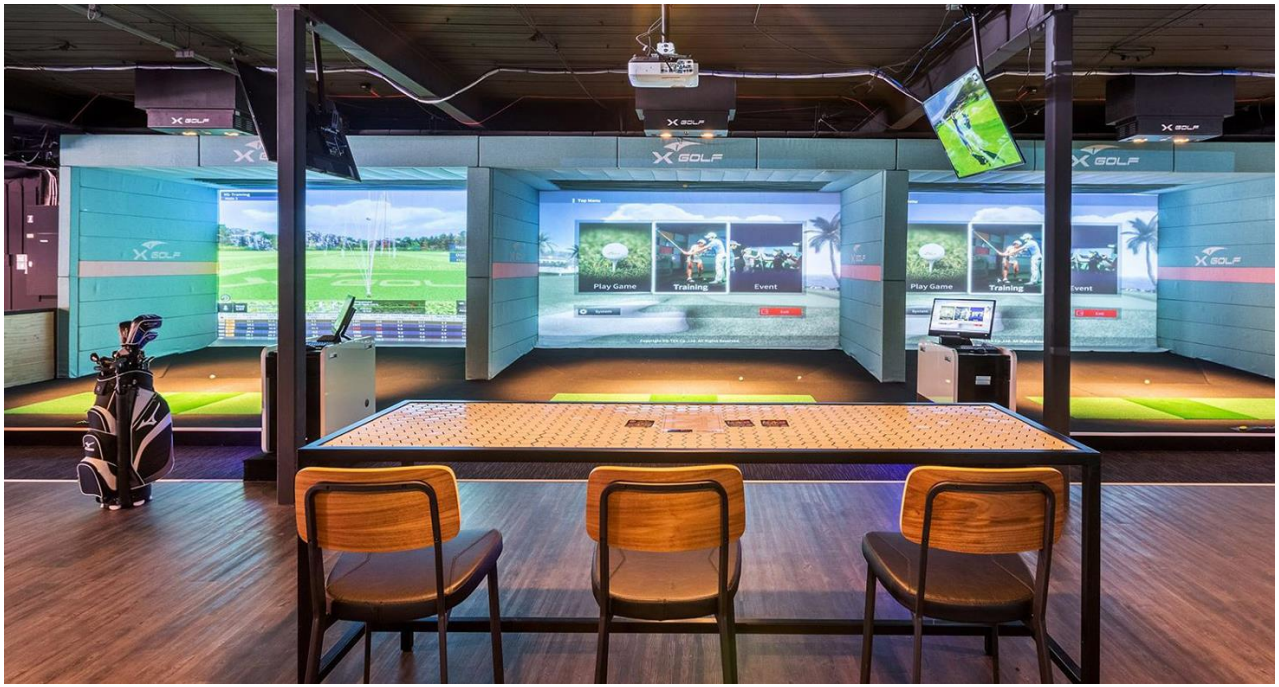
- As a standalone product, Australian business Holey Moley has had great success operating as part mini golf, part cocktail lounge.
- Holey Moley is a mini golf course and bar that turns traditional putt putt into a multi-sensory experience of unique holes inspired by childhood favourites and items from every life.
- Each Holey Moley venue also has a food and beverage offer, serving beer, wine, cocktails, burgers, and 'old-school' sandwiches and snacks.
- Holey Moley is owned by Funlab, a hospitality-driven entertainment organisation whose subsidiaries also include Strike Bowling, Juke's Karaoke and Red Herring Escape Rooms (to name a few).
- In the USA, Popstroke – a high-end, larger scale version of mini golf designed by Tiger Woods – has had great early success, building multiple venues nation wide.



Holey Moley is in locations across NSW, QLD, VIC, WA and SA.

Source: Holey Moley

- X-Golf is a global leader in golf simulation technology across Australasia, North America and Europe.
- X-Golf was originally designed to address the conflict between the increasing demand for golf versus the constraints of climate, time and space for golf courses.
- This issue required re-imagining how golf could be played, harnessing digital technology to produce a virtual concept of the real game.
- The product includes state of the art indoor golf simulators offering unparalleled accuracy and realism, through a combination of camera systems, infrared lasers, impact sensors and advanced gaming software.
- The relaxed, welcoming atmosphere makes it perfect for players of all ages, genders and demographics. It is enjoyable for golfers of all abilities, and is ideal for events, birthday parties, corporate functions, etc.
- The 'X-League' has also been integrated into Australian locations, offering a competitive element to the largely social product.
- The product's compatibility with entertainment spaces offers potential for strategic partnerships with hospitality and event organisations.



Example of an X-Golf Facility

Source: X-Golf

- The Town of Cambridge in Western Australia is home to Wembley Golf, widely renowned as one of the busiest and most activated golf facilities in Australia.
- Opened in 1932, it is also one of Perth's oldest public golf courses, however since that time the facility has seen significant investment to expand and develop the services on offer.
- Over a 14-year period, the Town of Cambridge has invested over $30 million into the facility, with the vision to create “an active community hub” that would appeal to broad demographic – including non-golfers.
- The most recent developments in 2016 saw the introduction of an 18-hole mini golf course, a new restaurant and function facility, and a children’s playground.
- Wembley Golf now generates significant revenue for Council, with profit in excess of $4 million per year.
- Both the mini golf and playground developments have brought a new and varied customer base to the facility.
- Mini Golf can deliver between 45,000-65,000 rounds per year. Interestingly, mini golf patrons have a significantly higher F&B spend than traditional golfers.
- On busy days the driving range can deliver over 100,000 balls.
- The playground has also been a driver of non-golfer visits (this is the only element of the re-development which Council did not insist on a business case). Approximately 80% of patrons who use the café are locals or non-golfers.

Mini Golf course at Wembley Golf

Source: Town of Cambridge

One of the key challenges facing golf today is dispelling the conventional thinking of what makes a great golf course. Many have a narrow view of the game and think golf must be played on a course of a certain length, over a certain number of holes and to a certain par.

Golf: 2021 and Beyond

Many opportunities to develop or redevelop golf courses have been lost over the years because key decision makers are unaware of the great courses around the world which defy such rules.

To many experienced golfers, a true course is 18 holes and anything else is not a "serious test". But this is just one of the many misconceptions about the game which needs to be challenged.

There are many examples of unique courses which have proven to be enduringly popular with full tee time booking sheets and clubhouses full of happy golfers. Some examples include 12-hole courses, par 3 courses, and short courses barely measuring 5,000 metres long.

In recent times we have seen genuine innovation disrupting the status quo. This presents a wonderful opportunity to attract more people to the sport, as well as retain those already in love with the game.

The most important element to a good golf course…

- The quality of holes

The misconceptions about what people think makes a good golf course…

- Length and par
- Being regarded as a "Championship" course
- Condition
- Blind shots
- Length of walks
- Returning nines
- Quirks
- The number and mix of par 3/4/5 holes
- That golf courses and facilities are exclusive and aren't places for the whole community to enjoy

Top Tip:

Focus on delivering the best quality golf holes possible for the course – and having the courage to compromise on other elements – will provide a higher chance of success for the course over the long-term.

There are numerous new and innovative options available to course designers to maximise the use of space available for golf holes. Using three and six-hole loops can provide a 9- or 18-hole course experience within a smaller footprint.

Innovation in Course Design

The world of golf features all sorts of weird and wonderful quirks with many of these featured in some of the world's best designed courses.

An understanding of these is important when assessing a course's unique challenges – and weighing up whether a potential opportunity has some merit or not.

This can include:

- Blind shots
- Double Greens/Alternate Greens
- Cross-over holes/Alternate fairways
- Quirky sequences of holes such as consecutive par 3's or par 5's
- Courses that start or finish with a par 3
- Courses that start or finish into a rising or setting sun
- Courses split by a road or railway line
- Courses with non-returning 9's or no bunkers
- Courses with internal out of bounds.

Short Course Concept at Kingston Heath Golf Club, VIC

Source: OCM

"Get the best soil available, and if your members can only afford to buy fifty acres, lay out the most interesting holes possible in that area, regardless of length or number. Do not let certain standards become an obsession".

Robert Hunter, The Links 1926

This three-part diagram demonstrates innovative options which are available to Course Designers, to maximise the use of space available for golf holes.

Design 1

A typical three-hole loop.

Design 2

A three-hole loop with additional tees to make six unique holes.

Design 3

A three-hole loop with additional tees to create three additional holes if played in reverse.

Golf has been played for over 500 years… But we've only been building 18-hole courses for 150 years.

It provokes a challenging question… why are we so fixated on playing 18 holes today?

In 1851, Prestwick Golf Club opened on the West Coast of Scotland with 12 holes the same year it hosted the British Open. Meanwhile on the East Coast, golfers had been playing on the links at St. Andrews since the 1500's. Initially the layout was rudimentary but by 1754 it had been converted into a 12-hole course….10 holes of which were played twice to make a total of 22!

Yet today, why are courses predominantly designed with 18 holes in mind?

Building golf courses using less than 18 holes makes a lot of sense, especially in the current era when land and water can be such scarce commodities. Smaller golf courses cost less to build, less to maintain and allow for other development to occur on the unused or surplus land that might complement the golf offer.

Like short courses, or those with less than 18 holes, par 3 courses take up a much smaller footprint than a conventional 18-hole golf course. They provide holes which range between 60 metres and 200 metres, and offer an excellent examination of skill, testing every club in the bag. The additional benefits are that it takes less time to play and is built over a smaller playing field.

When well designed with high-quality holes, golfers can experience the same thrills, same variety, same fun and same enjoyment as an 18-hole course.

So, the big question is: why then, haven't they managed to make their way into the golfing landscape in Australia?

Overseas there are many great examples of well-respected and popular smaller golf courses including:

- 13-hole par 3 course – The Preserve – at Bandon Dunes;
- 9-hole course at Winter Park in Florida, and;
- 9-hole course recognised as the best in the world – Royal Worlington and New Market in England.

The R&A is also demonstrating support of shorter courses through its Lethamhill Golf Course project that sees the public course redeveloped to create a family focussed venue that provides access to a Par 3 course.

"We want to make golf more welcoming and inclusive for people of all ages and backgrounds and so we need to appeal to them by offering a variety of fun and affordable activities that entice more families and young people into the sport."

- Martin Slumbers, Chief Executive of The R&A

In recent years, courses have been designed longer and longer to help offset the advances in equipment which enables participants to hit the ball further.

The Myth of Length and Par

Interestingly, some of the courses which remain among the best in the world aren't long at all by modern standards. Many are close to, or under 6,000 metres rather than near the new standard of 6,500 metres plus.

While technology has changed the game for better players, it has done little to alter how the average hitter knocks their ball around. Most increases in the distance that golfers hit the ball today is predominantly at the professional level – where technique is impeccable and complementary to ongoing equipment improvements.

Unfortunately, many decision makers overestimate the impact of improved golf equipment and develop design briefs that are based on ambitions for tournament length and standard courses.

Top Tip:

The best advice for golf course decisions makers is actually to consider whether a course would be better if it were shorter?

Length…

Some examples of world class courses which are less than 6,000 metres long include:

- Swinley Forest (5,400m – Par 68)
- Cypress Point (5,900m)
- Rye (5,900m)
- Chicago (5,900m)
- Cruden Bay (5,600m)
- Macrihanish (5,800m)

Par…

Among the world's top 100 courses there are more courses that don't have a par of 72:

- Par 73's (5)
- Par 71's (30)
- Par 70's (22)

Image of Swinley Forest
Source: Gary Lisbon Golf Photography

- Bougle Run is a 14-hole short course at Barnbougle on the north east coast of Tasmania.
- Since opening in 2004, Barnbougle has climbed to the top of many golfers 'must play' lists, with two 18-hole layouts, the Dunes and Lost Farm.
- Bougle Run was designed by internationally acclaimed Golf Architect Bill Coore, and opened on 31st March 2021.
- The short course presents golfers with a new opportunity to experience the links landscape, in only 90 minutes instead of four hours.
- Bougle Run is designed for golfers of all abilities and its 14 holes consist of 12 par-3's and two par-4's. The route includes some of the highest points of the entire Barnbougle complex, and is set slightly back from the coastline, providing birds eye views over the Lost Farm Course and Anderson's Bay.[6]

Bougle Run, TAS
Source: Barnbougle

"We were searching for what else we could do to make it more fun for golfers when they're here. We went over to Ireland and Scotland and you could see the short courses there are all fun courses and they teach kids how to play…

I thought if we could build something that matched the two courses here, but shorter and more fun, that takes less time to play… people could play the course before taking off to get a flight or after getting off a flight and arriving here late in the afternoon… it just fills out their Barnbougle experience."

- Richard Sattler, Barnbougle Owner

- In 2016, the Sandringham (Sandy) Golf Links was chosen as the site for Golf Australia and the PGA of Australia's new home – the Australian Golf Centre.
- This set in train a series of developments at the site including high-performance facilities, an administration centre and a re-designed 18-hole golf course.
- To facilitate space for the expanded practice area, holes 1 and 9 from the original layout were lost, which meant finding a new 18 holes within a reduced footprint.
- The par-65 course has two sets of tees, both comparatively short at less than 5000m, and was designed by Mike Cocking from OCM and built by the links staff of Royal Melbourne.
- The course features wide fairways, firm and fast greens, and has been designed to be fun to play for all abilities.
- The facility also offers innovative playing and access options, with free golf for kids aged under 16 accompanied by a playing adult (after 1.30pm).
- The course re-development was largely funded by the Victorian Government, and has seen high demand since it opened, with up to 250 rounds played daily, equating to a 15 per cent rise on previous patronage.[7]

Sandy Golf Links
Source: Australian Golf Digest

"We did a lot of things so that the course doesn't daunt anyone, but it's also a great layout for lower handicappers because to score well, you probably need to attack it from the right spots. It's short enough that it's playable for all, but a test for those who want to take it on using the width on offer. Really, it's the perfect length for kids and beginners – both men and women – and those who are wanting to prolong their golf and now find the big courses too tough. "Hopefully Sandy helps illustrate the business case to other councils in terms of facility upgrades and what is possible."

- Mike Cocking, OCM Course Architect

- In 1898, Dr. Leroy Culver carved the first nine holes out of the sand at Pinehurst. Over the next century, Pinehurst came to be referred to as the 'Cradle of American Golf'.
- Nearly 120 years after golf arrived at Pinehurst, the historic resort re-opened 'The Cradle', a 720m, 9-hole short course featuring holes ranging from 50 to 115 metres.
- Greens fees for The Cradle are $50 and vary seasonally. Children 17 years and under play free when accompanied by a paying adult.
- Three years since its opening, 115,094 rounds have been played at The Cradle.
- Bordering The Cradle will be Pinehurst's expanded free-to-play putting course Thistle Dhu, which surrounds the Putter Boy statue.
- At 6,970 square metres, the new Thistle Dhu is four times larger than the original putting course built in 2012, with rolling hills and sweeping valleys providing a picturesque setting.[9]

Pinehurst, The Cradle
Source: GOLF.com

Par 3 Courses

The construction of Par 3 courses is becoming more common overseas, and according to Golf Course Architecture, are a popular option for many reasons – they allow golfers to have a complete golf experience in a smaller window of time through using a smaller parcel of land and they can be a great environment for introducing new golfers to the sport and a fun way for all types of players to work on their game.

In addition, a number of clubs and facilities are adding shorter Executive style courses to complement their existing course.

Golf Course Architecture features a number of stories on current and future short course projects in its topic section on Short Courses.[5]

Noosa Hills Golf Course in Queensland is an example of a successful Par 3 Course which in fact has 36 holes.

Benefits of Par 3 Courses

In Australia there are a minimal number of Par 3 and Pitch & Putt courses, but this creates an opportunity to increase this type of facility that has the benefits of:

- Takes less time to play
- Less cost to construct and maintain
- Caters for all levels of golfers including advanced players
- Ideal for children, beginners, families and the elderly and are important for transitioning participants along the golfing pathway
- Provides a solution for courses needing to be re-designed due to boundary and safety issues
- The course can be rated to accommodate competition play for golfers with an official handicap

Noosa Hills Par-3 Golf Course, QLD
Source: Golf Australia Magazine

Recommended Resources

Golf Course Architecture – Short Courses

- In 2009, the full length 9-hole golf course at Lake Claremont was seeing low utilisation and increasing operating costs. As a Council-owned facility, the Town of Claremont was facing a decision about whether to retain the full-length 9-hole course, or to re-purpose the land for another use.
- At a Council referendum, the community made it clear they wanted a golf course to remain open at the site, and as a minimum they wanted at least a Par 3 layout to be retained.
- In 2017 the course was redesigned by world class golfer Terry Gale.
- The course comprises of 9 Holes, which are all Par 3's and range in distance from 87 metres to 137 metres.
- The course was re-designed with the intention of providing something for everyone – from the complete novice, through to the skilled golfer.
- The new facility re-opened in October 2017, and the on-site amenities include a practice putting green, practice chipping area, clubhouse and the TeeBoxCafe.[8]

Lake Claremont Golf Course
Source: Golf Pass

Pitch and Putt

Pitch and putt is an amateur sport derived from golf where the golf course has hole lengths that are typically up to 90 metres and just 2–3 clubs are typically used. Invented in Ireland in 1929, and developed through the 1940s, it is now played in dozens of countries and has two world governing bodies.

In Australia the sport is governed by the Australian Pitch and Putt Association (APPA) who has a memorandum of understanding with Golf Australia.

APPA is affiliated with the Federation of International Pitch and Putt Association (FIPPA) and European Pitch & Putt Association (EPPA) Pitch and Putt who define Pitch and Putt as having the following key characteristics:

Distance

- Length of hole – maximum 90 metres
- Length of 18 holes – course maximum 1,200 metres

Number of clubs

- Maximum 3 – one of which must be a putter

Tees

- Designated teeing ground may be constructed of grass or synthetic or other artificial materials
- The ball must always be played off the defined teeing ground by placing it on a tee

Image of a Pitch & Putt Course
Source: Piza Golf

Pitch and Putt courses cater for children, beginners, families and the elderly and are important for transitioning participants along the golfing pathway and offer a more time efficient and alternate way to engage in the sport.

Although there are few pitch and putt courses in Australia, there is an opportunity for future growth in this type of facility that require far less land to construct than a standard golf course with far less maintenance costs and can provide an offering to attract new market segments.[3,4]

Recommended Resources

Our Crusade for Pitch-and-Putt, Australian Golf Digest

Multi-Purpose Golf Facility: Pitch & Putt on Steroids, Piza Golf

- Traditional golf in central Victoria is easy to access but evidence suggests that even at a relaxed club like Neangar Park, the intimidation factor to start golf can be high.
- Neangar Park Golf Club came up with an idea to build a nine-hole pitch and putt facility and upgrade its existing practice fairway.
- Designed by Contour Golf Design Group, the pitch and putt course has been constructed next to an upgraded practice fairway and is accessible to the public as well as members.
- Built by Course Superintendent Brendan Brown, there are no other such facilities in the area.
- Since being opened the course has been well received by members and the local community.
- Neangar Park worked closely with Golf Australia to develop the project, which was funded under the Victorian State Government's November 2018 election commitment.
- The Neangar Park Pitch & Putt course officially opened on Monday 30 May, 2022.[10]

The Neangar Park Golf Club pitch and putt course
Source: Golf Australia

"This project should be seen as a regional facility, rather than just for the benefit of our members."

- Philip DeAraugo, Club President

Forward Tees

Many golf courses have traditionally been set up in a manner that is not conducive to beginners and in particular women by being too long in distance and hence have placed many women at a disadvantage to men. As a result women and beginners have been presented with an unenjoyable golfing experience and therefore have been lost to the sport.

A simple way to address this issue is having golf courses set up through the positioning of tees and the location of cross hazards to match the full spectrum of driving distances and swing speeds of the level of golfer and therefore attracting the full potential market.

The PGA of America produced a guide book – Setting up Golf Courses for Success, A Critical Factor in Attracting More Women to Golf that provides recommendations on how golf facilities can adapt their courses through the introduction of forward tees.[11]

In addition prior to the introduction of the world handicapping system, the United States Golf Association and the PGA of America launched Tee It Forward – a joint initiative promoted by Jack Nicklaus to encourage players to play from a set of tees that are best suited to their driving distance.

Key Findings

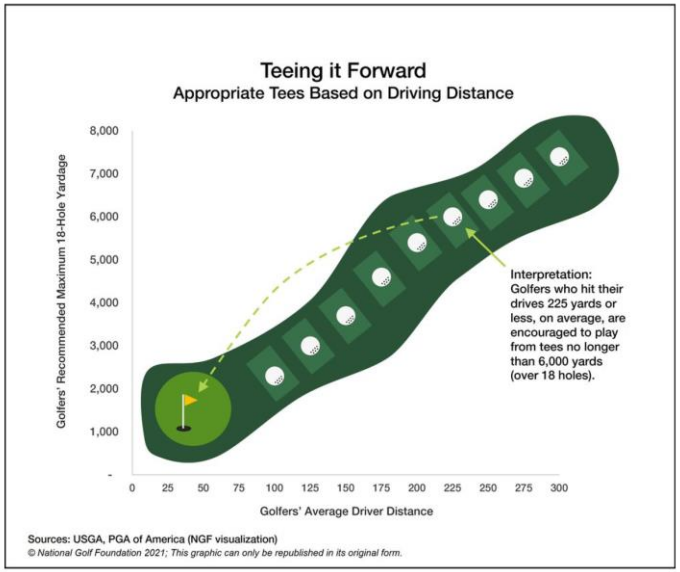
The findings of this initiative were that:

- 56 percent of golfers played faster
- 56 percent are likely to play golf more often
- 83 percent hit more-lofted clubs into greens
- 85 percent had more fun
- 93 percent will continue with Tee it Forward[12]

To the right is an illustration of the recommended maximum 18-hole course distance according to golfers average driver distance as published by the National Golf Foundation.

Benefits

- Greater enjoyment by golfers as tees are commensurate to a players ability.
- Assists retention of older golfers.
- Rounds can be used for handicapping purposes.
- Spreads wear and tear for normal tees.
- Improves pace of play.
- Better integration of golfers.
- Eliminates gender specific tee times.



World Handicap System

One of the key benefits of the World Handicap System (WHS) is that the calculation for a daily handicap includes an adjustment for the difference between the Scratch Rating and the Par of the set of tees being played.

This makes playing to par the universal measure of whether a player has played to their handicap, regardless of the course or set of tees.

As a result, in a handicap competition played from two or more sets of tees (such as in mixed-gender or mixed-ability events), the appropriate comparison of two players who have played from different sets of tees is their net scores in relation to par.

Orange Tees Initiative

Golf Australia SA has led the way with forward tees through assisting clubs to label their shorter course as the **Orange** course to signal that a club has a set of tees that are beginner friendly. All of SA's premier sand belt courses have had **Orange** tees rated, as have most of the Tier 2 clubs in the metropolitan area, and several courses in country districts.

Example of an orange teeing area at The Vines Golf Club of Reynella, SA
Source: Golf Australia

Lyne Morrison, a member of the Society of Australian Golf Course Architects (SAGCA), published an article in Issue 16 of the SAGCA magazine, *Changing Course for Slower Swing Speed Player.*[14]

In an age when lengthening courses is the norm, finding some elasticity within a design is important if the game is to retain a significant portion of its participants.

Lyne has worked in the field of golf course design for over 25 years and believes golf courses should provide a challenging but manageable playing experience that build inclusion for all levels of golfing ability. She is a strong advocate of improved course set-up that provides a more enjoyable and rewarding game for women and seniors.

An example at Friar's Head of forward tees being sited to provide the golfer with achievable carries across rough ground
Photo: Geoff Shackelford

- "Life Tees" is a gender-neutral initiative that has been implemented at the Schaumburg Golf Club & Academy (SGC) with each set of markers appropriately distanced for all golfers.[15]
- SGC also reimagined the colour schemes of each marker as illustrated below to help eliminate the stereotypes associated with standard colours and encourage golfers to play it forward.
- The renovated SGC has drawn attention from the United States Golf Association, who will be conducting research on the effectiveness of the new Life Tees and their impact on golfer enjoyment.
- Providing juniors, beginners, or members of lesser ability a shorter course option than would otherwise be available to them through altered tee positions can make for a more enjoyable experience.
- A further benefit of this is that it will almost certainly lead to an improvement in the pace of play. A common refrain in world golf is that players should be encouraged to choose tee options that align with their level of play.

Forward Tee, Case Studies in Additional Tees
Source: American Society of Golf Course Architects Foundation

SECTION 3
PROJECT PLANNING

Image of Lonsdale Links
Source: de zeen

The following recommended guiding principles have been developed from best practice and a future-thinking mindset to assist with the initial planning of any golf facility development project. Australian Golf's objectives and aspirations for future facilities and infrastructure are…

Customer focused

Designed and developed to reflect the needs of the community, with current and future user groups at the forefront.

Adaptable

Provides a diverse offering that is inclusive of all user groups and is flexible to meet the changing needs of the community.

Sustainable

Environmentally, fiscally, and socially responsible, and effectively managed so that usage is optimised – both now and into the future.

Community benefit

Celebrates cultural and heritage connections and delivers a broader benefit to the local community by providing a social license to operate.

Innovative

At the leading edge of facility design and harnesses technology to enhance the customer experience.

Managing any project is not an easy task – irrespective of the scale or type of project. It is recommended that the following five distinct phases are followed when undertaking a golf facility project.

Initiation

- Define project goals
- Develop a business case
- Complete project charter
- Compile a list of stakeholders
- Identify Traditional Owners

Planning

- Define project scope and develop a project plan
- Formulate a budget
- Define roles and responsibilities
- Develop a Community and Stakeholder Engagement Plan
- Prepare a Communications Plan
- Identify statutory planning considerations

Execution

- Allocate project resources
- Manage project resources
- Commence works
- Meet often and solve issues as they arise

Monitoring and Control

- Track effort and cost
- Monitor project progress
- Ensure adherence to plan
- Prevent any chance of disruptions

Completion

- Handover deliverables
- Review project deliverables
- Approve project completion
- Document project learnings

Recommended Resources[16]

- Project Stages
- Project Management Docs
- Project Management Plan Template
- Project Business Case Template

There are a number of key phases of work and relevant documentation required when undertaking a course development project.

Expertise	What they do?	Typical cost and payment arrangements	When to engage?
Course Designer/Architect	Master Plan; Concept Development; Detailed Design and Documentation; Construction Supervision.	Master Plans are usually a fixed fee depending on the size and scale of works and can vary. Course Designers will often work on a % of total construction costs and generally range between 5% (larger projects) and 15% (smaller projects).	As early as possible – the initial planning and problem solving can have a significant benefit by avoiding unidentified problems.
Clubhouse Designer/ Architect	Concept Development; Building Program and Circulation Planning; Detailed Design and Documentation; Construction Supervision.	Clubhouse architects often work on a % of total construction costs and generally range between 5% (larger projects) and 15% (smaller projects).	As early as possible – the initial planning and problem solving can have a significant benefit by avoiding unidentified problems.
Commercial Advisor	Feasibility and business case; Investment and payback modelling; Operational and cash flow modelling; Government grant writing and advice; General commercial advice.	Generally able to arrange a fixed fee based on an agreed scope of works. The consultant should prepare the scope for negotiation and agreement.	The earlier the better.
Project Manager	Develop overarching timetable for all consultants; Manage all aspects of the facility development; Assist with managing costs and negotiations with suppliers.	Payment options might vary but include monthly fees, % of project costs or agreed fixed fee.	When moving to Design and Construction Phase.
Community and Stakeholder Engagement	Understand the needs and requirements of the community and how the facility may provide broader community benefits.	Generally engaged on an hourly rate for a proposed delivery of tasks/engagement activities.	Throughout all stages of the project – the earlier the better.
Additional sub-contractors: Arborist, Agronomists, Environmental, Ecology, Irrigation Designer, Heritage and Cultural, Town Planners Other.	Specialist advice, assessments and reports to inform the overall planning, design and construction process. Particularly useful for understanding the cultural, heritage and environmental values of a site and other planning considerations.	Generally are a fee for service based on a clear scope of works.	Rely on the advice from the Architects, Commercial Advisors and Project Mangers.

The key phases of work and relevant documentation required when undertaking a golf facility project are outlined below and over the following page.

Business Case

The Business Case will assess the overall costs against the desired vision and objectives of the project (these are not necessarily all financial and often include a more holistic series of desired benefits for the community which will have access to the facility). The business case will also outline the investment plan and forecast ongoing cash flows which demonstrate the viability of paying back any borrowed capital.

Planning Considerations

Early stage engagement with experts on environmental design, sustainability, Cultural Heritage Management Plan (CHMP) and Traditional Landowners.

Planning Approval

The planning approval process will depend on the complexity of the site and its characteristics. Some factors include Floodplain, Significant Vegetation, Zoning and other Overlays. Specific expertise will be required to achieve planning approval.

Communications Plan

Ensuring a communication plan is set up to regularly update stakeholders through phases of the project.

Consultation and Engagement

Identifying and engaging with golfers and the local community on their needs to inform the project scope. As well as key stakeholders and partners such as landowners, Local, State and Federal Government, and Commercial that may inform or make decisions or assist in delivering the project through investment or other partnerships.

General Design Brief

Outline of the overall vision and facility specifications, desired physical infrastructure, functional requirements.

Feasibility Study

Evidence-based assessment of whether the project will succeed; what location and site attributes are critical; if there is sufficient market demand and will likely continue to be; implications of other competitors or competitive offers.

It is critical to factor in costs of planning delays, cost of finance, sources of funds, and they should canvass widely with like facilities to appreciate the likely full operating and depreciation costs once project completed.

Master Plan

The response to the general design brief where the architects will ‘bring the ideas’ to life with visual articulations of what’s possible and overviews of the key issues and opportunities that exist for the proposed site.

Top Tip:

It is important to familiarise yourself with the entire planning process before commencing any project.

Early engagement with the local planning authority is key to understanding statutory planning requirements or constraints to guide any thinking and feasibility studies

A Project Management Team or Project Working Group should be formed to govern the project from start to finish.

You should also consider whether any specialist consultants will be required, and factor this into your overall timelines and budget.

Engaging with your local council through the planning process will be useful for obtaining access to resources, advice and potential project funding opportunities.

Concept Development And Costings

The Concept Plans will include much more detailed specifications for the overall facility and each specific infrastructure component (i.e. course, clubhouse, maintenance shed). It will include enough detail for the plans to be costed. In some cases they might be provided to a Quantity Surveyor who will then provide costings for each component of the facility.

Tendering

Tendering involves identifying and selecting a group of suppliers to provide proposals to complete the works or specific components of the facility. A brief will be required with enough information for the suppliers to determine how they will approach the project and how much it will cost for them to do so.

Construction

The selected tenderers will be engaged and all details will be finalised so they can begin construction. The construction process includes site preparation, bulk shaping, drainage installation, irrigation installation, sand capping (if required), feature construction (tees, greens, bunkers, fairways, grassing and re-vegetation.

Construction underway at Castle Hill Golf Course in Sydney
Source: Harrison Golf

Course Area

The following should serve as a guide for the minimum usable land required for the golf course. This assumes the land available for golf is all usable and a reasonable buffer of 30 to 40 metres exists around all boundaries.

- 18 holes – 50-60 hectares.
- 9 holes – 20-30 hectares.
- 9 hole par 3 course – 4 hectares (not including clubhouse/pavilion, car park or maintenance).

Driving Range Area

Driving ranges vary in size depending on site/range boundaries and netting:

- With netting, minimum area is 2 hectares.
- Without netting, general range is from 3.3 hectares with safe boundaries (golf course holes surrounding the range) to 6 hectares with unsafe boundaries (i.e. a road or housing down one side).

Soil

Sand or a sandy loam is ideal as it minimises the need for drainage, is easier to shape and potentially avoids the need to import materials. Heavy sites comprising of clay or heavy soil will need more careful planning and likely need more care to ensure good surface drainage and the addition of significant sub-surface drainage. A heavy site will likely cost twice that of a sandy site to construct.

Terrain

Ideally the site is undulating enough for good variety but not too steep to create difficult walks or challenges in creating golf holes. There should also be early planning for any landscape implications for clubhouse location and its connection to services.

Water Access

The ability to store, collect or source water is critical to the feasibility of a project. The design and amount of fine turf, soil type, grass and climate will all influence the ultimate amount of water required for maintenance. During 'grow-in' or 'establishment', it is common to use twice the amount of water required for normal maintenance.

Services

If the site is greenfield, services will need to be connected to the site for power, gas and water, which will create additional project costs.

Planning

Planning advice will determine if there are any overlays on the site which could affect the golf course layout or construction (e.g. flood plain, significant vegetation, indigenous heritage, bush fire requirements, etc.).

Key questions to answer before selecting a final site:

1. What is the vision for the golf facility?
2. How many people will be using the facility?
3. How often will people be using the facility?
4. Is the site easily accessible for these people?
5. Who will be operating the facility, and have they been involved in answering the previous question?
6. How many holes does the course need to achieve the vision (and have you discussed this with a Course Designer?)
7. What size area does the site need to be?
8. What are the requirements for clubhouse/pavilion, parking, infrastructure and maintenance facilities?
9. Is there a budget for the facility and have you factored in the cost implications of the site attributes?
10. Have traditional Owners been consulted engaged?
11. Have statutory planning requirements and current planning zones been considered?

When considering a facility development/redevelopment project, understanding your market and the key types of customers that you want to attract is a critical factor to ensuring ongoing customer satisfaction and retention.

Why is the Customer Experience so Important?

The customer experience is the total perception someone has of your club/facility. It's the cumulation of all the various experiences customers have with your business, and can help:

- Improve customer retention and loyalty
- Increase customer spend
- Optimise customer acquisition
- Reduce the costs to serve your customer
- Increase brand awareness and equity
- Improve your market awareness

Finding out what your customers really want will help you improve your products and services to meet their needs.

Understand Your Market

The following are some key tips for enhancing your understanding of your market:

- Identify specific geographical areas to target potential customers
- Map the customer journey through your facility
- Learn as much as you can about your competitors
- Understand where and how to promote your offers

Market Sizing

Determining the size of your potential market is critical to estimating demand and patronage at your facility. This can be done using the following steps:

- **Determine a geographic catchment** that is within close proximity to your facility. This could be a local Council boundary, suburb boundary or could be more granular and based on a drive-time catchment.
- **Calculate the size of the population** based on the geographical catchment. The Australian Bureau of Statistics website or your local Council website will have this information.
- **Estimate the proportion of the population that have an interest in playing golf**. Research carried out by the Australian Golf Industry Council in 2021, found that 5.8 million Australians are interested in playing golf in some form.[17] This research can be used to determine a rough estimate of the general population that would be interested in engaging with your facility.

Ask your customers what they think

- Conduct a customer satisfaction or member survey
- Identify what's special about your club/facility
- Understand key pain points and areas for improvement

Consider ways to increase engagement

- Identify underrepresented groups and develop an engagement plan to inform them and engage them with the facility
- Create a retention programme for existing members and customers
- Create a marketing plan to recruit new members and customers
- Offer new packages to meet the needs of different customers
- Support the development of new facilities

SECTION 4
BUILDINGS AND AMENITIES

Artist's Impression of Lethamhill Golf Course pavilion
Source: The R&A

A great golf experience is made up of both the on-course and off-course elements. High quality complementary facilities (such as a modern clubhouse or pavilion) assists in driving visitation for social activities and events.

Clubhouses and Pavilions of the Future

The design, layout and functional areas within a golf pavilion or clubhouse are critical to bringing new audiences into the facility. Golf facilities need to appeal to new markets by broadening, coordinating and aligning the offering.

The most important elements are…

- Adaptability and flexibility
- Functional and customer focused
- Logical and intuitive design
- Universal design
- Sustainability and ESD principles
- Safety and security

Adaptability and flexibility

- Can cater for different user groups and functions
- Considers future expansion opportunities and can withstand changing market dynamics
- Sustainability and lifecycle of building (i.e. the building can be retro-fitted in the future or updated to meet changing needs

Functional and customer focused

- Efficient design, suitable for the overall facility offering
- Clubhouse meets patron requirements and expectations
- Planning and design is focused on a positive patron experience

Logical and intuitive design

- Provides intuitive wayfinding, good solar orientation, maximises views and patron comfort
- Enables efficient and effective operation and staffing
- Ancillary functions are located and well designed for ease of access, storage and maintenance machinery

Complementary uses

- Consideration of other local facility or business needs
- Create opportunities to diversify and incorporate other shared uses which could include for example allied health and gymnasium facilities, or shared office and functional spaces to accommodate other sporting bodies/clubs

Top Tip:

Environmental, social and cultural elements of a ‘facility’ are equally or more important than physical buildings. Consider the sense of arrival, the wayfinding to get to the venue/find what you’re looking for and the additional ways to bring people from the community into the facility.

The following key design principles can assist in creating safe, welcoming, inclusive and sustainable facilities.

Sustainability & ESD Principles

- Solar orientation
- Energy efficiency
- Energy ratings
- Conservation of resources (i.e. water and power)
- Optimise operational and maintenance practices
- Use of materials
- Recycling opportunities
- Passive and active building climate management/control
- Thermal heating

Universal Design

- Equitable use
- Flexibility in use
- Simple and intuitive use
- Perceptible information
- Tolerance for error
- Low physical effort
- Size and space for approach and use

Passive Security/CPTED Design

- Lighting, signage and wayfinding
- Surveillance
- Legibility
- Territoriality
- Ownership of the outcomes
- Management
- Vulnerability

Occupational Health And Safety Design

- Staff safety and wellbeing
- Patron safety and wellbeing
- Hazardous materials
- Surfaces, finishes and materials
- Machinery, plant and equipment
- OH&S audits and risk assessments
- Natural event/emergency management procedures

Top Tip:

Encouraging your facility designer to align with best-practice design principles will ensure your facility meets contemporary community expectations and will create more flexible use opportunities in the future.

Recommended Resources

Universal Design Fact Sheet

Golf clubs and facilities have an important role to play in engaging their local community to support a healthy lifestyle. It is important to ensure that a welcoming and safe environment is provided for people of all abilities.

This particularly relates to facility access (including to various parts of the course), club offerings and entry level programs, access to equitable rules of play, on-course motorized transport, and fees.

Golf Australia has worked in partnership with The Australian Human Rights Commission (Commission), to develop a set of guidelines for the inclusion of people with disability in golf.

The purpose of the guidelines is to provide practical guidance to golf clubs and facilities on promoting an inclusive environment for people with disability in golf in a manner that is consistent with the Disability Discrimination Act 1992 (Cth) (DDA).[18]

Course Access

The following should be provided to ensure that the golf course is designed to be accessible for all.

- On-course motorised transport/golf carts for hire at low/no cost
- Hire golf clubs adapted specifically for people with disability
- Teaching/coaching services that take into account a person's disability
- Access to competitions for people with disability
- Support for carers assisting people with disability

Facility Access

To ensure equitable access for people of all abilities, club and facility operators should ensure that the relevant parts of a building and associated buildings:

- Are connected by accessways suitable for use by people with disability
- Provide access from the main points of a pedestrian entry at the allotment boundary
- Ensure access from any required accessible car parking space on the allotment
- Consider the proximity of ramps or lifting devices to stairs or steps at an entrance
- Limit the use of revolving doors as these can not form part of a continuous accessible path of travel
- Have accessible toilet and shower facilities

Recommended Resources

Guidelines for the Inclusion of People with a Disability In Golf

Premises Standards Guidelines

Top Tip:

The following questions should be considered to ensure there is no discrimination and ensure a safe, welcoming and inclusive environment for people with disability:

1. Does your club or facility generally provide accessible facilities (e.g. clubhouse, change rooms, golf shop)?
2. Is the provision of accessible facilities a consideration when golf facilities are refurbished?
3. What might be some practical barriers to providing accessible facilities?
4. If your facility doesn't have adequate course accessibility for people with disability (coaching, motorised carts, disability-specific equipment) what do you consider to be the barriers to achieving access?
5. Is the course set up to facilitate access for people with disability (e.g. tees and difficulty)?
6. Is your club moving towards an inclusive and accessible approach to membership?

- The owners of Leura Park Estate vineyard across the road from the Curlewis Golf Club on the Bellarine Peninsula in Victoria had been the official wine partner at Curlewis for years.
- When they heard the iconic course just outside Geelong on the Portarlington Rd was in danger of going under, they entered into a five-month negotiation to purchase the land, and have since developed a new clubhouse, pro-shop, accommodation and golf course complex that officially opened in March 2022.
- The new driving range at Curlewis and facility improvements have been developed with the application of universal design principles in its design. This includes:
    - Car parking accessibility and access to facilities with no elevation changes
    - The use of automatic doors for entry and exit
    - Counter heights at reception being "wheelchair friendly"
    - Accessible driving range, mini golf and food and beverage areas
    - Full wheelchair access with a Paragolfer (motorised standing chair) on site
    - PGA Professionals with – PGA All Abilities Accreditation
    - Program offerings for people with disabilities
    - Accessible toilets

Curlewis Golf Club
Source: Australian Golf Digest

Planning Scheme Provisions and Requirements

The local planning scheme provisions and requirements will set out what controls cover the subject land with respect to future development, types of development allowed on the land, requirements for building massing and heights, vegetation and removal, bushfire controls and restrictions, as well as cultural heritage and other heritage issues. It is recommended to engage a town planner or planner to provide clear guidance around the requirements, allowances and restrictions covering the subject land.

Terrain Condition

The terrain will also impact the functional design and overall costs. Ideally the chosen location for the clubhouse will be flat and easy for trucks to access throughout the construction phase. The type of soil/geological conditions may also impact the structure which is achievable – and geological testing will be required before construction.

Consultation with Traditional Landowners

Engaging early with the local Traditional Owners is important to inform design in compliance with relevant State/Commonwealth legislation, including potential inclusion of cultural heritage elements in the final built form.

Functional Area and Space

The final design will need to ensure the building can meet anticipated patronage requirements for now and into the future. This applies to the maximum capacity as well as being able to operate efficiently during reduced operation time periods.

Building Program and Circulation Planning

A building program visually outlines how people will move throughout the different spaces of the building and informs the layout arrangements. The various spaces may include arrival, reception, back of house, amenities, servicing, cart type and storage, access to course, etc.

Topography and Landscape

The general visual impact of the building on the overall amenity of the course and setting is another important consideration. It should complement the natural setting and context through the use of appropriate materials and integration/accentuation of the existing landscape.

Futureproofing for Expansion

During the early planning and master planning of the facility thought may be given to provide for future expansion of buildings and development of ancillary use on site such as function spaces, accommodation, other golf related purposes and additional car parking. Planning of infrastructure should also take this into account during the design phases.

Climatic Design

The analysis of the site should include consideration of the changing climate on energy efficiencies, use of renewables, and water conservation/recycling in adapting to a hotter and drier climate. The design process should generally seek to maximise passive solar gains and consider the direction of the sun and any predominant or prevailing wind directions. The solar access (sunrise and sunset) will impact the position of the building and any windows, and wind directions might impact the layout of any areas that need to be protected.

Top Tip:

Engaging with your Local Council's Open Space Planning staff will provide insight into opportunities for the facility to connect with local walking paths, trails and open space.

Have a look at your Local Council's website to find the Open Space Strategy for your area and identify any relevant planning priorities that may impact your project.

General Access Requirements

Depending on the location and surrounding setting, general access requirements might include bicycle, footpaths, bus/tram stops, pedestrian access.

Planning will need to consider functional opportunities for pick-up and drop-off points and bus access and parking options, which will likely impact the size and layout of the car park.

Siting Location

The position of the clubhouse/pavilion on a course should be proximal to car parking, the 1st/10th tee and the 9th/18th green. If the course has a 3-hole loop layout the car park should be in close proximity to the 3rd, 6th, 12th and 15th greens and driving range.

Additional considerations include a position which enables access for waste management, emergency service vehicles and various planning scheme requirements.

Distance from Building Entry to Car Park

The distance from site entry to the facility and car parking can have a large impact on costs. This is due to the amount of road structure required, vegetation removal and landscaping required. Other cost impacts include service infrastructure installation and connection (gas, electricity, water, sewerage, etc.).

The clubhouse at Wembley Golf Course
Source: Gresley Abas Architects

Reception and Administration

The reception and administration offices should be co-located to ensure operational efficiencies.

The reception area should be signed and easily visible from all facility entry points, including the car park.

Service/Back of House

Allowance for adequate service and back of house areas should be provided when planning the design of the facility. Provision needs to be made for storage of equipment, supplies, food and beverage, cleaning and maintenance. A secondary area for rubbish and waste should be located with ease of access for removal via garbage trucks. Some facilities may require larger areas for general refuse and materials. Designers may also need to provide for some undercover areas depending on weather conditions.

The reception area at Huntingdale Golf Club
Source: Inarc Architects

Food and Beverage Offer

The food and beverage operations at a golf facility provide a key source of alternative revenue. Careful planning is required to ensure operational efficiency and profitability.

Contemporary food and beverage services are an important component of the 'customer experience'. Providing an enhanced food and beverage offer assists in attracting new audiences and driving patronage from non-golfers.

Food trends are also constantly evolving and it is important for golf facilities to provide customers with healthy options that cater to special diets, and also offer quick pre-made meals for golfers on the go.

It is recommended to seek specialist advice when planning a new or re-designed food and beverage services at a golf facility. Engaging a catering consultant, professional architect and interior designer with hospitality industry experience is often a worthy investment.[20]

Designing a Food and Beverage Space

While an architect is trained to make sure a restaurant is structurally sound, interior designers are trained to design a functional space within the space constraints and are likely to offer the following skills:

- A strong understanding of space planning.
- Up-to-date knowledge of building codes and regulations.
- Advice on materials, furnishings and finishes.
- Knowledge gained through experience.

It is also important to consider the overall catering offer, and how catering revenue fits into the business model when designing the food and beverage areas within a facility. The kitchen size and storage facilities (i.e. freezers and fridges) should reflect the size of the overall food offering.

Minimal Requirements

Minimal requirements include a freezer, food storage area, food preparation area and food service spaces. In larger facilities that have restaurant/bar and function offer, a fully enclosed kitchen and enough floor space to enable flexibility to cater for multiple functions will be required. This may include a large provision of floor space that can be divided into smaller function rooms. Clubhouse designers should also consider requirements for on-course food provisions and include fridge space for 'grab and go' offers.[21,22]

Top Tips:

When planning the layout of your food and beverage area, the following key factors should be considered:

- Building codes and regulations
- Accessibility
- Budget
- Efficiency
- Aesthetics
- Area per customer

Recommended Resources

Golf Course Food Trends

Golf Course Restaurant Management

Restaurant Floor Plans

Artist's impression of a contemporary food and beverage area at the Lethamhill Golf Course project, Scotland.
Source: The R&A

Golf Services/Pro-shop

The golf pro-shop is often the heart of any golf club/facility. It acts as the golf bookings and retail hub and is a key driver of ancillary revenue. It can also be a destination to initiate custom fittings, a meeting place, and a sign-up location for membership, events and functions.

There is a lot to consider when planning and designing the optimal pro shop to suit the needs of a golf facility.

Key considerations include the location of the pro-shop within the site and building footprint, sizing, fixtures and fittings and layout.[23]

Location

The pro-shop should be located close to the reception and staff areas to enable improved security and surveillance. Proximity to the reception and food and beverage areas should also be considered to enable staff to service both areas.

Sizing

There are no specific size requirements for a pro shop but it is important that the design takes into consideration the layout, fixtures and fittings and intended product range.

Design of the pro-shop should consider adequate provision of floor space, storage space and shelving for retail and merchandise displays.

Fixtures and Fittings

It is recommended that a pro shop is fitted out with slat walls and adjustable shelves are used with a well positioned counter that has ample area for customers and the provision for a fitting area.

Right Turn Approach

The 'Right Turn Preference', which is also known as the 'Invariant Right' is a design principle suggesting that as human beings have a tendency to turn to the right when we begin to navigate a space or enter a room. With this in mind, an approach that many retailers adopt, is to locate the core product range to the right-hand side of the store entrance. This is one of the first factors to be considered when setting up the layout of your pro-shop.

Top Tips:

1. Use the right floor plan

Your floor plan plays a critical role in managing store flow and traffic. The choice of which one is right for you will depend on the size of your store, the products that you sell, and more importantly, your target market.

2. Be aware of where you "lead" customers

Consider the customers pattern of movement through the store, and place items accordingly.

3. Ensure that your product quantities are appropriate

The amount of stock to display depends on the size of your shop, the image you want to project, and the type of experience you want to create.

4. Use your layout to drive impulse sales

Your store layout can be a powerful tool to increase sales. With the right merchandising, you could put key items on the radar of your customers and drive impulse purchases.

5. Freshen up your displays regularly

Most experts recommend changing some part of your store around once a week. You could, for example, change the outfits of your mannequins or feature a different upsell every week.

Layout Options

Planning the layout of your shop floor is critical to managing store flow and traffic. The choice of floor plan depends on a number of factors including the products that are sold, the area of the shop footprint, and your target market.

There are typically four kinds of layouts that are used in retail to encourage customers to move through the shop: Loop, Grid, Herringbone and Free Flow.

Loop Layout

The loop layout encourages customers to "loop" your store and is one of the more straightforward types of layout. The positioning of fixtures and merchandise within the store encourages customers to follow a specific path through the store and guides them to the checkout. This layout is very effective at ensuring customers see all of the merchandise as they are on a predetermined path.

Herringbone Layout

A herringbone layout is particularly useful if you are working with a smaller shop floor. This works well for pro shops that have large amounts of inventory and limited display areas. In a herringbone layout, keeping popular items and promotions close to the main aisle may assist in driving sales.

Grid Layout

The grid layout involves positioning shelves or racks in straight lines in order to control the flow of traffic. It is one of the most popular and economic layouts and is often used in large retail spaces to maximise efficiency.

This layout can work at pro shops by allowing the operator to display every product in their inventory. This layout is best suited to pro shops that have a broad product offer and a lot of space.

The key benefit of the grid layout is that the management has more control over how customers interact with the pro shop floor.

Free Flow Layout

A free flow layout provides the most creativity opportunity and is the most common layout in the golf industry. There are no limits to floor patterns or shelves that must be placed in certain positions or angles, and there is no guiding of the customers through the store. Browsing is encouraged and is based more on the intentions of the customer rather than the positioning of items.

While a free flow layout is the most flexible, it takes the most thought to be successful. The key to success is having high-quality signage that draws people in and creative branding. Creating an enhanced customer experience is critical for success with this layout.

Choosing Your Layout

While the layouts suggested can be used on their own, if there is still uncertainty about which setup will work best, one or more of the above layouts can be combined.

At a minimum, the right turn approach and the power wall display are both best practice initiatives and will help to guide customers through the pro shop and encourage more purchases.[24]

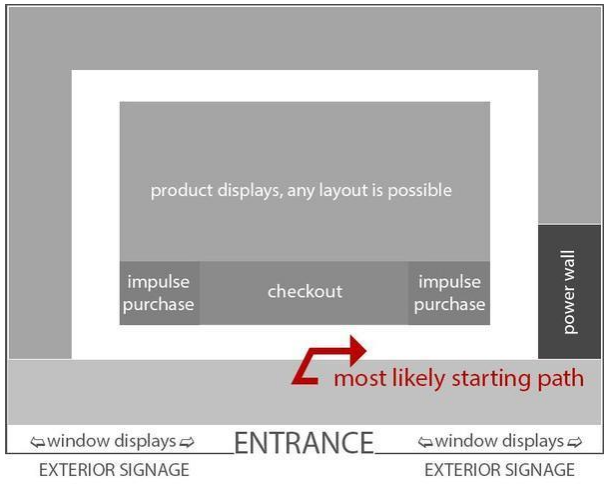
Recommended Resources

Pro-shop Layout Tips

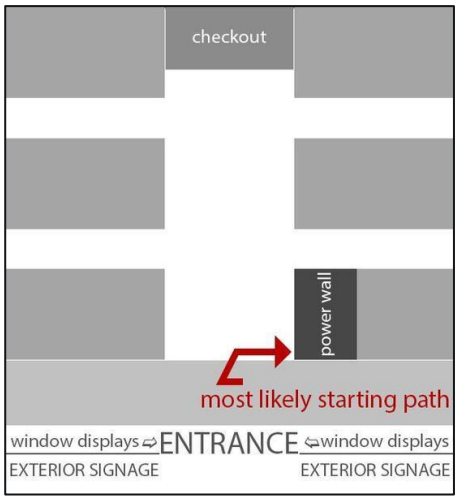
Adapting Your Pro-shop

Club Fitting

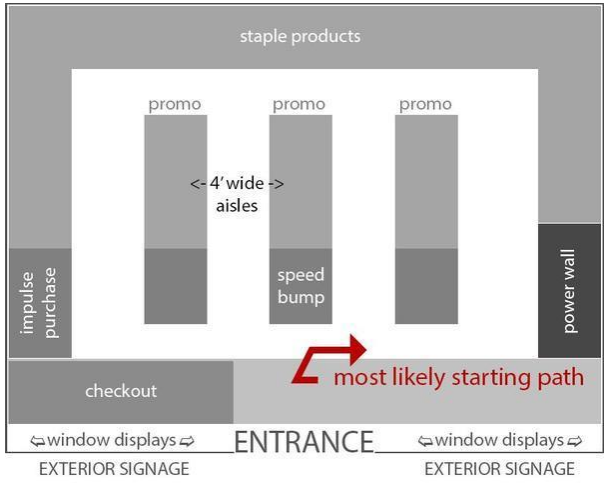
Loop Layout



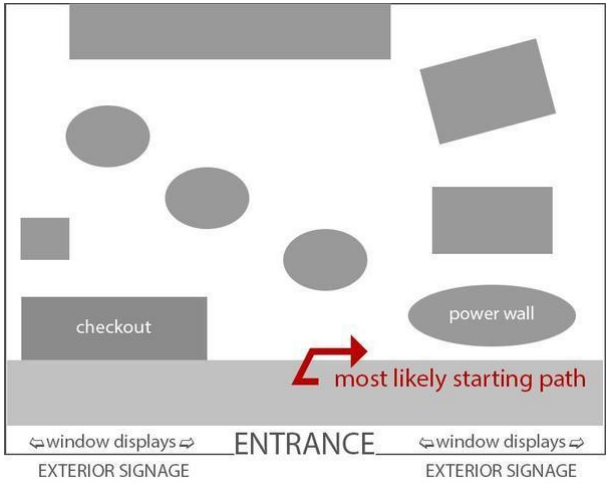
Herringbone Layout



Grid Layout



Free Flow Layout

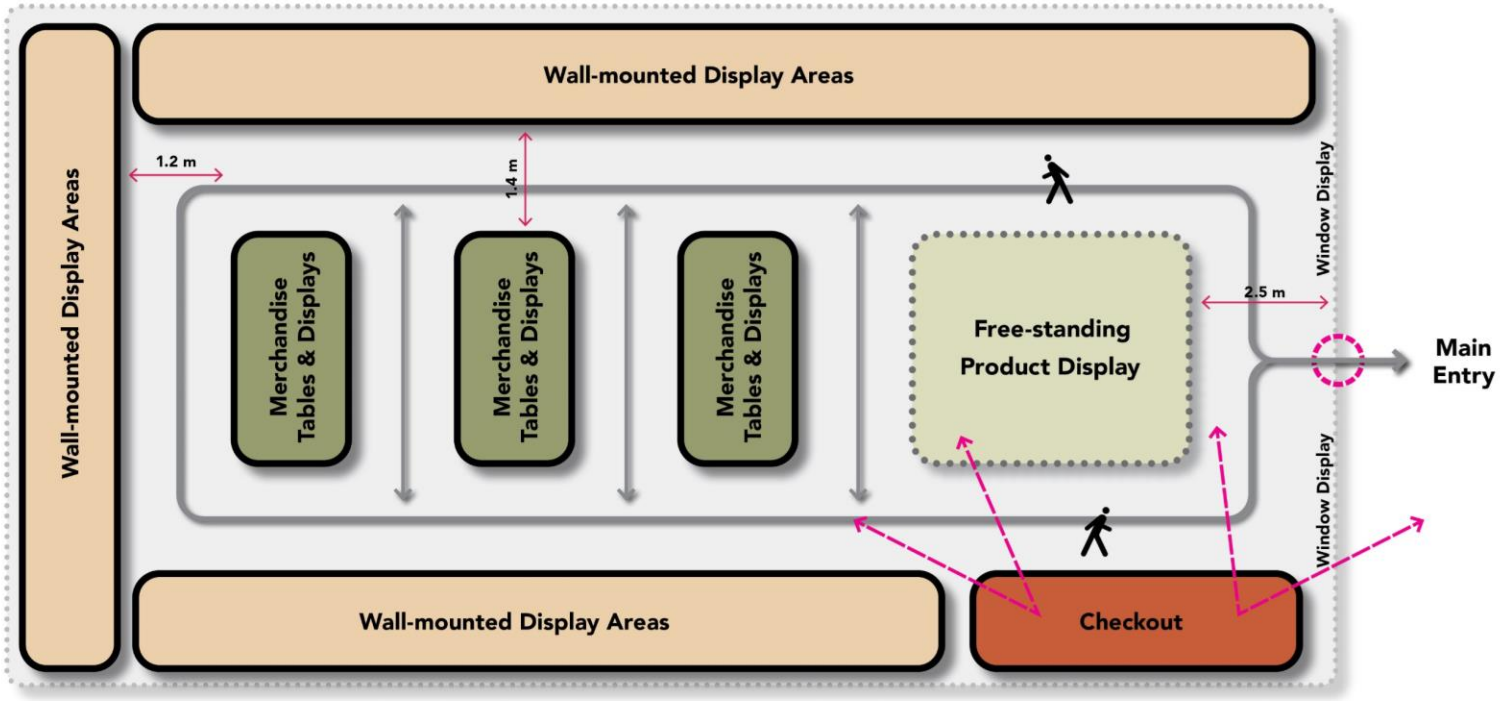


Source: Shopify

Example of the layout at the Curlewis Golf Club Pro-shop
Source: Curlewis Golf Club

Example of a pro-shop display at the Wollongong Golf Club
Source: Wollongong Golf Club

The functional diagram below demonstrates a concept for a pro-shop based on the grid layout. It demonstrates the functional relationship between spaces and can be used as a basis for planning.



Office Space

There are no legislated minimum space requirements for an office, however it is critical for an employer to provide a 'working environment that is safe and without risks to health'.

There are three types of space that need to be considered:

1. **Primary space** – amenities, meeting rooms, lift lobbies and similar areas;
2. **Secondary space** – corridors and storage; and
3. **Tertiary space** – space required at a workstation to accommodate a desk, chair, drawers, filing cabinet and other necessary equipment.

The Building Block approach is a common method that is used to calculate the space requirements for staff members, and is based upon a functional analysis of the tasks they perform in their jobs.

This method recommends a minimum of 6 square metres per person for tertiary space and additional space for secondary and primary space requirements. It enables planners and architects to provide enough space for the requirements of all people working in an office environment.[25]

Australian Standard 1668.2 (2002) recommends an overall 10 square metres per person for offices, including primary, secondary and tertiary spaces. This standard relates to the ventilation of the building. The important thing to design for in all circumstances is the functional needs of the employee.

Example of office workstations at the Australian Golf Centre
Source: Golf Australia

There are also a number of relevant Australian Standards – but these provide guidelines only, as they are not 'called up' in any regulations - for

- AS/NZS 4443: 1997 Office panel systems – Workstations
- AS/NZS 4442: 1997 Office desks

Top Tips:

Consider multiple users when designing office space, where complementary businesses or sports may hire desks and meeting rooms to run businesses locally.
Examples of this are Casey Fields Sports House, where National/State Sporting Organisations are located in a regional office hub, in collaboration with the City of Casey.

Change Rooms and Amenities

As golf has traditionally been a male-dominated sport, the design and provision of change rooms and amenities has ultimately not been inclusive of the whole community.

Making infrastructure more inclusive, female friendly and more family orientated consists of a range of factors and attributes, such as:

- unisex and gender neutral change facilities that cater for the needs of all genders
- inviting community spaces
- clean and easily accessible facilities
- adequate lighting in and around the facility
- family friendly attributes including baby change amenities.

General design considerations for change rooms are that they are designed for user demand, with enough locker space and toilet/shower facilities to cater for demand at peak times.

The change rooms should be located with direct access to the course, and the materials and finishes should be selected with durability in mind.

In addition, the change rooms should also open into the building to provide easy access to other facilities and to improve security and passive surveillance.

Recommended Resources

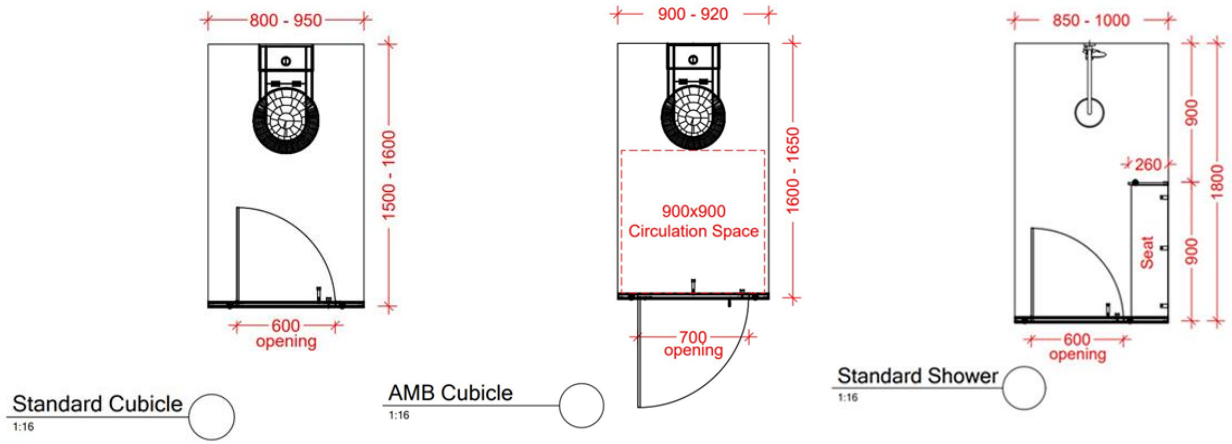
Female Friendly Sport Infrastructure Guidelines

Toilets and Change Rooms

Guide to Toilet Cube Dimensions in Australia

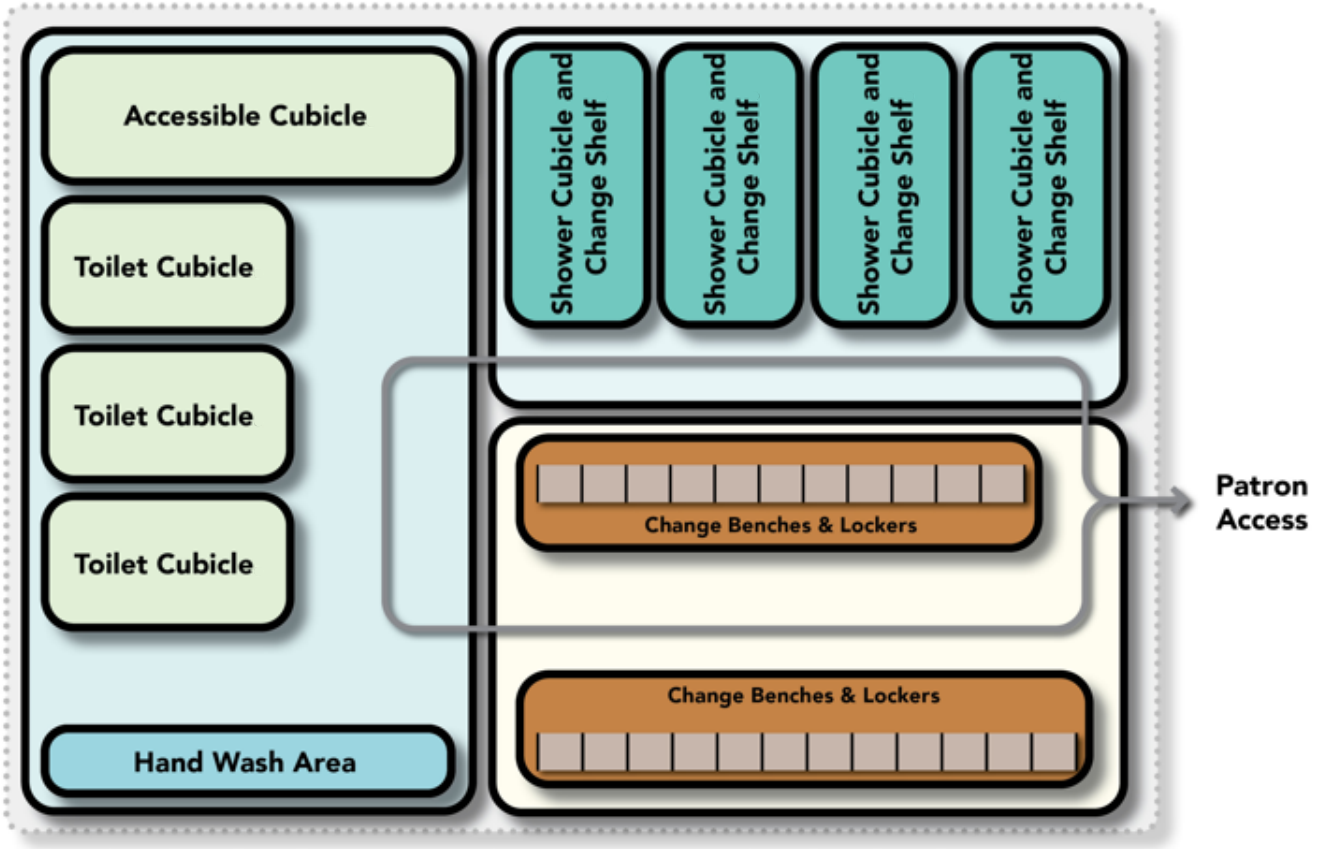
Standard Dimensions

- **Standard toilet cubicles** are recommended to be between 800-950 wide, with a typical depth of 1500-1600.
- **Ambulant toilet cubicles** must be between 900-920 wide, with a minimum depth of the toilet pan + 900 circulation space to the inside of the toilet cubicle door. This depth is typically 1600mm.
- **Standard shower cubicles** are recommended to be between 950-1050 wide, with a depth of 1800mm.



Standard dimensions for toilets and amenities
Source: Duracube

The functional diagram below has been prepared to guide the development of a change room and amenities area. It demonstrates the functions and relationships between different areas and can be used as a basis for concept planning.



Locker Rooms

When designing a locker room, the first requirement is to establish the number of users and available space allocated for the lockers. It is important to ensure that there is always sufficient room for clear access, so ensure that the placement of lockers or benches do not obstruct pathways.

Placing lockers so they sit back-to-back will make the most of your space. If benches are required, it is recommended to leave at least 1.5m of space between lockers. However, if lockers are just for staff to store their belongings during their shift, 1.2m should be enough space for lockers that are face-to-face.

Example of locker rooms at Northern Golf Club
Source: Lockln.com.au

First Aid

When developing facilities, it is important to consider the need to provide an area for first aid. Club and facility operators should supply:

- First aid equipment and first aid kit
- An area to administer first aid
- Trained first aiders
- Signage indicating where first aid is located
- First aid procedures
- Training and information to workers/volunteers

Recommended Resources

How to Create a Locker Room

Locker Room Design

Wayfinding/Signage

Clear, defined, well located signage can assist visitors to find their way to the facility. Wayfinding should be logical, legible, and easily described.

Viewlines to the facility and golf course should be easily identifiable when approaching the facility entry.

Facility signage at the entry point should be large enough to be easily discernible from a long distance. It is suggested that branding and identity of the golf course be of a similar scale.

All internal signage and wayfinding should be consistent, legible and in alignment with the overall theming of the golf facility brand.

Directions to facilities should be provided within the car park to assist patrons accessing the clubhouse/pavilion, golf course and other site functions, including:

- Reception
- Café/food and beverage
- Golf course
- Driving range/practice areas
- Entertainment areas
- Car parking
- Other ancillary facilities

Recommended Resources

Signage and Wayfinding

Wayfinding Signage Design

Interpretive Design to Acknowledge Traditional Owners

Wayfinding can also be done creatively, beyond providing signage. This includes the use of lighting, line marking, the use of art and symbols.

Improved design generally involves reducing the clutter or non-essential information, and assists in removing language barriers.

In addition, acknowledging the values and history of Traditional Owners through wayfinding design can also create a sense of place and vested interest in the space.

Example of Welcome to Country signage
Source: The Interpretive Design Company

Example of well designed and consistent wayfinding signage at Huntingdale Golf Club
Source: Latitude

Technology Considerations

Implementing new technology can be daunting but it's important to remember that the aim of a new technology solution is for the life of a golf course operator to become much easier.

The emergence of cloud-based technology has changed the way many facility operators manage their golf course. Cloud platforms use web-based technology, which means the system can be accessed through the internet from any device anywhere in the world. This provides greater flexibility, as there is no requirement to install the platform on a physical computer or device.

Online tee time reservation has simplified the way golf courses offer tee times. Having an online tee sheet booking process can enhance the customer experience as less time is spent on the phone or in-person trying to book a spot.

Enhanced Presence and Visibility

An online presence assists in both attracting younger golfers and reaching a broader range of golfers.

Online searches can allow players to easily find your course and book a tee time – all without entering the facility. An online presence will organically enhance awareness of your facility and increase demand and patronage.

Recommended Resource:

Getting Started with Simple Technology at Your Golf Course

Improved Flexibility

Golf courses experience demand fluctuations, due to both weather and lifestyle events. Cloud-based golf management platforms provide facility managers with the flexibility to quickly make changes to a tee sheet and react to new information as it comes to hand.

One of the major concerns regarding cloud-based platforms is internet connection issues. However, well designed and implemented cloud-based systems can function off cellular reception or a Wi-Fi hotspot from a phone.[26]

What to consider when adopting a modern platform?

- **Time of year**: Depending on your location, certain months may be more favourable to make the switch, and mid-season is rarely the best idea. Implementing a new solution takes time to get demos, make a choice and undertake onboarding and training.
- **Identify needs**: Map out the operation's workflows to determine what features are needed to cover base operations. It's also important to think about what isn't being done that would significantly improve the staff and golfers' experiences.
- **Listen to staff**: It is important that staff members who are using the solution and have direct interactions with golfers are consulted to understand what they would like to see in a management platform.
- **Determine a budget:** When looking for a provider, keep price limits in mind when comparing quotes.

Top Tips:

When embracing technology solutions, there are many things to consider. Operating a golf course through a modern platform does not necessarily translate into higher efficiency on its own merit – the solution must work for the facility.

- **Do research:** Take a good hard look at the operation of the facility and get an idea of needs and wants. What aspects of the operation are currently handles well, and where could the system be improved? Ask what is absolutely needed in a system, and what the perfect solution would look like.
- **Get a demo:** Once the needs and wants of the facility are established, arrange an appointment with a representative who can provide an in-depth walkthrough of the product's features and integrations with the goal to initially focus on the facility needs and how the system can fulfil the wants.
- This step will provide an idea of how modern technology can help a facility and identify the kind of features that are needed.
- **Finalise needs and obtain a quote**: An expert can assist with the final decision on what features are needed for integrating into a package including the hardware that is required.

Using technology in creating a positive learning environment

Insights from Sport Australia show that positive experiences for newcomers into the game are paramount in supporting ongoing participation and retention.

The use of technology through coaching, specifically when participants have early touchpoints with the game, can enhance the learning experience for new players through individual or group coaching offerings. For most facilities, these offerings are a strategic priority in developing greater connections with the facility and the wider community. These facilities also support ongoing development of golfers at all levels of the Australian golf pathway.

Variations subject to building design and orientation need to be factored into technology solutions.

The PGA Centre of Learning and Performance can assist facilities with linking facility operators to technology providers. For assistance, contact the PGA Centre for Learning and Performance at info@pga.org.au.

Coaching area at the Australian Golf Centre
Source: Golf Australia

Top Tips:

- Design the rooms to be as open as possible to enable flexibility for group and indoor coaching.
- Use safety rails to help divide the space (activity areas vs. common areas). Safety rails can also be used to mount video cameras for swing analysis.
- Balance the use of walls and safety rails for soundproofing, room flexibility and coaching visibility.
- The less monitors and cabling the better. IT support requirements can be reduced significantly through simplified and shortened cable runs, reduced use of USB and adapters to a minimum and a large screen and one projector per bay. This is the suggested configuration used by the PGA Centre for Learning and Performance.
- The size of coaching rooms is important to ensure appropriate video capture and ball flight monitoring. Coaching bay widths of 5m is preferable with a minimum depth of 8m required (3m from ball flight monitor to ball, and further 4-5m from ball to net).
- Avoid "fixed" technology unless it is a feature of the facility. E.g. fixed pressure plate vs portable. This enables the facility to move between indoor and outdoor applications.

Car Park

The car park is one of the most important elements of the facility design.

The design of the car park should consider the following key elements:

- Number of cars
- Proximity to clubhouse/pavilion
- Visual impact and site lines through car park
- Traffic noise
- Siting access and entry
- Overflow car parking
- DDA and accessible parking considerations
- Pathways
- Pick up and drop off zones
- Large vehicle access (e.g. buses, firetrucks, garbage trucks)
- Stormwater and water run-off and retention/recycling
- Lighting
- Surfacing (e.g. gravel vs sealed roads)

A car parking requirement may be calculated as either:

- A number of car parking spaces;
- Or a percentage of the total site area that must be set aside for car parking

As an example, Table 1 in Clause 52.06 of the Victorian Planning Scheme sets out the number of car parking spaces required for a particular land use.

The requirement for most new uses, or an extension to an existing use, can be calculated from this table.

Determining Space Requirements

Use	Rate		Car Parking Measure
	Column A (Applies the standard rate to all zones)	Column B (Only applies where specified in a schedule to the Parking Overlay)	Column C
Golf	4	4	To each hole plus 50 per cent of the relevant requirement of any ancillary uses.

Note: You will also need to make allowances for DDA car parks, staff car parks, contractor car parks and loading bays. The maintenance facility will also require additional space for staff car parking.

How to Interpret the Table

- The first column lists the land use.
- Column A applies a standard rate to all zones, unless the Column B rates apply.
- Column B provides a rate that can apply when the site is covered by a Parking Overlay and the schedule to the Parking Overlay specifies that the Column B rates apply.
- Column C lists the car parking measure.

How to Use the Table

The requirement is determined by multiplying the applicable rate, in either Column A or B, by the measure specified in Column C. For example, for an 18-hole golf course with a 60-seat restaurant the parking requirement would be calculated as follows:

= 4 x 18 (total holes on golf course) + (60 x 2)

= 72 + 120

= 192 spaces minimum.

Electric Vehicle Parking

As electric vehicles continue to move into mainstream use, golf course owners, operators and managers who want to future-proof their site may consider the provision of parking spaces for electric vehicles (EV).

Appealing and attractive public EV charging spaces raise awareness and understanding of electric vehicles, while also accelerating the transition to low-emission transport for cleaner cities and a brighter future.

For non-residential developments (such as golf courses), it is recommended that a minimum of 5% of car parks are built with electric car charging infrastructure; and 20% of all car parking spaces are to be built with future provision requirements.

Recommended Resources

Car Parking Provisions

Planning Scheme – Car Parking Requirements

City of Darebin – EV Charging Policy

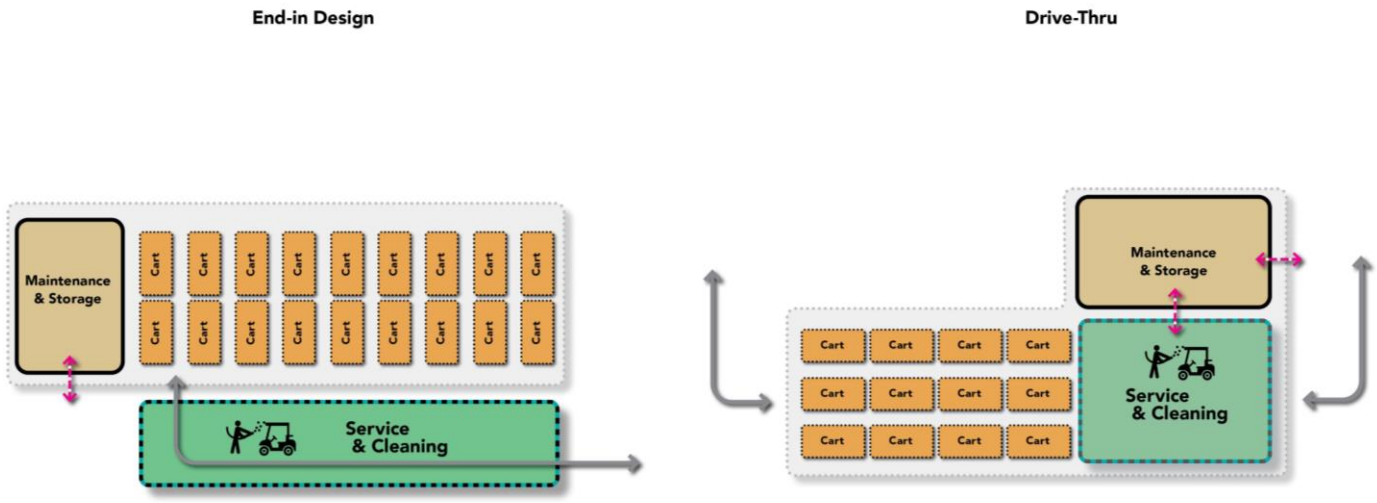
Cart Storage

Golf carts should ideally be stored in a covered dry area, away from any water exposure. A golf cart storage shed is the optimal solution, as carts are kept out of the elements.

For golf cart storage, there are some key considerations:

- **Accessibility:** Parking and retrieving golf carts is made easier with wide pathways and road access, or if stored in a shed, with evenly spaced sectional or roll-up doors that provide protection from the elements during off-hours.
- **Location:** Golf carts should ideally be stored in a location within close proximity to the clubhouse, golf services, car park and course to enable ease of access to key areas of the facility.
- **Area**: The area allocated to golf cart storage should be large enough to cater for increased growth in participation and demand.
- **Charge Points**: Ensure that a sufficient number of power outlets are provided to accommodate the charging of electric powered carts.

This functional diagram provides examples of both end-in and drive-thru cart storage options. This can be used as a basis for concept planning.



Recommended Resource:

Golf Cart Maintenance Guide

Golf Simulator Design Considerations

Golf simulators have evolved rapidly from their beginnings to now providing a realistic and sophisticated user-friendly experience. There is an increasing number of suppliers with numerous options to choose from and therefore it is important to be well informed before deciding on what solution is best suited to your requirements.

Space

The amount of space required for a golf simulator is a critical factor to consider. There needs to be enough space to swing a club comfortably.

Below are guidelines for the space required for one hitting area only that does not allow for any other supporting infrastructure such as food and beverage services.

- **Ceiling Height**: A ceiling height of 3m is a "safe" distance that can accommodate most golfers' height and swing type.
- **Width**: There are two things to consider: Will the hitting area only be for a right-handed golfer, or will left-handers be playing as well?
- If there are going to be left and right-handed golfers, then 4.5m is appropriate.
- **Depth:** The minimum depth of the hitting area required is about 4.5m. This includes 0.3m from the wall to the screen, 2.4m from the screen to the tee, and 1.8m of safe distance behind the golfer.

However, if using a radar-based system like Trackman, the room depth required could be as much as 7.5m.

Ground versus Ceiling Tracking

This is an important consideration which is dependent on the skill level of the player and the likelihood of an accident happening from striking a ceiling mounted system or striking a launch monitor that sits on the ground. Irrespective of what system is used it is recommended that precautions are put in place to minimise the risk of damage.

Portability

The need for portability is dependent on whether there is to be a fixed dedicated space where the simulator will be located or whether there will be times when the simulator will need to be moved.

Quality

More expensive and higher quality simulators feature better image quality, larger/wider screens, fuller enclosures, more advanced and precise tracking systems, high speed cameras and playback and greater ball data measurements.

Software

It is important to consider the types of features, games and activities that are required with the many options available that include practice, game improvement and play and the various associated cost levels.

Mats

Hitting mats are a very important component but costly to manufacture because of their weight.

Projector

The space will have its own needs based on light, size, and the resolution that the simulator software so therefore not all projectors are appropriate for a golf simulator.

Nets and Impact Screens

To prevent doing any damage to walls, a net or impact screen is required.

Cost

Golf simulators can vary in cost considerably and can range from a few thousand dollars to around $150,000.

Top Tip:

Golf simulators have become a lot more affordable and accessible and can generate additional revenue for golf facilities but it is important to thoroughly research the many options and packages that are available to ensure that they meet your needs.

Simulator

This is the most crucial component as the sensor system has a significant impact on the experience. Factors that impact the type of simulator are budget, size of the room and how important accuracy is. Each system has its own pros and cons.

Computer

Almost every single simulator package require a PC to run its software. Before purchasing any simulator system, it is important to check the recommended system specs from the software that is to be used.[27]

Recommended Resources

- Golf Simulators: Home-course advantage
- Big Swing Golf
- X-Golf
- Golfsim Australia
- 24/7 Golf
- Foresight Sports
- Supreme Greens
- Golf Studio
- GolfTec

Modern golf simulators have never been so sophisticated – or in such high demand

Source: Australian Golf Digest

Maintenance Facilities

Maintenance facilities require thoughtful planning with location to the golf course being a key consideration. The facility should be directly accessible to the course for servicing and maintenance, be located to avoid visual and acoustic impact on the course and players, as well as have an external access for service vehicles that avoids disruption to the clubhouse.

Key information to consider when planning to upgrade or build a new maintenance facility includes:

- Purpose of a Course Maintenance Facility
- Appearance
- Equipment and Storage
- Hand-Tool Storage
- Equipment Maintenance and Repair
- Staff Facilities
- Safety and Environmental Issues
- Solutions

As maintenance facilities requirements differ in each State and Territory and at each golf course, there are no prescribed guidelines, however, below is a recommended article from the Australian Turfgrass Management Journal, Volume 16.3, May-June 2014, that provides useful information and guidance when planning a facility.[28]

Recommended Resource

Maintenance Facility Time to Upgrade, Australian Turfgrass Management Journal

Top Tip:

- Provision should be made for the storage of large heavy equipment, machinery, storage of fuels, chemicals and materials, good access to water and electricity, be safe, secure, and fenced off from the general public.
- Also consider areas for vegetation waste storage and removal as well as soils and other materials.

Peninsula Kingswood Country Golf Club Maintenance Facility
Source: Turfmate

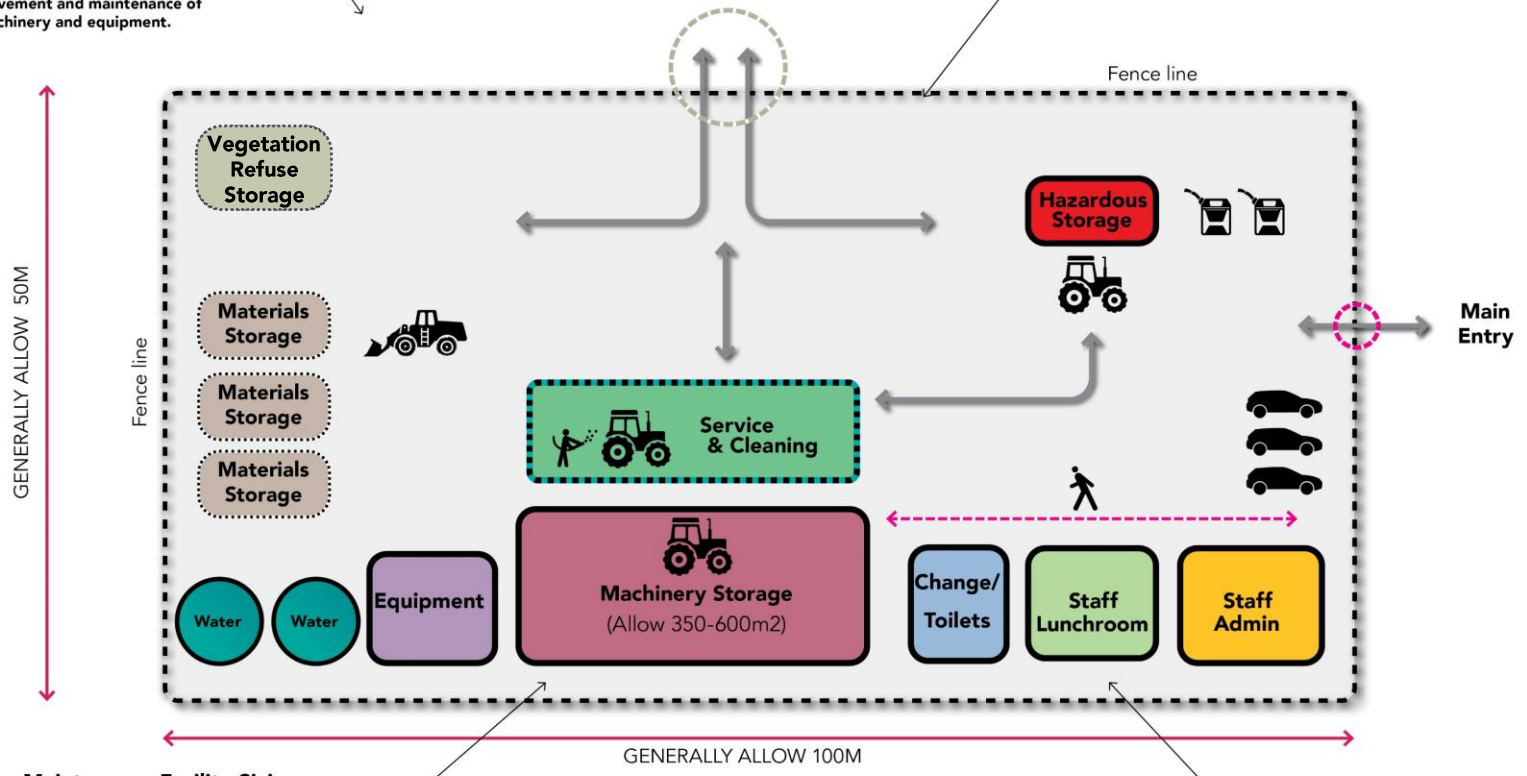
04 Functional Diagram
Maintenance Yard

Circulation and Compound:

1. Allow for sufficient circulation for heavy vehichles and machinery.
2. Plan for generally level areas for saftey and function, dust mitigation and good drainage.
3. Set out buildings and areas with adequate area for loading, safe movement and maintenance of machinery and equipment.

Other Considerations:

1. Locate facility with good access to golf course and access to surrounding road access.
2. Locate the facility in areas with low visual impact on the golf course and clubhouse facility.
3. Provide fencing for safety and security around the permiter of the mainteance facilty.
4. Store hazardous materials and liquids within a seperate storage area.



Maintenance Facility Sizing:

1. Facilities vary depending on the scale of the golf course and operation.
2. Generally shed sizes vary in depth and length.
3. Allow 10-15m in depth for machinery storage.
4. Provide sufficient hard stand areas for washdown and other activities.

Amenity Facility Sizing:

1. Facilities vary depending on the scale of the golf course and operation.
2. Allow for pick up and drop-off.

Hitting Nets

Hitting nets provide golfers with a convenient way for practicing and warming up prior to commencing a round and in situations where golf facilities do not have a practice fairway.

It is recommended that the cage/bay is constructed with no exposed vertical poles in front of the golfer thus eliminating the risk of injury from ricocheting golf balls.

The dimensions of the steel frame for most hitting nets is approximately 3m by 3m by 3m. Bays can be installed in single or multiple configurations.[29]

Example of hitting nets side by side and behind each other
Source: David Golf

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Hitting Cages

'Golf Birdie Cages' are unique to the City of Glen Eira in Melbourne where they have been installed at a number of locations adjacent to parks and reserves. These cages aim to address the issue of people practicing golf in parks, whilst offering more diverse recreation facilities within the Council area.

The innovative design of the cage allows golfers of all ages and skill levels to practice safely without endangering themselves or others.

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Examples of a Golf Birdie Cage in the City of Glen Eira
Source: City of Glen Eira

Lighting

Consideration needs to be given to the lighting requirements for sections of the facility which may be used at night.

For example, many golf clubs and facilities hold evening and night functions so they would need to consider appropriate and compliant lighting for entry/access roads, car parks, walking paths to the clubhouse, and the clubhouse entrance. Facility planners should ensure design architects are referencing Australian Standards for specific requirements.

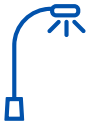
The following factors need to be considered when designing a lighting strategy for a facility, noting that they are general considerations, and the lighting strategy should be developed in conjunction with a lighting engineer.

Top Tip:

Any lighting strategy should be developed in conjunction with a lighting engineer for the specific site and function of the area.

Safety

Lightning protection (and water protection) are important safety considerations for any outdoor lighting.



Light spill

Facility lighting design can impact light spill into adjacent areas or neighbouring properties.

Flicker

The type of light will influence the amount of flicker at a facility, which impacts the ability to see a golf ball.

Type

LED lights are recommended as they have longer life spans, use less energy and therefore cost less.

Strength

200-300 LUX levels are generally suitable for driving ranges and mini golf facilities.

Maintenance

Consider how the light fittings will be maintained. Higher heights may result in a higher cost of hiring equipment to undertake cleaning.

The Importance of Lighting

The lighting of a golf course or driving range requires careful planning with a number of key factors to be considered.

With the increasing popularity of night golf entertainment activities like Topgolf and mini golf, there are opportunities to increase the interest in lighting up golf courses particularly with smaller courses such as 9-hole, par-3 and executive courses or even the final few holes of a traditional 18-hole layout to differentiate and create a unique experience.

A number of driving ranges and mini golf courses across Australia are lit, but only a handful of golf courses that include Emerald Lakes and KDV Sport on the Gold Coast, Terrey Hills Par 3 Course in Sydney and North Adelaide Par 3 Course. According to Golf Pass there are 65 facilities in America that have course lights, which all but one are Executive Courses.

With the advances in LED technology, the associated energy-savings and reduction in costs there is an increasingly-attractive story in the potential lighting of golf courses.

The following information has been sourced from LEDLUCKY to assist when considering the installation of lighting at a golf facility.[30]

Brightness Standards of Golf Course Lighting

A proper lighting plan is essential to maintaining adequate lighting and uniformity for a golf course or driving range.

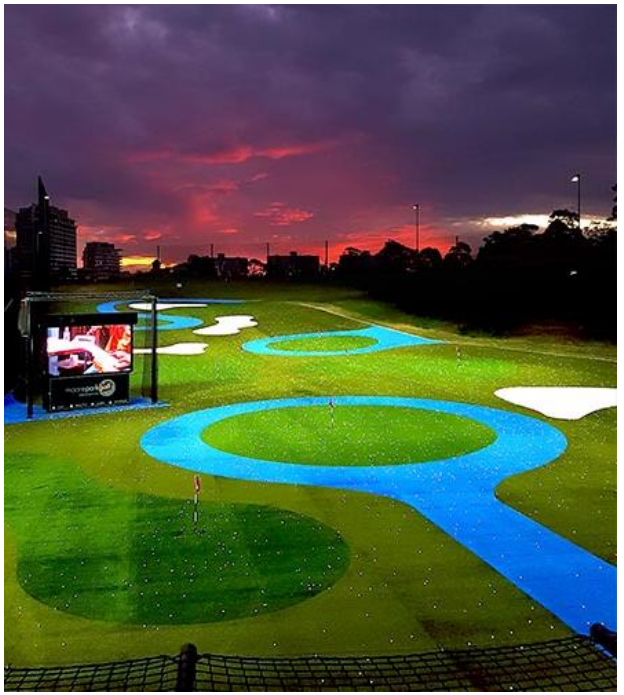
When considering the brightness standard there are two types of illumination which include vertical and horizontal. Vertical illumination involves the illumination of the lighting on the body and face of golfers, whereas, horizontal illumination refers to the lighting on the ground. The ratio between the vertical and horizontal illumination needs to be close to one. A lighting designer or engineer who is proficient in preparing golf course lighting plans can help ensure that required standards are followed.

Golf Course Lighting Standards

When it comes to golf course lighting standards, adequate illumination is vital. Golf courses are different from other sports fields, as the sport is played in a much bigger field. To illuminate the entire golf course, high powered LED lights are required. They help make the golf balls visible at night. On some sites, temporary stand-alone mobile lighting systems have become popular that can easily be installed and the LED spotlights can be mounted onto them.

Driving Range Lighting Standards

Similar to golf course lighting standards, driving range lighting standards need to focus on achieving sufficient lighting for the designated areas. A mix of golf range floodlights and LED lighting technology is required for the best outcome.



Example of driving range lighting
Source: Moore Park Golf

Golf Range Lighting Hitting Area Illumination

Some general guidelines for the illumination of golf course lighting is provided below.

Horizontal illumination of the hitting area:

- The average horizontal illumination value of the main shot area should be 150Lx or more.

Vertical illumination of the hitting area within a height of 30m:

- The average vertical illuminance behind the main pole area should be above 100Lx;
- The average vertical illuminance at 100m in front of the hitting area should be above 300Lx;
- The average vertical illuminance at 200m in front of the hitting area should be 150Lx or more.

Golf Range Lighting Channel Illumination

Within the total length of the channel, both horizontal and vertical illumination provide good lighting conditions for the rolling hills. The required average illuminance should be above 120Lx. The average vertical illuminance should be 50Lx or more. The vertical illuminance is the average vertical illuminance on the cross section of the effective width within 30 m of the vertical height on the channel.

Golf Range Lighting Putter Green Area Illumination

There must be enough illumination in the green area of the putter. It should also minimize the shadow of the human body produced by the hitter when hitting the ball in multiple directions in the area. The average horizontal illuminance in this area should be above 250Lx.

Example of golf course lighting design
Source: Mecree LED

Recommended Resources

Lighting Illumination

Golf Course Lighting Design

The lighting design focuses on different aspects of the lighting. It is crucial to focus on each component to achieve the desired results as follows:

Uniformity Level

The first factor that needs to be considered when working on the lighting design is the uniformity level. High uniformity means that the overall brightness level would remain more or less the same. However, poor uniformity can be an eyesore and even cause fatigue and will prevent golfers from seeing the golf course properly.

Flicker-Free

There is a need to consider flicker-free lighting. With the maximum speed of golf balls reaching up to around 300 kilometres per hour, flicker-free lighting is required, as it will enable high-speed cameras to capture the motion of golf balls and clubs.

Colour Temperature

In addition to the above, the colour temperature of the lighting also has to be taken into account. For a professional tournament, there is a need for about 5,000K white light. On the other hand, a recreational driving range or community golf course, both white and warm lights should be sufficient.

Example of golf course lighting
Source: Emerald Lakes Golf Course

Top Tip:
Lighting quality, direction and spill should be tailored to minimise the impact on biodiversity (birds, nocturnal mammals etc.)

Golf Course Lighting Design

High Colour Rendering Index

Besides the factors mentioned above, the colour rending index or CRI also needs to be considered. With a high CRI, the colours would appear like they normally would in sunlight – crisp and clear and will be easy to distinguish.

Lightning Protection

Since golf lighting is placed in the outdoors, there is always a risk of the lighting getting damaged by lightning. Therefore, it is important to install golf course lighting that offers lightning protection.

Waterproof Anti Collision

As golf course lighting is placed outdoors, it is important that it is waterproof, anti-collision with a light-weight structure, energy efficiency, and high durability. It is due to this reason that high-pressure sodium vapour lamps, mercury vapour, and metal halide should not be used.

Terrey Hills Par-3 Golf Course is one of the only floodlit golf courses in Sydney
Source: Australian Golf Digest

Benefits of LED Golf Course Lighting

Longer Lifespan: A key benefit of light emmitting diode (LED) lighting is the fact that it offers a much longer lifespan as compared to other lighting options. Traditional lighting such as high-intensity discharge lamps and metal halide are neither energy-efficient nor durable.

Beam Angle Control: There are different parts of the golf course that need to be illuminated. Therefore it is important for there to be beam angle control. For instance, some high illumination will be required for different terrain and distance.

Energy Efficiency and Lower Cost: The cost of running LED golf course lighting is significantly less than any other lighting option.

Maximize Quality and Reduce Costs: LED lighting provides the ability to maximize the quality of the lighting fixtures and helps reduce costs.

Improved Safety: LED lighting offers improved safety. Since visibility is critical to safety, it is important to invest in the best lighting. LED lights offer uniform light coverage, full, and bright lighting which ensure that all dark corners are brightly lit.

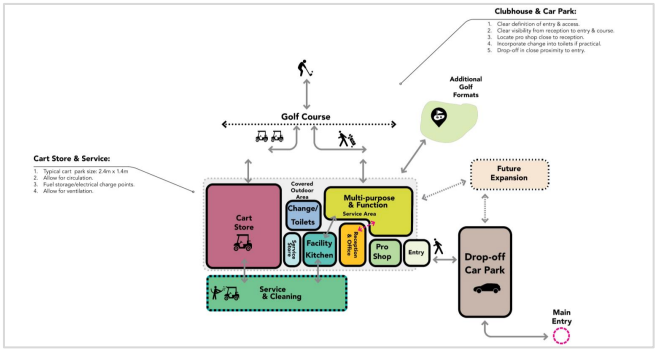
Recommended Resources

Guide to Golf Course Lighting

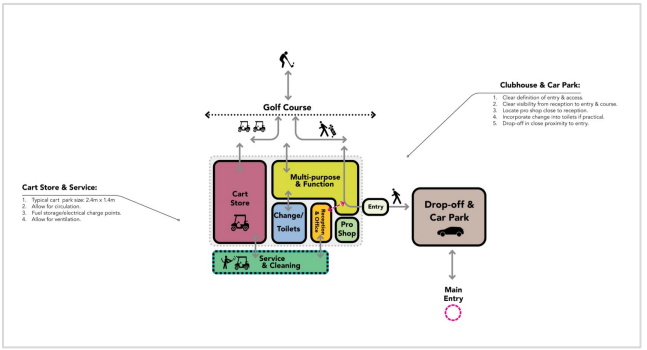
Logistics of Lighting a Golf Course

Night Moves: Discover Golf Under Lights

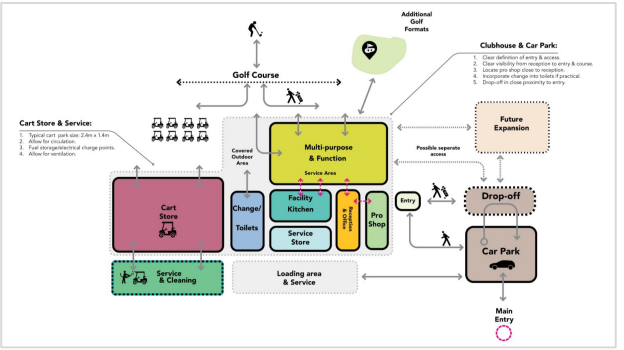
Functional diagrams have been developed on the following pages to assist in demonstrating the spatial and functional requirements at a golf facility. They show the functions and relationships between different areas and can be used as a basis for concept planning.



Minimal Facility
(9 Holes)
Total sqm: 400-600sqm

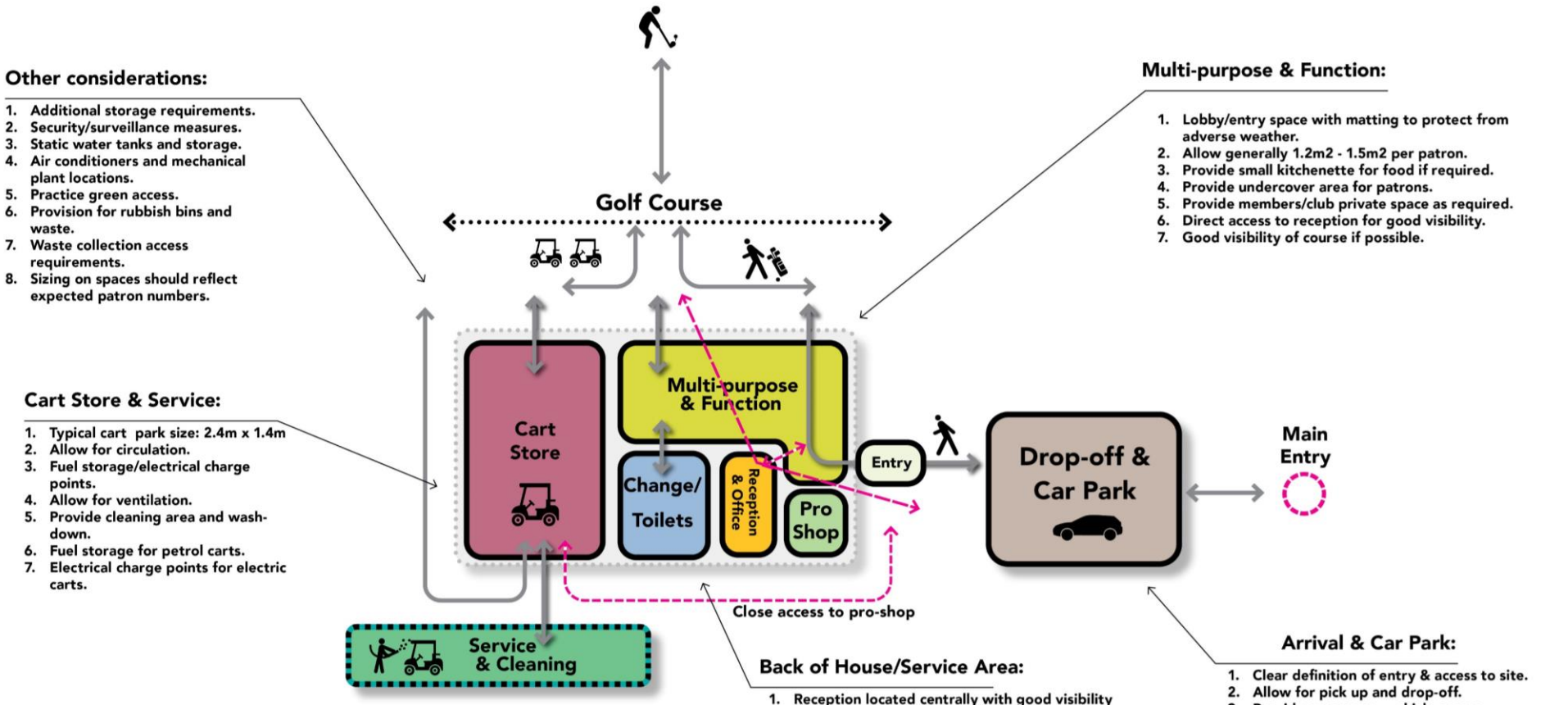


Minimal Facility with Food and Beverage
(9-18-Holes)
Total sqm: 600-900sqm



Large Facility with Additional Areas
(9-18-Holes)
Total sqm: >900sqm

Clubhouse Design Functional Diagram
Minimal Facility (9 Holes)



Other considerations:

1. Additional storage requirements.
2. Security/surveillance measures.
3. Static water tanks and storage.
4. Air conditioners and mechanical plant locations.
5. Practice green access.
6. Provision for rubbish bins and waste.
7. Waste collection access requirements.
8. Sizing on spaces should reflect expected patron numbers.

Multi-purpose & Function:

1. Lobby/entry space with matting to protect from adverse weather.
2. Allow generally 1.2m2 - 1.5m2 per patron.
3. Provide small kitchenette for food if required.
4. Provide undercover area for patrons.
5. Provide members/club private space as required.
6. Direct access to reception for good visibility.
7. Good visibility of course if possible.

Cart Store & Service:

1. Typical cart park size: 2.4m x 1.4m
2. Allow for circulation.
3. Fuel storage/electrical charge points.
4. Allow for ventilation.
5. Provide cleaning area and wash-down.
6. Fuel storage for petrol carts.
7. Electrical charge points for electric carts.

Back of House/Service Area:

1. Reception located centrally with good visibility of entry, carts, pro-shop and function areas.
2. Provide office adjacent to reception area.
3. Refer to local regulations for provision of female, male and DDA toilets.
4. Provide change facilities as required.
5. Allow for storage room.

Arrival & Car Park:

1. Clear definition of entry & access to site.
2. Allow for pick up and drop-off.
3. Provide emergency vehicle access.
4. Allow for bus pick-up and drop-off.
5. Site car parking low in landscape.
6. Avoid light spillage from customer headlights.
7. Refer to planning guidelines for numbers.

Clubhouse Design Functional Diagram
Minimal Facility (9-18 Holes)

Other considerations:

1. Additional storage requirements.
2. Security/surveillance measures.
3. Static water tanks and storage.
4. Air conditioners and mechanical plant locations.
5. Practice green access.
6. Provision for rubbish bins and waste.
7. Waste collection access requirements.
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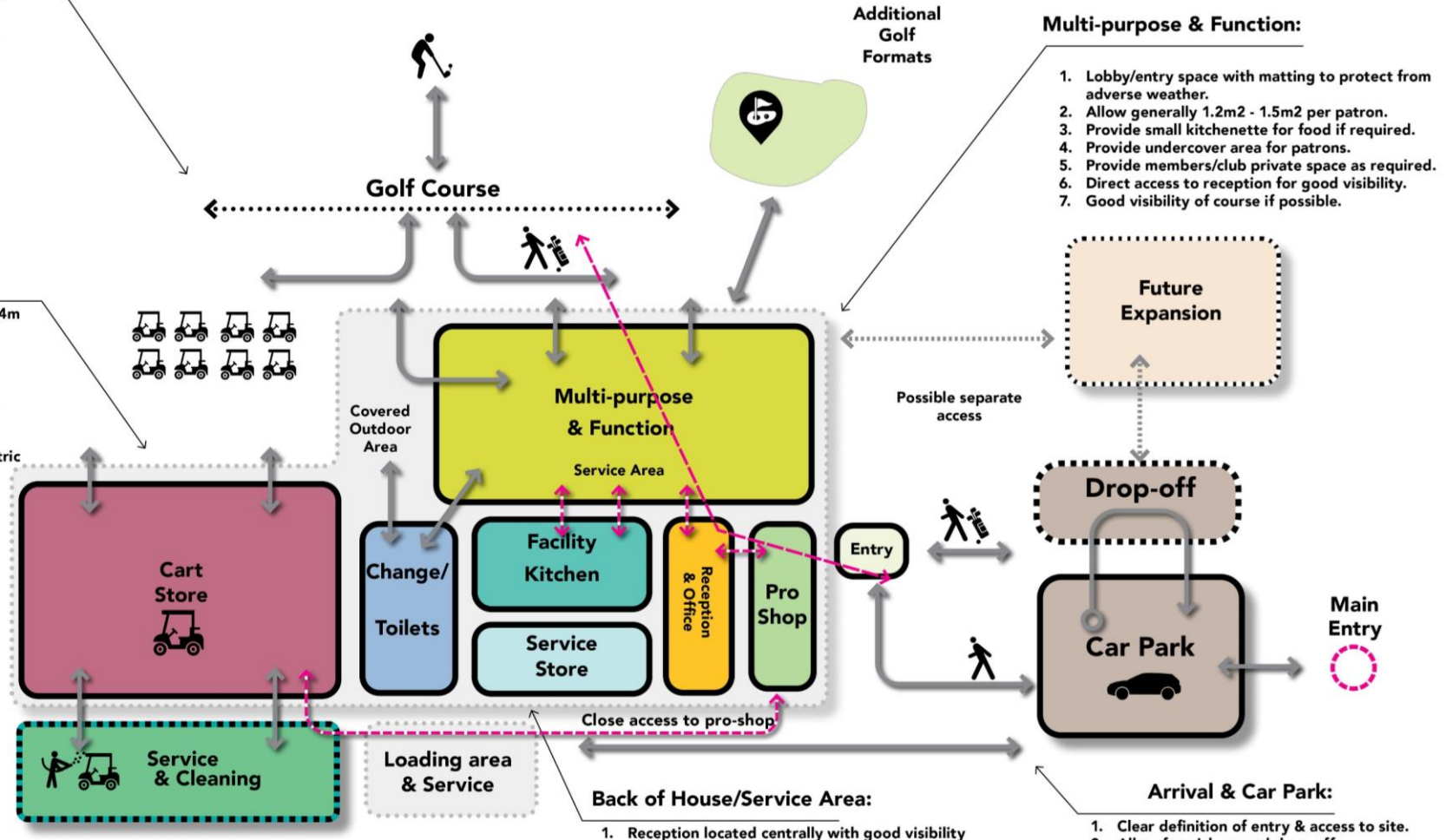

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7. Good visibility of course if possible.

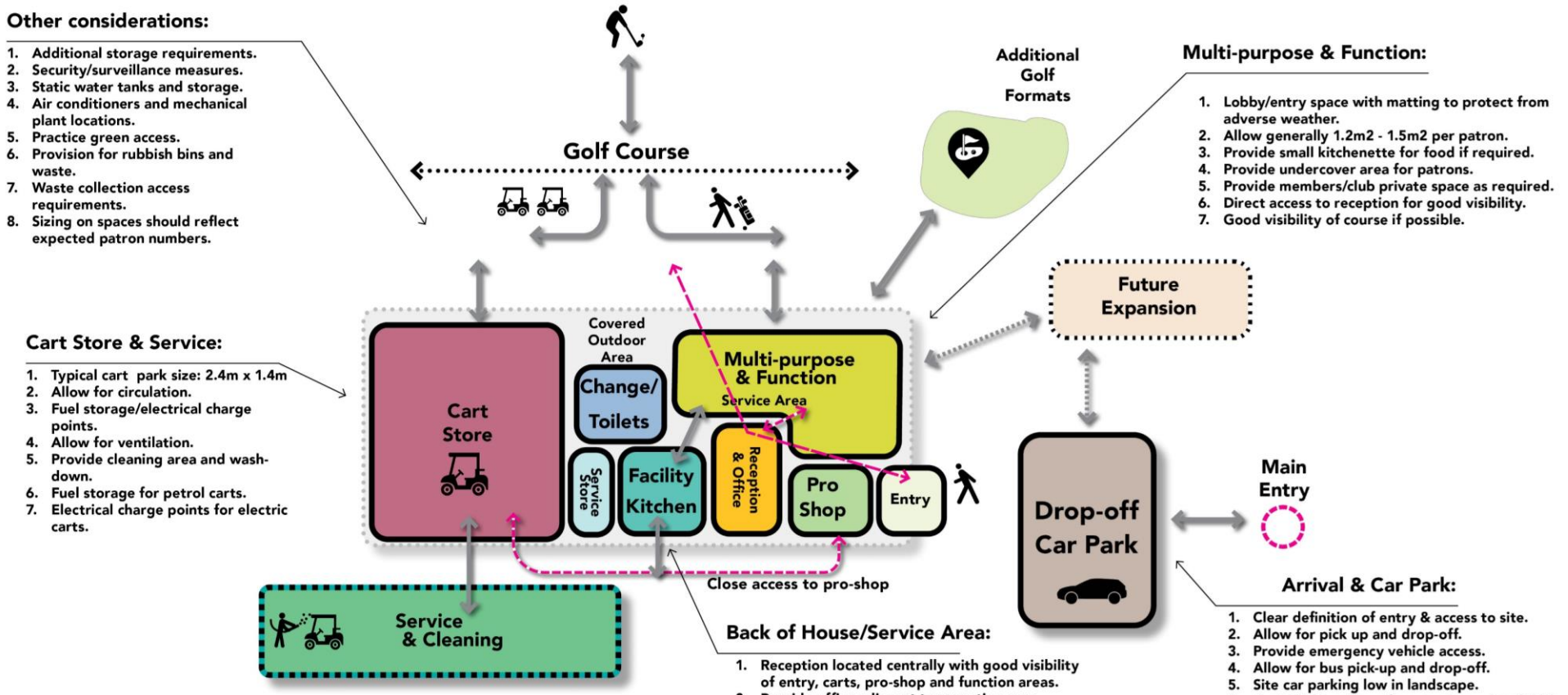
Back of House/Service Area:

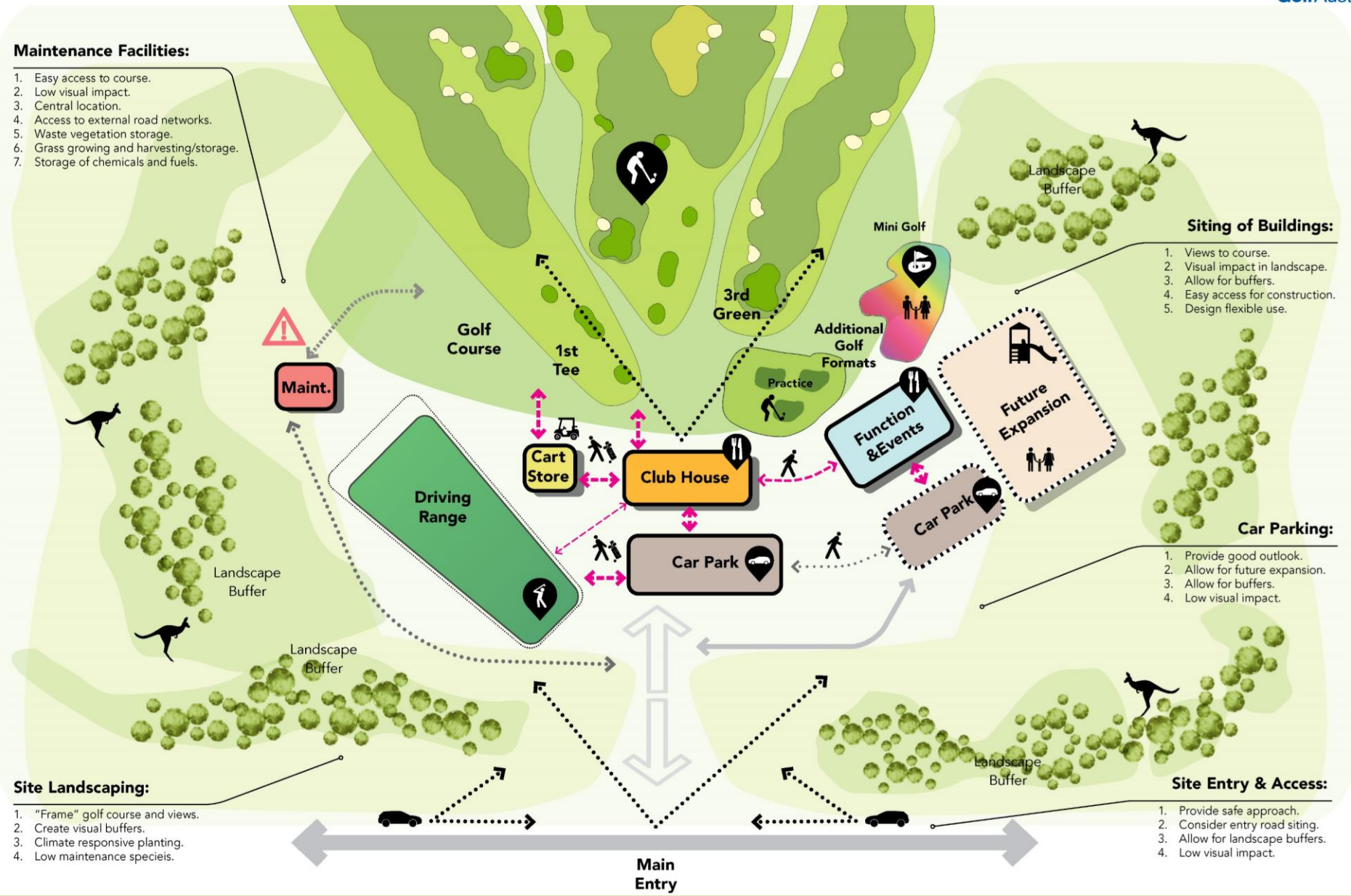
1. Reception located centrally with good visibility of entry, carts, pro-shop and function areas.
2. Provide office adjacent to reception area.
3. Refer to local regulations for provision of female, male and DDA toilets.
4. Provide change facilities as required.
5. Allow for storage and service rooms.
6. Kitchen space approx. 35m2.
7. Allow for freezer and cool rooms.

Arrival & Car Park:

1. Clear definition of entry & access to site.
2. Allow for pick up and drop-off.
3. Provide emergency vehicle access.
4. Allow for bus pick-up and drop-off.
5. Site car parking low in landscape.
6. Avoid light spillage from customer headlights.
7. Refer to planning guidelines for numbers.
8. Include dedicated loading bay.

Clubhouse Design Functional Diagram
with Additional Areas




Maintenance Facilities:
1. Easy access to course.
2. Low visual impact.
3. Central location.
4. Access to external road networks.
5. Waste vegetation storage.
6. Grass growing and harvesting/storage.
7. Storage of chemicals and fuels.
Maint.
Golf Course
1st Tee
3rd Green
Mini Golf
Additional Golf Formats
Practice
Landscape Buffer
Siting of Buildings:
1. Views to course.
2. Visual impact in landscape.
3. Allow for buffers.
4. Easy access for construction.
5. Design flexible use.
Cart Store
Club House
Function &Events
Future Expansion
Driving Range
Car Park
Car Parking:
1. Provide good outlook.
2. Allow for future expansion.
3. Allow for buffers.
4. Low visual impact.
Site Landscaping:
1. "Frame" golf course and views.
2. Create visual buffers.
3. Climate responsive planting.
4. Low maintenance specieis.
Main Entry
Site Entry & Access:
1. Provide safe approach.
2. Consider entry road siting.
3. Allow for landscape buffers.
4. Low visual impact.

The following are some of the key facility attributes to keep in mind when planning or designing a golf clubhouse/pavilion:

- Ensure there are close walking linkages to the driving range/practice area
- Building architecture should be sensitive to its surroundings and context
- Design for good solar aspects and visible connectivity with a café and food/beverage area
- Provide passive views of playing areas and golf course (if possible)
- Provide clear sightlines to clubhouse/pavilion entry and reception
- Car parking should have good connectivity to the facility
- Provide clear signage, wayfinding and branding

SECTION 5
COURSE DESIGN AND CONSTRUCTION

Image of Sandringham Golf Links
Source: Sandringham Golf Links Management

The course is a key asset of any golf facility. There are a number of specialists that are critical to engage through this stage to assist with course design and construction. In addition, it is critical to consider the natural environment, vegetation, topography and soil conditions through the course design process.

Greens and Budgets

Greens can range in costs from $20,000 to over $100,000 depending on the materials, architect fees and earthworks required. A quality versus cost relationship exists with these decisions and facility owners/decision-makers need to make balanced choices, which will meet the desired standards of the people who will play on the course with the project budget.

The key factors which will determine the most appropriate construction method are:

- Climate
- Rainfall
- Weather
- Soil conditions

Soil and Drainage

In order to ensure year-round golf and quality turf grass, good drainage (both surface and sub-surface) is essential. If the site is naturally sandy it may allow a relatively simple construction process by reshaping the land and avoiding the need to import materials. If the site is clay, silt or heavy topsoil with poor drainage characteristics, a significant amount of drainage will be required - and high quality sands or soils will need to be imported to aid the growing of fine turf.

Preparation of a green
Source: ASTMA

Technology and Equipment

Water and irrigation is an area of extensive innovation and technological advancement. The following demonstrates the current level of sophistication available in best-practice systems.

- Modern irrigation systems can feature more than 1,800 sprinklers that can be programmed, operated, and adjusted on an individual basis (from a phone or smart device).
- The sprinklers in these systems are all linked to a central computer, and integrated with a pump station, allowing for constant monitoring and intervention.
- Specialised equipment and sensors are also used to classify typical moisture content of the area around each sprinkler – in real time.
- Watering can be done with precision to increase the efficiency of watering and save water.

Without access to advanced technologies and systems, the key focus should be ensuring sprinklers are flat and level with the surrounding turf. Well installed and located sprinklers can reduce water requirements by as much as 20%. In addition, allowing a balance of hand watering on some small or strategic areas will also save water.

Types of Systems

The layout of the site will determine the overall system coverage. There are two main types of irrigation systems:

- Valve and head control
- Block control

Image of a fairway automatic irrigation system
Source: Golf Australia

Valve and head control: This type of system provides individual sprinkler control and is better suited to areas where both the course and native/rough areas have different water requirements.

Block control: With this type of system, all sprinklers are controlled from the same device. This type of arrangement is typically used for small systems of 4-6 sprinklers that deal with a small teeing area, as it reduces water overthrow.

A block system may also be useful if hard edge sprinklers are not available, but will require a little bit of water out in the roughs. It is very rare to see a block control system used on fairways and greens today.

The main things to consider when selecting a system are:

- Parkland vs native/rough situation.
- Whether you require tee to green watering coverage.

Efficiencies

Targeted and precision watering means less water wastage and less water used overall. It also results in shorter overall watering windows, which also reduces the usage and maintenance of the pumps.

Technical Feedback

Modern systems are essentially self monitoring, as the sensors alert the central computer (which can be run off an iPad) when an area is low on moisture, and the computer can then activate the pump for the sprinkler in that area.

Typical Costs for Systems

Decoder or satellite systems (Toro and Rainbird are the main suppliers of these systems)

- $800,000 – $1.2 million for Decoder 18 holes
- $1 million – $1.4 million for Satellite for 18 holes

Process for Assessments and Upgrades

It is important to engage with an irrigation designer early in the course design or upgrade process. They will prepare a water balance (an equation which explains the flow of water) which will take into consideration local climate, grass types and will use the concept plan prepared by the architect to establish irrigation requirements.

Irrigation at Royal Canberra Golf Club
Source: Gary Lisbon Golf Photography

Taking into account rainfall and other water sources, they will then help to determine if water storage is required on site and how large this needs to be. Once the layout for the course is established, the irrigation designer will be able to finalise their plans and assist the club or client to put out a tender on the irrigation installation.

Top Tip: It is important to regularly review system costs to ensure they are up-to-date.

Establishing an annual process to review all ongoing operational and system costs will assist in effective budgeting and future planning.

Survey

Conduct a survey of the course to determine the water and irrigation requirements of the site. This should involve a review of local climatic data via the Bureau of Meteorology and the identification of turf grass varieties and associated water requirements.

During this stage, it is also important to develop a 'water budget' which outlines how much water is required on a daily, monthly, and annual basis.

System Design Criteria

Determine areas where green grass is required, and the types of features in the system.

There are two main types of systems:

Hard edge: This involves back-to-back part circle sprinklers on edge of the main course. This type of system allows one part of the sprinkler to cover the green and one to cover the surrounds and is generally more popular now as it enables better water conservation and allows native landscape to grow with the seasons.

It may also be suitable for sand profile greens that have different water requirements to the surrounds.

Parkland system: This type of system is more suited to large areas where the same amount of water is required (i.e. water can go under trees and into native scrub).

During this stage it is also important to consult with the course developer or course architect/designers as they will generally have an idea of the desired look for the course and associated irrigation requirements.

Design Process

The next stage is the design process to build in features such as being able to isolate each fairway separately, whether the sprinklers are lateral (pipe coming off main) or are all isolated. Consideration needs to be given to which types of valves will be used:

Quick coupling valve: With this type of valve, there is a hose plugged into every valve, so every third or fourth sprinkler down the fairway allows manual establishment of roughs. One or two on the tees.

Air valves and Scour valves: These types of valves enable you to drain the water main to a low point and conduct repairs/maintenance.

During this stage it is also important to work with project engineers to build water storages and bring them to the site and to consider the power requirements for pump stations, and whether any civil engineering works are required for the pump system location.

Tender Process

Develop and distribute the tender documents, answer any questions, vet the tenders, and make a recommendation on the desired contractor.

Once the irrigation contractor is engaged, it is important to check the materials and installation procedures to ensure they comply with the irrigation layout plan.

Key things to look out for:

- Do the sprinklers and pipe work in the system?
- Does the type of system control fit in with the control/wiring plan and cable layout drawings?
- What is the pump station plan and how does this fit in with the water supply?
- Are all the materials and installation procedures that were listed in the tender response being adhered to?
- Is there a bill of quantities – how many of everything that is needed?

Set-out

It is now time to take the plan out into the field! Locate the position of the sprinklers across the site. This is particularly critical if using a hard-edge system as there will be varying contours and slopes that need to be considered.

Monitoring and Maintenance

Once the system is installed it is important to conduct regular maintenance and monitoring. 'As-built' surveys and inspections should be done at critical stages to check trench depths, joins and sprinkler installation are all done correctly.

How golf's views on vegetation have changed over time

When golf was first being popularised, it was common on greenfield sites to vegetate them with exotic species. They were fast growing and many involved at the club were 1st or 2nd generation settlers who were familiar with the chosen species.

In more recent times the philosophy of revegetation has changed to either:

- Native plants;
- Plants which are common to the area, or;
- Site indigenous vegetation, trees, plants and grasses (which grew on the site prior to settlement).

The native and indigenous vegetation options for any site within Australia can be researched via a dedicated national database.

In addition, specific expertise can be engaged to assist with Vegetation and Landscaping Management.

Contemporary Vegetation Planning

Native vegetation in Australia has been classified into distinctive groupings known as Ecological Vegetation Classes or EVCs. These groupings are based on floristic, structural and ecological features of the vegetation. Each EVC has been assigned a distinct descriptive name (e.g. "Coast Banksia Woodland") and number (e.g. 002).

The process to establish the type of vegetation that originally grew on the site involves researching the Ecological Vegetation Class (EVC) classifications which have been determined for each local area.

Planting native species also provides important biodiversity benefits at a time of fragmented and declining urban values. improved native vegetation can help manage the natural environment and enhance enjoyment for all golfers.

In addition, contemporary planning will take careful consideration of where to position trees to ensure they do not, or will not eventually, restrict sun, shade and water from rejuvenating the turf (particularly important around greens).

Removing Trees and Safety

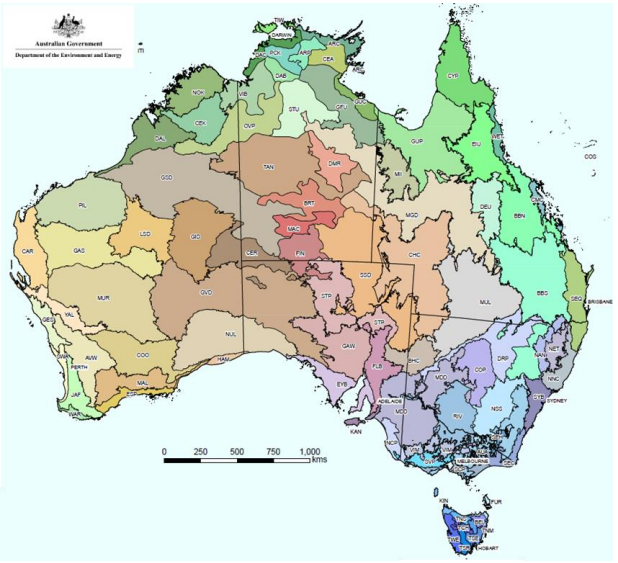
Arborists reports (determine the safe useful life of a tree and recommendations on whether its safe to be removed – and if any additional actions are required to minimise or offset the loss). Each tree should be assessed through an Arborist Report approximately every five years.

Re-Vegetation

During the re-vegetation process it is critical to use specific indigenous species that require less water and chemicals.

Locally sourcing plant species, or undertaking community planting projects can help to reduce overall costs and encourage community involvement.

Re-vegetation and tree planting in particular, provides significant value in terms of urban cooling, carbon capture and biodiversity. These all have economic and environmental impacts that extend beyond golf course boundary.



Top Tip:

Some of the common pitfalls to avoid include:

- Planting weeds or non-indigenous species which may lead to overgrown areas where golf balls may be lost.
- Creating more habitat for snakes. Any long grass or bushland that creates a warm sheltered environment can create the perfect habitat for snakes.

Background Research

The first step of any vegetation or re-vegetation project is to understand the local environment and vegetation context. During this phase, making contact with local Landcare groups, Friends of Environment groups and local nurseries will assist in understanding the indigenous species that are native to the area.

Once an understanding of the local environment has been established, the next step is to start mapping vegetation. Using the EVC mapping, the various species of local indigenous flora should be identified.

Vegetation Planning

The next step is to start planning the vegetation or re-vegetation project. Develop a flora list of local appropriate species using the EVC.

Pick one or two sties and begin the planting process for re-vegetation. During the planting stage, consider the creation of natural habitat such as nest boxes, logs, and hollows in trees to provide a sanctuary for local fauna. When planting vegetation, it is also important to consider the species of flora that are a food source for wildlife.

After Care

During the after-care phase when the plantings are growing in, is a great time to get the golfers and the community involved. There are also potential funding opportunities and Landcare grants that can be sourced to allow inclusion from the community.

Maintenance and Monitoring

It generally takes approximately 12-18 months for new plantings to become established. During this time, it is critical to keep out weeds and allow native species to establish. Rope off the areas to keep golfers out, and after 18 months put in tree guards to protect the plantings from large animals such as kangaroos.

The maintenance requirements will depend on the EVC and species planting but will slowly reduce as your natives become more established.

It is important to conduct yearly audits, to see how the vegetation plan is going and make any adjustments and recommendations on further maintenance.

Ecological Burns

An 'ecological burn' is the burning of native vegetation to preserve or enhance ecological processes. Fire is an important natural event that shaped the Australian landscape over time and increased native biodiversity.

Many Australian native species require smoke to germinate, so it is important to factor ecological burning into an ongoing maintenance plan. Slashing down an area that is around 5 years old will assist in stimulating the seedbank and promoting new growth of native heathland species.

Before undertaking any ecological burn, it is recommended to consult with the Traditional Owners of the land.

Top Tip:

The most important elements to consider with any vegetation and landscaping management project are:

- Using native indigenous vegetation and appropriate techniques for revegetation.
- Creating habitat for native and threatened species - golf courses are often a great refuge due to the reduced lighting around the course and natural biodiversity.
- Ensuring you factor in enough time to order plants in advance from a local nursery. Most of the time, plants will need to be grown 12 months in advance.
- Making sure you don't pick off more than you can chew! Re-vegetating multiple areas of the course at a time can make the project too big and difficult to maintain. It may be helpful to start by doing smaller sections one at a time.
- Identifying and introducing other sustainability initiatives across the club such as reducing single-use plastics, switching to solar energy and composting food scraps.

Key Considerations

When considering turf management, some of the key considerations and tasks to undertake include:

- Assessing the types of soils that are already on-site, as well as the drainage rates.
- Understanding the water requirements, including access to water sources and water storage capacity.
- Determining the grass and weed species present, and how these will need to be managed.
- Understanding the levels of organic matter accumulation across different areas of the course.
- Looking at the vegetation surrounding the course, and how shaded areas may affect turf management requirements.
- Selecting appropriate grasses to manage adaptation to a changing climate and water management in future hotter and drier conditions.

Grass Types

From the early 80's to now there has been a transition from cool to warm season grasses – mainly as a result of the millennial drought.

Warm-season grasses, such as Couch and Bermuda are more favoured for Australian fairways, as they require less water and can provide a better-quality surface all year.

In more temperate regions, Bent grass and Kikuyu grass may be used for fairways and tees, however nearly all Australian golf courses now have warm season grasses on their fairways.

Grass Conversion

There are multiple ways of converting the grass types within a golf course. The key consideration is whether to leave the course open for play, or close the course to allow it time to establish. Some options include:

- For 18-hole courses, closing 9 holes at once and re-grassing the whole course over a 1-2 year period.
- Converting half a fairway per year and over a longer time period.

Each has different costs associated and there is no right or wrong answer. It is up to each club or facility to determine what works for them.

Water Sources and Storage

The availability of water is the most crucial element to any turf management plan. It is important to consider how the volume and time of the year that water is available, as well as the storage capacity on site.

The main water sources used by golf clubs and facilities are lakes and rivers, and catchment/stormwater. This is stored in on-course water hazards, dams and tanks.

Soils and Soil Types

When thinking about soil types, consider what can be used on-site and what may need to be imported. For example, soils for teeing areas may need to be imported, while fairways can use local soil types. A soil survey of the site can be undertaken to get soils tested and determine what types of soils are available.

Geographical Location

Weather patterns and rainfall has a significant impact on turf maintenance. It is important to consider drainage infrastructure, irrigation requirements and potential catchment areas.

Renovation and Maintenance Programs

Across the board there is generally inadequate renovation of golf courses. Generally, greens should be renovated twice per year and remove 20-30% of total surface annually to avoid the build-up of organic matter.

Top Tip:

When considering turf management, it may be useful to engage a specialist to complete a benchmarking study on the course. This will determine the amount of organic matter across the site, and the amount of thatch in each green and fairway and how this may limit performance of the course.

From this process, recommendations can also be provided on how to improve, including the development of a maintenance plan, as well as future water storage requirements. This may include a renovation program or complete reconstruction.

The Importance of Sustainability

Any facility development or re-development project provides an opportunity to improve the environmental footprint of the facility.

The best outcomes are achieved when sustainability is the first thought, rather than the last. Importantly, environmentally sustainable decisions also provide a financial benefit, as less resource inputs are required to maintain playing surfaces and buildings alike.

Playing Surfaces

Proper grass selection is critical to minimising the inputs required to maintain optimal playing surfaces. Lowering water inputs, in addition to in-organic fertilisers, fungicides and pesticides will have a positive impact on the environmental footprint.

Minimising the maintained turf area will have a greater impact than any other measure. While not suggesting that there should be sacrifices in the actual playing quality of the facility, simply having turf for the sake of having turf will increase the maintenance requirement of the facility. Returning areas that are out of the designed playing area to natural ground cover will be beneficial.

Irrigation and drainage systems also play a critical part. Professional design of both will ensure the minimum amount of water is required as even coverage is achieved. Hard-edge, head-to-head, and back-to-back irrigation designs all contribute to achieve even irrigation coverage and should be investigated any time that irrigation works are required.

Building Infrastructure

Without question, building design with environmental sustainability in mind will have a positive impact on both maintenance and running costs. There are endless innovations which are becoming more affordable to install, which can have a positive impact.

Rooftop solar panels have a huge impact on building running costs and if the building is designed with panels in mind, the aesthetic impact of the panels can be minimised or even removed.

Underground water tanks can capture rooftop stormwater with the water being reused in toilets though the facility to minimise the needless use of potable water.

Other initiatives to positively impact a buildings energy rating should also be considered, such as high quality insulation, double glazing of windows, energy efficient LED lighting, professionally designed and appropriately sized heating and cooling solutions.

Managing Climate Change Impacts

Given the changing climate, the need to manage the impacts of a hotter and drier climate on future operations will become increasingly important – and vital to the sustainability of the sport. Golf clubs and facilities should consider where they can implement the use of renewable energy sources, water and waste recycling, green power generation and storage, and carbon neutrality.

Environment

According to Golf Benefits to the Environment, Australian Golf Industry Council, 2020, well-designed golf courses can provide a number of benefits to the environment that include:

- Preserve open space and remnant vegetation within both rural and urban environments
- Promote indigenous flora and fauna and the Australian landscape experience
- Protect and act as wildlife sanctuaries
- Utilise, treat and enhance water resources
- Rehabilitate degraded landscapes
- Improve air quality and moderate heat
- Protect topsoil from degradation
- Beautify the environment and aid community education[31]

Recommended Resources

Golf Course 2030

Improving the Environmental Management of Golf Courses

Golf Course 2030

Golf Course 2030 (GC2030) was established by The R&A in 2018 as an industry initiative to consider the impacts, both positive and negative, of the changing climate, resource constraints and regulation on course condition and playability.

Its aim is to produce a roadmap that will steer the sport to mitigate for the challenges and take advantage of the opportunities that these issues present.

The GC2030 plan has produced for each country/region that includes Australia, a set of needs to promote greater resilience through appropriate management practices which address the challenges and opportunities. It must also meet strategic needs at regional, national and local level, and the operational needs at golf facility level.[32]

Hole 7, Royal Adelaide Golf Club
Source: Royal Adelaide Golf Club

Glenelg Golf Club is in the midst of a sustainability project that will ensure there are many more chapters added to their own history books and those of clubs around the country.

Indigenous vegetation in the course's out of play areas are being restored and the club has joined with three other Adelaide golf clubs - Kooyonga, The Grange and Royal Adelaide - in enriching the local ecosystem by creating a safe space for native insect and animal species.

"We're hoping to create a corridor of habitat for the butterflies between the four golf courses," Glenelg's biodiversity manager, Monina Gilbey, said.

The project began in November 2021 when the four clubs' received a Green Adelaide Grassroots Grant and Gilbey is leading the charge.

"We've already been working on rewilding a butterfly. The butterfly larvae have been collected from other parts of South Australia and we're trying to reintroduce them to the Adelaide metropolitan region," she said.

"We've done our first two butterfly releases at Royal Adelaide and a release of caterpillars too."

The project also aims to connect vegetation pockets - including a plan to relocate a rare orchid from The Grange to Glenelg - between the courses, hold educational workshops on local Kaurna history and cultural burning practices, and install nest boxes and bee hotels.

Those objectives are an expansion of the work Gilbey and Glenelg's maintenance team have undertaken in the four years since she joined the club on a part-time basis.

Native vegetation on the 8th hole at Glenelg Golf Club. Photo: Monina Gilbey

She began her role alongside Glenelg's superintendent Tim Warren and has implemented a staged process to restore native vegetation.

This began with the removal of pine trees - which were classified as weeds - and other dead plant material from the course and has progressed to protecting the corellas, Australian painted lady butterflies, ducklings, fairy wrens, bees, caterpillars and many other wildlife that enjoy the safe spaces of Glenelg.[33]

"Things like reducing irrigated rough and managed turf areas means less chemical usage and less resources. Using electric vehicles around the course helps too. There are wider benefits. It's not just happy, fluffy environmental things."

- Monina Gilbey, Glenelg Biodiversity Manager

When planning or designing a golf course, the following key questions need to be considered for each of the critical elements of the golf course.

Greens

- What type of grass will be used?
- What is the preferred construction methods (push up, California or USGA, etc.), based on agronomic considerations (e.g. soil, climate, rainfall, maintenance budget)?

Tees and Fairways

- Is drainage required or not?
- Is the existing site soil suitable – or does sand need to be imported?
- What type of grass will be used?
- What is the ongoing maintenance budget and can this sustain the desired grasses?

Bunkers

- Is drainage required or not?
- If drainage is required, what type of bunker liner is going to be used (e.g. no liner, synthetic cloth liner, grass liner, manufactured rock liner such as Better Billy or Custom Bind)?
- Is there sand available on site or does it need to be imported?

Example of the elements of a golf hole – Lake Karrinyup Country Club
Source: Gary Lisbon Golf Photography

Sizing

The size of a green will be influenced by a number of factors including budget, the size of the area and the architects design intent.

Whilst there are exceptions to the rule, it is generally recommended to have a minimum of 400m^2 to enable the pin position to be rotated around, spreading the wear caused by golfers.

Most greens are between 500 and 700 square metres, however some larger greens exist with some over 1000m^2.

Construction

Much like the construction of tees, the biggest factor in choosing a construction technique for greens will likely be a result of the quality of soil or sand found on site.

If the soil has a high percentage of sand it may be possible to build greens in situ, shaping the native soils as a putting surface. Such greens are regarded as “push up”.

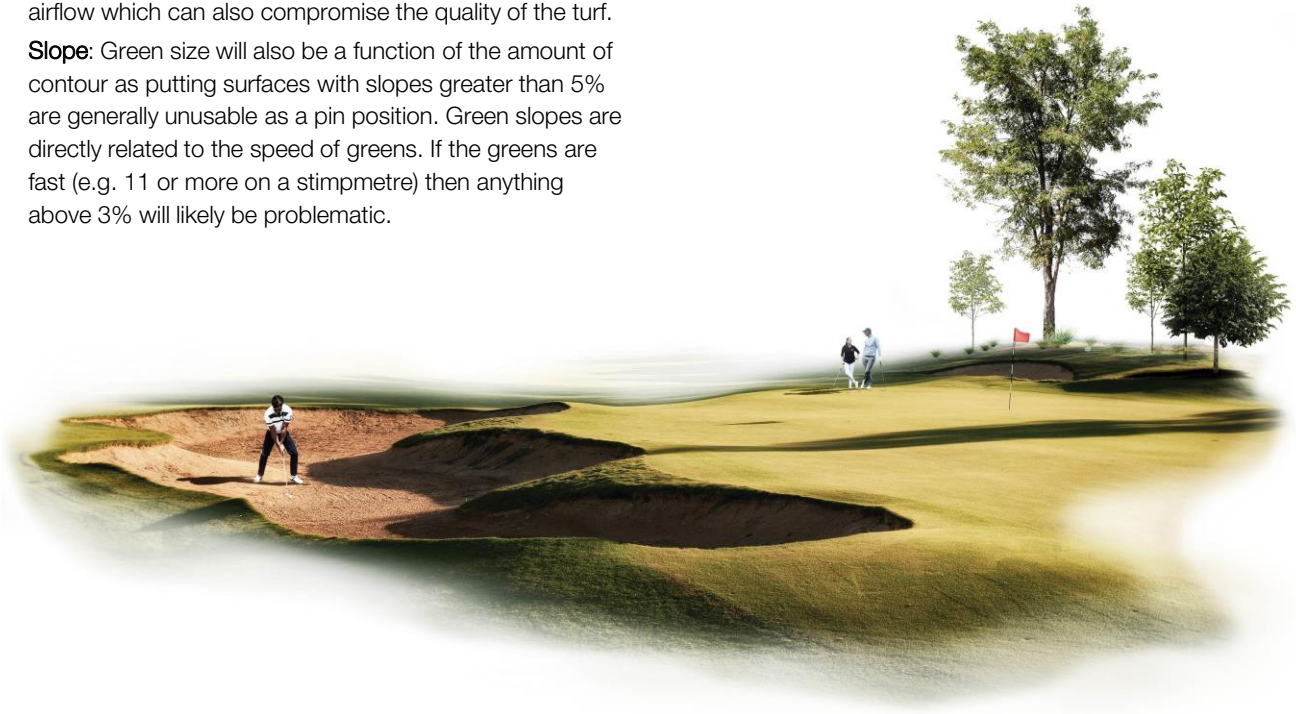
If the soil on site is not satisfactory then constructed using a different method which relies on importing materials from off-site is required. The two most common methods for construction are a USGA Construction method and a California Style construction method. Whilst their profiles are slightly different, each relies on sub-surface drainage to ensure the sand profile does not become water-logged. The exact specification for greens construction and the chosen grass variety will be influenced by climate, water quality and accessibility, aspirations and budgets.

Additional Considerations

Shade: Perhaps more than any other playing surface it is especially important to ensure that trees do not encroach on any the putting surface. Trees should not be positioned within 15 to 20 metres of a putting green and care is needed to ensure that as a minimum that the greens receive at least 6 hours of sunshine each day.

Trees positioned close to a putting green can also create problems with tree root encroachment and they can limit airflow which can also compromise the quality of the turf.

Slope: Green size will also be a function of the amount of contour as putting surfaces with slopes greater than 5% are generally unusable as a pin position. Green slopes are directly related to the speed of greens. If the greens are fast (e.g. 11 or more on a stimpmetre) then anything above 3% will likely be problematic.



Sizing

The size of tees is dependent on a number of factors which will influence the ability and speed for divots to repair, including:

- The number of rounds played (especially important on the par three holes where divots are more frequent)
- The soil
- Climate
- Grass variety

As a general guide, course designers will typically allow for:

- 700m^2 total teeing space for par 3's
- 500m^2 total teeing space for par 4's
- 500m^2 total teeing space for par 5's

Construction

The desired construction technique will largely be dependent on the quality of the site soil and this in turn will affect the cost of construction. If the site is naturally sandy and drains freely, the tees may be able to be constructed in situ using the natural sand/soil.

By contrast if the site is heavy (e.g., clay or marine mud) and suitable sand is not available on site, it will need to be imported from a suitable quarry. In this instance sub-surface drainage is also recommended to ensure the profile does not become waterlogged after heavy rains.

Irrespective of the technique chosen, it is generally recommended to have at least 1% surface fall to ensure surface water does not pool on the surface of the tee. Whilst this small amount of fall is achieved it is not perceptible to the golfer. Generally speaking, tees are finished with a laser-grade machine to ensure the teeing areas are perfectly even just prior to grassing.

Additional Considerations

Shade: Like all playing surfaces it is important the tees don't receive excessive shade as it will compromise the playing surface by limiting the amount of sun required for growth and recovery. Generally, any trees within a few metres of a teeing area should be avoided.

Sizing

The size and number of bunkers is generally the product of the golf course designer.

Depending on the scale and style of the course, these may be just a few metres across (e.g. the pot style bunkers found on a links course) to many hundreds of square metres as is the case with some of the larger bunkers found on the Melbourne sandbelt.

Whilst these are often under the direction of the golf course designer, some consideration should be given to maintenance as bunkers can be a costly item to maintain.

Construction

On naturally sandy ground with good drainage characteristics, bunkers can be relatively cheap to construct and require little more than digging a hole in the ground.

In heavy ground it will be necessary to drain the floor of the bunker with subsurface drainage. Sand will need to be imported to line the bunker for play – typically to a depth of around 200mm. Liners are often used to separate the heavy ground (clay) from the imported sand which ensures the sand does not become contaminated after heavy rain events. Methods can include using a cost-effective turf liner or geofabric layer through to the more modern and expensive solutions such as capillary concrete, Better Billy or Kustombind which can also assist in limiting washouts after major storms.

Additional Considerations

When the ground is heavier, the costs and processes involved with the construction of bunkers as well as their maintenance increases significantly. As a result, it may make sense not to build too many.

Sizing

The fairway area of a typical 18-hole golf course is generally between 10 and 20 hectares. On some resort courses or tournament venues where the footprint can be a lot larger, the amount of maintained fairway grass may be as high as 25 or 30 hectares.

Construction

As a rule of thumb, there is a greater tolerance when it comes to the soil conditions on fairway areas for the establishment and maintenance of fairway grass.

Unless the construction budget is significant, most golf courses will try and work with the existing soils of a site for fairway areas and just try and reshape or add drainage if the site conditions are heavy.

Only in the case that there is no topsoil available or the client is trying to attain an exceptionally high standard will sand capping be considered. In these instances it is quite common to construct the fairways in a similar fashion to a tee, where a drainage network is created in the sub-grade and then 300mm of sand or sandy loam is added as a growing medium.

Additional Considerations

The choice of fairway grass will be influenced by the climate, soil type, the number of rounds, maintenance budgets and the goals or expectations of the client.

Purpose

Penalty areas are typically used on golf courses for any number of reasons including:

1. Aesthetics and design strategy
2. Drainage
3. Water storage (for irrigation)
4. One or all of the above.

They can also make for very effective and strategic hazards whether they are creeks, streams, ponds or wetlands.

Water Storage

The most common purpose for water hazards on a golf course is a result of the need for stored water to assist with irrigation. Ideally a hydrological study is first performed to better understand the amount of water required to irrigate the golf course and then calculations are made against the ability to capture water through drainage or stormwater to determine the appropriate size of the storage. Other methods for capture may also be possible include bore water, sewer mining etc.

There are many methods by which water storages are constructed and they are largely dependent on the ground conditions of the site. If the site is favourable it may be possible to use the site clays and avoid expensive liners. If not, it may be necessary to add an impermeable liner as part of the construction process.

Image of RACV Country Club – Healesville
Source: Gary Lisbon Golf Photography

Drainage

Water hazards can be an effective way to help the drainage of a site. One method might be to formalise a low part of the course for drainage to empty into. This can be particularly effective if it is difficult to outlet water off the property. Another example is where creeks are used instead of pipework to help quickly drain surface water. The Healesville Golf Course provides a great example of this where the creeks help direct water into the irrigation ponds so that water can be recycled out onto the golf course.

Top Tip:

When considering the impacts of climate change on water storage and irrigation, the use of natural mechanisms (e.g. streams) may provide further resilience in the face of changing environments.

Purpose

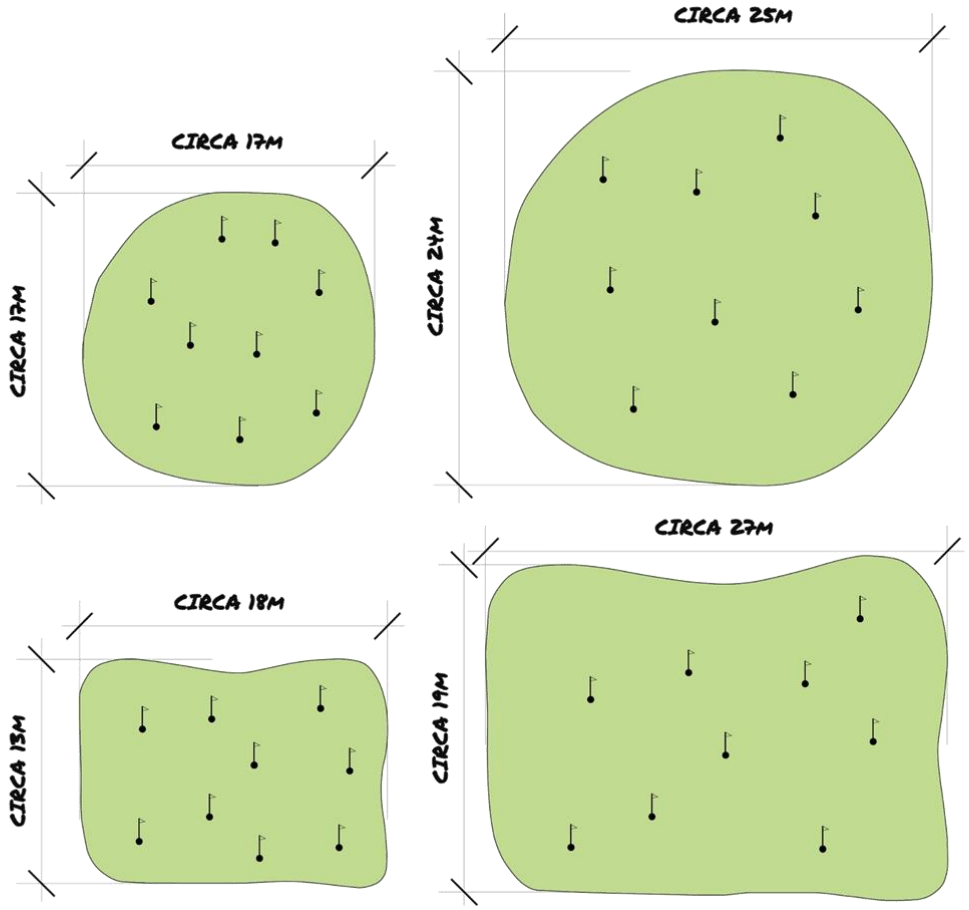
Without question the most common type of practice facility is the putting green. Irrespective of whether the course is a tournament venue or a simple 9-hole public course it is extremely rare to not have a putting green somewhere near the clubhouse where golfers can hit a few putts before going out onto the course.

These range greatly in number and size depending on the type of the facility. At their simplest a green may be just 100 or 200m^2 and increased up to a few thousand square metres, often over a number of greens at larger facilities.

Sizing

A putting green will consist of multiple hole locations and a variety of putt lengths and contours The practice putting green should be rectangular, square or round in shape to maximise playable area, with a minimum of 9 hole locations. The recommended area is 250m^2 - 500m^2. The putting green may feature greater slope and contour between hole locations than greens on a typical course, and the green surface should slope between 1% (1:80) and 3% (1:30) contoured to create the opportunity of downhill, uphill, and left & right breaking putts.

The putting green should not have substantial internal contouring (such as tiers) within the putting surface, and the surrounds should be adequately contoured to drain/divert water away from putting surface.



Sizing

Short game facilities have become a popular addition to practice facilities over the last few decades and are now common to many courses.

It is difficult to generalise about the size requirements for a short game facility as they can be anything from a simple small green to a larger green with complementary bunker and chip shot area, through to something more elaborate featuring multiple greens, bunkers and expansive areas to hit from.

For high-quality benchmarking purposes:

- One of the best small short game practice areas can be found at Victoria Golf Club. It includes a full-size green, multiple bunkers and a fairway area to play chips and pitches from. Overall, it measures just under 3,000m^2.
- At the other end of the spectrum, the new short game facility at Peninsula Kingswood Golf Club features three large greens, multiple bunkers, a creek and an expansive fairway area. This area measures 12,000m^2.

Additional Considerations

Approach fairways: The approach fairways should be a simple round or oblong shape, with a variety of lengths and slopes ideally featuring uphill and downhill shots from hole-to-hole. The contours should ensure water does not collect on the target green or in the approach fairway area.

Teeing Locations: There should be teeing grounds on each hole, measured to the centre of the green, providing for shots at 14m, 28m and 46m.

Ideally there should also be provision for shots for up to 92m within one or more of the holes.

Short Game Practice Area

The below diagram demonstrates how multiple short-game practice areas can be grouped together to create a pitch and putt course or short three-hole loop.

The Safety Challenge

There are no universal safety standards for golf courses. There is however, a generally accepted guideline for the total distance between fairways, which has been the industry norm since the 1960's.

- The guideline outlines the minimum acceptable distance from the middle of a fairway to the middle of an adjacent fairway (or to a boundary).
- The measurement is conducted at a driving distance of approximately 230 metres from the tee.
- The minimum requirement for this measure is to be no less than 50 metres for any hole.
- **More recently, the desirable distance incorporated into modern design is 60 metres (and some are now moving to 70 metres).**

The reason there is no universal safety standards in place is that a hard rule would mean some existing courses would be non-compliant, and there are other factors which contribute to the safety of holes.

In addition, unique design techniques such as repositioning a tee or the centre of a fairway can improve the safety of a hole and reduce the likelihood of a ball striking another person or damaging another object. Beyond design intervention, netting may also be required to protect the boundary of a hole.

The reality is that most courses have a safety issue, and most don't know how to address it…

Trajectory Study

The most detailed method to assess this guideline is to perform a trajectory study. This involves taking actual data from many thousands of golf shots, factoring in wind direction and speed, and the topography of the hole in question, to plot the path of the golf ball.

The study can determine the flight, where the balls land and whether netting or redesign is the best way to solve the issue.

A typical trajectory study for a hole or for a driving range will cost approximately: $10,000 - $12,000.

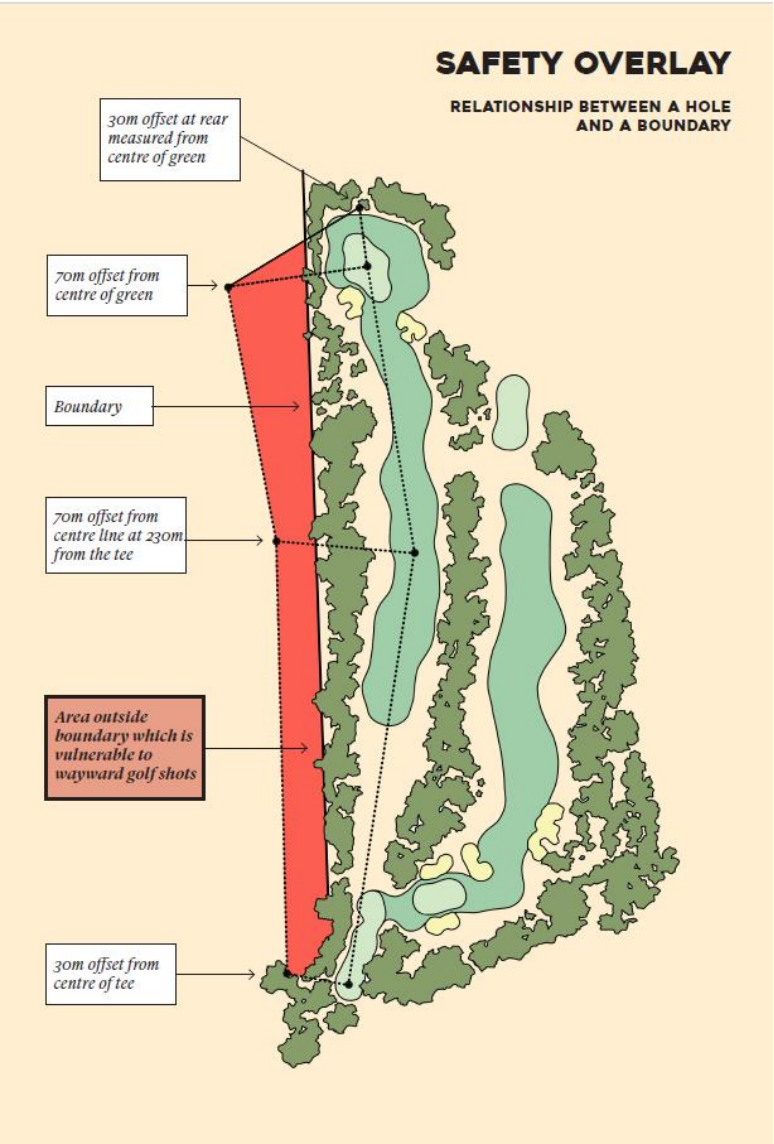
The following diagram is an example of an impact diagram from a trajectory study.

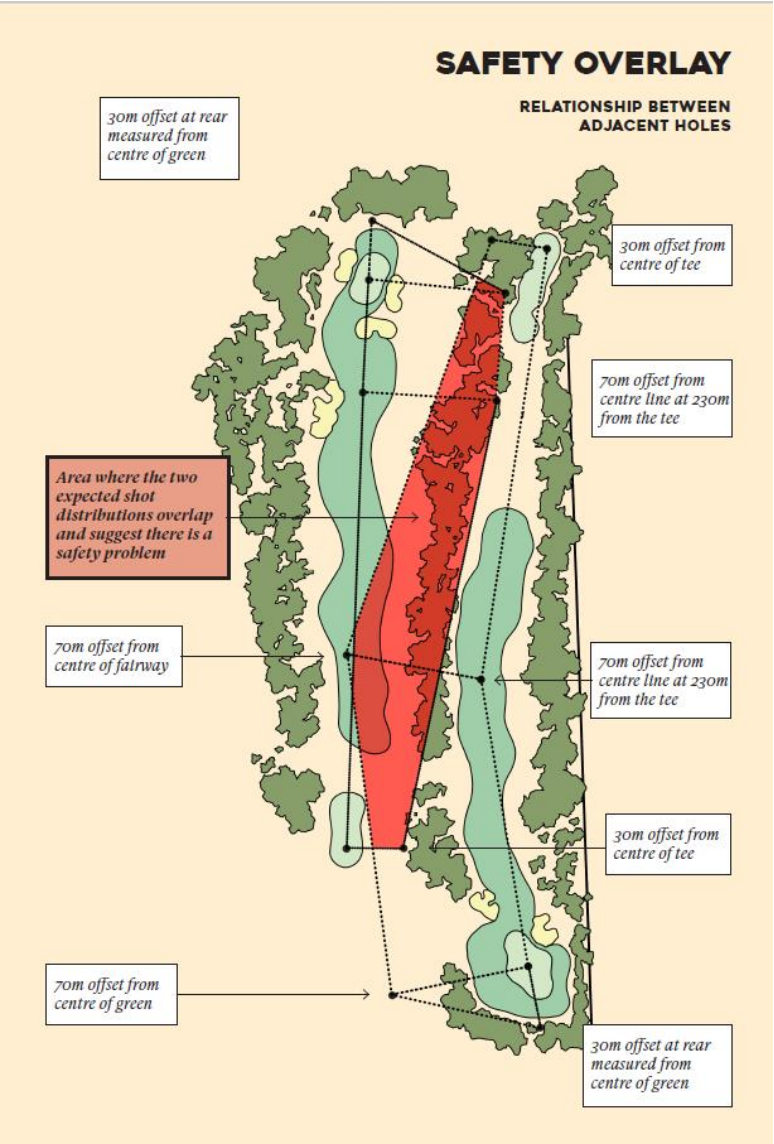
Example of a trajectory study
Source: Pacific Coast Design

Safety Mapping

This diagram provides a visual representation of the safety considerations which can be evidenced by trajectory studies.

Source: OCM Golf





Netting and Fencing

The installation of safety netting and fencing can be a means for mitigating safety risks caused by errant golf balls in situations where there are boundary and internal design safety issues. Two common types of barriers are Blinker Barriers and Boundary Barriers.

Blinker Barriers

Blinker barriers interject the ball flight early when the ball is rising. These barriers are effective for balls played in close proximity and offer protection for problem areas without requiring a great deal of height or width but are less effective if hit-off points are dispersed or distant.

These barriers can be closer to the players and more visually intrusive. The close proximity of blinker barriers to players can be advantageous by influencing players to adjust their line of play to hit away from the protected area. An example of this could be near a teeing area.

Boundary Barriers

Boundary barriers are positioned to stop balls towards the end of their flight when they start to descend. In order to be effective, boundary barriers are normally longer and higher and can provide extended coverage for larger areas.

Boundary netting costs are dependent on the height and length. For a 20-metre-high net, the approximate costs are $6,000 per lineal metre.

Boundary nets with screens up to 36 metres high – the tallest in Australia – use slender poles and wide pole spacing to significantly reduce the visual impact of the screens.[34]

Example of Golf Course Boundary Netting
Source: Country Club International – Safety Fencing

What is Par?

Par reflects the score a scratch player is expected to score on a given hole and may be allocated depending on the playing difficulty of the hole, including any effective length correction factors, for example, elevation changes, forced layups, and prevalent wind.

Where a hole length falls within two par ranges, for example 430m (men) or 360m (women), the par may be allocated as 4 or 5 depending on the difficulty of the hole.

Where a hole length falls within two par ranges, par should be designated relative to the way the hole was designed to be played.

For example, if the hole lengths from all sets of tees on a specific hole lie within the recommended par 4 range for men, with the exception of the forward tee at 220m, this hole should still be designated as a par 4 hole due to the way the hole is designed to be played.

Establishing Par

The Rules of Handicapping feature par as a factor in the calculation of:

- Net par (for hole(s) not played)
- Net double bogey (maximum hole score for handicap purposes)
- Daily Handicap (which includes a Scratch Rating minus Par adjustment)

It is important that an accurate par be established for each hole on a golf course for both men and women, and these values should be printed alongside each hole on the scorecard.

It is recommended that par be established for each hole in accordance with the hole lengths set out in the table below.

Course Rating Minimum Length

In order to qualify for a Course Rating and Slope Rating, a golf course needs to be 2,744 metres or longer for 18 holes (1,372 metres for nine holes) and must have one or more "long" holes as follows:

- For any combination up to nine holes, there must be at least one hole that would require a male scratch player to hit a full shot greater than or equal to 230 [192]* metres.
- For any combination greater than nine holes, there must be at least two holes that would require a male scratch player to hit a full shot greater than or equal to 230 [192]* metres.

*Refers to distance for females.

Par	Men	Women
3	Up to 240 metres	Up to 200 metres
4	220 to 450 metres	180 to 380 metres
5	410 to 650 metres	340 to 550 metres
6	610 metres and up	520 metres and up)

Note: These guidelines assume an altitude less than 610 metres above sea level.

Source: Interpretation 5/2 and Clause 13, World Handicap System Operational Guidance & Supporting Regulations, Golf Australia, which are reviewed from time-to-time.

SECTION 6
DRIVING RANGES

Image of The Range @ Curlewis
Source: Golf Australia

Evolution of Topgolf

As noted previously, through the advent of Topgolf, driving ranges have evolved considerably from being simple venues with a focus on skill development with synthetic mats to hit from and play out to an open field with perhaps a handful of targets or flags to being an entertainment venue with ball tracking technology and high-quality food and beverage offerings.

Topgolf originated from "Target Oriented Practice Golf," where the founders of Topgolf used proprietary radio-frequency identification (RFID) technology and dartboard-style targets to create the first venue in Watford in the United Kingdom in 2000.

The Topgolf environment is commonly compared to that of a ten-pin bowling alley with up to 100 bays across three levels and includes sports bars, restaurants, lounges, games tables and function areas.

Each bay at a Topgolf venue holds up to six people who play individually or in teams by taking turns with hitting shots to an artificial turf outfield with targets that each have a reader that detects the microchip inside the ball to automatically send the score for each shot to the bay monitor.

The closer the shot is hit to the centre of the target and the further the shot is hit – the more points that are scored. Food and beverages are available to be served without the team having to leave their bay. After the game is finished, patrons can continue to experience the other extensive hospitality areas of the facility.

Image of Topgolf hitting bay
Source: Topgolf Gold Coast

Topgolf Sizing and Cost

Topgolf facilities occupy approximately 6 hectares with an outfield that is 200 to 240 metres long with netting and poles rising as high as 46 metres. The cost to construct a facility varies depending on the scale of the venue. Topgolf Gold Coast is reported to have cost $35 million to build. Topgolf offers multi-level and single-level venues.

Topgolf Multi-Level Venues

Multi-level venues up to three levels high with 72-102 hitting bays that encompass technology, entertainment and food and beverage.

Topgolf Single-Level Venues

Single-level venues are a community-focused, open-concept design delivering Toptracer technology to 30 plus hitting bays and a backyard-style outdoor area with food and beverage, music and entertainment and a 9-hole mini golf course. This concept was introduced for the first time at the 2021 Masters in Augusta, Georgia to accommodate smaller venues while still providing an entertainment experience.[35]

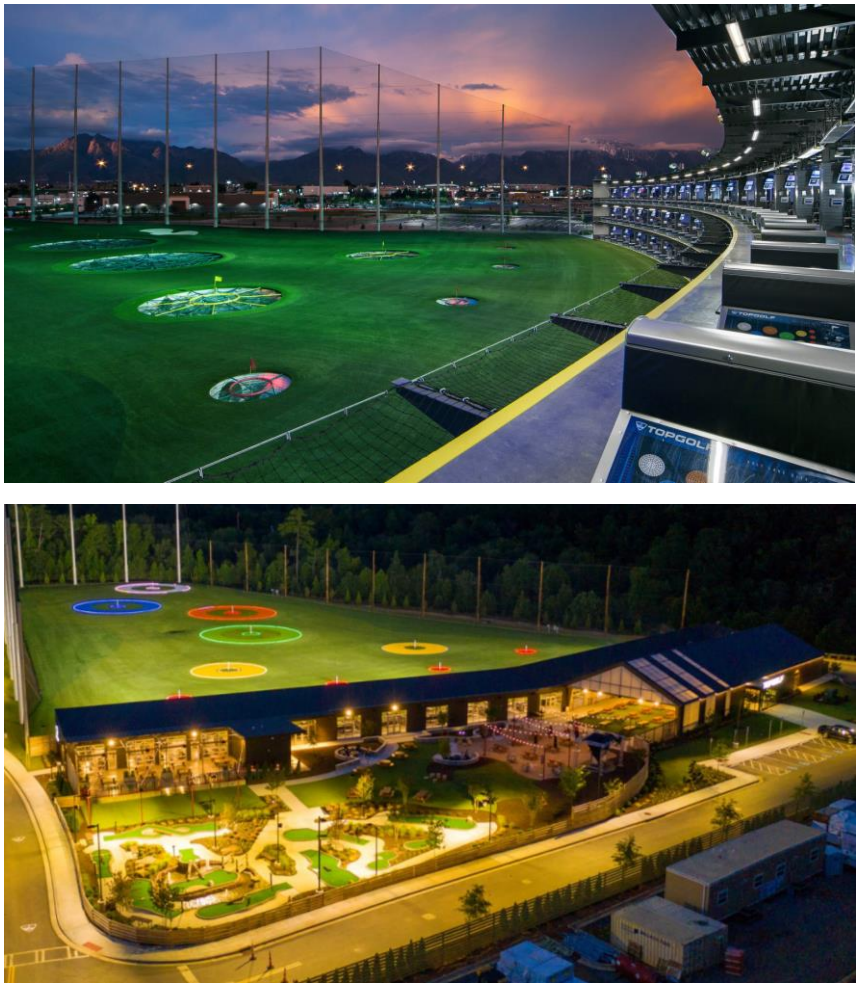


Image of Topgolf multi-level venue (top) and Topgolf single level venue (bottom)
Source: Topgolf Entertainment Group

In response to the Topgolf evolution, golf facilities in Australia are now looking at ways to enhance the driving range experience.

Recognising the significant investment required to construct a full blown Topgolf venue, there are ways that existing driving ranges can be refurbished, or new ranges constructed to create an experience that incorporates entertainment and technology elements.

Outfield

Thornleigh Golf Centre has installed a synthetically turfed and fully contoured driving range with raised target greens.

Ball Tracking and Lounge

Brisbane Central was the first venue to install the Toptracer Range where shots are tracked via a camera with screens at each bay.

Range Ball Automation

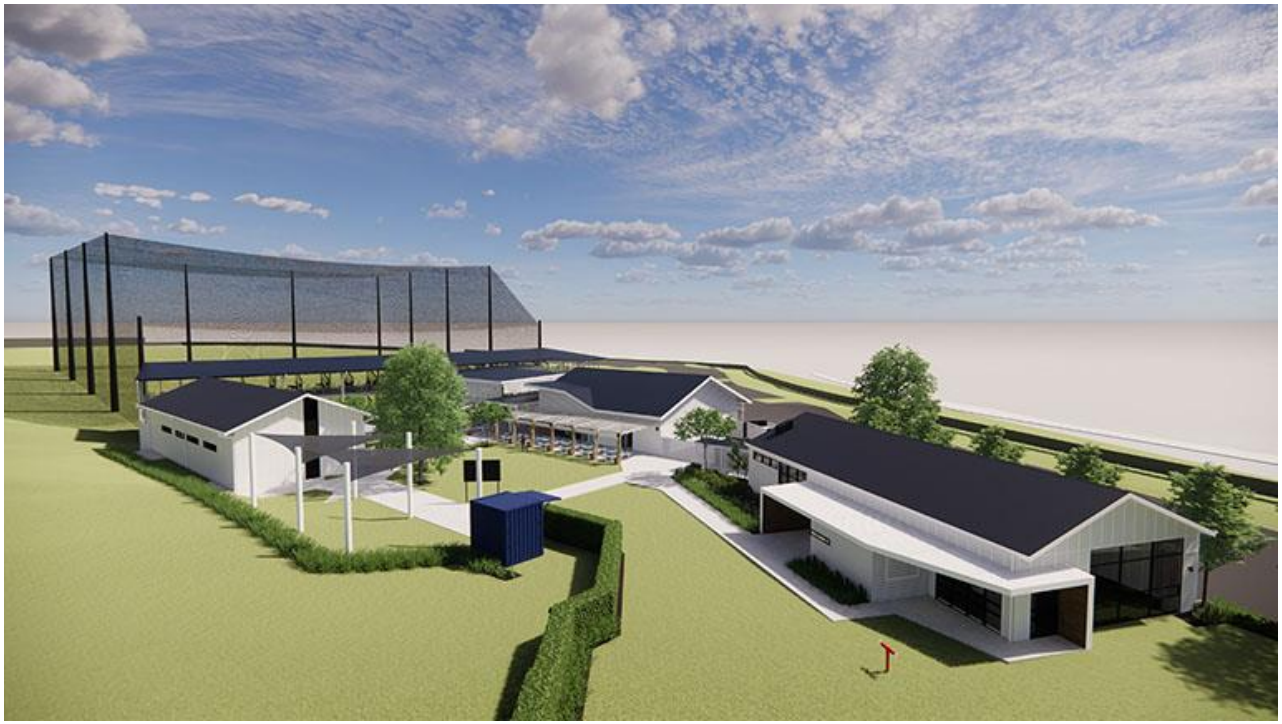
Range ball automation is another innovation that is being incorporated at ranges, where patrons have the option of balls being automatically teed up at their bay. Automatic tee-up systems tee a ball up every few seconds and also allow the tee height to be adjusted. Golfers can maintain their stance between shots which eliminates the need to bend over to tee-up a ball.

Image of the outfield at Thornleigh Golf Centre Driving Range, NSW
Source: Thornleigh Golf Centre

A challenge with designing new driving ranges or re-designing existing ranges is the risk issue of errant golf balls on smaller sites and those located in built up urban areas.

To mitigate this issue, *Swing City Golf* is an example of a fully enclosed driving range that is being constructed at a length and width of 60 metres and a height of 25 metres, as part of a broad range family focused sporting and entertainment venue that will feature golf, food and beverage and corporate entertainment facilities in Norwest, NSW.

The development at a cost of $12 million will include 40 driving range bays with golf ball tracking technology, a restaurant with undercover and outdoor alfresco dining, corporate function and entertainment facilities, mini golf and amusements.[36]



Artist's impression of Swing City Golf
Source: Mulpha Group

Driving Range and Practice Fairway Considerations

When designing and constructing a more traditional driving range or practice fairway, the following key elements should be considered.

Sizing and Design

- With the increasing distance that the ball travels, ranges should ideally be up to 300 metres long
- To enable divot recovery, the hitting tee should be built as large as possible with a minimum width of 100 metres and length of 50 metres
- If there are tees are at both ends, the total range length should exceed 350 metres
- If possible, ranges are better positioned in the interior of a course layout rather than in property border areas
- If possible, distance is a better safety safeguard than netting, mounding and vegetation
- To minimise wayward shots, the teeing area should curve inward to direct shots toward the centre of the range
- Landing areas should be at least 150 metres wide
- If on a golf course, the range should ideally be near the clubhouse/pavilion for golfer convenience and visual monitoring, and if possible, near the 1st and 10th tees
- To distribute traffic evenly, the main access point should be centered rather than at one end
- The ideal range should be aligned in the north-south direction to avoid users facing the sun

Other Considerations

The modern driving range or practice fairway should offer more than an open field on which to hit balls and be of same standard to that of a good golf hole, with consideration to:

- A target fairway, comparable to that of the golf course in terms of turf type and width
- Inclusion of a synthetic turf tee to alleviate turf recovery
- Target greens with the option of bunkers shaped to a similar style and size of the greens on the course
- A teaching tee that's secluded but easily accessed
- An indoor video and teaching area
- A teeing area that replicates course conditions
- A practice bunker for hitting shots out in the direction of the range[37]

Construction

It is recommended that the fairway/hitting area and teeing ground are constructed using the same guidelines that are provided in the Fairways and Tees section and that adequate drainage and irrigation systems are installed.

Target greens can be constructed as a "push-up" green that is shaped using the native soil or be built by bringing in sand or other filler to achieve the desired contours which are subsequently topped with soil and turf.

The Importance of Driving Ranges:

Driving Ranges are essential for engaging new participants to the game and in particular attracting younger segments and female participants.

Research carried out by the Australian Golf Industry Council in 2021 reported that there were 295,000 Australians that had been to a driving range but not played a round of golf in the last year.

Recommended Resources

Driving Range Experience
Top Golf
Top Tracer
Trackman
Range Automation

Large Land Option

Specifications

- Total site size – 25,000-40,000 square metres
- Range length – 225-300 metres
- Range width – 70-140 metres

Advantages

- Build size can cater for high demand
- Can offer 'traditional' and entertainment driving range experience
- Minimises errant ball risks

Disadvantages

- Large land requirement

Venue Examples

- Wembley Golf Course, Wembley Downs, Western Australia
- Yarra Bend Public Golf Course, Fairfield Victoria
- Sandringham Golf Links, Cheltenham, Victoria
- Moore Park Golf, Moore Park, New South Wales
- Thornleigh Golf Centre, Pennant Hills, New South Wales
- Golf Central Brisbane Airport, Queensland

Medium Land Option

Specifications

- Total site size – 20,000-25,000 square metres
- Range length – 200-225 metres
- Range width – up to 100 metres

Advantages

- Can offer 'traditional' and entertainment driving range experience
- Build size can cater for high demand

Disadvantages

- Land requirement

Venue Examples

- West Beach Parks Golf, West Beach, South Australia
- Ranfurlie Range, Cranbourne, Victoria

Small Land Option

Specifications

- Total site size – Up to 15,000 square metres
- Range length – Up to 100 metres
- Range width – Up to 100 metres

Advantages

- Can be designed to fit into limited space available
- Can be constructed in built up areas
- Provides solutions to mitigate errant ball issues
- Technology solutions to track ball flight are attractive to new demographics for golf

Disadvantages

- High build costs
- Net installation

Venue Examples

- Swing City, Bella Vista, New South Wales (Under Construction)
- Golf Studio, Mordialloc, Victoria
- Precision Golf, Chatswood, New South Wales
- The Golf Club, Chelsea Piers, New York, USA

Driving Range Concepts

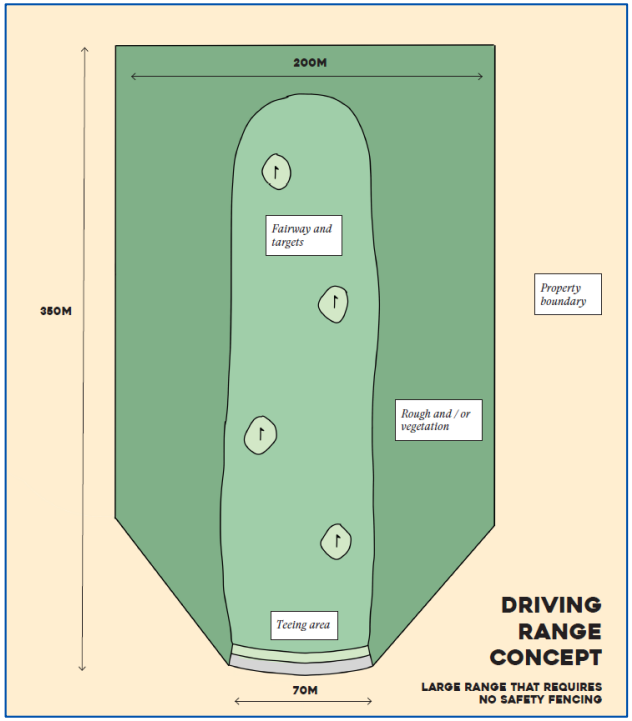
The following two driving range scenarios demonstrate:

a) how large a range needs to be to avoid any netting.

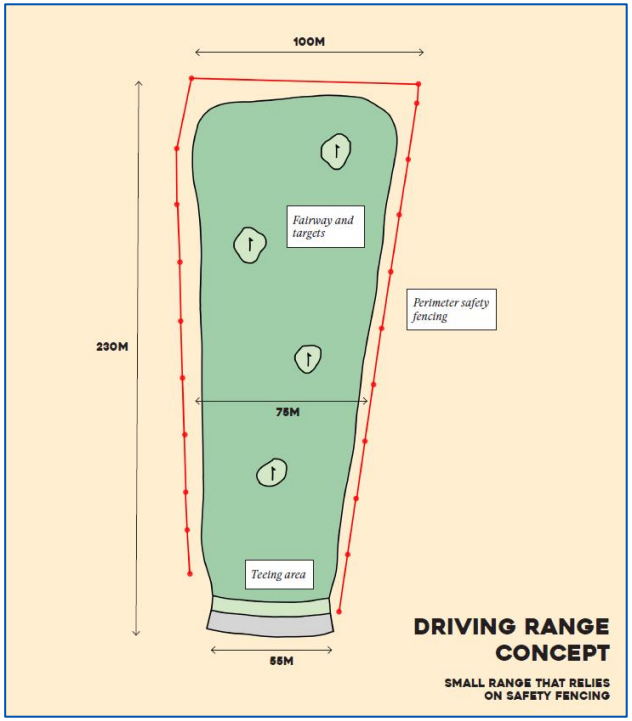
b) how a much smaller range (similar to how Topgolf facilities are set up), which involve a smaller footprint but relies on nets.

Most facilities have hitting bays which are roughly 3.5 metres wide.

Teaching bays are usually larger as they must have space for the teaching professional to watch shots from various angles. These bays will generally range from 3-5 metres wide.



Driving Range Concept (a)



Driving Range Concept (b)

Hitting Bay Sizing

Teaching bay dimensions: Minimum 4 bays at 3m x 3m.

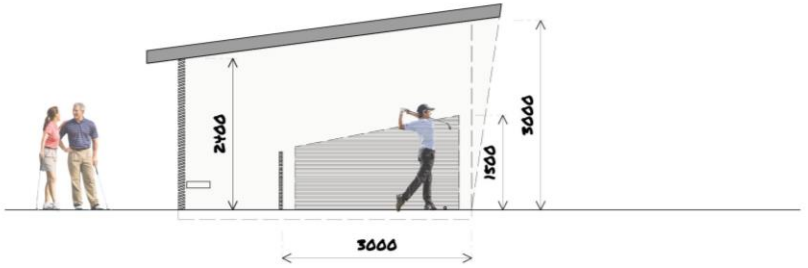
Performance bay dimensions: Minimum 3 bays at 3m x 3.5m.

Tee mats: Standard synthetic turf mat dimensions are 1.3m x 1.3m

Bay dividers: 1m high x 3m long. These dividers should be designed to be removable to allow the coaching area more flexibility.

Power supply: Ideally each of the performance bays should have four power sockets to support video equipment.

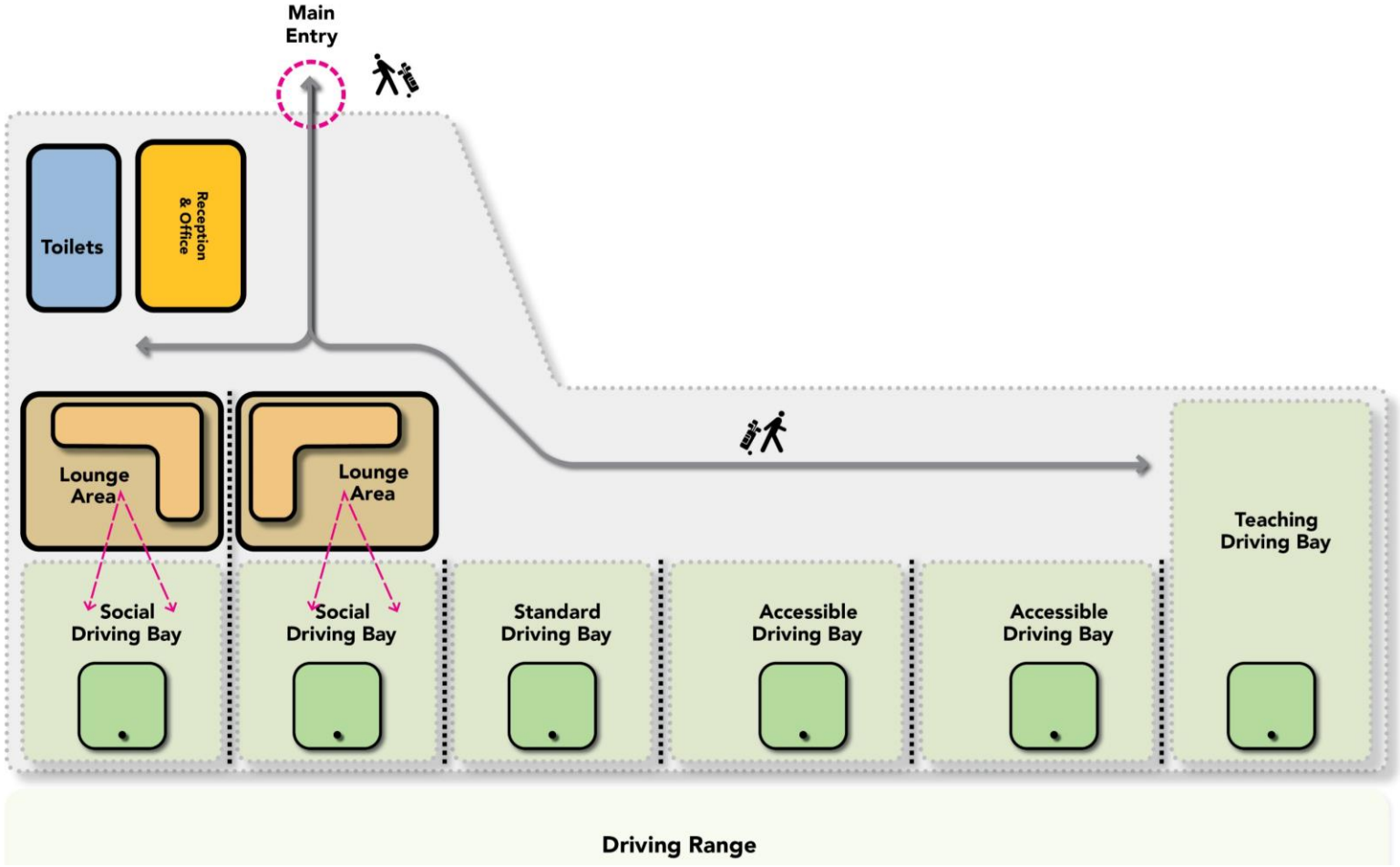
Locked storage: Storage may be required to keep videos equipment when not in use.



Covered Bays

Driving range teeing locations ideally are covered by a semi-closed ‘driving-range’ structure allowing full shots to be played whilst providing protection from the weather.

The functional diagram below has been prepared to guide the development of a driving range with entertainment areas. It demonstrates the functions and relationships between different areas and can be used as a basis for concept planning.



Artist's impression of a double-storey driving range concept at Hammersley Public Golf Course
Source: City of Stirling, WA

SECTION 7
MINI GOLF

Image of SHANX @ Regency Park
Source: SHANX

The origins of mini golf can be traced back to 1867 at St. Andrews, Scotland where an 18-hole putting green also known as the "Himalayas" was created.

According to *We are Mini Golf*, the first written mention of the game known as mini golf was documented in the June 8th, 1912, edition of The Illustrated London News. An article in this newspaper introduced the Golfstacle as a concept of a smaller, miniature-sized golf course. The green was made from carpet and other artificial materials and incorporated geometrically shaped obstacles to present players with unique challenges.

From this point, miniature golf courses are thought to start spreading in Europe and the US. Although documented courses are quite rare, a few such as the "Thistle Dhu" (pronounced: "This'll do"), created by James Barber, in 1916 in North Carolina, although it was again more a putting green than a "mini golf course", is believed to be the starting point for the development of mini golf in North-America. The use of artificial green, which was a mixture of cottonseed hulls, sand, oil and dye made the construction of courses cheaper and more accessible. Soon after, golf courses on rooftops of buildings in New York started springing up.

The first "golden age" of American mini golf as we know it is known as the 20s, where several European entrepreneurs who came back to their home countries with the idea of creating courses, mainly in Scandinavian countries and Germany.

The second "boom" took place mainly from 1940 until 1970. The economic expansion, with people taking more and more time for leisure activities was a perfect booster for mini golf. The number of courses exploded during this period, making it an affordable, family activity.

The first mini golf course to open in Australia was the Putt-Putt golf course at Hanlan Street in Surfers Paradise on 19 September 1969 which even hosted tournaments!

Four years later the course moved from Surfers Paradise to Mermaid Beach, next to the first McDonalds Restaurant in Queensland to be known as Putt Putt Mermaid Beach. The course still operates today and celebrated its 50th anniversary in 2019.

Today's mini-golf courses have evolved considerably to resemble the features of an actual golf course. It is estimated that a well-researched and planned mini golf facility, supported by a strong business plan can achieve a return on investment within 3 years.[38, 39]

Putt Putt at Surfers Paradise
Source: Aussie Golfer

Image of the "Himalayas" at St. Andrews and a mini golf course on a rooftop in New York
Sources: We are Mini Golf and Golf Digest

Mini Golf is experiencing a resurgence in the golf facility market within Australia with a number of public golf facilities and clubs either recently operating new mini golf facilities or are in the process of planning to construct new facilities.

Benefits of a mini golf facility are:

- Flexibility to be constructed in a variety of sizes and styles.
- Can be integrated into existing golf facilities, greenfield sites and non-golf facilities.
- Diversifies the revenue stream of existing golf facilities through new visitation.
- Creates opportunities to generate increased customer sales of existing facility offerings such as golf course rounds, driving range usage and food & beverage.
- Complements an existing golf facility's activities and creates a participation pathway.
- Extends the existing golf facility catchment demographic to include non-golfers, children, families and women.
- Relatively simple to construct with low costs to maintain and manage.

Project Planning

The project planning process for constructing a mini golf facility should follow the same process as outlined for a golf course in Section 5.

- Project Scoping
- Planning and Feasibility
- Design and Budget
- Construction
- Operations

Construction

The construction of a mini golf course normally encompasses earthworks and bulk shaping, installation of drainage systems, installation of golf holes, application of synthetic grass and landscaping. Consideration also needs to be given to the building infrastructure required to operate the facility, or whether in the case of an existing facility it can be integrated.

Sizing

The size requirements for a mini golf course can be tailored to the available space at a site and the desired size and scale, depending on expected usage. A mini golf course depending on the number of holes required can be constructed in an area up to 1,200 square metres for a 9-hole course to larger sites of up to 5,000 square metres that can accommodate 36 holes.

Cost

The cost to construct a mini golf course can range from $0.5M to $2M depending on the size of the course and the number of holes.

Maintenance

The main maintenance consideration for a mini golf course is the ongoing replacement cost of the synthetic grass which needs to be planned for in the operating model. The approximate cost to replace synthetic grass is $100 per square metre and depending on the amount of course traffic and the size of the layout, the expected life of a course layout is about 7 years.[40]

Mini Golf Course Designers

There are companies who specialise in designing and constructing mini golf facilities to suit any type of setting. These companies are listed in Section 10 of the guidelines.

The Importance of Alternative Formats:

Mini Golf facilities are essential for engaging new participants to all forms of the game and in particular attracting younger segments and female participants.

Research carried out by the Australian Golf Industry Council in 2021 reported that there were 1,645,000 Australians that had been to an alternative form of golf such as mini golf but not other activities.

Specifications

- Total site size – Up to 1,200 square metres
- Total synthetic grass coverage – Less than 800 square metres
- Build cost – Less than $700k

Advantages

- Lowest build cost
- Small land requirement
- Versatility on where it can be built

Disadvantages

- Smaller patron capacity
- Reduced visitation time
- Reduced lifespan of synthetic turf due to increased traffic wear

Venue Examples

- 'Shanx' at Links Shell Cove, Shell Cove, New South Wales
- Rich River Golf Club, Moama, New South Wales

Example of a 9-hole mini golf course at Rich River Golf Club
Source: Mini Golf Creations

Specifications

- Total site size – 1,500-1,800 square metres
- Total synthetic grass coverage – 600-800 square metres
- Build cost – Up to $1M

Advantages

- Low build cost
- Small land requirement

Disadvantages

- Tight feel for participants using venue
- Reduced lifespan of synthetic turf due to increased traffic wear

Venue Examples

- 'Shanx' at Regency Park Community Golf Course, Regency Park, South Australia
- City Golf Club, Toowoomba, Queensland

Example of an 18-hole mini golf course
Source: SHANX Mini Golf @ Regency Park

Specifications

- Total site size – 1,800-3,000 square metres
- Total synthetic grass coverage – 900-1,200 square metres
- Build cost – $1M-$1.4M

Advantages

- Increased versatility in build
- Improved patron experience
- Greater patron capacity
- Allowance can be made in design for wheelchair access

Disadvantages

- Greater land requirement
- Increased build cost

Venue Examples

- The Vines Resort, Perth, Western Australia
- The Range @ Curlewis, Victoria
- Maroochy River Golf Club, Bli Bli, Queensland

Example of a medium 18-hole mini golf course
Source: City Golf Club, Toowoomba

Specifications

- Total site size – 3,000-5,000 square metres
- Total synthetic grass coverage – up to 2,500 square metres
- Build cost – up to $2M

Advantages

- Maximum versatility in build
- Greater patron capacity
- Allowance can be made in design for wheelchair access
- Increased usable life of synthetic turf with increased wear spread

Disadvantages

- Greater land requirement
- Increased build cost

Venue Examples

- Wembley Golf Course, Wembley Downs, Western Australia
- Topstroke, Oxley Golf Club, Oxley, Queensland

Example of a large18-hole mini golf course at Oxley Golf Club
Source: Pelz player Greens

Top Tip: Mini Golf Pop-Ups and Kits

Mini Golf “Pop Ups” are also an option to consider with the benefit of being fully portable and cost effective that are quick to install, require low maintenance and can be easily moved by 2 people.

Example of a Mini Golf Pop-Up
Source: Mini Golf Creations

SECTION 8
OPERATIONAL CONSIDERATIONS

Artist's impression of a contemporary golf clubhouse/pavilion
Source: The OCD

When developing or expanding a golf facility, you will need a business plan. Below are the components that should be included in each section of the plan.

Executive Summary

The executive summary introduces your business plan, and the aim is to quickly engage the reader. Introduce the subsequent sections of your plan and provide an overview of:

- The type of golf course you operate
- Direct competitors
- Target customers
- Marketing plan
- Key staff and members of your team
- Financial plan

Company Analysis

In this section, detail the type of golf course you are operating. For example:

- **Members Only Golf Course**: this type of golf course is available to patrons who purchase a membership and tends to be more exclusive.
- **Public Golf Course**: this type of golf course is open to the public and accepts all golfers.

In addition to the type of golf course you operate, this section should also provide background on the business. Include answers to questions such as:

- When and why did you start the business?
- What milestones have you achieved to date? (E.g. number of members, number of rounds, number of positive reviews, construction of 18 holes, etc.
- Your legal structure.

Industry Analysis

This section provides an overview of the golf industry and helps you understand the market in which you are operating. The following questions should be answered in the industry analysis section of your business plan:

- How big is the golf industry (in dollars)?
- Is the market growing or declining?
- Who are the key competitors in the market?
- Who are the key suppliers in the market?
- What trends are affecting the industry?
- What is the relevant market size?

Customer Analysis

In this section, explain the customers you expect to serve. The customer segments you aim to serve will significantly impact the products and services you offer.

Using demographic and psychographic profiles can be helpful for defining your target customers. For demographics, include age, gender, location and income.

Psychographic profiles explain the wants and needs of your target customers. Understanding and defining these needs will assist you in better attracting and retaining your customers.

Competitor Analysis

Identify the indirect and direct competitors of your business. Direct competitors are other golf courses, while indirect competitors are other sport and recreation offers such as gyms and sports centres, community hub facilities, cafes etc.

For each such competitor, provide an overview of their business and document their strengths and weaknesses. The final part of your competitive analysis section is to document your areas of competitive advantage. What is your unique selling point?

Marketing Plan

A marketing plan typically includes the four P's: Product, Price, Place, and Promotion.

- **Product**: Reiterate the type of golf course that you documented in your Company Analysis. Then, detail the specific products you will be offering. For example, in addition to a golf course, will you provide a driving range, Mini Golf, restaurant, etc?
- **Price**: Document the prices you will offer and how they compare to your competitors.
- **Place**: Document your location and mention how the location will impact your success.
- **Promotions**: Document how you will drive customers to your location, for example social media, advertising in your local paper, flyers, website etc.

Operations Plan

While the earlier sections of your business plan focused on your goals, the operations plan describes how you will meet them. It should have two distinct sections:

- **Short-term processes:** This includes the everyday tasks required to run your facility, including maintenance, cleaning, staff meetings etc.
- **Long-term goals:** These are the milestones you hope to achieve, such as when you hope to reach $X in revenue, X number of members or X number of rounds played.

Management Team

A strong management team is essential to the success of any business. Highlight your key staff and their skills and experiences that will assist in growing the business.

If your team is new and/or inexperienced, consider assembling an advisory board. An advisory board would include 2-6 individuals to act as mentors, help answer questions and provide strategic guidance. Look for advisory board members with experience in managing golf courses or successfully running small businesses.

Financial Plan

The financial plan should include a 5-year financial statement broken out both monthly or quarterly for the first year and then annually. Your financial statements include your income statement, balance sheet and cash flow statements.

- **Income Statement:** An income statement is commonly called a Profit and Loss statement or P&L. It shows revenues and subtracts expenses to show whether you turned a profit or not.
- **Balance Sheets**: The balance sheet shows assets and liabilities. Try to simplify the balance sheet to key items.
- **Cash Flow Statement**: The cash flow statement will determine how much money you need to start or grow your business.

In developing the Income Statement and Balance Sheet, there are several key costs that need to be accounted for, such as:

- Building and construction (including golf course design fees, construction, etc.)
- Cost of equipment and supplies
- Payroll or salaries paid to staff
- Business insurance
- Taxes and permits
- Legal expenses

Appendix

All financial projections should be provided in the appendix, along with any supporting documents. For example, you might include your golf course land lease or architectural renderings of the golf course.[41]

Business Plan Structure

- Executive Summary
- Company Analysis
- Industry Analysis
- Customer Analysis
- Competitor Analysis
- Marketing Plan
- Operations Plan
- Management Team
- Financial Plan
- Appendix

Key Components of a Golf Facility Business and Operating Model

Golf facility operating models are generally aligned to the most common aspects of the individual facility business model.

The operating model will be determined by whether it is managed 'in-house' or via a third party.

The following table demonstrates one possible combination of a golf facility operating model, which (like most combinations) would be considered a 'hybrid' model. The two alternatives to a hybrid model are a completely 'in-house' operating model or a completely 'outsourced' operating model.

	IN-HOUSE	OUTSOURCED
Golf Facility Operations	✓	
Golf Course Maintenance	✓	
Pro-shop		✓
Commercial and Ancillary Facilities		✓

The key aspects of a golf facility operating model are:

Administration: financial management, membership, marketing and promotion, staff management, overall facility planning, coordination of staff operations, external stakeholder engagement etc.

Golf Services/Pro-shop: coaching, golf retail, tee-time bookings, competition administration, take-away food and beverage offer/service, etc.

Food and Beverage: food and beverage café or restaurant, function and event space.

Commercial and ancillary facilities: may include retail, conference facilities, other recreation offers (tennis, bowls, accommodation, etc.) and all accompanying management requirements.

Golf Course Maintenance: course presentation, environmental management, occupational health and safety, staff training and management, etc.

Diversification: golf facilities are expensive assets and are difficult to run at 100% capacity from golf activity alone. Successful case studies from the industry demonstrate the benefit of creating alternate uses for courses and otherwise underutilised pockets of land.

Operational Efficiency

One of the key factors to consider when designing the clubhouse or pavilion of any golf facility is operational efficiency. This is particularly important as we emerge from the COVID-19 pandemic, where many industries are facing labour shortages. Some of the key factors to think about include:

Facility layout

The layout of a facility can have a significant impact on the number of staff required to run operations. Co-locating areas such as the reception, pro-shop, and food and beverage area can reduce the number of staff required to run day-to-day operations.

When designing a facility to be operationally efficient, the following should be taken into account:

- Ensuring the cart storage area is near the pro-shop.
- The pro shop has sightlines over the golf course.
- The driving range is in close proximity to the pro shop.

Free up your staff in as many ways as possible

While facility design can impact staff requirements, it is also important to consider how the implementation of technology and systems can free-up staff from day-today tasks.

When designing or upgrading a facility, it is important to consider the inclusion of additional infrastructure, such as a driving range, mini golf course, and a hospitality offer that provides more diverse revenue streams and enables ongoing growth.

To assist with understanding the implications of size and scale of golf facility business models, the following continuum has been developed based on the three indicative golf facility types outlined in these guidelines.

A golf facility with diverse revenue streams, such as course, mini golf, driving range, hospitality offer and golf shop will have broader overall resources, creating flexibility to explore further growth opportunities.

A golf facility with one or two primary revenue lines will be under more pressure to cover its overheads and in most cases will have narrower margins across the business model. This is highlighted by the greater percentage of revenue required to cover 'Overheads' in the table below.

Ultimately, narrow margins and reduced flexibility will limit a facility operator's ability to cover asset depreciation as well as constraining opportunities to explore and invest in growth opportunities without external funding sources.

Top Tip:

In the early stages of a golf development project, investigate the inclusion of additional infrastructure that may provide alternative revenue streams.

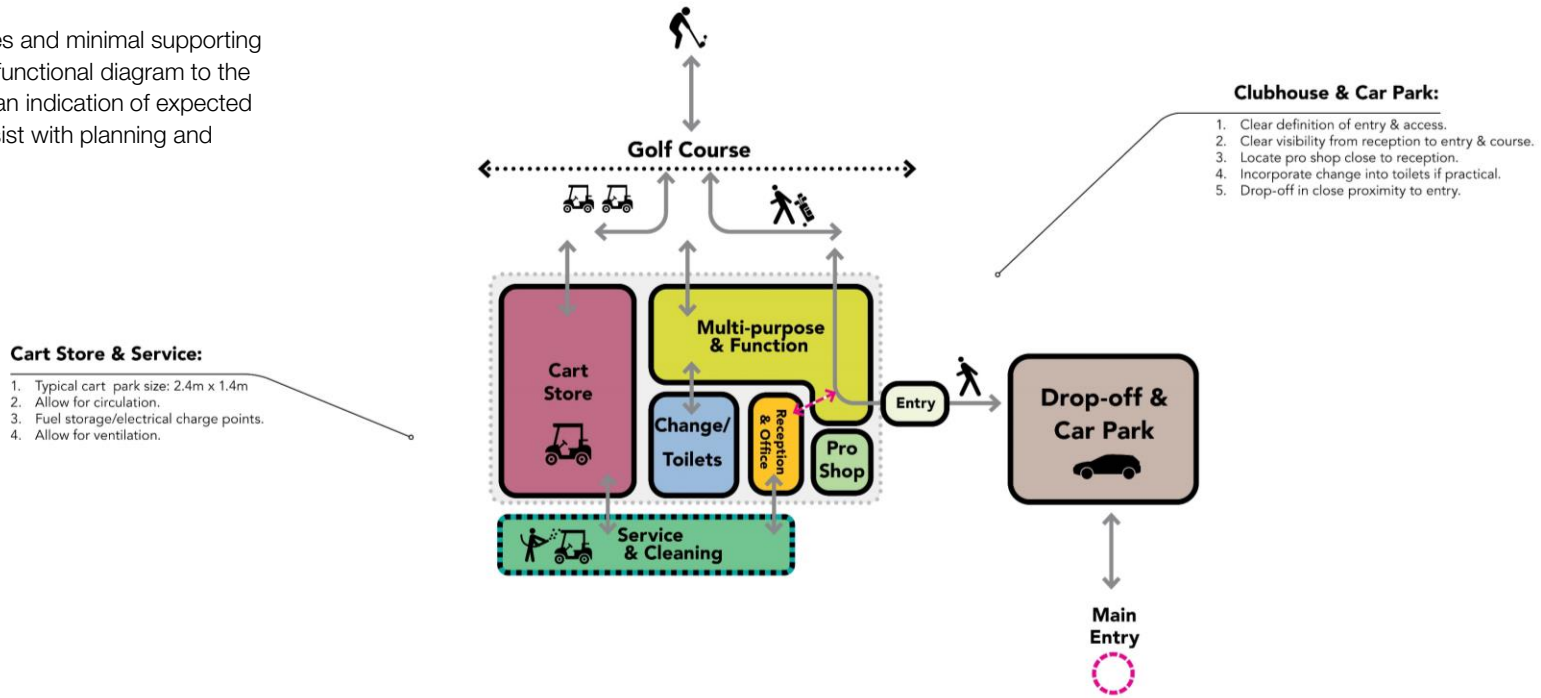
Indicative Financial Summary	Minimal	Minimal with F&B	Large Facility
Revenue	% of Overall Revenue	% of Overall Revenue	% of Overall Revenue
Course Operations	80% - 100%	60% - 80%	30% - 40%
Driving Range	0% - 0%	20% - 30%	20% - 30%
Golf Shop	10% - 20%	5% - 10%	10% - 20%
Hospitality	0% - 0%	5% - 10%	5% - 10%
Mini Golf	0% - 0%	0% - 0%	5% - 15%
Administration - Golf Course	0% - 5%	0% - 5%	0% - 5%

Indicative Expenditure (% Revenue)	% of Overall Revenue	% of Overall Revenue	% of Overall Revenue
Course Operations	70% - 80%	50% - 70%	30% - 40%
Driving Range	10% - 15%	15% - 25%	10% - 20%
Golf Shop	0% - 5%	4% - 8%	10% - 20%
Administration - Golf Course	0% - 5%	0% - 5%	5% - 10%
Hospitality	0% - 0%	4% - 8%	0% - 10%
Mini Golf	0% - 0%	0% - 0%	0% - 10%
Overheads	10% - 20%	5% - 10%	0% - 5%
Plant Operations	0% - 5%	0% - 5%	0% - 5%
Average Range	**90% - 130%**	**78% - 131%**	**55% - 120%**

Source: The above ranges in the table have been determined based on an analysis of numerous financial statements form golf clubs and facilities of differing scale and size.

Minimal Facility (9 Holes)

For a minimal facility with 9 holes and minimal supporting infrastructure, as shown in the functional diagram to the right, the below table provides an indication of expected revenue and expenditure to assist with planning and budgeting.

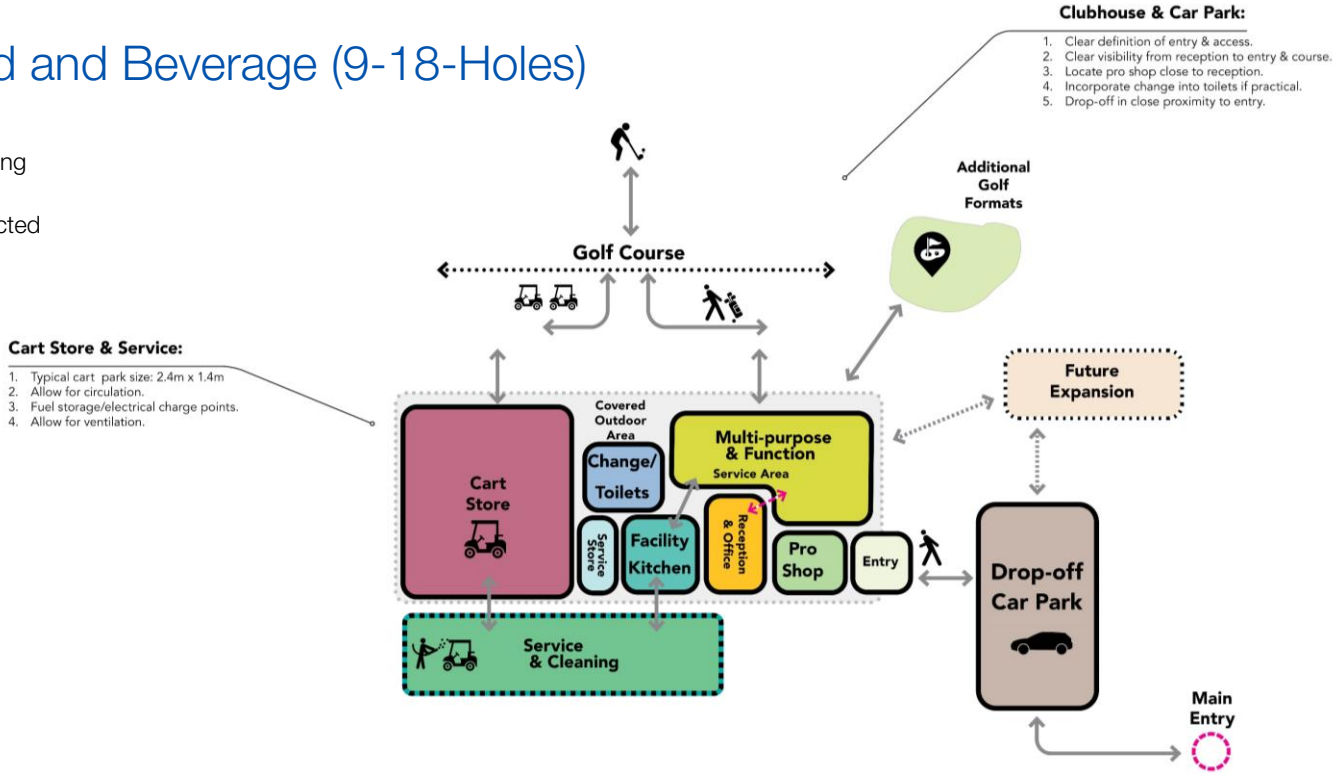


Indicative Financial Summary	
Indicative Revenue	% of Overall Revenue
Course Operations	80% - 100%
Driving Range	0% - 0%
Golf Shop	10% - 20%
Hospitality	0% - 0%
Mini Golf	0% - 0%
Administration - Golf Course	0% - 5%

Indicative Financial Summary	
Indicative Expenditure (% Revenue)	% of Overall Expenditure
Course Operations	70% - 80%
Driving Range	10% - 15%
Golf Shop	0% - 5%
Administration - Golf Course	0% - 5%
Hospitality	0% - 0%
Mini Golf	0% - 0%
Overheads	10% - 20%
Plant Operations	0% - 5%

Standard Facility with Food and Beverage (9-18-Holes)

For a facility with 9-18 holes and the supporting infrastructure shown in the functional diagram, including additional golf formats such as mini golf or a driving range, the below table provides an indication of expected revenue and expenditure to assist with planning and budgeting.

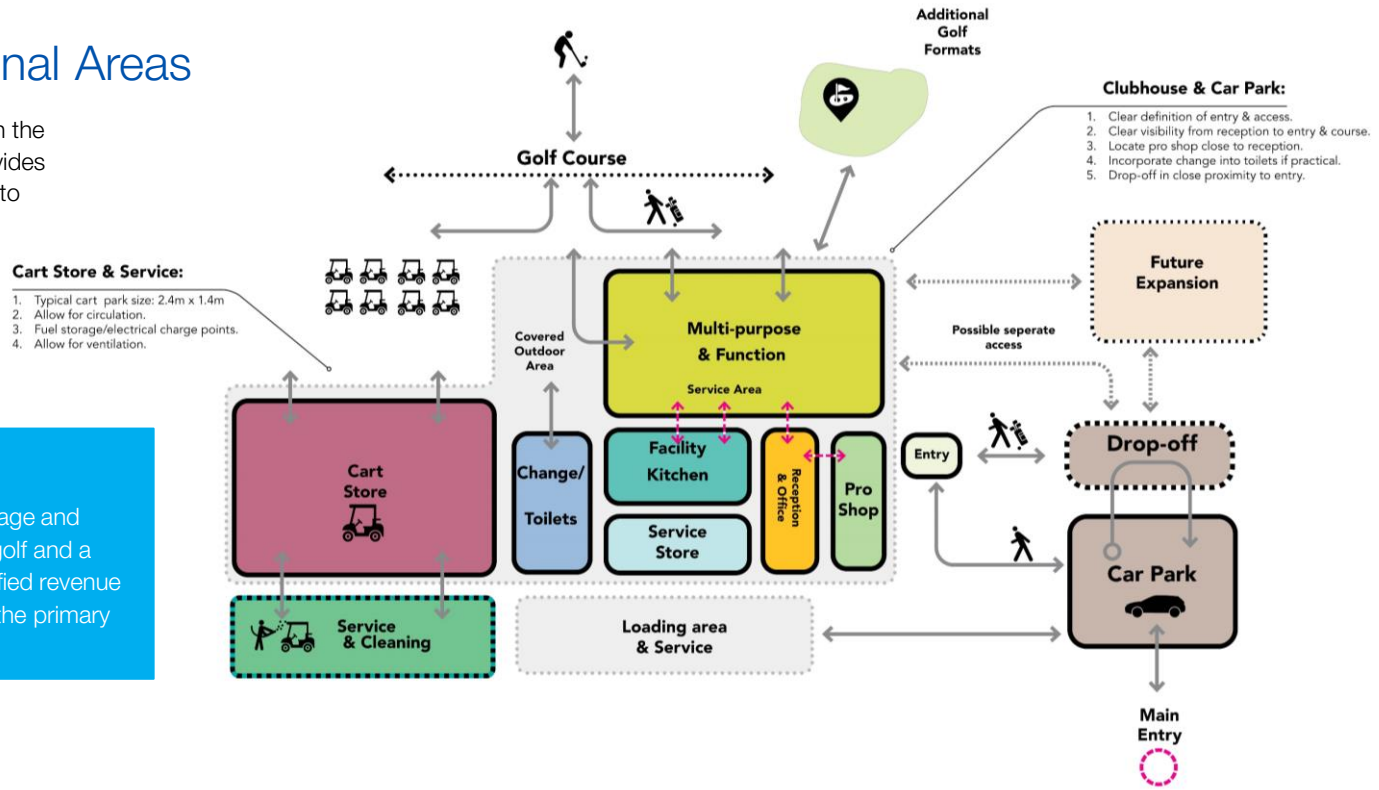


Indicative Financial Summary	
Indicative Revenue	% of Overall Revenue
Course Operations	60% - 80%
Driving Range	20% - 30%
Golf Shop	5% - 10%
Hospitality	5% - 10%
Mini Golf	0% - 0%
Administration - Golf Course	0% - 5%

Indicative Financial Summary	
Indicative Expenditure (% Revenue)	% of Overall Expenditure
Course Operations	50% - 70%
Driving Range	15% - 25%
Golf Shop	4% - 8%
Administration - Golf Course	0% - 5%
Hospitality	4% - 8%
Mini Golf	0% - 0%
Overheads	5% - 10%
Plant Operations	0% - 5%

Large Facility with Additional Areas

For a larger facility with additional areas as shown in the functional diagram to the right, the below table provides an indication of expected revenue and expenditure to assist with planning and budgeting.



Top Tip

A broader offer including food, beverage and additional golf formats such as mini golf and a driving range will enable more diversified revenue streams and less reliance on golf as the primary income stream.

Indicative Financial Summary	
Indicative Revenue	% of Overall Revenue
Course Operations	30% - 40%
Driving Range	20% - 30%
Golf Shop	10% - 20%
Hospitality	5% - 10%
Mini Golf	5% - 15%
Administration - Golf Course	0% - 5%

Indicative Financial Summary	
Indicative Expenditure (% Revenue)	% of Overall Expenditure
Course Operations	30% - 40%
Driving Range	10% - 20%
Golf Shop	10% - 20%
Administration - Golf Course	5% - 10%
Hospitality	0% - 10%
Mini Golf	0% - 10%
Overheads	0% - 5%
Plant Operations	0% - 5%

The following table provides key considerations to support golf facility operating model reviews and decision-making processes.

Operating Models	In House Operating Model	Hybrid Operating Model	Outsourced Operating Model
Description	Under the in-house management model, the facility owner/operator, golf club or Council is directly responsible for the full management and operation of the facility including operating policies, financial performance and asset maintenance.	Contract management offers the facility owner/operator, golf club or Council the ability to retain direct management of the facility but contract out any specialist responsibilities (such as the course maintenance) if deemed beyond its capacity.	Outsourcing of management transfers the responsibility for the care, control and management of a facility to an independent entity that is set up to specifically manage the facility in return for an agreed lease fee.
Benefits	• Full control and autonomy over all aspects of the facility. • End to end visibility over the customer experience. • Broad employment offering to recruit and retain staff. • Flexibility to pivot the business or offer to suit changing market preferences. • Direct access to any financial surpluses.	• Flexibility to leverage and focus specific internal capabilities. • Complement existing experience with external expertise. • External contractors provide broader access to industry best-practice and IP. • Third-parties have access to streamlined administrative resources shared across multiple facilities or business lines (e.g. IT, HR, marketing, pay roll). • Creates opportunities for third-party Capital Expenditure contributions.	• External contractors provide broader access to industry best-practice and IP. • Third-parties have access to streamlined administrative resources shared across multiple facilities or business lines (e.g. IT, HR, marketing, payroll). • Low risk profile as risk is transferred to contractors. • Creates opportunities for third-party Capital Expenditure contributions. • Given the current labour issues, an additional benefit is that an outsourced model favours longevity of the service provider due to a predetermined minimum tenure.
Challenges	• Full financial risks, commitments and accountability. • Higher risk and liability profile.	• Alignment of vision and objectives of the facility. • Managing multiple parties and interests within the facility. • Coordinating day-to-day operations between different parties. • Contracts, policies, procedures and reviews.	• Quality assurance and monitoring of expected standards and deliverables. • Reliance on availability/interest and quality of contractors in the market. • Managing contract and relationship with external parties.
Assessment (in general terms)	*Preferred model by larger golf facilities.*	*When structured, managed and implemented well, this model can be the best of both worlds.*	*Ideal if trying to minimise risk and maintain full visibility of annual costs.*

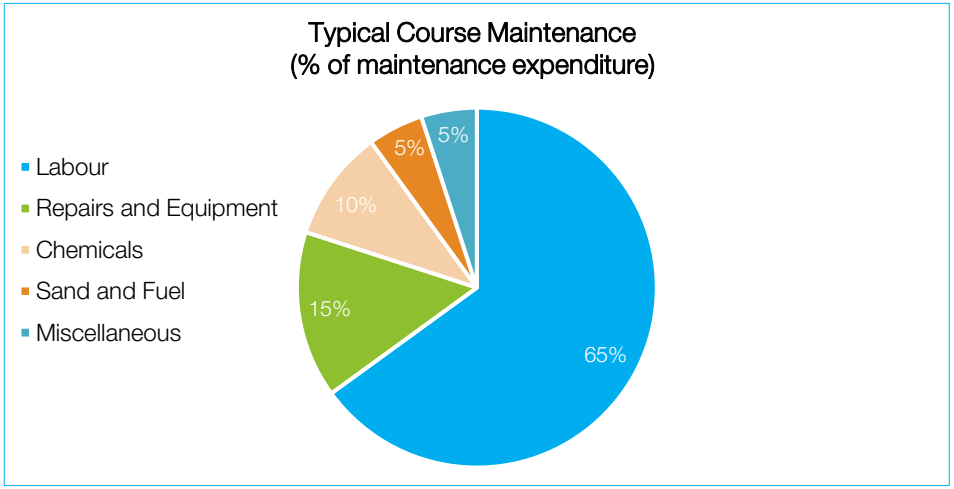
Maintenance Cost Variance

There are two main variables which impact the cost of maintenance on a golf course:

- The quality and standard of course presentation.
- The environment (climate, soil types, water access)

The specific allocation of total expenditure per year is generally consistent across the board and falls into the following five sub-categories:

- Labour cost
- Repairs and Equipment
- Chemicals (fungicide etc.) and fertiliser
- Fuel and Sand
- Miscellaneous (uniforms, office supplies, training and testing, cleaning and rubbish, etc.)



Types of Maintenance

Consideration	Advantages	Disadvantages
Traditional Maintenance (approximately 95% of clubs and facilities)	• Enables autonomy of the day-to-day decision-making, facility operations and maintenance. • Easy access to facility data and analysis which can measure performance • Retain responsibility for all staff, creating more pathways.	• Always a trade off between expenditure priorities. • Requires additional resources (staffing, HR, OH&S etc.). • Often requires additional volunteer support – particularly in regional areas
Contract Maintenance (approx. 5% of clubs and facilities)	• Enables expertise and experience to be brought in to deliver high-quality presentation. • Ensures a dedicated team primarily focused on maintenance. • Enables access to broader networks of support and advice.	• Reduces flexibility in decision-making – and at times responsiveness to customer needs. • Creates additional reporting and administrative requirements for both facility and contractor. • Contractor businesses generally require scale to create efficiency so they will typically be stretched over a couple of courses/facilities.

Source: The above figures have been sourced from an analysis of numerous financial statements form golf clubs and facilities of differing scale and size.

Multi-Use Facility Design Considerations

Due to the large parcels of land that golf courses occupy, golf clubs and facilities may also be co-located with other sports. Grass sports such as lawn bowls, tennis and croquet are the most common sports that share facilities with golf. However, courses that are Council-owned and/or operated are generally accessible by the broader community.

The key requirement of a shared pavilion or clubhouse area is to separate the public and private functions of the club.

The pavilion should house a multi-purpose/event space, kiosk and space for spectators, but also more private change rooms, toilets and amenities for players and officials.

It is also important to recognise and celebrate the history and traditions of the tenant club. Designing a trophy room or ensuring the provision of memorabilia cabinets should be considered in the facility design. These spaces may also double as entry foyers, or may line the walls of a hallway within the pavilion.

Multi-Use Operating Model Considerations

As listed on the previous page, there are three main operating models that can be used for multi-use facilities. These include:

- **In House Operating Model**: The in-house model has been proven successful across the industry at some Council's, however, is reliant on a broad facility offer, a high-level of activation and utilisation of the facility, and the experience and expertise of key staff members.
- **Hybrid Operating Model:** When structured and implemented well, the hybrid model can provide the best of both worlds, by complementing existing experience with external expertise.
- **Outsourced Operating Model:** Outsourced models work well, providing there is alignment between the objectives of the contractor and the facility operator.

There are challenges associated with each model, and the ultimate success of each is reliant upon the capacity and expertise of the personnel responsible for delivering the program, and the oversight of the Council, Club or facility operator to ensure objectives and KPI's are met.

Many metropolitan LGAs outsource the operations of golf courses to third party contractors as Council employees typically lack golf-specific knowledge and expertise.

The most successful courses are those where the Council or the operator takes an active role in overseeing the contract management and linking performance measures to community health and wellbeing outcomes.

Operating Model Criteria

The following key criteria have been developed to assist club and facility operators in identifying the preferred management model for a multi-use facility.

- **Capital improvements**: Access to internal funding/Council budget to finance growth.
- **Scale and complexity of operation**: Size of facility, diversity of offer, number of staff.
- **Opportunities for growth**: Potential to expand the offer by increasing the site footprint, additional/upgraded infrastructure or greater promotion and activation.
- **Community focused**: Flexibility to adapt the offer to changing community needs.
- **Shared staff/resourcing**: Existing golf facility operational and maintenance expertise within the current operations. This includes current staff training and induction processes.
- **Shared staff/resourcing**: Ability to access and share staff and resources across facilities.

Each of the following criteria can be used to objectively assess each of the models, to assist in determining an optimal approach for the facility.

- Cammeray Golf Club has developed a world-class inclusive golf course masterplan featuring a community golf and recreation facility in light of the land resumption for the Western Harbour Tunnel project (in Sydney, NSW).
- The new facility is planned to include a new or renovated clubhouse with modern food and beverage offerings for members and the local community.
- Four forms of golf will be on offer:
    - A high standard golf course, re-designed to 9-hole par 3 course.
    - Full-size practice range combined with Top Tracer
    - Virtual golf simulators
    - Short golf course
- It will also include a range of community and recreation facilities including:
    - Full-size sport field
    - 4 x five a side sports soccer pitch(futsal pitches)
    - Fitness & walking trail
    - Dog agility park
    - Village green family park
    - Visitor appropriate car parking
- It is expected that the new facilities will have greater appeal to millennial golfers as practice facilities and that virtual simulator golf will be viewed as a modern-day form of golf participation.
- The new club facilities will create a social hub and enhance the enjoyment for all users of Cammeray Park.

Draft Concept Master Plan for Cammeray Golf Course

Source: Cammeray Golf Club

- The Carrara Gardens Golf Course had been in existence for over 35 years (since 1985). The KDV Group acquired the Carrara Gardens Golf Course in 2011 with the aim of building an international quality sports academy.
- Inspired by the world-class academies in Europe and the United States, the facility was planned to be used by both Gold Coast families and social sports, as well as elite athletes.
- The Carrara Gardens Golf Course is a modern, state-of-the-art sporting complex that includes a 12 hole golf course, together with mini golf, driving range, tennis, swimming pool and gymnasium. This facility encourages participation of all ages and abilities, and the opportunity to have fun with family and friends.
- Today, KDV Sport is a modern, state of the art sporting complex containing:
    - 12 hole golf course.
    - 20 tennis courts.
    - Mini golf.
    - Kids parties with BBQ facilities.
    - Full range of golf & tennis pro shops.
    - 20 undercover driving ranges.
    - Gym, sauna and 20-metre pool.
    - Restaurant and function room.
- The 80-seat restaurant and two function rooms open up onto the three-storey driving range, and there are also barbecue facilities, a children's playground, a gym, sauna, spa, ice baths and a rooftop pool.[42]

KDV Sport, Carrara, Queensland

Source: Must Do Brisbane

- With the merge of three sports clubs and a combined total of 1,000 club members, the Devonport Country Club has brought together The Devonport Bowls & Croquet Club, Devonport Golf Club and Spreyton Bowls Club in one purpose-built facility.
- Along with a state of the art indoor bowls centre, croquet lawns, outdoor bowling greens and upgrades to the golf course, there is also a new clubhouse, built over two levels including a club bar, bistro and function centre.
- The facility includes:
  - Eight-rink indoor bowling area, allowing club members to bowl all throughout the year,
  - Three grass greens,
  - Two croquet courts, and
  - An updated 18-hole golf course[43]

Official opening of the Devonport Country Club
Source: The Advocate, Burnie

SECTION 9
CASE STUDIES

Image of Wembley Golf Course
Source: tripadvisor.com

The following case studies have been listed to provide a broad range of projects that are transformational or demonstrate innovation.

Bougle Run, Tasmania

Project: Short Course Development
https://www.golfaustralia.com.au/feature/born-to-run-the-story-of-barnbougles-newest-course-565764

Chirnside Park Country Club, Victoria

Project: Relocation and Redevelopment
https://www.golfindustrycentral.com.au/golf-industry-news/the-new-gardiners-run-suits-members-to-a-tee/

Compact Golf Courses, France

Project: Construction of Small Golf Courses in Urban Areas
https://www.eigca.org/uploads/documents/originals/ffgolf%20-%20Plan%20for%20100%20compact%20urban%20courses.pdf

Curlewis Golf Club, Victoria

Project: Driving Range and Mini Golf Development
https://www.countryclub.com.au/blog/curlewis-golf-club-ready-to-open-new-8-million-lux/

Devonport Country Club, Tasmania

Project: Merger and Multi-Use Development
https://www.devonportcountryclub.com.au/news-updates/categories/country-club-development

Golf Central Brisbane Airport, Queensland

Project: Driving Range and Mini Golf Development
https://avidsports.com.au/portfolio-item/golf-central-bne/

KDV Sport, Queensland

Project: Multi-Use Development
https://www.goldcoastbulletin.com.au/sport/local-sport/kdv-sports-golf-and-tennis-academy-plans-to-produce-worldclass-athletes/news-story/33e64ef71e2a28b34069e318e1dd6c3e

Latrobe Golf Club, Victoria

Project: Short Course Development
https://www.australiangolfdigest.com.au/course-review-latrobe-golf-club-melbourne/

Lethamhill Golf Course, Glasgow, Scotland

Project: Par 3 Course, Driving Range and Adventure Golf
https://www.randa.org/key-projects/lethamhill

Longleaf Golf & Family Club, USA

Project: Forward Tees Initiative
https://www.golfcoursearchitecture.net/content/asgca-foundation-introduces-new-longleaf-forward-tee-initiative

Lonsdale Links, Victoria

Project: Redevelopment – Clubhouse and Course
https://www.golfindustrycentral.com.au/golf-industry-news/lonsdale-links-enters-next-stage-of-major-redevelopment/

Maleny Golf Club, Queensland

Project: Course Redevelopment
https://www.malenygolfclub.com.au/wp-content/uploads/2021/04/Turfgrass_Maleny-23.1-pg-24-29_April-2021.pdf

Maroochy River Golf Club, Queensland

Project: Relocation and Mini Golf Development
https://www.sunshinecoastnews.com.au/2021/11/08/maroochy-river-golf-club/

Neangar Park Golf Club, Victoria

Project: Pitch & Putt Course and Driving Range Development
https://www.youtube.com/watch?v=hnZ7843U-wM

NextLinks eGolf Arena, USA

Project: Indoor Golf Concept
https://www.golfcoursearchitecture.net/content/piz225-collaborates-with-dave-shultz-and-sanzpont-on-indoor-golf-concept

Regency Park Golf Course, South Australia

Project: Mini Golf Development
https://www.golfindustrycentral.com.au/golf-industry-news/pre-opening-night-a-success-for-shanx-regency-park/

Sandy Golf Links, Victoria

Project: Course Redevelopment
https://www.planetgolf.com/news/redeveloped-sandringham-golf-course-unveiled-for-public-play

Swing City, New South Wales

Project: Driving Range and Mini Golf Development
https://www.mulpha.com.au/approval-for-new-12m-swing-city-golf-and-hospitality-venue-in-norwest/

The Club Parkwood Village, Queensland

Project: Multi-Use Development
https://www.golfindustrycentral.com.au/golf-industry-news/green-light-for-160-million-retirement-village-on-parkwood-village-precinct/

The Hills Golf Club, New Zealand

Project: Par 3 Course Development
https://www.golfcoursearchitecture.net/content/the-hills-golf-club-opens-elastic-par-three-course

The Lakes at El Segundo, USA

Project: Topgolf Development
https://www.cagolf.com/articles/top-golf-opens-at-lakes-at-el-segundo

The Links Shell Cove, New South Wales

Project: Community Hub Development
https://www.australiangolfdigest.com.au/the-links-shell-cove-a-vibrant-community-hub/

Wembley Golf Course, Western Australia

Project: Multi-Use Development
https://www.australiangolfdigest.com.au/wembley-golf-course-continuity-change/

Winter Park Public Golf Course, USA

Project: Course Renovation
https://www.golfpass.com/travel-advisor/articles/the-secret-ingredients-of-the-winter-park-golf-course-near-orlando

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Society of Golf Course Architects Australia Magazine

The 7 Principles of Universal Design, National Disability Authority

Universal Design, Centre for Universal Design Australia

What is the Future of Golf in Cities Around the World

World Handicap System Operational Guidance & Supporting Regulations, Golf Australia

SECTION 10 Glossary of Terms

Term	Definition
Ball	The round object which golfers attempt to hit into the hole.
Ball Mark	Indentation made to the grass/ground on a putting green when a lofted shot lands on the green.
Boundary	The edge of the golf course that defines the area of play.
Bunker	Holes with sand in the bottom which are placed around the course as obstacles.
Clubhouse	The building at a golf course providing facilities for golfers that may include change rooms, food and beverage areas, offices and a pro shop.
Dog leg	A hole where the fairway is straight for some distance and then bends to the left or right.
Driving Range	A dedicated structure or facility that is open to the public and includes undercover and exposed bays for hitting shots to an area with targets and distance markers.
Facilities	A place or destination provided for the particular purpose of engaging in the game of golf. This may include golf courses (including short courses) as well as standalone driving ranges, mini golf courses and golf simulators.
Fringe	The closely mowed area surrounding the green.
Golf Course	A typical golf course consisting of 9 holes, 18 holes, more than 18 holes or other configurations that may have a variety of par 3, par 4 and par 5 holes.
Green	The finely manicured area surrounding the hole on the course. This area is designed for putting.
Handicap	A numerical measure of a golfer's potential that is used to enable players of varying abilities to compete against one another.
Hardpan	Term given to an area of the golf course (not bunkers or hazards) on which no grass is growing.
Hazard	Any obstruction on a golf course such as lakes, ponds, fences, or bunkers.
Infrastructure	The physical buildings and structures within a facility (e.g. clubhouses, pavilions, maintenance sheds, cart storage and paths) needed for the operation of a golf facility. Where a facility has multiple formats of golf offered, elements such as driving ranges and mini golf courses are considered as infrastructure.
Layout	The manner in which the holes are placed on the golf course when designed.
Links	The name given to golf courses which are constructed on an area of coastal sand dunes and sometimes to open parkland.
Mini Golf	An artificial grass putting course where each unique hole may involve negotiating an obstacle with a combination of elevation changes and surface types.

Term	Definition
Obstruction	Any artificial object that has been left or placed on the course with the exception of course boundary markers.
Out	The first nine holes of an 18-hole course. The second 9 holes is going "in".
Out of Bounds	Any area encountered during a round of golf from which play is prohibited. Typically, out of bounds (OB) is off course property.
Par	The number of shots intended for a player to take on a given hole.
Par 3 Course	A short golf course consisting entirely of par 3 holes that does not meet the definition of a pitch & putt course.
Pitch & Putt	A short golf course with a maximum hole length of 90 metres and total course length of 1,200 metres for 18 holes that is designed to be played with a maximum of 3 clubs – one of which must be a putter, as defined by the Federation of International Pitch and Putt Associations (FIPPA).
Practice Fairway	A fairway area at a golf course where players can practice or warm up and may include distance markers and targets.
Pro Shop/Golf Shop	A retail outlet at a golf facility where golfing equipment can be purchased.
Putting Green	A putting surface usually found close to the clubhouse or pavilion which is used to warm up and practice putting.
Rough	Type of grass, bordering fairways, that is higher and generally more coarse than the grass in the fairway.
Simulator	An indoor facility that has hitting bays with a graphically simulated driving range or golf course.
Stimpmeter	A device used to measure the speed of putting greens.
Slope Rating	The measure of how much the difficulty of a course increases for the handicap golfer. The Slope Rating determines how many handicap strokes the player receives from a specific set of tees.
Teeing Ground	The flat area on the course where play begins in a hole.
Waste Area	An area on a golf course that is similar to a sand trap, but is not declared an official hazard.
Water Hazard	The term applied to any relatively permanent and open area of water (sea, lake, pond, etc.) anywhere on the course.

Australian Golf Centre
Sandringham Golf Links
Cheltenham Rd
Cheltenham Victoria 3192

(03) 9626 5050
info@golf.org.au
www.golf.org.au

GolfAustralia