

# RECREATION & AQUATIC FACILITY

*A Premier Regional Integrated Community Wellness, Education  
and Recreation Precinct*

## Project Definition Plan - FINAL DRAFT



Succeeding  
Together



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**Attachments:**

- Appendix A – Operational Management Options
- Appendix B – Functional Brief
- Appendix C – Precinct Planning Strategy
- Appendix D – Concept Design
- Appendix E – Preliminary Environmental Investigation
- Appendix F – Geotechnical Investigations
- Appendix G – Engineering Servicing Study
- Appendix H – Transport Impact Assessment
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- Appendix M – Cost Estimate
- Appendix N – Programme
- Appendix O – Risk Register
- Appendix P – Stakeholder Support Documents
- Appendix Q – Community Consultation Report

## Distribution and Revision History

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# 1. EXECUTIVE SUMMARY

## 1.1 INTRODUCTION

The Project Definition Plan ('PDP') is one of a suite of documents commissioned by the City of South Perth ('City'), which also includes an Operational Feasibility, Treasury Business Case and Business Plan), in order to effectively define the why, what, when and how in relation to the delivery of the Recreation and Aquatic Facility project. It builds on and refines the previous feasibility study, defines the site analysis undertaken, outlines the work undertaken to inform the functional brief prepared by the Architect and informs the structural of the Operational Feasibility. Once approved, the Project Definition Plan will become the central reference point to aid in decision making throughout future project phases.

## 1.2 BACKGROUND

Development of the City's Recreation and Aquatic Facility ('RAF') has been an aspiration for the City for an extensive period of time. In 2018, a feasibility study for the RAF resulted in Collier Park North being endorsed as the preferred location, following which the Federal Government made a commitment of \$20 million in funding towards the project.

The vision for the RAF is to create a world class health, wellness, fitness, recreation and education hub that supports the needs of a growing population. The RAF will be a unique and vibrant social hub where physical activity and lifestyle experiences meet and a place for community, sport and education partnerships.

## 1.3 SCOPE

The scope of the RAF project developed through the Project Definition phase incorporates the following key components:

### Ground Floor

- \ Indoor Aquatic (Learn to Swim / leisure and warm water / wellness);
- \ Outdoor Aquatic (52 metre pool, with boom);
- \ Sports Hall (6 courts minimum);
- \ Retail / Pro shop;
- \ Food & Beverage (café / restaurant and kiosk);
- \ Creche;
- \ Climbing Centre;
- \ Driving Range; and
- \ Associated Facilities (e.g. kitchens, store rooms, amenities, office space, etc.).

The facility will also include a mini golf course and 9-hole short course golf, being developed separately to the RAF however, included in plans for reference, together with an 18-hole traditional golf course (existing).

### First Floor

- \ Health Club (including program rooms);
- \ Function Areas;
- \ Community House;
- \ Curtin University Facilities; and
- \ Associated facilities (e.g. back of house, amenities, etc.).

The facility encompasses an estimated total building area of 17,247 square metres and has been developed through a masterplan approach to consider its location within the broader precinct and to allow for future expansion / works that may not be completed during initial construction.

## 1.4 COST

The current Project Definition phase cost estimate is \$79,871,845 (excl. GST), inclusive of contingencies commensurate with the stage of the project and escalation. This exceeds the project budget (target) of \$73m adopted at feasibility stage, primarily due to the following changes or inclusions:

- \ Inclusion of a climbing centre;
- \ Increased size of the Community House to meet requirements (including by Council on the Ageing and SEDA College);
- \ Provision of space for occupation by Curtin University;
- \ Increased size of the health club to meet forecast demand;
- \ Increased size of food and beverage facilities;
- \ Increased infrastructure and servicing requirements; and
- \ Increased number of car bays.

In addition, a number of option items have been investigated and an estimate of cost obtained, for consideration during the next phase of the project in line with the project budget and any operational implications.

## 1.5 FUNDING

The broad funding strategy for the proposed RAF has been developed, based on an overarching strategy of securing State and City funding equal to that committed by the Federal Government (\$20m). The key components of the funding and their status is summarised as follows:

- \ Federal Government Grant funding of \$20m is committed, having been pledged in 2019;
- \ City of South Perth funding of \$20m is proposed however, will be subject to Council approval and supported by the operational viability of the RAF;
- \ State Government funding of \$20m will be targeted, with a draft Treasury Business Case prepared for this purpose; and
- \ Funding from Commercial and other Funding Partners of \$20m is targeted.

## 1.6 PROGRAMME

The targeted opening date for the RAF is mid-2024 and in order to achieve this, the following critical milestones have been identified:

Task	Commence	Complete
Endorsement of PDP and Operational Feasibility, City Funding Commitment and Endorsement to Advertise the Business Plan	Nov 2020	
S3.59 Business Plan Advertising & Approval	Nov 2020	Feb 2021
Federal Funding Agreement	Feb 2021	
State Funding Submission*	Nov 2020	Jun 2021
Finalisation of Project Scope	Nov 2020	Jun 2021
Design*	Jun 2021	Apr 2022
Procurement & Tender	Feb 2022	Jul 2022
Construction	Aug 2022	May 2024
Completion & Handover	May 2024	Aug 2024
RAF Opens to Public	Aug 2024	

Table 6: Indicative Programme Milestone Summary

\* This programme assumes that design activities do not commence until June 2021, allowing for the project scope to be finalised based on final funding commitments (State funding). Design activities can commence earlier should the funding and therefore scope, be finalised prior to that date, which would result in an earlier RAF opening date. Conversely, should the project scope not be finalised by June 2021, any delays will have a consequent impact on the overall project programme.

## 1.7 RISK

The following key risks requiring appropriate management and coordination during the future stages of the project have been identified:

- \ City approvals causes delays i.e. Council timing or unexpected feedback, lack of cohesiveness, etc.;
- \ Delay in endorsement of Council's project funding commitment beyond November 2020, causing subsequent failure to secure State funding; and
- \ Cost escalation in excess of that allowed for in the Project Definition phase cost plan due to market conditions.

## 1.8 PROCUREMENT

The procurement approach determined to be most appropriate for the delivery of the RAF was identified as being Design and Construct (>50%).

As the project progresses to the delivery phase, the level of design at which to tender and the timing of such will be further investigated and agreed by the project team considering market conditions at that time. Accordingly, the procurement approach remains open for further review.

## 1.9 STAKEHOLDER & COMMUNITY ENGAGEMENT

As part of the Project Definition phase, a comprehensive, four-week long community stakeholder engagement program was conducted from 26 August 2020 to 23 September 2020

The purpose of this was to provide the community stakeholders an opportunity to provide their views, ideas and thoughts to assist in shaping the future of the RAF.

Key activities included:

- \ A survey (available online and in hard copy format).
- \ 5 stakeholder 'face-to-face' workshops including:
  - o Disability and Access Workshop;
  - o Aboriginal Key Stakeholder and Community Workshop;
  - o Community and Action Groups Workshop;
  - o Collier Park Golf Key User Groups Workshop; and
  - o South Perth Youth Network ('SPYN') Workshop.

- \ An on-line engagement workshop (via ZOOM).
- \ Community Information Day.

Consultants Research Solution and Elton Consulting were engaged and worked with the City's Stakeholder Engagement Team to assist with the analysis and facilitation of the engagement.

An extensive number of potential user / tenant stakeholders were also engaged with throughout the Project Definition phase, a number of which has previously been consulted during the feasibility stage. These largely comprising state sporting entities or other related peak bodies, together with aligned educational and community organisations. The primary outcomes of this engagement included:

- \ Definition of the likely occupants of the Community House and their spatial requirements to inform the design;
- \ An understanding of the facility usage requirements of the sporting users;
- \ Details of their specific sports technical requirements to consider as part of the concept design and to further detail during the next stages of design;
- \ Any potential funding opportunities to inform the funding strategy; and
- \ Identification of the stakeholders' broad expectations that the RAF will meet many unmet needs, including reference to it being "long overdue".

## 1.10 COMMUNICATIONS

As part of the Project Definition phase, a marketing and communications plan was developed and implemented by the City's internal communications personnel, incorporating promotional videos, website, media release, outdoor advertising, social media, newspaper, E-newsletter, printed collateral and banners located throughout the City.

This high-level campaign was developed with the purpose of increasing awareness and providing information about the project, together with encouraging participation in the community stakeholder engagement events and activities.

## 2. PROJECT DEFINITION

### 2.1 BACKGROUND

Development of the City of South Perth's ('City') Recreation and Aquatic Facility ('RAF') has been an aspiration for the City for an extensive period of time. In 2018, the City commissioned the development of a feasibility study for the RAF, with the priority being identification of a preferred location as well as preliminary concepts, cost estimates, financial operational models and funding strategy.

Collier Park North was endorsed as the preferred location due to:

- \ Co-locating the golf club with the RAF, creating a unique, recreational and community facility, while also assisting with on-going revenue generation;
- \ Upgrades were required to the Collier Park Golf Club in the near future and this option allows the City to meet this objective in the single development;
- \ Impacts the most underutilised golf holes on the course and limited impact to existing trees and the wildlife living within; and
- \ Access to the Curtin University market.

In support, in March 2019 the Federal Government made a commitment of \$20 million in funding towards the project.

### 2.2 PROJECT VISION

The vision for the RAF is to create a world class health, wellness, fitness, recreation and education hub that supports the needs of a growing population. It is a signature project that will strengthen the relationship between all project partners, stakeholders and the community.

The RAF is more than sports facility, it is a hub for integrated learning and the delivery and evaluation of health programs that will facilitate a shift in care from expensive hospital based to community care, thus bending the cost curve for health care.

The RAF will be home to community sport and recreation across the region supporting greater participation in physical activity and providing tenants and key stakeholders with shared facilities which are managed in a collaborative model.

### 2.3 PROJECT OBJECTIVES

The project team has identified the following key project objectives:

- \ To set a new benchmark in wellness and leisure facility integrated into one world-class regional facility for the benefit of the community and its stakeholders;
- \ To deliver the project within the overall budget and provide an economically sustainable development that enhances capital and operational cost efficiencies for the City through integration of components into one facility; and
- \ Fulfil the obligations of the Federal grant in relation to an increase in sporting facilities that provide female change rooms and amenities, increasing the number of girls and women participating in sport at all levels and an increase in community swimming facilities.

### 2.4 FEASIBILITY CONTEXT

An initial feasibility study was undertaken in 2018, the main outcome of which was the identification of a preferred site for the RAF, being Collier Park North, with an estimated total cost of \$73 million (excl. GST), including contingencies, fees and charges.

This feasibility identified the following base functional inclusions for the RAF:

- \ 50m and 25m pools;
- \ 6 hardcourt stadium;
- \ Health club;
- \ Function centre;
- \ Golf clubhouse with 18-hole course;
- \ Mini golf;
- \ Driving range;

- \ Retail;
- \ Creche;
- \ Community meeting rooms;
- \ Café / restaurant; and
- \ Administration space.

Whilst **not** included in the feasibility study calculations, the following optional elements were identified as worthy of further consideration:

- \ Recreational activities (e.g. laser tag, bowling, rock climbing);
- \ Elite training and administration facility;
- \ Community sporting house;
- \ Commercial leasing space;
- \ Recovery pools;
- \ Performing arts theatre;
- \ Education and multi-media facilities; and
- \ Allied health tenancies.

These base facilities and optional elements have informed the development of the Functional Brief and Concept Design during this Project Definition phase.

## 2.5 OPERATIONAL FEASIBILITY CONTEXT

In parallel with this Project Definition Plan, an Operational Feasibility report has been developed by NS Group. The key purpose of this is to inform the operational viability of the design and overall facility, from the perspective of an external third-party operator. It further guided the following:

- \ Market take-up for the operation of the facility (during procurement to market);
- \ Forecast returns to the City, through handover of management and / or lease rights to an Operator; and
- \ The design development and facility uses, including target commercial streams.

## 2.6 BUSINESS CASE CONTEXT

A draft Treasury Business Case has been developed, based on the adopted concept developed during the Project Definition phase. The primary function of this Treasury Business Case is to provide the strong strategic justification necessary to support funding by the State.

The Treasury Business Case format is in accordance with the Department of Treasury's Strategic Asset Management Framework and provides substantiation of the need for the RAF facility and its alignment with strategic objectives of the State, together with the objectives and benefits of the project. It further considers the various options available to meet the determined demand and substantiates the development of the proposed RAF as being the recommended option.

This Treasury Business Case will be finalised and submitted to the State during the next stage of the project and following endorsements of the City's funding commitment, in support of a funding application.

## 2.7 BUSINESS PLAN CONTEXT

A Business Plan will be prepared in accordance with Section 3.59 of the Local Government Act, due to the development of the RAF constituting a "major land transaction", which includes the entering into of funding agreements for this purpose.

The Business Plan will provide an overview of the RAF development, including but not limited to, the following details:

- \ the expected effect of the RAF development on the provision of facilities and services by the City;
- \ the expected effect of the RAF development on other persons providing facilities and services in the City's district;
- \ the expected financial effect of the RAF development on the City;
- \ the expected effect of the RAF development on the City's current Strategic Community Plan and Corporate Business Plan;

- \ the City's ability to manage the undertaking or performance of the RAF development; and
- \ proposed agreements that the City will be entering into for the purpose of development the RAF (e.g. funding agreements, construction contract, operator / management agreement, leases, etc.).

The Business Plan will be prepared by the City and presented to Council for endorsement to advertise, together with the Project Definition Plan and Operational Feasibility, as required by the Local Government Act (six-week advertising period applicable).

## 2.8 OPERATIONAL & FUNCTIONAL OBJECTIVES

The development of the RAF aligns with one of the key strategies of the City's Strategic Community Plan 2020 - 2030, being "to plan for and promote the development of recreation and aquatic facilities to service community needs". It also closely aligns with the Public Health Plan which advocates for the promotion of a healthy lifestyle and the delivery of primary health care and prevention in the community.

The current situation in the South Perth region which is to be addressed by the RAF includes:

- \ Lack of public aquatic facility, no local Learn to Swim programs;
- \ Lack of indoor sporting facilities;
- \ Low participation rates in local sports, particularly amongst females;
- \ Insufficient community meeting and gathering spaces;
- \ Lack of integrated sport and wellbeing opportunities;
- \ Lack of preventive health programs delivered in the community; and
- \ Inadequate and ageing facilities that are no longer fit for purpose.

The project further creates the opportunity to collaborate with, and leverage partnerships between, State and Federal Government, wellness and health, sport and leisure, education (including Aboriginal education) and the community.

## 2.9 PROJECT DEFINITION PROJECT TEAM

The following team contributed to the preparation of this Project Definition Plan:

<p><b>Client Agency:</b> City of South Perth</p> <p><b>Client (Project Director):</b> ██████████</p>
<p>As the Client, the City is responsible for providing overall strategic direction for the project team and to assist in the stakeholder management and communications.</p>
<p><b>Architect (Lead Design Consultant)</b> Christou Design Group</p> <p>Responsible for providing experienced architectural services to assist with defining the functional requirements, space planning and production of facilities schedule and concept plans for the Project Definition phase. Their engagement allows for continuation through to future stages following gateway approvals.</p>
<p><b>Quantity Surveyor (QS)</b> Rider Levett Bucknall</p> <p>Responsible for providing cost advice and analysis to develop estimates of cost and review opportunities for savings, together with whole of life cycle costs to inform the operational feasibility. Their engagement allows for continuation through to future stages following gateway approvals.</p>
<p><b>Civil Engineer</b> Pritchard Francis</p> <p>Responsible for preparing an Engineering Servicing study in order to identify whether the proposed RAF is capable of being provided with essential services and opportunities and constraints associated with providing services. Through sub-consultant Direct Energy Australia, provided a high-level analysis of an integrated renewable energy system, the purpose of which was to provide potential integrated design opportunities in relation to sustainable and conventional technologies and a selection of the most appropriate systems.</p>

<p><b>Environmental Consultant</b> Aurora Environmental</p>
<p>Responsible for undertaking a Preliminary Site Investigation, the primary purpose of which was to provide information in relation to potential contamination issues associated with the current and historical use of the site, which may impede the potential development of the RAF.</p>
<p><b>Traffic Engineer</b> KCTT</p>
<p>Responsible for undertaking a Transport Impact Assessment in order to identify any improvements / upgrades that may be required to surrounding transport infrastructure as a result of the RAF and inform access and car parking requirements.</p>
<p><b>Geotechnical Engineer</b> CMW Geosciences</p>
<p>Responsible for undertaking geotechnical investigations, the primary purpose of which was to investigate the ground conditions and subsoil classification and obtain advice on recommended site classification and design requirements such as foundations, pavement subgrade, retaining / batters, onsite stormwater disposal and site classification.</p>
<p><b>Town Planning Consultant</b> Taylor Burrell Barnett</p>
<p>Responsible for providing advice on the planning approval requirements and recommended approval pathway(s) for the proposed RAF.</p>
<p><b>Specialist Aquatics Consultant</b> Oceanis International</p>
<p>Responsible for undertaking a review of the pool functionality for the RAF, in order to inform pool configuration concepts, together with providing advice in relation to the pros and cons of indoor vs outdoor pools.</p>

<p><b>Environmentally Sustainable Design Consultant</b> Full Circle Design Services</p>
<p>Responsible for undertaking a sustainable design review and certification feasibility study of the RAF and provide advice on the sustainable design features expected from the various design disciplines as the design progresses.</p>
<p><b>Legal Advisor</b> Jackson McDonald</p>
<p>Responsible for the provision of legal advice in relation to Local Government Act considerations, review of funding agreements and drafting of template legal agreements (e.g. for funding partners). Their engagement allows for continuation through to future stages following gateway approvals.</p>
<p><b>Sports Demand Consultant</b> ActiveXchange</p>
<p>Responsible for undertaking a demand analysis with regard to the health club and aquatics components and sports, together with a social benefit analysis, to assist with informing the operational feasibility and area requirements.</p>
<p><b>Strategic Advisory</b> Paatsch Group</p>
<p>Responsible for providing strategic advice and guidance in relation to such matters as funding opportunities, strategy, partner opportunities and operational inputs, together with aiding in the drafting of the Treasury Business Case, having relevant experience with the Cockburn ARC development.</p>
<p><b>Project Management &amp; Advisory</b> NS Group</p>
<p>Responsible for providing project management services necessary to complete the Project Definition phase and preparation of this Project Definition Plan, together with commercial advisory services to develop the Operational Feasibility and aiding in the drafting of the Treasury Business Case, having previously been involved in the initial Feasibility Phase of the project.</p>

## 2.10 PROJECT GOVERNANCE

### GOVERNANCE STRUCTURE

A Project Governance Structure has been established in order to define roles, responsibilities and accountabilities and facilitate decision making throughout the project.

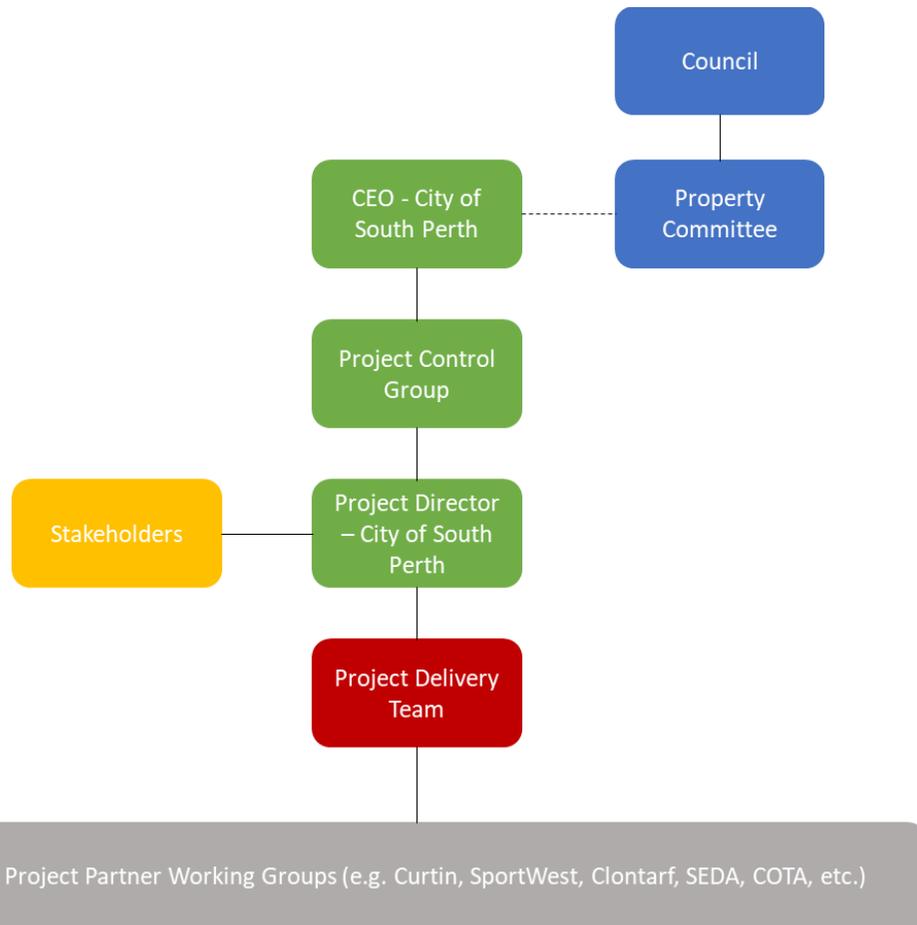


Figure 1: Governance Structure

The key components of the governance structure are described as follows:

Entity	Responsibility / Role
Lead Proponent (City of South Perth)	Having organisational accountability and reporting to the City's Property Committee and Council.
Project Control Group (PCG)	Comprising members from the City and key project partners (e.g. Curtin University, SportWest), having responsibility for management of the overall project direction and resolution of issues that cannot be closed out within the project delegations, for communication through to the project delivery team, with the Project Director responsible for reporting to the Project Control Group on project progress and providing recommendations requiring endorsement / approval.
Project Partner Working Groups (PWGs)	Comprising individual working groups of the project partners (as required) to work with the project delivery team to inform the design in line with their functional requirements and provide any relevant approvals / signoffs.

### DELIVERY STRUCTURE

A delivery structure has been established to detail delineation of project roles, together with delegation authorities upon definition of the decision making and delegation authorities within the project team.

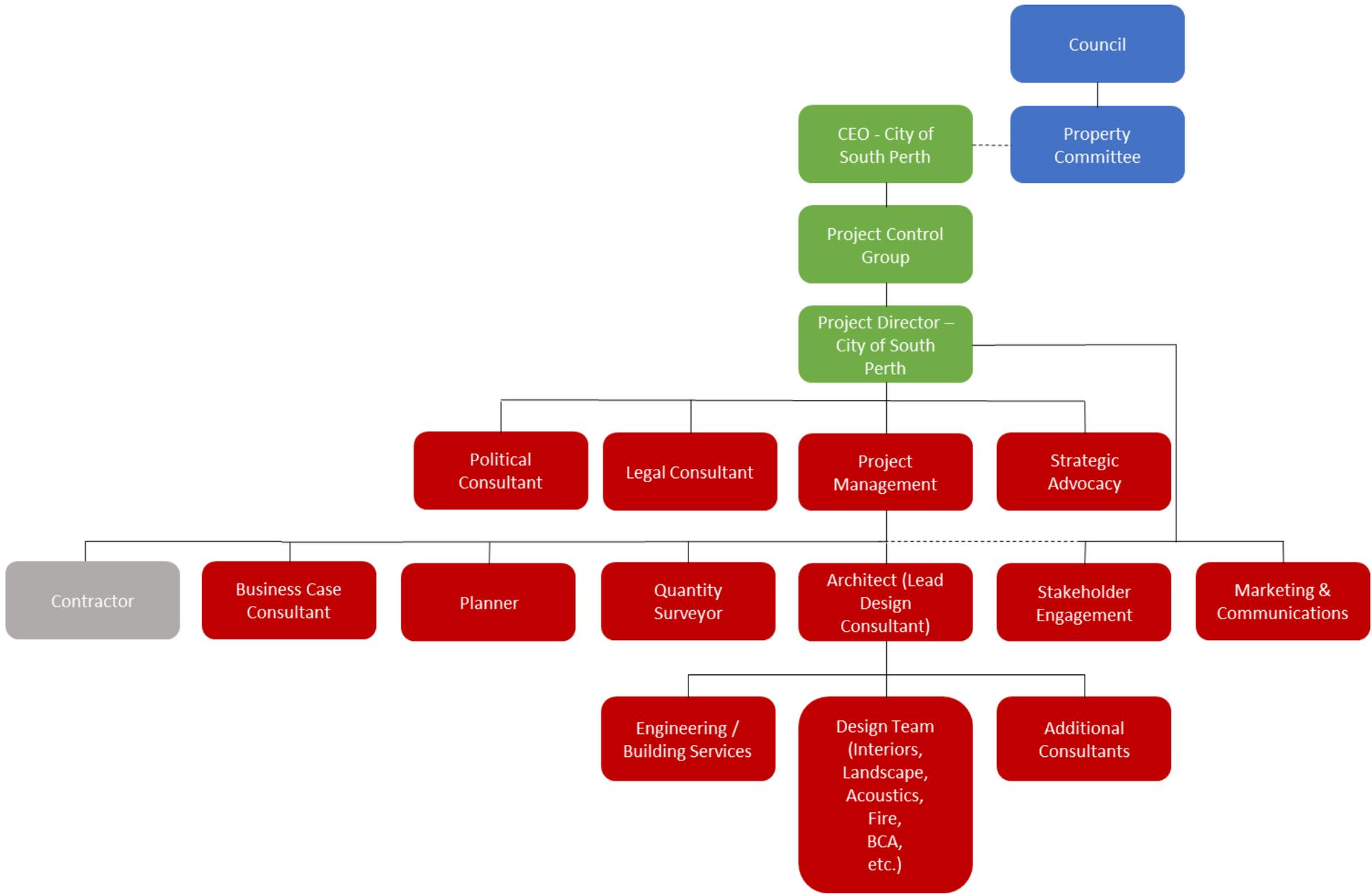


Figure 2: Delivery Structure

The key roles and responsibilities within the core project team proposed for the future **delivery stages** are described as follows:

<p><b>Client Agency:</b> City of South Perth</p> <p><b>Client (CEO)</b></p> <p><b>Client (Project Director)</b></p>
<p>Role &amp; Responsibilities: The City is the Client for the project, having responsibility for providing overall strategic direction for the project team and to assist in the stakeholder management and communications.</p>
<p><b>Project Control Group</b></p> <p>The City of South Perth Management Team as relevant to the requirements of the project</p>
<p>Role &amp; Responsibilities: Providing direction, management and monitoring of project progress to deliver project outcomes. Holds accountability for the overall project delivery and provides strategic direction as required.</p>
<p><b>Project Management</b></p> <p>To be appointed</p>
<p>Role &amp; Responsibilities: The role of the project manager is to manage and co-ordinate the development and implementation of project management plans and for the day-to-day activities necessary to complete the project and to facilitate communication between the project team members. The project manager will collate and process the various project inputs from stakeholders with input from the City as required. The project manager will carry out the role of Superintendent for the Construction Contract(s) including all contract administration functions and monitor contractor performance. The project manager supports the City's Project Director to achieve project deliverables and escalate issues via exception reporting.</p>

<p><b>Head Contractor</b></p> <p>To be appointed</p>
<p>Role &amp; Responsibilities: The Head Contractor is responsible for the construction (and some level of design if Design and Construct procurement approach adopted) and contract administration support services including the co-ordination of the commissioning team.</p>
<p><b>Quantity Surveyor &amp; Cost Control (QS)</b></p> <p>Rider Levett Bucknall</p>
<p>Role &amp; Responsibilities: The QS is responsible for providing cost consultancy services including cost estimating, reviews, cost advice and control and value management support at key gateways in the project, this includes assessing variations and reviewing and recommending contractor progress claims.</p>
<p><b>Architect (Lead Design Consultant) – Sub-consultants: Landscape, Structural, Hydraulic, Mechanical, Electrical, ESD, Acoustic, Fire Engineering, etc.</b></p> <p>Christou Design Group</p>
<p>Role &amp; Responsibilities: The Architect is responsible for the project design and is engaged directly by the Client (dependent upon the procurement approach adopted, may be novated to the Head Contractor), being responsible for managing a team of specialised design sub-consultants required to carry out the works. Consult with end users to minimise scope change through design progression and construction. Provide specific technical and design advice to assist the Superintendent as required during construction, including the review and endorsement of shop drawings and variations.</p>

### OPERATIONAL MANAGEMENT STRUCTURE

An operator(s) is required to be appointed for the RAF, having the knowledge, skills and capacity to manage a facility of this scale and nature, whilst also ensuring its financial viability.

Three main operational management structures have been developed by the project team, which were further considered at the Procurement Workshop attended by key City personnel and are further detailed in the Operational Feasibility. This workshop reviewed the most appropriate procurement / management approach for the operation of the RAF, with these being:

- \ Single external management group (i.e. Clublinks, YMCA, Belgravia Leisure, BlueFit, other specialist firms);
- \ Multiple external management groups (e.g. each responsible for management of an individual component(s) of the facility); and
- \ Direct Management by the City of South Perth.

Further details of these options are provided at Appendix A.

The current assumed management option was deemed to be the single external management group, adopted for the purpose of the determining the Operational Feasibility and performance of the RAF, as depicted below:



Figure 3: Operational Management Structure

The single external management group structure would provide for a commercial arrangement such as a lease, management fee (flat fee or % turnover), profit share as a means of generating a return to the City. This would be via a single lease / Management Agreement with the Management Group, who would in turn have commercial or sub-lease agreements directly with a food and beverage operator (could potentially be part of Management Group), SportWest and Summit Climbing (a potential commercial tenant).

The positives of this structure are that a fully integrated management maximises opportunities across facilities, there would be only one contact point for the City, there would be limited conflict between management groups and it maximises the ability for investment by the operator.

The negatives are that management groups may not have experience in all areas (i.e. may have experience in aquatic and leisure centre management but not golf).

It is noted that there are a number of items to be resolved through the next phase of the project with regard to the management structure, including:

- \ Responsibility for maintenance of greens, fairways, etc., currently undertaken by the City;
- \ Responsibility for and roles of existing City recreation staff;
- \ Ability to set fee levels; and
- \ Ability to control quality (expected to be through a Management and Operations Agreement, which would include Key Performance Indicators).

Ultimately, the final operational management structure will be determined following a market procurement process, which is anticipated to be in the form of a market sounding process via an Expressions of Interest campaign, followed by a tender process to those shortlisted operators. This is planned to be undertaken early in the next stage of the design process, in order to gain their input into the ultimate design from an operational perspective through early operator involvement, necessitating Local Government Procurement processes to be followed in this regard.

## 3. SCOPE

### 3.1 FUNCTIONAL BRIEF

Developed through a detailed briefing process, Christou Design Group has prepared a Functional Brief for the RAF facility. This outlines the key design and functional requirements and is based on the understanding and interpretation of stakeholder needs and expectations. A copy of the Functional Brief is provided at Appendix B, with the key aspects summarised below.

#### MASTERPLAN

A masterplan approach has been adopted with regard to the RAF, both in relation to its location within the broader precinct and a wider facility masterplan that allows for future expansion / works that may not be completed during initial construction.



Figure 4: Precinct Integration

Key items considered within the broader precinct planning, a copy of which is provided at Appendix C include:

- \ Maximising the linkage to Curtin University and Clontarf College and enhancing connections with the surrounding communities (e.g. Karawara to the south);
- \ Identification of a potential connection through the Collier Park Golf Course;
- \ Identification of a potential link to the car park of the adjacent Wesley playing fields;
- \ The broader sporting precinct within which the RAF is situated, including Collier Park Golf Course, Curtin Stadium, State Hockey Centre and adjacent sporting fields;
- \ Opportunities to provide recreational activity and activation opportunities such as running trails through surrounding pedestrian linkages; and
- \ Surrounding land uses, including future uses such as Bentley West, Department of Primary Industries and Regional Development, etc.

In addition, an area of the site has been identified which can provide informal overflow car parking during any major events, to accommodate in excess of 100 vehicles.

It is also noted that the City is in the process of progressing an Integrated Transport Plan, the purpose of which is to:

- \ Identify and address transport issues;
- \ Manage travel demand;
- \ Align transport and land use planning; and
- \ Improve mobility equity and access.

The RAF will form a key facility within the City and therefore, will consider these key purposes as the design is developed through the next stages.

The facility master plan allows for the following:

- \ Expansion to provide an increased number of hardcourts (up to 12 in total);
- \ Expansion of the driving range to provide up to 80 bays;
- \ The ability to provide future decked car parking; and
- \ The proposed 9-hole short course concept for the balance of the “Lake 9”.

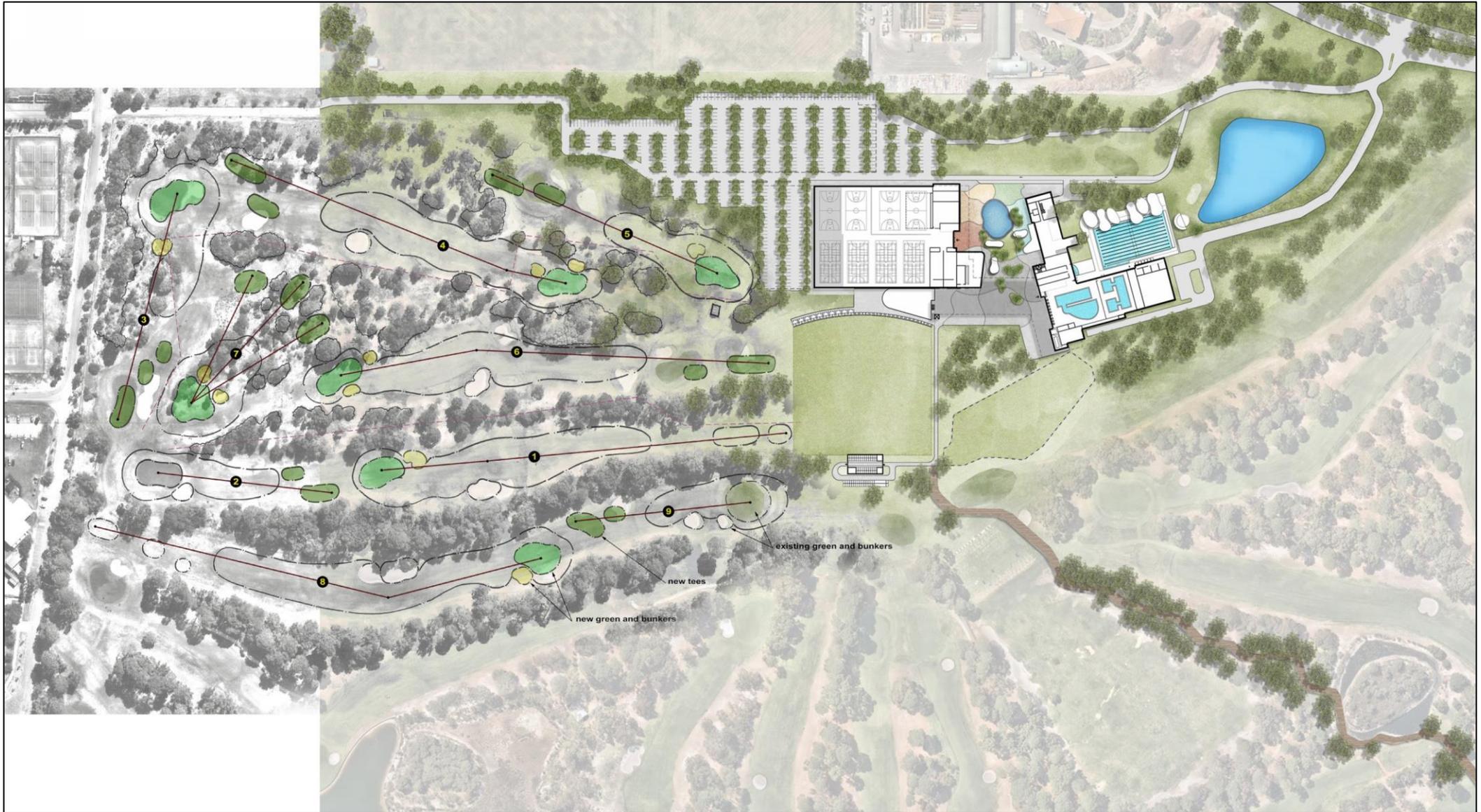


Figure 5: Site Concept Plan (Including Indicative 9-hole Short Course)

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## CONCEPT DESIGN

The concept design developed through the Project Definition phase is provided at Appendix D and incorporates the following key components:

### Ground Floor

- \ Indoor Aquatic (Learn to Swim / leisure and warm water / wellness);
- \ Outdoor Aquatic (52 metre pool, with boom);
- \ Sports Hall (6 courts minimum);
- \ Retail / Pro shop;
- \ Food & Beverage (café / restaurant and kiosk);
- \ Creche;
- \ Climbing Centre;
- \ Driving Range; and
- \ Associated Facilities (e.g. kitchens, store rooms, amenities, office space, etc.).

The facility will also include a mini golf course and 9-hole short course golf, being developed separately to the RAF however, included in plans for reference, together with an 18-hole traditional golf course (existing).

### First Floor

- \ Health Club (including program rooms);
- \ Function Areas;
- \ Community House;
- \ Curtin University Facilities; and
- \ Associated facilities (e.g. back of house, amenities, etc.).

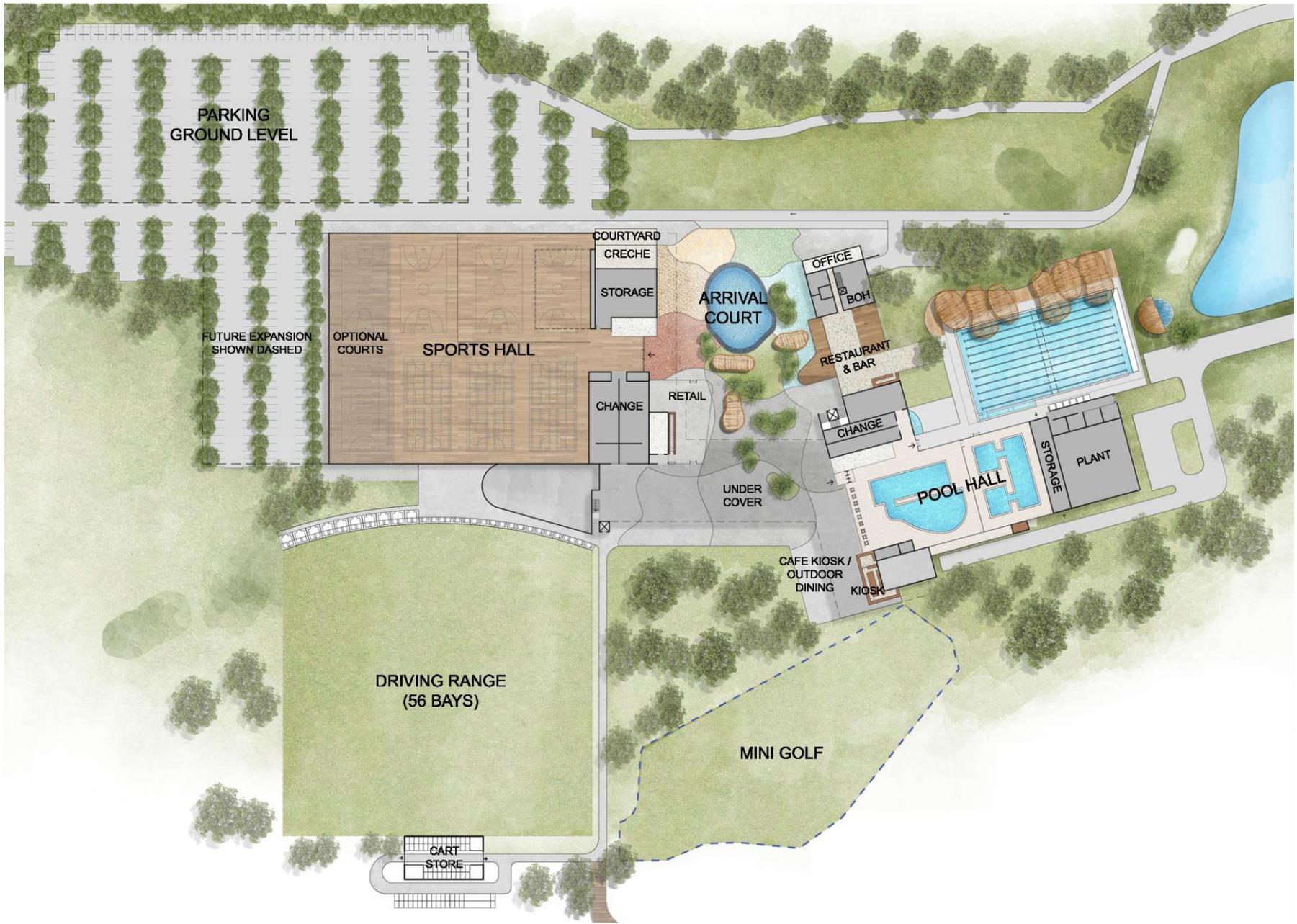


Figure 6: Ground Floor Concept Plan

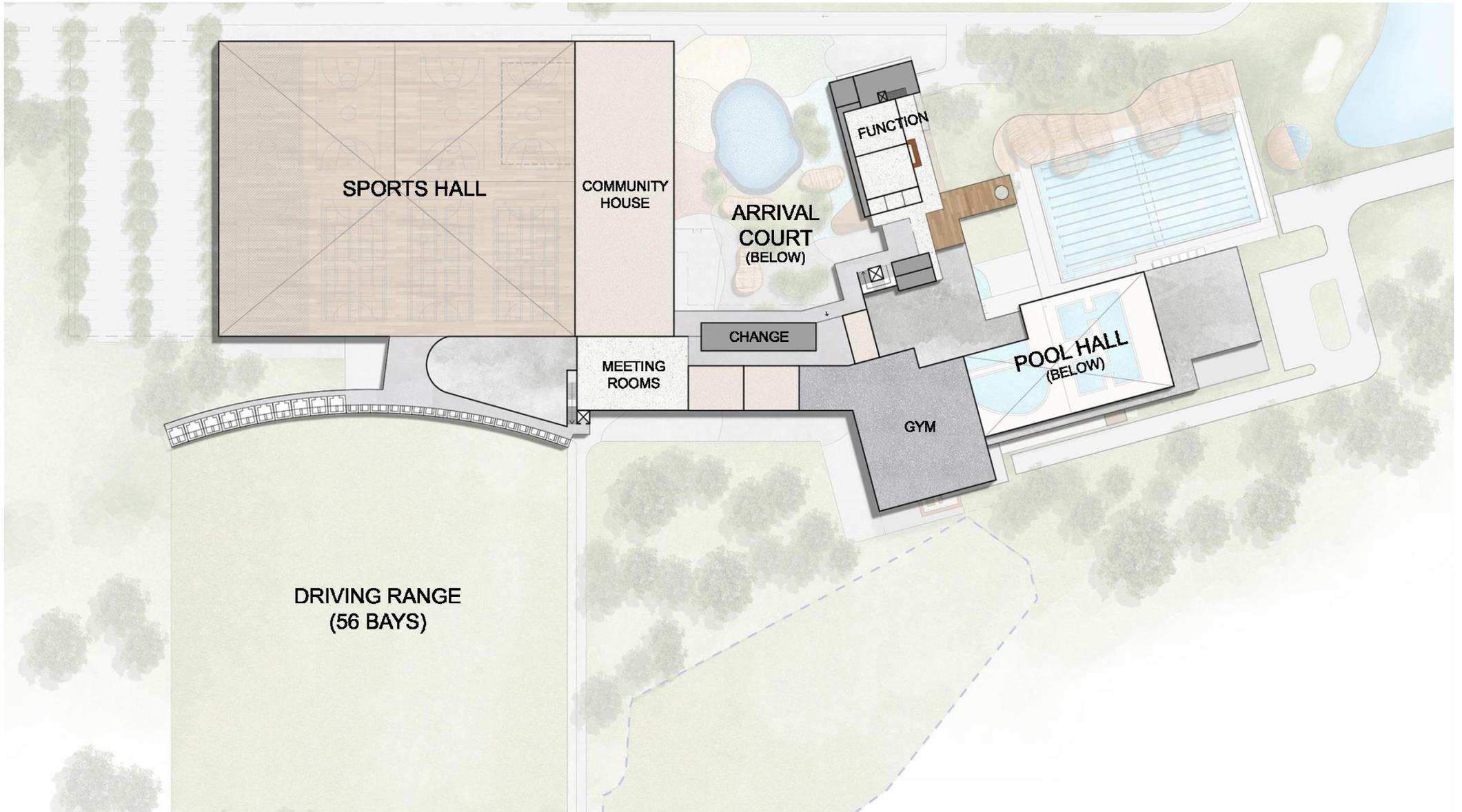


Figure 7: First Floor Concept Plan

## FACILITIES SCHEDULE

The key components of the RAF and their respective areas are summarised below:

Element	No.	Area (m <sup>2</sup> )	Total Area (m <sup>2</sup> )
<b>Community House</b>			
Reception	1	40	40
Offices	16	10	160
Open Plan Desks	54	6	324
Hot Desks	10	6	60
Meeting Room - Small	4	20	80
Meeting Room - Medium	1	40	40
Photocopy & Stationery Room	2	50	100
IT & Server Room	1	20	20
Lunch Room	1	100	100
Storage	1	100	100
Amenities	1	100	100
Area for COTA / SEDA	1	613	613
Circulation & Engineering		15%	163
<b>Sub-total</b>			<b>1,900</b>
<b>Aquatic Indoor</b>			
Pool - Leisure	1	220	220
Pool - Learn to Swim	1	190	190
Pool - Warm Water	1	270	270
Sauna	1	20	20
Aquatic Office	1	110	110
Airlock	1	30	30

First Aid	1	15	15
Storage	1	260	260
Dining (Wet)	1	90	90
Changerooms	1	220	220
Family Change	1	175	175
Amenities	2	20	40
Meeting	2	20	40
Plantroom	1	560	560
Circulation / Concourse	1	1,152	1,152
<b>Sub-total</b>			<b>3,392</b>
<b>Aquatic Outdoor</b>			
Pool - 50 metre	1	1,430	1,430
Splash Pad	1	150	150
<b>Sub-total</b>			<b>1,580</b>
<b>Sports Hall</b>			
Courts - Type 1	3	420	1,260
Courts - Type 2	3	465	1,395
Showcourt Seating	1	40	40
Office	1	90	90
Storage	1	300	300
First Aid	1	15	15
Changeroom & Amenities	1	570	570
Circulation / Runouts	1	2,275	2,275
<b>Sub-total</b>			<b>5,945</b>

<b>Climbing Centre</b>			
Climbing Centre	1	600	600
<b>Sub-total</b>			<b>600</b>
<b>Health Club</b>			
Gym	1	1,200	1,200
Program Rooms	2	150	300
Testing Rooms	4	20	80
Changerooms	1	100	100
Amenities	1	100	100
<b>Sub-total</b>			<b>1,780</b>
<b>Common Facilities</b>			
Retail / Pro Shop	1	415	415
Kiosk	1	110	110
Kitchen	1	175	175
Office - Administration	1	100	100
Office - Food & Beverage	1	90	90
Cleaners' Store	1	30	30
Lift & Stairs	1	50	50
Creche	1	150	150
<b>Sub-total</b>			<b>1,120</b>
<b>Food &amp; Beverage</b>			
Restaurant	1	200	200
Bar	1	200	200
Back of House	1	150	150
Function	1	260	260

Pre-function / Bar	1	235	235
Finishing Kitchen & Back of House	1	210	210
Restaurant Amenities	1	80	80
Function Amenities	1	70	80
<b>Sub-total</b>			<b>1,415</b>
<b>Driving Range</b>			
Driving Range (Outdoor)	2	800	1,600
Amenities	1	50	50
Golf Cart Storage	1	340	340
<b>Sub-total</b>			<b>1,990</b>
<b>Plant</b>			
Communications	1	70	70
Security	1	25	25
Pumps & Tanks	1	80	80
Distribution Boards	1	30	30
<b>Sub-total</b>			<b>205</b>
<b>Curtin University Facilities (Area Within Community House)</b>			
Curtin University Facilities	1	500	500
<b>Sub-total</b>			<b>500</b>
<b>Car Parking</b>			
Car Park	1	17,000	17,000
Drop-off & Loading	1	3,000	3,000
<b>Sub-total</b>			<b>20,000</b>
<b>TOTAL - INDOOR</b>			<b>17,247</b>
<b>TOTAL - OUTDOOR</b>			<b>23,180</b>

Table 1: Facilities Schedule

## 3.2 SITE CONTEXT & CONDITIONS

The proposed site of the RAF forms part of the existing Collier Park Golf Course, situated adjacent to Curtin University to the east, Wesley playing fields and the City of South Perth Operations Centre to the north and residential dwellings to the south.

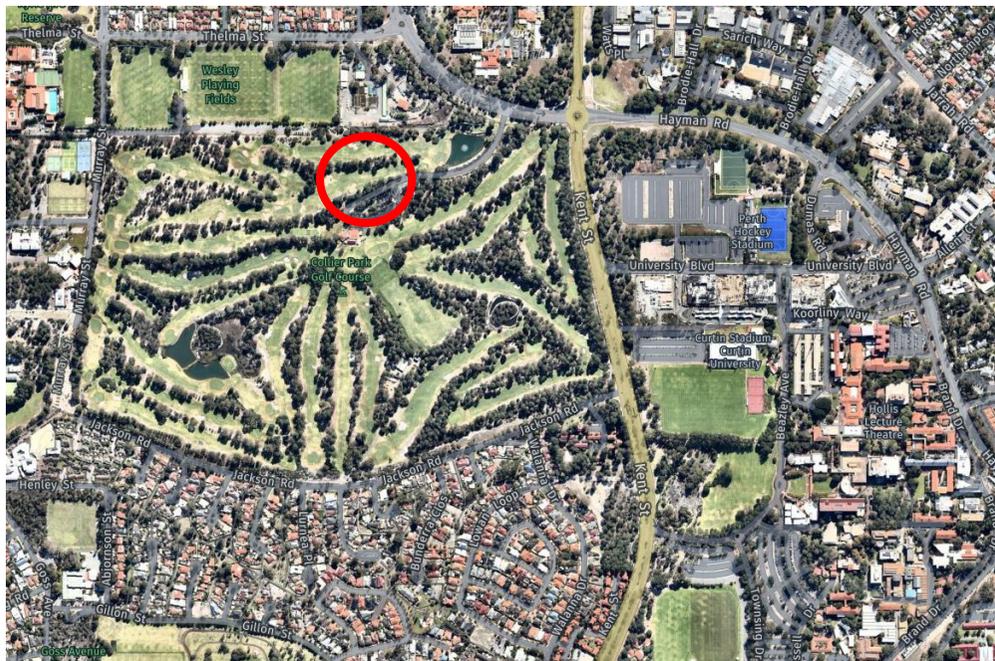


Figure 8: Location Plan

The site is situated to the northern section of the golf course, where the existing clubhouse, café and associated car park are located, overlooking the start and finish of the original 18 hole golf course ('Pines' and 'Island') in a southerly direction and a lake in north-easterly direction.

The site is relatively level however, in line with a golf course landscape, contains embankments of up to approximately 1 metre in height, with ground levels ranging from 5.3 metres AHD to 8.8 metres AHD.

The main opportunities and constraints of the site comprise:

- Existing main entry into the golf course off Hayman Road (continued utilisation);
- Minimising disturbance to the original 18-hole golf course; and
- Location of the mini-golf course to be constructed prior to the RAF.

The site of the RAF will impact a number of golf holes making up the 'Lake' nine, which will be reconfigured to provide a short form golf offering (e.g. par 3 course), the concept for which is being developed in parallel with the RAF design.

## 3.3 PHYSICAL SITE CHARACTERISTICS

In order to identify opportunities and constraints associated with the proposed site of the RAF and inform design decisions and cost estimates, a number of technical investigations were undertaken during the Project Definition phase. These are detailed below.

### ENVIRONMENTAL

#### Opportunities and Constraints

The areas considered in the Preliminary Site Investigation undertaken by Aurora Environmental, provided at Appendix E, broadly included:

- Review and analysis of historical environmental reports;
- Analysis of the site's environmental setting (climate, topography, geology and soils, Acid Sulphate Soils, hydrology and hydrogeology);
- Site history and historical uses;
- Flora and vegetation;
- Significant fauna;
- Conceptual site modelling to determine potential contamination risks; and
- A site walkover.

The main outcomes of the investigation comprised identification of the following potential areas of environmental concern:

- \ Portion of the site previously used as a landfill;
- \ Previous demolition of a building associated with the former landfill which was erected at a time when asbestos containing material was used in construction; and
- \ A soak well at the pro-shop where golf carts are washed down which presents a potential risk if contaminants were washed into it.

Further key findings included:

- \ A moderate to low risk of Acid Sulphate Soils occurring within three metres of the natural soil surface, with a high to medium risk beyond three metres;
- \ Native vegetation was observed and remnant pine trees may provide foraging resources for black cockatoos;
- \ Existing buildings proposed to be demolished to facilitate the RAF may comprise hazardous building materials;
- \ Soil beneath the existing proshop may have historically been sprayed with pesticides

Accordingly, Aurora Environmental made the following recommendations:

- \ The site be reported to the Department of Water, Environment and Resources as a potentially contaminated site (former landfill use);
- \ Undertake further detailed investigations to characterise the nature and extent of the identified potential areas of environmental concern;
- \ Undertake an Acid Sulphate Soil investigation where the proposed development required earthworks extending beyond three metres beyond the natural soil surface, temporary or permanent lowering of the water table or works within 500 metres of wetlands;

- \ Assessment of the potential presence of pesticides beneath the current building pads following demolition;
- \ Undertake a HAZMAT survey on the current buildings to ensure adequate demolition procedures are completed; and
- \ Further assessment or approvals may be required prior to clearing of any vegetation.

## Response

In consideration of the findings and recommendations of Aurora Environmental, the siting of the building and car parking minimises impacts on existing established trees.

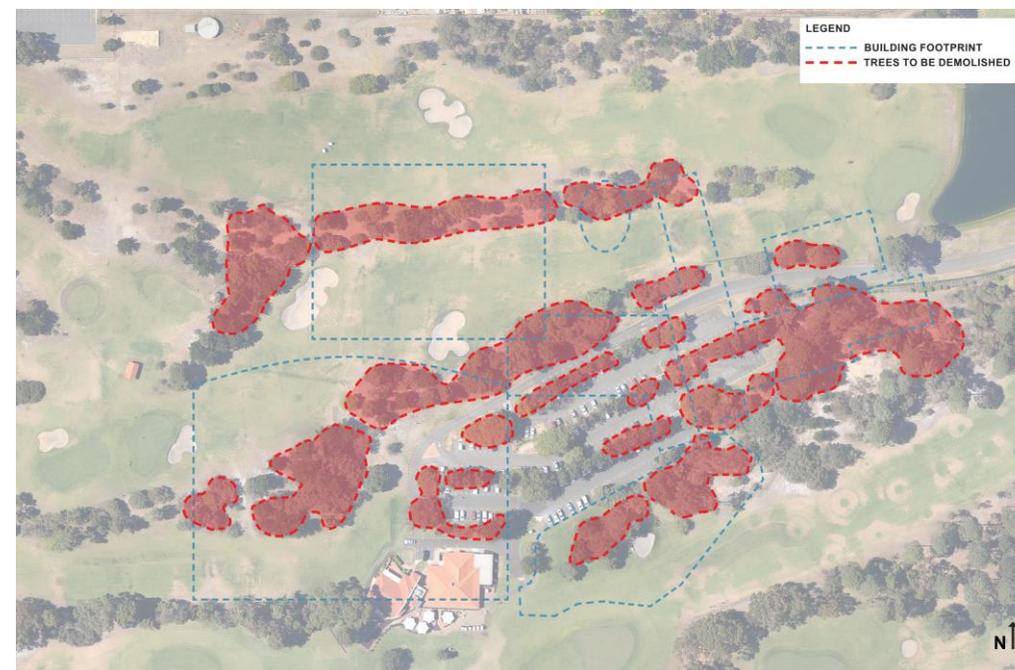


Figure 9: Indicative Tree Impact Plan

During the delivery phase of the RAF, the recommendations of Aurora Environmental are to be implemented, including:

- \ Detailed environmental investigations (inclusive of a fauna study in relation to black cockatoos);
- \ Acid Sulphate Soil investigations in relevant areas once defined;
- \ HAZMAT survey of the buildings to be demolished; and
- \ Testing of former landfill material to determine its nature (in conjunction with geotechnical investigations as further detailed below).

## GEOTECHNICAL

### Opportunities and Constraints

The main outcomes of the geotechnical investigations undertaken by CMW Geosciences, provided at Appendix F, comprised:

- \ Site walkover survey;
- \ Hand auger boreholes (x10);
- \ In-situ falling head permeability testing; and
- \ Cone Penetrometer Tests (x12).

The key findings included:

- \ Ground conditions comprise fill sand (gravel, dark brown, fine and gravel, fine to coarse grained, of plastic, bricks and glass);
- \ Area of uncontrolled fill, associated with the former landfill;
- \ Shallow ground water depths of approximately 0.5 metres to 1.2 metres below existing ground level (completed in winter conditions); and
- \ Recommended site classification of Class A for the site not affected by uncontrolled fill and Class P for the area of the site where greater than 0.8 metres of uncontrolled fill exists below design foundation level (may be reclassified and designed to Class A pending earthworks and foundation preparation works).

In addition, as an alternative to bulk excavation of the areas of uncontrolled fill, alternate recommendations were made, including:

- \ Limiting excavations to beneath the building footprints or foundations;
- \ Adopting piled foundations, deeper pad foundations or stiffened raft foundations; and
- \ Adopting suspended floor slabs.

CMW Geosciences recommended undertaking additional site investigation work including the excavation of additional test pits to a target depth of four metres to visually observe the uncontrolled fill material and to map its extent.

### Response

To sufficiently allow for the potential costs associated with remediation of the area of uncontrolled fill, the Project Definition phase cost estimate includes an allowance for removal, screening and replacement of the area of fill likely to be impacted by the RAF as a “base case”.

However, in order to more accurately determine the nature and extent of the area of former landfill, during the next stage of the project additional geotechnical investigations are required to be undertaken, comprising test pitting, as recommended by CMW Geosciences. This will further enable the most appropriate and efficient means to deal with the fill as the design is further developed.

## 3.4 SERVICES / UTILITIES

### Opportunities and Constraints

The Engineering Servicing study undertaken by Pritchard Francis, provided at Appendix G, determined that the proposed RAF is capable of being provided with essential services (stormwater drainage, sewerage reticulation, water reticulation, gas supply, electrical supply and communications).

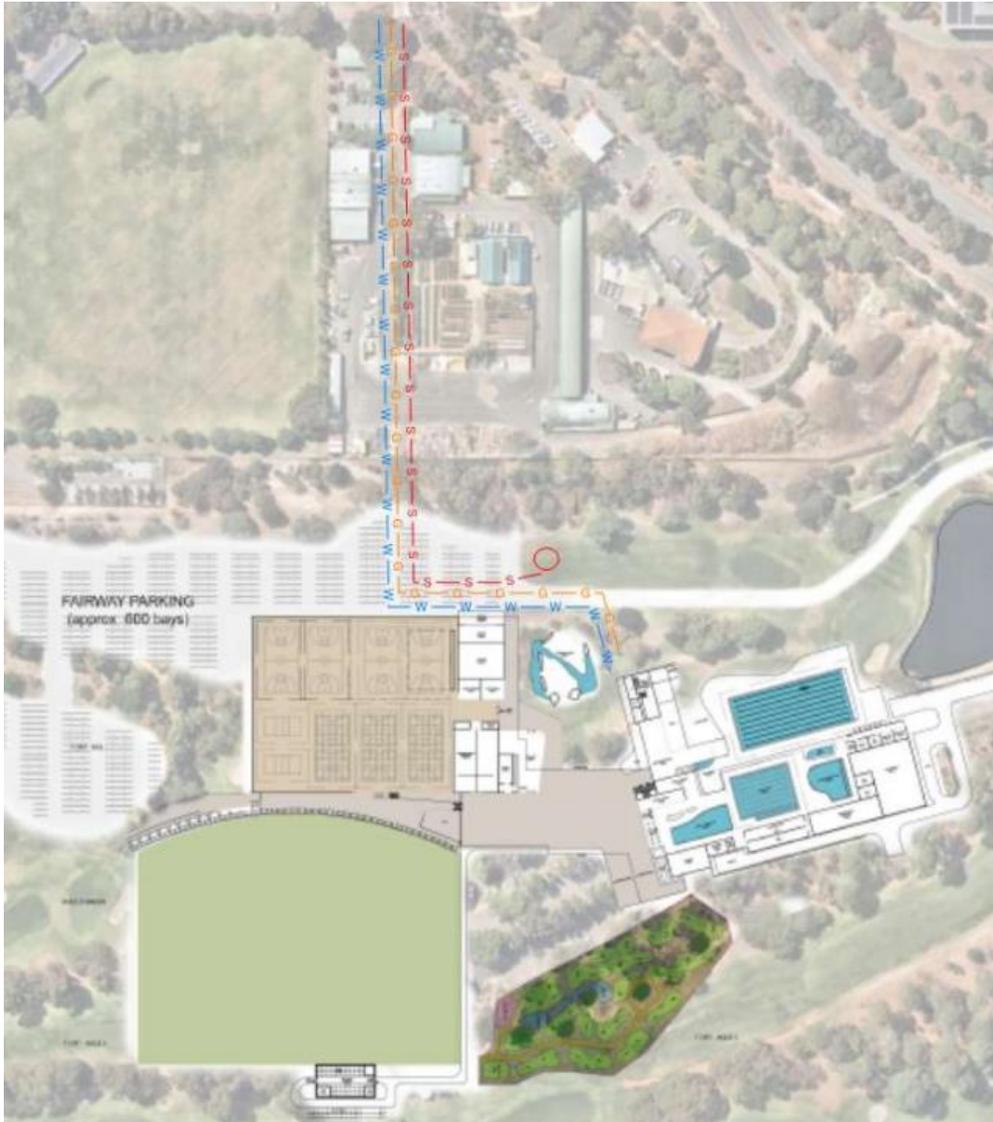


Figure 10: Proposed Service Links / Extensions

Other key findings or recommendations included:

- \ The requirement to realign an existing stormwater drain and formalise land tenure requirements (Easements);
- \ The requirement for a private waste water pump station;
- \ Opportunity to reuse waste water to supplement bore water;
- \ Requirement to upgrade an existing 50mm water connection to 80mm, currently extending through the City of South Perth Operations Centre / Depot;
- \ Requirement to install HV switchgear and a substation containing two transformers;
- \ Recommendation to install solar PV to offset daytime energy use;
- \ The need to confirm the type of NBN connection required (i.e. Fibre to the Node, Fibre to the Premises, Hybrid Fibre), dependent upon demand and operational requirements; and
- \ Opportunity to extend the sewer main and gas main through the City of South Perth Operations Centre / Depot site as the most cost-effective means to service the RAF.

### Response

The Project Definition phase cost estimate incorporates allowances for the servicing requirements for the RAF, including the realignment of the existing stormwater drain, portion of which has been assumed to be done as part of the mini-golf course construction works.

## 3.5 TRAFFIC & TRANSPORT

### Opportunities and Constraints

The Transport Impact Assessment prepared by KCTT, provided at Appendix H, determined that, even though the proposed RAF traffic impact would be high, the surrounding road network would successfully absorb the additional traffic, with the only required works being the construction of channelised right turn treatment (slip lane) of 95 metres on Hayman Road.

Other key findings or recommendations included:

- \ That the proposed RAF would generate additional 3,753 vehicle trips per day, 568 vehicle trips in the AM peak and 637 vehicle trips in the PM peak;
- \ The internal access road should be designed as a shared zone to ensure that vehicle speed is kept at a very low level;
- \ The internal access road should be split to provide separate patron and delivery vehicle / bus access, with suitable intersection geometry to define primary patron vehicle access;
- \ Potential future vehicle access via the existing car park servicing Wesley Playing Fields and Collier Park (off Murray Street);
- \ Circa 669 car bays should be provided, including 11 accessible bays, plus 10 service and delivery bays;
- \ End of trip facilities should be provided, including 34 staff bicycle bays and 211 visitor bicycle bays, in order to promote alternative transport modes; and
- \ Based on the intersection proposed (existing with a channelised right turn treatment added), at completion there is an expected acceptable level of delay when exiting the RAF of 24.4s at peak and at 2033 a queue of circa 7 vehicles is expected when exiting the RAF at peak (delay of 41.4s), with no major issues expected.

## Response

The concept design and cost estimate allow for the car bay numbers and end of trip facilities recommended by KCTT, with the cost estimate further allowing for the construction of channelised right turn treatment (slip lane) of 95 metres on Hayman Road.

## 3.6 PLANNING APPROVAL

The key findings and recommendations of the planning advice provided by Taylor Burrell Barnett, provided at Appendix I, comprised:

- \ The site of the proposed RAF is zoned reserved Parks and Recreation under the Metropolitan Region Scheme and the City of South Perth's Local Planning Scheme No. 6;
- \ Confirmation as to whether the proposal would constitute public works should be sought, considered to be unlikely (exempt from approval requirements on this basis);
- \ On the basis that the proposal does not constitute public works, approval is only required under the Metropolitan Region Scheme and is not subject to a requirement for approval under the City of South Perth's Local Planning Scheme;
- \ The land use for the purpose of an application for planning approval should be identified as 'Civic Use', being consistent with the purpose of the Parks and Recreation reservation;
- \ The application will be determined by the Inner Metropolitan South Joint Development Assessment Panel; and
- \ The application will be subject to a 60-day determination period;
- \ Preliminary engagement with the Department of Planning, Lands and Heritage should be undertaken and additional engagement with the Department of Local Government, Sport and Cultural Industries and the Department of Lands may also be beneficial;
- \ The application should be prepared to include an assessment of the proposal in accordance with SPP7.0 Design of the Built Environment and Development Control Policy 5.3;
- \ The application will need to be supported by a range of technical analysis, including geotechnical assessment, environmental assessment, bushfire management plan, transport impact assessment, engineering summary report and stormwater management strategy.

Accordingly, there are no "fatal flaws" in relation to planning approval requirements and it is proposed that approval under the MRS be sought during the delivery phase of the project, with the master programme taking this into account.

## 3.7 RENEWABLE ENERGY SYSTEM FEASIBILITY

### Opportunities

The high-level analysis of an integrated renewable energy system for the RAF, provided at Appendix J, considered, in the main, alternative technologies including geothermal heat pump systems (open and closed loop), standard air source heat pump systems, direct geothermal heating systems, solar thermal, solar photovoltaic, energy storage solutions and natural gas boiler.

Two alternate integrated energy system solutions were provided being:

- 1) Combination of solar thermal system (190kw), solar photovoltaic (250kw) and ground source heat pump open loop system (330kw), reducing the gas and electricity and carbon emission from 1,221 (business as usual) to 959 p.a.; and
- 2) Combination of solar photovoltaic (250kw) and direct geothermal (1,500kw), reducing the gas and electricity carbon emission from 1,221 (business as usual) to 754 p.a.

Solution 1 provides a mix of heating and cooling technologies and requires the use of the Leederville aquifer, being a high-quality aquifer, with drilling up to 200 metres needed, presenting negligible risk to experienced contractors.

Solution 2 provides pool water heating technologies only, plus domestic water pre-heating and requires the use of the Yarragadee aquifer, with drilling from 600 metres to 1,100 metres in depth needed, presenting an increased risk. Accordingly, there are high financial risks associated with this system, with there several examples of projects that have endured substantive cost blow-outs during installation and operations, or both, not generating the expected financial return.

Each of these two solutions was further analysed from a financial perspective, with:

- \ Option 1 having an overall CAPEX cost of \$1,423,600, payback period of 6.42 years and Net Present Value of \$2,477,201 (20 years, 2.5% discount rate); and
- \ Option 2 having an overall CAPEX cost of \$2,614,083, payback period of 8.61 years and Net Present Value of \$3,033,288 (20 years, 2.5% discount rate).

Option 1 is recommended as the most suitable solution, providing the least risk for the highest amount of energy offset and lowest payback period.

In addition, Direct Energy Australia has recommended other energy saving opportunities to be considered through the design phase of the project, including:

- \ Integrated smart control system to manage the mixed heating and cooling supply site elements;
- \ Variable Speed Drives on appropriate pool pumps;
- \ Window glazing and skylights to be aligned with passive design and coordinated effectively with the mechanical system requirements (e.g. double glazing);
- \ Pool covers;
- \ Power factor optimisation; and
- \ LED lighting.

Further, in consideration of the social and educational aspects of the RAF, it is recommended that highly visible screens be installed at the main entrance, to display daily energy and cost savings and promote the sustainable approach and technologies implemented.

### Response

Although not included in the base concept design or cost estimates, the ability to incorporate alternate energy sources into the RAF as the design progresses is to be considered, with the estimated cost documented as an “optional item”. This should be on the basis of the capital requirements and the cost benefit of including (e.g. operational savings).

## 3.8 SUSTAINABLE DESIGN REVIEW

### Opportunities

The sustainable design review, provided at Appendix K, included recommendations in relation to Green Star certification, specific Environmentally Sustainable Design ('ESD') features that would be required to achieve a 4-star 'Best Practice' performance level, being:

- \ Climate change risk review and design adaptation;
- \ Provision of low-emission vehicle infrastructure (electric car bays and priority for fuel efficient / car pool vehicles);
- \ Sustainable cleaning, groundskeeping and procurement policies in operation;
- \ Building Envelope Pressure Testing;
- \ Appointment of an Independent Commissioning Agent;
- \ Completion of a building occupant survey, pre and post practical completion;
- \ Inclusion of a meter reading and monitoring system, including public display;
- \ Mechanical and electrical services to exceed BCA minimum requirements by greater than 10%; and
- \ Solar array (nominally 100kW).

The anticipated cost of the above would be in the order of \$350,000, excluding the solar array, which although recommended is not expressly required to achieve 4-star certification.

To achieve a 5-star certification, in addition to the 4-star features above, recommended ESD features comprise:

- \ Increasing the solar array to 300kW;
- \ Appoint a Life Cycle Assessment practitioner to complete building modelling and provide design advice from concept stage;
- \ Provide CO2 control to occupied spaces and increase minimum outside air provision for air-conditioned areas; and
- \ Avoid the use of gas on site.

The anticipated cost of the above would be in the order of \$1,000,000, excluding the solar array, which although is recommended is not expressly required to achieve 5-star certification.

### Response

The costs associated with achieving Green Star certification have been documented as "optional items", with it anticipated that a baseline target of 4-star Green Star certification will be targeted as the design progresses and overall project costs are better defined. The ability to target a 5-star Green Star certification will also be considered further.

## 3.9 POOL FUNCTIONALITY REVIEW

### Opportunities

The conclusions of the review of the pool functionality for the RAF, provided at Appendix L, are summarised as follows:

- \ There are capital expenditure savings and operational expenditure savings from combining a range of functions within fewer pools;
- \ A total number of pools of three is considered to provide combined functionality, being a 50-metre pool (outdoor), Community pool and Wellness pool;
- \ The temperatures for the Community and Wellness pools are required to be marginally higher than typical local Council aquatic centre pools to meet functionality requirements;
- \ The 50-metre pool, at 27 degrees, retains the same amenity and functionality as its core function;
- \ The Community pool, at 32 degrees, combines the functions of program, learn to swim and leisure, including a zero-depth beach entry;
- \ The Wellness pool, at 36 degrees, combines the functions of medical / hydrotherapy, aged activity and hot recovery; and
- \ The combined functionality adds the possibility of 'resort style' leisure, an amenity which is largely unavailable in Perth and offers a unique proposition, particularly when combined with the RAF's golfing facilities and is likely to be a strong attractor.

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In conclusion, a wide range of functionality encompassing all the core functions can be achieved with a small number of water bodies, providing consequent opportunities for capital and operational cost management.

Oceanis International further provided an assessment of the pros and cons in relation to indoor versus outdoor pools, with the recommendations for outdoor pools, in comparison to the same indoor pools, being to provide:

- \ Sun and rain protection;
- \ Wind protection;
- \ Warmer water;
- \ Warm floors;
- \ Radiant heaters;
- \ Retractable walls / roofs;
- \ Proximity of changerooms to pools; and
- \ Warm showers in proximity to pools.

### **Response**

The concept design for the RAF incorporates a pool configuration that combines water bodies to provide multiple functions, comprising an:

- \ Indoor Learn to Swim and leisure water pool (“Community pool”);
- \ Indoor warm water pool (“Wellness pool”); and
- \ Outdoor 50 metre pool, being 52 metres with a 2-metre boom to facilitate multiple configurations and uses.

A matrix indicating the functionality of the adopted pool configuration in comparison to the base pool configuration is shown overleaf.

## Base Functionality

PARAMETER / FUNCTIONALITY	TEMPERATURE RANGE		DEPTH RANGE	STAIR ENTRY	RAMP ENTRY	ZERO DEPTH BEACH ENTRY	HOIST OR LIFT ENTRY	50M LAP SWIMMING	25 M LAP SWIMMING	SYNCHRONISED SWIMMING	WATER POLO	WATER HOCKEY	DIVING - HIGH & SPRING BOARD	WALKING	AQUA-AEROBICS	RESISTANCE TRAINING	ENDURO FITNESS 18+ (UWA)	TABATA DEEP WATER FITNESS	HYDROTHERAPY - INJURY RECOVERY	HYDROTHERAPY - AGED / MEDICAL	INFLATABLES	NINJA CROSS	AQUATIC CLIMBING WALLS	SCUBA TRAINING	CANOE TRAINING	LTS (1-5)	LTS (5-12)	LTS (13 & UP)	PRIMARY SCHOOL COMPETITIONS	HIGH SCHOOL COMPETITIONS	STATE COMPETITIONS	INTERNATIONAL COMPETITIONS	OLYMPIC COMPETITION	SLIDES	WATER PLAY		
	°C	Recommended Temperature °C																																		m	
50M POOL	25 - 28	27	1.1 - 3.0	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
25M POOL	25 - 28	27	1.1 - 1.4	Y	Y	N	Y	N	Y	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	Y	N
LEARN TO SWIM / PROGRAM	28 - 32	32	0.9 - 1.4	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N
HYDROTHERAPY	32 - 36	36	0.9 - 1.5	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LEISURE POOL	28 - 32	32	0.0 - 0.9	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	N	N	Y	Y	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	Y	Y
HOT RECOVERY POOL (SPA)	32 - 36	36	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
COLD RECOVERY POOLS	10 - 15	10	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SPLASH PAD	20 - 26	25	0.0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

## Combined Functionality

50M POOL <sup>1,2</sup>	25 - 28	27	1.1 - 3.0	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
COMMUNITY <sup>3</sup>	28 - 32	32	0.0 - 0.9	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	N	N	Y	Y	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	Y	Y	
WELLNESS <sup>4</sup>	32 - 36	36	0.9 - 1.5	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
COLD RECOVERY POOLS	10 - 15	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SPLASH PAD <sup>5</sup>	20 - 26	25	0.0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

Figure 11: Pool Functionality Comparison

## 4. COST

### 4.1 FEASIBILITY BUDGET

The project budget (target) established as part of the initial feasibility phase of the project is as follows:

Item	Target Budget Cost (Excl. GST)
Aquatics Centre	\$22,172,000
Stadium	\$14,073,000
Health Club	\$5,851,000
Ancillary Facilities	\$14,327,000
External Works	\$3,509,000
Golf Facilities	\$13,067,000
<b>TOTAL</b>	<b>\$73,000,000</b>

Table 2: Feasibility Project Budget

These costs were determined by Quantity Surveyor Rider Levett Bucknall ('RLB') as target costs based on the initial concept at that time, which it is noted included the following main components:

- \ A total of 6 hardcourts;
- \ 50 metre outdoor pool;
- \ Aquatics centre with 25 metre pool, leisure pool, Learn to Swim pool, warm water pool, spa and sauna;
- \ Gym;
- \ Café, retail area and function / community meeting rooms;
- \ Community House;
- \ Mini golf;
- \ 2-storey driving range (not automated);
- \ Playground; and
- \ Car parking (590 bays).

### 4.2 PROJECT DEFINITION PHASE COST ESTIMATE

RLB was engaged to provide cost advice for the Project Definition phase and have prepared an Indicative Order of Cost Estimate based on the adopted concept design and facilities schedule, a copy of which is provided at Attachment M. The estimated total cost is summarised below:

Item	Cost (Excl. GST)
Demolition & Site Preparation	\$3,204,600
Building Works	
- Community House (Incl. Curtin University)	\$6,185,150
- Aquatic	\$15,935,400
- Sports Hall	\$15,293,750
- Health Club	\$3,956,000
- Common Facilities	\$3,773,000
- Food & Beverage	\$4,200,250
- Driving Range	\$2,479,000
- Plant	\$369,000
External Works & Services	\$9,363,695
<b>Construction Sub-total</b>	<b>\$64,759,845</b>
Design Contingency	\$2,591,000
Construction Contingency	\$3,368,000
Statutory Fees & Charges	\$354,000
Professional Fees	\$6,000,000
Headworks Fees & Charges	\$350,000
Public Art	\$500,000
Escalation	\$1,949,000
<b>ESTIMATED TOTAL COST</b>	<b>\$79,871,845</b>

Table 3: Project Definition Phase Cost Estimate

It is noted that a number of operator fitout items have been excluded from these costs, including:

- \ Kitchen / bar fitout / equipment;
- \ Driving range equipment incl. netting, lighting, etc. and automation;
- \ Climbing centre fitout; and
- \ Health club equipment.

These items have been considered in the operational feasibility (operator fit out cost), with the exception of the driving range equipment (circa \$2.3m and required to be operational), which will be finalised as part of the operator procurement process.

The estimated total cost exceeds the project budget (target) of \$73m adopted at feasibility stage, primarily due to the following changes or inclusions:

- \ Inclusion of a climbing centre;
- \ Increased size of the Community House to meet requirements (including by Council on the Ageing and SEDA College);
- \ Provision of space for occupation by Curtin University;
- \ Increased size of the health club to meet forecast demand;
- \ Increased size of food and beverage facilities;
- \ Increased infrastructure and servicing requirements; and
- \ Increased number of car bays.

### 4.3 OPTIONAL ITEMS

Through the Project Definition phase, a number of option items have been investigated and an estimate of cost obtained, for consideration during the next phase of the project in line with the project budget and any operational implications. These comprise the following items, the estimated cost of which is for the extra over base building works only (i.e. excludes any fitout element and associated ground works / infrastructure which forms part of the main building works):

Item	Estimated Cost (Excl. GST)
Allowance for Temporary Facilities for CPGC (Subject to Staging Plan and Deliver Strategy Adopted)	\$550,000
Additional 2 No. Hardcourts	\$3,065,000
Increase Size of Health Club from 1,200m <sup>2</sup> to 1,500m <sup>2</sup> (Future Proof)	\$720,000
Additional 24 No. Driving Range Bays (Excluding Fitout and Additional Netting)	\$2,000,000
Additional Car Bays (300 No.) on Suspended Deck	\$6,325,000
Parking Guidance System	\$414,000
Curtin University Linkage (Minimum Scope for Safety)	\$2,000,000
Renewable Energy System	\$1,425,000
Greenstar 4-star Requirements	\$350,000
Greenstar 5-star Requirements	\$1,000,000

Table 4: Optional Items Cost Estimates

### 4.4 VALUE MANAGEMENT

Value, in its broadest sense, is the benefit to the Client offered by a project. Value means ensuring that the right choices are made in relation to obtaining maximum benefit within time, cost and quality constraints. Examining relevant options for the design and construction of the project and leading to a refinement of the design brief and identification of any budget constraints.

In order to value manage the budget the aim is to produce results creatively and economically by:

- \ identifying unnecessary expenditure;
- \ challenging assumptions;
- \ generating alternative ideas;
- \ promoting innovation;
- \ optimising resources;

- \ saving time, money and energy;
- \ simplifying methods and procedures;
- \ eliminating redundant features; and
- \ considering of whole of life cycle costs.

It is noted that maximum Value Management benefits are achieved in this early definition phase as indicated in the graph below. This can be further aided by input from the facility operator during the design phase, together with input from the contractor through a Design and Construct approach. Unfortunately, value management is sometime undertaken too late in the project to get the maximum benefit. Applied in later stages of the project, Value Management usually produces limited advantages for the Client, but is likely to have a significant impact on the design. Changes that result from later reviews often entail re-documentation, delays in construction and can have unforeseen implications on other aspects of the design.

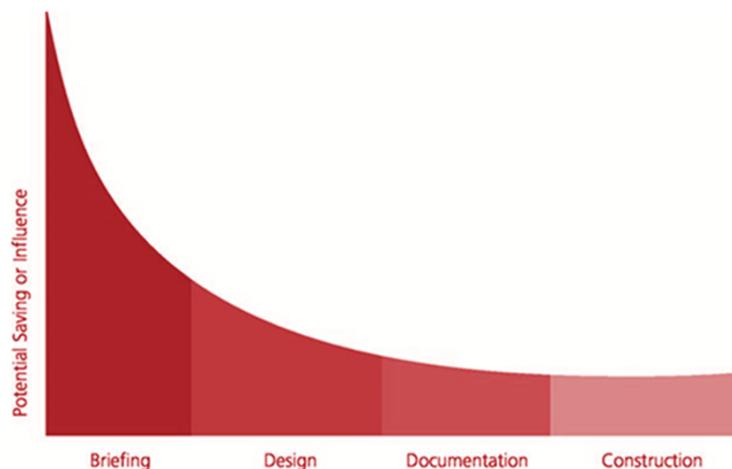


Figure 12: Potential Influence of Value Management

The project team considered a variety of possible Value Management options through the Project Definition phase and agreed that the following be implemented in order to control costs in line with an \$80m project budget, whilst still best meeting functionality and operational viability requirements, all of which have been included in the current Project Definition Plan budget:

- \ Reduction of size of the health club to 1,200m<sup>2</sup> to meet current projected demand however, not future proofed (saving of circa \$720,000);
- \ Integration of the climbing centre within the main building areas rather than as a feature, standalone building in the forecourt (saving of circa \$1,675,000); and
- \ Combining indoor pool areas to multi-purpose pools, resulting in the 25m pool being deleted however, areas providing the same use in other pools (saving of circa \$3,350,000).

Additional Value Management options have also been identified that could be considered by the project team in future project phases if required, comprising:

- \ Reduction in the size of the Community House and Curtin University areas;
- \ Deletion of the splash pad; and
- \ Reduce the nature and extent of external hard and soft landscaping.

Further, early engagement with the operator to assist in Value Management initiatives is to be considered.

## 4.5 CASH FLOW

The anticipated indicative cash flow for the project is as follows, which is on the basis that Bank Guarantees are adopted as the main form of security (proposed to be coupled with cash retention by the City):

	2020 / 21	2021 / 22	2022 / 23	2023 / 24	2024/2025
Cash Flow (Excl. GST)	\$800,000*	\$9,500,000	\$35,000,000	\$32,750,000	\$1,850,000

Table 5: Indicative Cash Flow

\* We note that the cash flow assumes that design works commence in June 2021 and in the event that these commence earlier, additional funding will per required in the 2020 / 21 period.

## 5. FUNDING

### 5.1 FUNDING STRATEGY

The broad funding strategy for the proposed RAF has been developed, based on an overarching strategy of securing State and City funding equal to that committed by the Federal Government (\$20m).

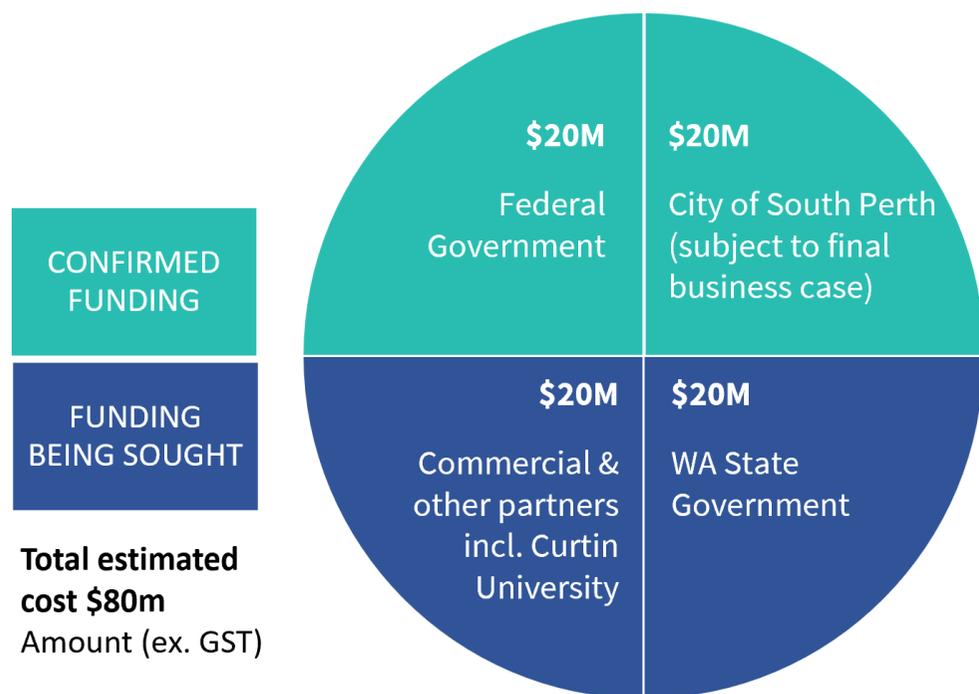


Figure 13: Funding Strategy Chart

The key components of the funding and their status is summarised as follows:

- \ Federal Government Grant funding of \$20m is committed, having been pledged in 2019;
- \ City of South Perth funding of \$20m is proposed however, will be subject to Council approval and supported by the operational viability of the RAF;

- \ State Government funding of \$20m will be targeted, with a draft Treasury Business Case prepared for this purpose, potentially through COVID-19 stimulus and / or supported by the inclusion of a Community House to accommodate State sporting entities and the Council on the Ageing and affiliated organisations, together with SEDA College and Clontarf College;
- \ Funding from Commercial and other Funding Partners of \$20m is targeted, considered to include to following parties:
  - o Commercial Operator;
  - o Curtin University;
  - o SportWest (\$1m committed); and
  - o Others, comprising neighbouring Municipalities, key sport users, naming rights partner, supply rights, etc.

State Government or other Funding Partners are highly unlikely to make a financial commitment to the project prior Council's endorsement and commitment to the project being obtained.

As part of the funding strategy, "short form" and "long form" funding documents have been developed. These documents are suitable to be used as a "prospectus" for issue to the State and other potential funding partners and:

- \ Outline the community benefits that the RAF brings;
- \ Detail how the RAF addresses Federal and State strategic initiatives and policies / plans; and
- \ Detail the health and social outcomes that the RAF can deliver, including in the areas of Sport Development, Education, Women's Sport, Environmental, Multicultural, Community and Health and Wellness.

## 5.2 FUNDING / COMMERCIAL AGREEMENTS

### FEDERAL GRANT

As highlighted above, a commitment of \$20m from the Federal Government has been received. The grant is in relation to the “Female Facilities and Water Safety Stream Program”, the objectives of which are to:

- \ remove barriers to participation for women in sport; and
- \ Increase access to community swimming facilities.

The intended outcomes of the grant are:

- \ an increase in sporting facilities that provide female change rooms and amenities;
- \ an increase in the number of girls and women participating in sport at all levels; and
- \ an increase in community swimming facilities.

A funding agreement has been provided by the Federal Government and is under review by the City and legal advisors Jackson McDonald. It is noted that the funding instalments are linked to milestones, the first one of which is anticipated to be achieved in the first half of calendar year 2021.

### SPORTWEST

SportWest has provided a commitment to the project via an exchange of letters with the City, which includes a funding contribution of \$1,000,000, \$50,000 of which is a contribution towards the Project Definition and Business Case phase, with the balance a contribution towards the Community House fitout.

### OTHER FUNDING PARTNERS

Template legal agreements have been drafted by legal advisors Jackson McDonald, in order to facilitate formalisation of funding / commercial agreements during the next stage of the project.

These comprise a non-binding Heads of Agreement suitable for those entities who have expressed an interest in the securing tenure within the RAF (and contributing funding as applicable), including the likes of SportWest, Curtin University and a climbing centre operator (e.g. Summit Climbing).

In addition, although not funding partners, an Indicative Heads of Agreement has been agreed with Clontarf (partnership), containing Clontarf’s access requirements and their obligations in providing support and assistance in the planning and development of the RAF. Similar agreements are being developed and are planned to be finalised with COTA and SEDA.

## 6. PROGRAMME

### 6.1 KEY CONSIDERATIONS

The project team has targeted an opening date of mid-2024 for the RAF. The timeframe outlined in Section 6.2 sets out a series of activities and milestones that need to be achieved prior to that being possible, noting the following key considerations:

- \ Stage 2 works (design) do not commence until June 2021, allowing for the project scope to be finalised based on final funding commitments (State funding), noting these can commence earlier in the event that final funding commitments are obtained prior to this date;
- \ The programme indicates Practical Completion in May 2024, allowing for a post Practical Completion completion and handover period of circa 3 months to allow for operational fitout and training requirements prior to opening;
- \ An allowance for planning approval post schematic design, with detailed design to continue in parallel however, not be finalised until post approval; and
- \ Client gateway approvals of 4 weeks at the end of the design phase and procurement and tender phase have been factored in, allowing for Council approval requirements.

Other primary issues requiring specific attention from the project team during project delivery include:

- \ Opportunity to undertake early works comprising site remediation in relation to the area of former landfill, together with the realignment of the stormwater drain to mitigate any programme risks;
- \ Market constraints associated with a post COVID-19 market including contractor capacity and supply chain delivery;
- \ Local Government Act approval requirements (Business Plan) with respect to major land transactions and major trading undertakings;
- \ Finalisation of procurement approach; and

- \ A detailed commissioning programme should be prepared by the Contractor and signed off by the delivery team at a pre-determined milestone during the construction period. The delivery team are to prepare a detailed scope for commissioning and include a draft timeline in the tender documentation so that the Contractor is aware of the specific requirements from the outset and allows sufficient buffer to be identified. At tender stage, the potential Contractors should demonstrate how the commissioning process will be effectively and proactively managed by the Contractor, providing specific examples of previous success.

In addition, due to operational site constraints associated with ongoing golf course operations (including mini golf), it will be critical that the Contractor's activities are planned (i.e. staging, dust and noise management, any time restrictions, etc.) by the delivery team prior to tendering the project as this could impact upon sequencing of works and overall cost and programme. The contract preliminaries will need to clearly identify the site restrictions so that the Contractor is fully aware of access limitations during the construction period and the works are priced accordingly.

A potential staging plan has been prepared as shown below, which would allow for access, car parking and retention of the existing club house to facilitate ongoing golf course operations (golf course, existing driving range, mini golf) throughout the main RAF construction works. Demolition of the existing clubhouse could occur at the end of the construction programme, subsequent to which the driving range and golf cart storage can be constructed.

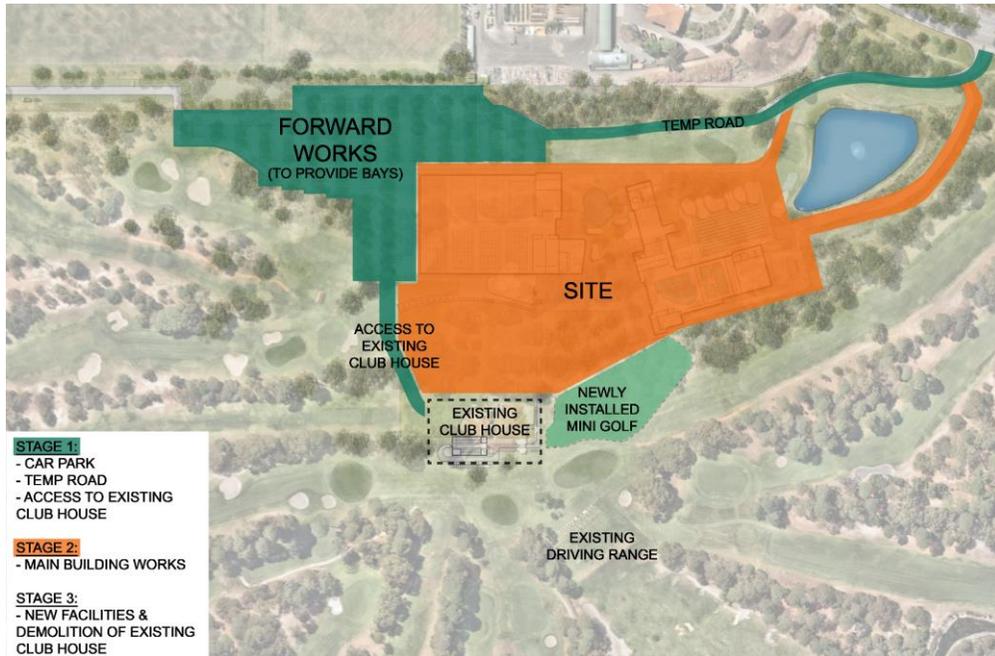


Figure 14: Potential Staging Plan

The alternate to this is to demolish all existing facilities and construct the RAF in one stage, providing temporary facilities for the ongoing golf course operations (e.g. office, food and beverage facility, golf cart storage, etc.). The final staging plan will be determined in consultation with the golf course operator and contractor, having regard to the operational and financial implications of any option.

## 6.2 MILESTONE SUMMARY

In order to achieve overall completion and opening of the RAF, the following critical milestones have been identified, resulting in a forecast opening date of August 2024. The project team will be required to regularly update the master programme through future phases so that progress can be more accurately tracked during the course of the project.

Task	Commence	Complete
Endorsement of PDP and Operational Feasibility, City Funding Commitment and Endorsement to Advertise the Business Plan	Nov 2020	
S3.59 Business Plan Advertising & Approval	Nov 2020	Feb 2021
Federal Funding Agreement	Feb 2021	
State Funding Submission*	Nov 2020	Jun 2021
Finalisation of Project Scope	Nov 2020	Jun 2021
Design*	Jun 2021	Apr 2022
Procurement & Tender	Feb 2022	Jul 2022
Construction	Aug 2022	May 2024
Completion & Handover	May 2024	Aug 2024
RAF Opens to Public	Aug 2024	

Table 6: Indicative Programme Milestone Summary

\* We reiterate that this programme expressly assumes that design works do not commence until June 2021, allowing for the project scope to be finalised based on final funding commitments (State funding). Design activities **can commence** earlier in the event that State is finalised prior to that date, which would result in an earlier RAF opening date. Conversely, should the project scope **not be** finalised by June 2021, any delays will have a direct and proportionate impact on the overall project programme.

## 6.3 PROJECT PROGRAMME

A detailed indicative programme has been developed and is provided at Appendix N, with a snapshot provided below.

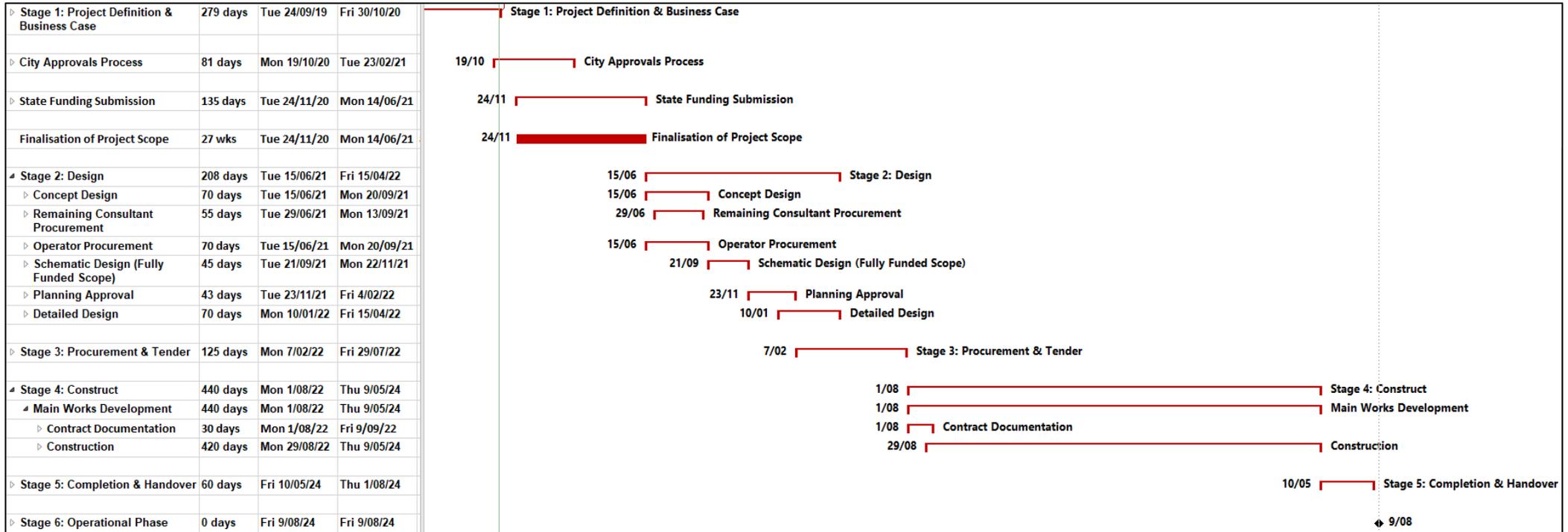


Figure 15: Indicative Programme Snapshot

## 7. RISK

### 7.1 RISK IDENTIFICATION

On 19 October 2020, NS Group facilitated a further review of the risks associated with the project. A Risk Workshop was attended by key personnel from the City, together with the appointed Architect, Quantity Surveyor and Strategic Advisor. The objective of this was to:

- \ identify, analyse and evaluate risks and opportunities against key strategic project categories;
- \ nominate respective stakeholders and risk owners to be responsible for monitoring and managing each risk; and
- \ agree risk treatment and determine residual risk rating.

Project risks were identified and analysed under the key pre-populated headings developed by NS Group and agreed by workshop participants:

- \ Safety, Health and the Environment / Safety in Design;
- \ Stakeholder / Political;
- \ Financial;
- \ Environmental;
- \ Organisational;
- \ Planning;
- \ Project Delivery;
- \ Incoming Services Delivery; and
- \ Operational.

Post the Risk Workshop, the Risk Register, prepared by NS Group, was further developed to allow rescoring of risks in accordance with the City's Risk Management Guidelines. This process also considered mitigation strategies and resultant risk reduction calculation to obtain a residual risk score.

### 7.2 RISK ASSESSMENT

Whilst there are numerous ways to describe or quantify the severity of a risk, the qualitative analysis was utilised. The qualitative analysis focuses on firstly, subjectively scoring the risks through multiplying the likelihood of the risk by the consequence of the risk to arrive at a risk assessment. The relationship is presented as a mathematical formula:

$$\text{Risk Severity (R)} = \text{Likelihood (L)} \times \text{Consequence (C)}$$

A qualitative analysis requires a consensus on the rating of Likelihood and Consequence to calculate the Risk. As part of the assessment typical risk scales were used for measuring the likelihood and consequence of risks. The likelihood and consequence scales utilised are detailed in Tables 2 and 3 below:

Level	Rating	Description	Frequency
1	Rare	The event may only occur in exceptional circumstances (<3% chance)	Less than once in 15 years
2	Unlikely	The event could occur at some time (>5% chance)	At least once in 10 years
3	Possible	The event should occur at some time (>10% chance)	At least once in 3 years
4	Likely	The event will probably occur in most circumstances (>50% chance)	At least once per year
5	Almost Certain	The event is expected to occur in most circumstances (>90% chance)	More than once per year

Table7: Likelihood Scale

Rating (Level)	Definition								
	Health / Injury	Financial Loss	Service Interruption	Legislative Breach	Reputational Damage	Property Damage	Environmental Damage	Project - Time	Project - Cost
Insignificant (1)	Near miss Minor first aid injuries	Less than \$50K	No material service interruption	No noticeable regulatory or statutory impact	Unsubstantiated, low impact, low profile or 'no news' item	Inconsequential damage	Contained, reversible impact managed by on site response	Exceeds deadline by 10% of project timeline	Exceeds project budget by 10%
Minor (2)	Medical type injuries	\$50K - \$500K	Short term temporary interruption - backlog cleared <1 day	Some temporary non-compliances	Substantiated, low impact, low news item	Localised damage rectified by routine internal procedures	Contained, reversible impact managed by internal response	Exceeds deadline by 15% of project timeline	Exceeds project budget by 15%
Moderate (3)	Lost time injury <30 days	\$500K - \$1M	Medium term temporary interruption - backlog cleared by additional resources <1 week	Short term non-compliance but with significant regulatory requirements imposed	Substantiated, public embarrassment, moderate impact, moderate news profile	Localised damage requiring external resources to rectify	Contained, reversible impact managed by external agencies	Exceeds deadline by 20% of project timeline	Exceeds project budget by 20%
Major (4)	Lost time injury >30 days	\$1M - \$10M	Prolonged interruption of services - additional resources; performance affected <1 month	Non-compliance results in termination of services or imposed penalties	Substantiated, public embarrassment, high impact, high news profile, third party actions	Significant damage requiring internal & external resources to rectify	Uncontained, reversible impact managed by a coordinated response from external agencies	Exceeds deadline by 25% of project timeline	Exceeds project budget by 25%
Catastrophic (5)	Fatality, permanent disability	More than \$10M	Indeterminate prolonged interruption of services - non-performance >1 month	Non-compliance results in litigation, criminal charges or significant damages or penalties	Substantiated, public embarrassment, very high multiple impacts, high widespread multiple news profile, third party actions	Extensive damage requiring prolonged period of restitution Complete loss of plant, equipment & building	Uncontained, irreversible impact	Exceeds deadline by 30% of project timeline	Exceeds project budget by 30%

Table 8: Consequence Scale

Based on the City's likelihood and consequence scales and using the adopted risk formula, the severity of each risk was re-classified as:

Risk Matrix						
Consequence Likelihood		Insignificant	Minor	Moderate	Major	Catastrophic
		1	2	3	4	5
Almost Certain	5	Moderate (5)	High (10)	High (15)	Extreme (20)	Extreme (25)
Likely	4	Low (4)	Moderate (8)	High (12)	High (16)	Extreme (20)
Possible	3	Low (3)	Moderate (6)	Moderate (9)	High (12)	High (15)
Unlikely	2	Low (2)	Low (4)	Moderate (6)	Moderate (8)	High (10)
Rare	1	Low (1)	Low (2)	Low (3)	Low (4)	Moderate (5)

Figure 16: Risk Severity Matrix and Descriptions

### 7.3 RISK SUMMARY & REGISTER

A total of 49 risks have been identified across all the project stages / elements, with a copy of the risk register provided at Attachment O, which will act as the baseline from which the Project Team will manage project risks going forward.

The following tables highlight the distribution of risks across the various risk severity categories prior to and post application of a risk reduction factor:

Risk Severity	Count	Proportion
Extreme	0	0%
High	11	22%
Medium	35	72%
Low	3	6%
<b>TOTAL</b>	<b>49</b>	<b>100%</b>

Table 9: Risk Severity Summary Table

Risk Severity	Count	Proportion
Extreme	0	0%
High	3	6%
Medium	19	39%
Low	27	55%
<b>TOTAL</b>	<b>49</b>	<b>100%</b>

Table 10: Residual Risk Severity Summary Table

Prior to the application of an appropriate risk reduction treatment factor, 11 High Risks were identified as shown in the table below:

Item	High Risk
1.1	Injury or death of staff, users, member of public as a result of inadequacy in designs.
1.2	Injury or death of construction worker during construction phases.
1.3	Injury or death of member of public during construction phases.
2.4	City approvals causes delay i.e. Council timing or unexpected feedback, lack of cohesiveness, etc.
2.5	Delay in endorsement of Council's project funding commitment beyond November 2020, causing subsequent failure to secure State funding.
2.7	City or external stakeholder / Project Team member provides information that results in unwanted press attention and / or breaches confidentiality (City Intellectual Property).
3.2	Cost escalation in excess of that allowed for in the Project Definition phase cost plan due to market conditions.
3.7	Impact to Collier Park Golf Course operations during construction works, reducing financial returns to the City.
7.4	Inadequate commissioning resulting in patron / staff complaints.
7.5	Contractor goes into liquidation during works.
9.5	Operator performance doesn't meet KPIs and impacts City returns.

These risks will be monitored as the project progresses to track that appropriate mitigation measures are being implemented and updated as necessary. Of particular note is the risk associated with a delay in Council's endorsement of its project funding commitment beyond November 2020, which may impact the ability to secure a funding commitment from the State (and others), together with the risk of cost escalation, which although mitigation measures have been identified, the residual risk is considered to remain high due to the uncertainty associated with the impact of COVID-19 on market conditions (e.g. tight labour market, materials supply chains, etc.).

The agreed mitigation strategies for these High Risks resulted in there being three remaining after calculating the residual risk score, comprising the following:

- \ City approvals causes delays i.e. Council timing or unexpected feedback, lack of cohesiveness, etc.;
- \ Delay in endorsement of Council's project funding commitment beyond November 2020, causing subsequent failure to secure State funding; and
- \ Cost escalation in excess of that allowed for in the Project Definition phase cost plan due to market conditions.

## 8. PROCUREMENT STRATEGY

NS Group facilitated a Procurement Workshop on 14 September 2020, the purpose of which was to determine the preferred procurement approach for the delivery of the RAF development. Key City personnel and the appointed Architect, Quantity Surveyor and Strategic Advisor were included in the workshop.

### 8.1 PROCUREMENT OPTIONS

The procurement options listed below were analysed during the workshop, to determine each option's applicability to the requirements of the RAF project work packages.

- \ **Traditional** – Design managed by the client's team through to 100% design, tendered to a 'head' contractor which delivers the works as designed. Design risk sits with the client; construction risk sits with the contractor.
- \ **Design & Construct (>50%)** – Design managed by the client's team through circa 80%, tendered to a 'head' contractor which finalises the design (typically novated design team) and delivers the work. Design risk partially shifted to the contractor; construction risk sits with the contractor.
- \ **Design & Construct (<50%)** – Partial design managed by the client, typically between concept to 50% design documentation, tendered to a 'head' contractor which finalises the design (either novated team or new team) and delivers the project. Typically, full design & construction risk transferred to the contractor.
- \ **Early Contractor Involvement** - Collaborative design, design and construction risk shifts to the Contractor at Site Possession.
- \ **Managing Contractor (MC)** – Contractor appointed on a fee for service and/or cost-plus arrangement. The contractor acts as an extension of the client's team working in partnership to design and deliver the works. Typically, the sub-contractor packages are tendered by the MC with procurement decisions made jointly. Level of shared risk is flexible and adjusted to suit the project type.

- \ **Public Private Partnership / Alliance** – Broad term for a project delivered in partnership between a client and contracting entity. The nature of the partnership and risk profile is developed to suit the specific project, client needs and market appetite. Typically undertaken when a client is seeking something additional from the market (e.g. design innovation, funding contribution, extended relationship through operation).

The process concluded that the PPP and Alliance models were not applicable for the delivery of the RAF and therefore were not considered further.

### 8.2 ASSESSMENT

#### Subjective Assessment

To determine the best procurement model for the RAF project, the City's business drivers in terms of its organisational profile and the key characteristics of the project were considered through the procurement workshop.

This involved assigning a weighting of between 1 and 10 to each of the criteria through consensus and therefore, although this is an objective decision-making tool, the inputs are a result of workshop discussion and are subjective. The adopted weightings are shown in the table below:

Criteria	Weighting
<b>Organisational Profile</b>	
The Vision for the Project is Clear	8
Mature Governance / Decision Making	8
Ability to Respond to Change	3
City's Project Capability	7
<b>Project Characteristics</b>	
Is the Design Simple	8
Is the Programme Flexible	4
Does the Budget Have Flexibility	7
Is the Site Clearly Understood	2

Table 11: Procurement Criteria Weightings

These weightings were then applied to each of the considered procurement approaches which had allocated scores in line with how they best addressed the key criteria in order to provide an overall score for each approach. The outcome of this objective assessment is shown in the table below:

Procurement Approach	Score	Ranking
Traditional	168	4
<b>Design &amp; Construct (&gt;50%)</b>	<b>177</b>	<b>1</b>
Design & Construct (<50%)	176	2
Early Contractor Involvement	176	2
Managing Contractor	169	5

Table 12: Procurement Assessment Scores

## Subjective Assessment

As part of a subjective assessment, consideration was given to the following broad questions at the procurement workshop:

- \ What if we split the Works into two or more packages;
- \ What would those Works packages be;
- \ What challenges will the City face if a non-Traditional approach is selected;
- \ If non-Traditional, would the Design Team be Novated; and
- \ Are there any preferred suppliers / purchasing power?

The key take-outs from the discussion around these questions and the broader discussions that ensued are summarised below and were considered in determining the recommended procurement approach for the RAF:

- \ Potential early works packages could comprise site preparation / remediation or the provision of temporary facilities for ongoing golf operations (e.g. car parking);
- \ The requirements of the Local Government Act need to be considered;
- \ Price rises are anticipated within the next six months due to expected tightening of the labour market, which may impact timing decisions (has been considered in the cost estimate as an escalation allowance);
- \ Early Contractor Involvement provides the ability to include an early works component within the tender and Early Contractor Involvement phase; and
- \ There is an option to design and document to 100% and procure as a design and construct contract.

## 8.3 PROCUREMENT APPROACH

Following the objective assessment and subjective discussions, the procurement approach determined to be most appropriate for the delivery of the RAF was identified as being **Design and Construct (>50%)**, with a likely level of design to be a minimum of 80% given the location, nature and quality considerations of the project. As the project progresses to the delivery phase, the level of design to tender at and the timing of such will be further investigated and agreed by the project team considering market conditions at that time. Accordingly, the procurement approach remains open for further review.

## 9. STAKEHOLDER & COMMUNITY ENGAGEMENT

### 9.1 COMMUNITY STAKEHOLDER ENGAGEMENT

As part of the Project Definition phase, a comprehensive, four-week long community stakeholder engagement program was conducted from 26 August 2020 to 23 September 2020.

The purpose of this was to provide the community stakeholders an opportunity to provide their views, ideas and thoughts to assist in shaping the future of the RAF.

Full details of the outcomes of the community stakeholder engagement are contained within the report provided at Appendix Q, summarised as follows.

#### Stakeholder and Community Engagement Outcomes

Key findings overall from the stakeholder engagement identified a high level of support for the concept of the RAF, with 87.2% of respondents to the survey indicating that they would use the proposed RAF.

Compelling reasons for developing the RAF were:

- \ Its location in South Perth, more convenient than many of the current venues used (70.3% of respondents used facilities outside of the City);
- \ That it met the need for a swimming pool in the City (79.4% of respondents had used an aquatic or indoor recreation facilities in the last 12 months); and
- \ That it provides the opportunity to create a unique facility which meets the needs of the community.

#### The Results of the RAF Survey

The stakeholder and community engagement was undertaken using a structured survey to obtain an understanding of the needs and expectations of the community in relation to the RAF. A total of 1,641 people participated in the online survey.

Based on those who participated in the survey, the majority (87.2%) say that they would be likely to use / visit the RAF should it be built (probably or definitely would use). Overall, 70.7% people who participated in the survey stated they would definitely use / visit the facility.

The main reasons community members gave for being likely to use the RAF themselves or take their children or grandchildren to the facility include:

- \ It is closer to home/work than the current facility used;
- \ To use the pool;
- \ Promotes fitness and wellbeing;
- \ Good for kids / would take children or grandchildren there;
- \ All the family would use it, its family friendly; and
- \ Provides a place to socialise with family and friends.

Of those who are unlikely to use the facility, their main reasons for not using it include:

- \ There are similar facilities already available close by;
- \ Do not want facility to be built on the golf course;
- \ Perceive it is a waste of ratepayer's money; and
- \ Believe it is the wrong location and should be built elsewhere.

Those who would definitely use the proposed RAF tend to fit the following demographic profile:

- \ Have used a public or private aquatic centre in past 12 months;
- \ Have children at school (pre-school, primary and secondary);
- \ Under 55 years of age;
- \ Female; and
- \ Live in the City of South Perth or directly surrounding Local Government Areas (LGAs).

Those likely to use the facility are expected to do so because they or their children currently participate in indoor and pool-based activities and the proposed facility is closer to their home or work compared to the facilities they currently use. Furthermore, the proposed venue has aquatic facilities, which the community believe are needed in the area. They also perceive the facility as being a family friendly environment which is good for children and a good place to socialise.

The main indoor and pool-based sports and activity facilities currently used by the community members are:

- \ Aqualife, East Victoria Park;
- \ Wesley Sports Club, South Perth;
- \ Beatty Park Leisure Centre, North Perth;
- \ Riverton Leisureplex, Riverton;
- \ LeisureFit, Booragoon;
- \ ARC, Cockburn; and
- \ Belmont Oasis Leisure Centre, Belmont.

On average, those likely to use the proposed facility travel for 15 minutes to get to the facilities they currently use and there was a high incidence of travel by private vehicle among this group of people, regardless of the facility they currently use.

Among those likely to use the proposed facility, the 12 most popular indoor and pool-based sports and activities which this group would like to be offered at the RAF include:

- \ Swimming;
- \ Pilates / Yoga;
- \ Gym workout;
- \ Swimming / walking in water;
- \ Group fitness classes;
- \ Swimming lessons;
- \ Hydrotherapy pool;
- \ Circuit training;
- \ Water play area / pool;

- \ Indoor climbing;
- \ Indoor basketball; and
- \ Aquatic group classes.

The research indicated that the RAF was unique compared to the surrounding facilities used in offering gym/ health club activities as part of the RAF offering. Among those likely to use the facility, the most preferred health and wellbeing services which have been proposed for the RAF include:

- \ Massage;
- \ Physiotherapy;
- \ Sauna / spa / steam room; and
- \ Hydrotherapy.

The most popular food and beverage facilities with the highest probable usage among those who are likely to use the facility include:

- \ Café;
- \ Kiosk / take-away; and
- \ General seating and tables.

In terms of outdoor facilities to be offered, those likely to use the RAF have greatest preference for the inclusion of:

- \ Shaded areas;
- \ Picnic area;
- \ Seating;
- \ Children's playground; and
- \ Mini golf.

Travel by private vehicle will remain by far the most popular mode of transport in getting to the RAF among those likely to use it. However, those living in the City of South Perth and surrounding LGAs may modify their mode of transport if there are safe cycling routes to the proposed facility and there is secure bike parking at the facility.

Expectations about the RAF that those likely to use the facility consider extremely important include it:

- \ Being a welcoming and safe environment;
- \ Providing opportunities to stay active;
- \ Providing a positive experience; and
- \ Improving general health and wellbeing.

Generally, there is wide support for the development of the RAF among those who participated in the stakeholder and community engagement survey.

### Face to Face Engagement Activities

Between Wednesday 26 August 2020 and 24 September 2020, the City of South Perth hosted a series of seven engagement activities (below) to inform the community about the project's background and seek feedback on their level of support for it, as well as their needs and expectations of it should the project go ahead.

Face to Face Engagement Activities	
<b>1</b>	<p><b>Workshop 1: Disability and Access Workshop</b></p> <p>Workshop One was held on 26 August and was attended by members of Inclusive Community Advisory Group (ICAG), a range of service providers, people living with disabilities and the carers of people living with disabilities. The purpose of the session was to inform them about the project and its background and encourage them to circulate that information to their contacts, and to capture their advice, needs and requirements to make the RAF a welcoming and inclusive place to visit.</p>

<b>2</b>	<p><b>Workshop 2: Community and Action Groups Workshop</b></p> <p>The Community and Action Groups workshop was held on 2 September 2020. The workshop was attended by representatives of the South Perth Historical Society, Karawara Action Group, Manning Community Association, Salter Point Community Group and the City of South Perth Residents Association. The purpose of the session was to inform them about the project background, with a focus on financial sustainability, to capture their needs and requirements for the RAF and to encourage them to circulate information to their contacts.</p>
<b>3</b>	<p><b>Workshop 3: Aboriginal Key Stakeholder and Community Workshop</b></p> <p>Held on 7 September 2020, Workshop Three was attended by members of the City's Aboriginal Reference Group, the community, Traditional Owners, the Curtin University community and South West Aboriginal Land and Sea Council (SWALSC) family representatives. The purpose of the session was to inform attendees about the project and to capture their advice, needs and requirements to make the RAF a welcoming, accessible place for Aboriginal people. Attendees were also encouraged to circulate information about the project to their contacts.</p>
<b>4</b>	<p><b>Community Information Day</b></p> <p>A Community Information Day was held at the South Perth Community Hall on 12 September 2020. The community was invited, with the intentions of informing them about the project, providing them with an opportunity to ask questions of the City and the architects, gauging their level of interest in and support for the RAF and capturing their needs and requirements.</p>
<b>5</b>	<p><b>Online Community Workshop</b></p> <p>Held on 16 September 2020, the online community workshop was intended to inform the community about the project, as well as to provide another opportunity capture their advice, needs and requirements for the RAF.</p>



05/05/20	ACPHER	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
05/05/20	Badminton WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
06/05/20	Waterpolo WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
06/05/20	Parks & Leisure Australia	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
06/05/20	Basketball WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
06/05/20	Swimming WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
06/05/20	Golf WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
12/05/20	Unisport	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
12/05/20	AUSTSWIM	██████████ (Paatsch Group)

13/05/20	Synchronised Swimming WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
13/05/20	Masters Swimming	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
13/05/20	PGA Australia	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
13/05/20	WASPs Hockey	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
13/05/20	Perth Basketball Association (Redbacks)	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
19/05/20	Diving WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
19/05/20	Summit Climbing	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
20/05/20	Curtin University	██████████ (Paatsch Group), ██████████ (Christou Design Group), ██████████ (Christou Design Group), ██████████ (City of South Perth), ██████████ (NS Group)

03/06/20	Royal Life Saving Western Australia	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
03/06/20	Triathlon WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
09/06/20	Hockey WA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
26/06/20	Clontarf College	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (City of South Perth)
21/07/20	SEDA	██████████ (SportWest), ██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
19/08/20	COTA	██████████ (Paatsch Group), ██████████ (City of South Perth), ██████████ (NS Group)
02/09/20	Netball WA / Basketball WA / Perth Basketball Association (Concept Presentation - Courts)	██████████ (Paatsch Group), ██████████ (Christou Design Group), ██████████ (City of South Perth), ██████████ (NS Group)

08/09/20	Volleyball WA / Badminton WA (Concept Presentation - Courts)	██████████ (Paatsch Group), ██████████ (Christou Design Group), ██████████ (Christou Design Group) ██████████ (City of South Perth), ██████████ (NS Group)
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The primary outcomes of this engagement included:

- \ Definition of the likely occupants of the Community House and their spatial requirements to inform the design, which included both the sporting entities and community organisations;
- \ An understanding of the facility usage requirements of the sporting users (i.e. aquatics, courts, etc.);
- \ Details of their specific sports technical requirements to consider as part of the concept design and to further detail during the next stages of design; and
- \ Any potential funding opportunities to inform the funding strategy.
- \ Identification of the stakeholders' broad expectations that the RAF will meet many unmet needs, including reference to it being "long overdue", further evidenced by several letters of support and presentations made to Council by a number of the key partners / stakeholders, which are provided at Attachment P.

### 9.3 IMPLEMENTATION, DELIVERY & EVALUATION

Effective stakeholder engagement will be a key factor in the success of the RAF project. The following process enables sound stakeholder management to be implemented:

- \ Stakeholder identification;
- \ Stakeholder analysis and mapping;
- \ Stakeholder engagement & communication schedule; and
- \ Monitor and evaluate stakeholder engagement.

Accordingly, as the RAF project progresses, continued stakeholder engagement activities will be planned and implemented in line with a Stakeholder Engagement Plan, in order to ensure interested stakeholders can be engaged in and informed of the project as it progresses.

## 10. COMMUNICATIONS

During the Project Definition phase, a marketing and communications plan was developed and implemented by the City's internal communications personnel, incorporating the following main activities:

Activity	Description
Video	Promotional video used across the City's website, <a href="http://yoursay.southperth.wa.gov.au">yoursay.southperth.wa.gov.au</a> and social media channels (1 x 60 - 90 second video and 6 x 15 - 20 second videos)
Website	Banner on the home page of the City's website and a project page
Media Release	Media Release issued to relevant media.
Outdoor Advertising	Bus stop advertising at Canning Bridge Station and Curtin Central Bus Station
Social Media	Facebook and Instagram advertising campaign using the videos to target residents in the City of South Perth, City of Canning and Town of Victoria Park, with interests in health, wellness, fitness, recreation and education (estimated reach of 400,000 people), plus organic posts throughout the campaign on the City's social media channels
Newspaper	Feature article in the City's full-page advert in the Southern Gazette
E-newsletter	Feature article in two editions of the City's e-newsletter (distribution of 11,000)
Digital Campaign	Videos used in pre-roll advertising campaign across a number of high-profile websites to target residents in the City of South Perth, City of Canning and Town of Victoria Park, with interests in health, wellness, fitness, recreation and education (estimated reach of 200,000 people)

Printed Collateral	Posters displayed at the libraries and City buildings, post cards distributed throughout the City of South Perth and displays at libraries, George Burnett Leisure Centre and Collier Park Golf Course
Banners	Street banners located throughout the City (30 no.)

This high-level campaign was developed with the purpose of increasing awareness and providing information about the project, together with encouraging participation in the community stakeholder engagement events and activities.

The outcomes of these communications activities are summarised as follows:

- \ 6,000 Visits to Your Say South Perth generated.
- \ 991,831 post impressions on social media.
- \ 65,592 completed video views on social media.
- \ 875 project website page views.
- \ Organic social media:
  - o Facebook posts x10 (reach 20,519);
  - o Instagram posts x8 (reach 2,947); and
  - o Twitter posts x7 (video views 219).
- \ Facebook and Instagram advertising:
  - o South Perth residents 144,291 impressions;
  - o Canning residents 440,079 impressions; and
  - o Victoria Park residents 253,037 impressions.

Ongoing communications activities in line with the above will continue to be undertaken throughout the RAF project, in order to continue to provide updated information to the community.

# ATTACHMENTS

**APPENDIX A – OPERATIONAL MANAGEMENT OPTIONS**

**APPENDIX B – FUNCTIONAL BRIEF**

**APPENDIX C – PRECINCT PLANNING STRATEGY**

**APPENDIX D – CONCEPT DESIGN**

**APPENDIX E – PRELIMINARY ENVIRONMENTAL INVESTIGATIONS**

**APPENDIX F – GEOTECHNICAL INVESTIGATIONS**

**APPENDIX G – ENGINEERING SERVICING STUDY**

**APPENDIX H – TRANSPORT IMPACT ASSESSMENT**

**APPENDIX I – TOWN PLANNING CONSIDERATIONS REPORT**

**APPENDIX J – RENEWABLE ENERGY SYSTEM FEASIBILITY**

**APPENDIX K – SUSTAINABLE DESIGN REVIEW**

**APPENDIX L – POOL FUNCTIONALITY REVIEW**

**APPENDIX M – COST ESTIMATE**

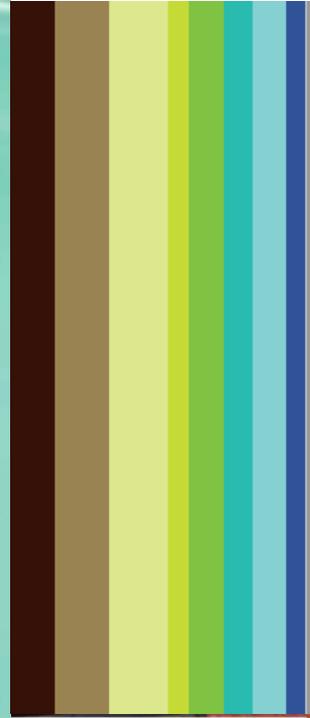
**APPENDIX N – PROGRAMME**

**APPENDIX O – RISK REGISTER**

**APPENDIX P – STAKEHOLDER SUPPORT DOCUMENTS**

**APPENDIX Q – COMMUNITY CONSULTATION REPORT**

## APPENDIX A – OPERATIONAL MANAGEMENT OPTIONS



**SOUTH PERTH RAF  
MANAGEMENT OPTIONS**  
*September 2020*  
*Draft v1*

PAATSCH  
GROUP



Public Version - Redacted



# OPTION 1 : SINGLE EXTERNAL MANAGEMENT GROUP (PREFERRED)



- **Management Options:** Clublinks, YMCA, Belgravia Leisure, BlueFit
- **Commercial Arrangements:** Lease, management Fee (flat fee or % turnover), profit share, hybrid
- **Positives:** Fully integrated management maximises opportunities across facilities; one contact point for Council; no conflict between management groups; maximises ability for investment by Operator
- **Negatives:** Management groups may not have experience in all areas (.ie. may have experience in aquatic and leisure centre management but not golf or vice-versa);
- **Comments:** Food & Beverage Operator could be part of Management Group
- **Agreements:** City of South Perth would require single lease/Management Agreement with Management Group; Management Group would have commercial or sub-lease agreements directly with Food & Beverage Operator, SportWest and Summit Climbing;

# OPTION 2 : MULTIPLE EXTERNAL MANAGEMENT GROUPS



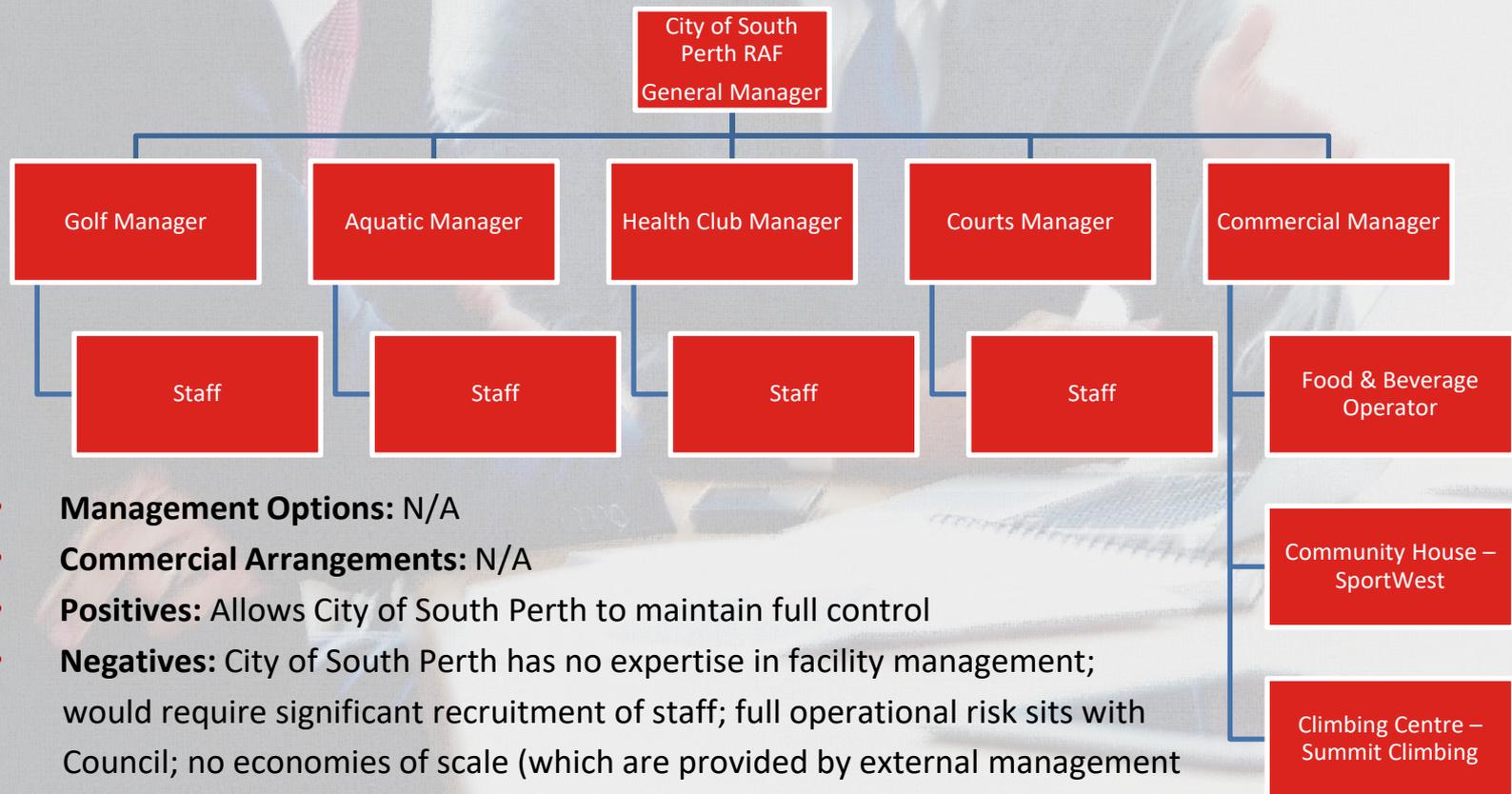
- **Management Options:** Clublinks, YMCA, Belgravia Leisure, BlueFit, other specialist firms
- **Commercial Arrangements:** Lease, management Fee (flat fee or % turnover), profit share, hybrid
- **Positives:** Allows specialist management of each area
- **Negatives:** Multiple contracts likely requiring full time contract manager at City of South Perth; demarcation issues; less opportunity for integration and cross promotion; diminishes opportunity for capital investment by Operator; scale of contract opportunities with each operator are smaller likely resulting in diminished commercial offer; diminished opportunities with stakeholders (i.e Curtin Uni, Clontarf, SEDA)
- **Comments:** Food and Beverage Operator could be part of Golf Operator or Leisure Facility Operator
- **Agreements:** City of South Perth would have direct Management Agreements with Golf Operator, Leisure Facility Operator, and separate commercial or lease agreements with Food & Beverage Operator, SportWest and Summit Climbing (hence need for Contract Manager)

# OPTION 3: EXTERNAL MANAGEMENT GROUP BY AREA



- **Management Options:** Clublinks, YMCA, Belgravia Leisure, BlueFit, Health Club Operators (i.e Revo)
- **Commercial Arrangements:** Lease, management Fee (flat fee or % turnover), profit share, hybrid
- **Positives:** Allows highly specialised management of each area
- **Negatives:** Multiple contracts definitely requiring full time contract manager at City of South Perth; significant demarcation issues; no opportunity for integration and cross promotion; diminishes opportunity for capital investment by Operator; scale of contract opportunities with each operator are smaller likely resulting in diminished commercial offer; diminished opportunities with stakeholders (i.e Curtin Uni, Clontarf, SEDA)
- **Comments:** Facility would essentially operate as separate facilities rather than integrated facility
- **Agreements:** City of South Perth would have direct Management Agreements with Golf Operator, Aquatic Operator, Health Club Operator, Courts Operator, and separate commercial or lease agreements with Food & Beverage Operator, SportWest and Summit Climbing (hence need for Contract Manager)

# OPTION 4: CITY OF SOUTH PERTH DIRECT MANAGEMENT



- **Management Options:** N/A
- **Commercial Arrangements:** N/A
- **Positives:** Allows City of South Perth to maintain full control
- **Negatives:** City of South Perth has no expertise in facility management; would require significant recruitment of staff; full operational risk sits with Council; no economies of scale (which are provided by external management group); City would need to purchase software and other operating systems
- **Comments:** City of South Perth would employ all staff directly
- **Agreements:** City of Perth would have commercial or lease agreements with Food & Beverage Operator, SportWest and Summit Climbing

## APPENDIX B – FUNCTIONAL BRIEF



# CITY OF SOUTH PERTH RECREATION AND AQUATIC FACILITY

FOR

CITY OF SOUTH PERTH

PROJECT BRIEF

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**NOTE:**

UNLESS SIGNED APPROVED THIS DOCUMENT REMAINS UNCONTROLLED AND SUBJECT TO INTERNAL AUDITING

B	Revision	22/10/2020	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A	Client Review	24/09/2020	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
REV.	ISSUED FOR	DATE	PREPARED	REVIEWED	APPROVED

# INDEX

Section 1	Introduction
Section 2	Budget & Quality
Section 3	Planning & Guidelines
Section 4	Facilities Schedule

## **SECTION 2: BUDGET & QUALITY**

---

### **2.1 PROJECT BUDGET**

Various budgets are being considered ranging from \$60.0M - \$80.0M – Business Case will determine.

### **2.2 CURRENT BUDGET STATUS**

Private and confidential – Not for publication.

### **2.3 QUALITY**

The City, the Stakeholders and the Community are looking for a quality building, which considers indigenous history and compliments the site.

Fosters sustainability initiatives and balanced selection of materials. Balances natural light (glare control) considers acoustics and life cycle.

## SECTION 3: PLANNING & GUIDELINES

---

### 3.1 BACKGROUND

The development for the site was selected from previous studies. That particular study investigated 2 sites.

### 3.2 SITE

#### 3.2.1 The Site

The selected site sits within the Collier Park Golf Course. Currently 27 holes, the site overlooks the start and finish of the 18 hole golf course (the site will require to occupy 2 of the holes that currently form part of the 3<sup>rd</sup> and 9<sup>th</sup> holes of the 27 hole golf course).

The site contours and landscape are in line with a golf course landscape.

The masterplan needs to work with the following constraints / opportunities:

- Main road into the golf course (intersection off Hayman Road)
- Minimum disturbance to the existing 18-hole golf course with the exception of the driving range and the impact on the mini golf course that will be implemented prior to the RAF Centre.

#### 3.2.2 Design Objectives

The City's – Stakeholders

- Financially sustainable
- Environmentally sustainable
- Environmentally sustainable
- Reflect community, civic, wellness, retreat, county club (in terms of its facilities) – campus style
- Offer diversity of opportunities
- Be timeless – withstanding the test of time
- Welcoming / accessible
- Strong sense of arrival, public space (free space)
- Minimise disturbance to the existing 18 hole golf course
- Merge new facilities into the golf scape
- Reinforce the strong tree canopy and capture the filtered light

The Community – Design Objectives

- Finance
- Traffic management
- Affordability
- Recurring costs
- Parking availability
- Customer service
- Environmental
- Public realm
- Welcoming – concierge
- Art, justice, healing
- 6 seasons
- Interpretation plan
- Socially inclusive
- Belonging
- Special space
- Capture camp fire
- Respect for the elderly
- Spaces to be enjoined – free
- Indigenous experience
- Buildings organic (rectangular is a form of the oppressor).
- Curtin link
- Receptive
- Women only to suit cultural differences in pool / gymnasium – especially in hydro

- Aboriginal meeting spot
- Teaching language
- My land
- Indigenous tourism
- 1<sup>st</sup> nation
- Truth telling
- Flora and fauna
- Surfaces
- Arrival sequence
- History – two brothers stand out
- Banksia tree's
- Naming of Centre
- Audio
- Point of difference
- Wiluna Pool – free raised above ground - supervision

#### Seniors

- Functional
- Shelter
- Safe entry and egress
- Playground (for grandchildren – consider shade and shelter)
- Community management committee
- Meeting place:
  - Yoga
  - Pilates
  - Tai Chi
  - Archery
- Welcoming smile
- Information:
  - Facilities
  - Seniors
  - Access
  - Where to get 'help'
- Seating seniors
- First aid facilities
- Safety – physically / emotionally
- Table tennis
- Involve Manning and South Perth seniors
- Warm in winter cool in summer
- Understanding of senior people – dementia

#### Senior Couple

- Walk ways
- Swimming walking lanes
- Secure bike parking
- Membership – different levels (swipe cards)
- Aqua aerobics
- Hydro pool (heated)
- Bar facilities
- Subsidised entry
- Security
- R.P.M. in gym
- Group fitness
- Senior circuit
- Social media technology classes
- Spa
- Accessible pool
- Meeting rooms

#### Young Adult

- WiFi
- Great coffee
- Arrival on e-scooters, skate boards, roller blades
- Running track
- Spaces for groups to gather
- Outside basketball
- Study group (spaces)
- 24/7 access
- Electric vehicles
- Outdoor cinema
- Performance spaces
- Friendly face (smile) at arrival welcome
- Fun / entertainment
- Economical to use facilities
- Secure
- Student discount
- Dance
- Walk / drive / transport bus
- Woman's mentoring
- Woman's network
- Classes for women by women
- Mental / emotional support (social emotional well-being)
- Staff / officials / managers that don't discriminate
- Safety, lighting / night time
- Cultural appropriate landscape architecture
- Good fitness program
- Cultural event – concerts
- Wifi
- Café
- One stop shop for exercise
- Basketball – casual hoops
- Security
- Reduced golf rates
- Quality café – outlook – healthy
- Meeting spot

#### Young Family

- Safety
- Discourage anti-social spaces (urban design)
- Playground all seasons
- Shade, formal / informal
- Indigenous culture
- Water splash and play
- Walking dog
- Public art
- Lockers (indoor/outdoor)
- Parking
- Affordability
- Indigenous involvement throughout all phases of the project
- Indigenous food
- Playground – public realm BBQ
- Mia Mia – traditional hut – 6 seasons
- Language training
- Aboriginal liaison office
- Business incubator
- Shade / BBQ
- Family change rooms
- Walk / slide into water (look at Betty Park pool)
- Kid's parties
- 'Learn to Swim'

- Mums sport with crèche – change facilities
- Adventure play
- Outdoor fitness
- Play area
- Function centre
- Climbing wall – long horizontal varying levels
- Group fitness
- 2 tier golf
- BBQ areas – to encourage families to stay for a long duration
- Membership for families
- Keep trees not all hard surfaces
- Learn to ride bikes for kids
- Acoustic – for users and teachers
- Locker spaces
- Affordable family dining
- Mini golf
- Outdoor films
- Small courts (portable netball / basketball)

#### Middle Aged

- Coffee (great)
- Storage lockers
- Outdoor meeting
- Men's shed (meeting)
- 24/7 gym
- Archery
- Circuits program
- Food and beverage experience
- Sustainability

#### Middle Aged Man

- Meeting Space – blokes | men's shed
- Bike access and pathways leading into site – within the site
- Consider parking set aside for various sporting / meeting facilities
- Consider flow of people
- Separate areas kids / family exercise
- Gets it built as soon as possible – fantastic place for all ages
- Room for card games
- Facilities for dance classes and dance nights
- Retail golf / mini golf
- Homework places for elder – basic skills

#### Middle Aged Woman

- Specific rooms in the gym – Pilates / yoga / low impact
- Aerobics
- Dancing
- Outside areas for coffee and chat (healthy menu)
- Lots of lap lanes  
(50M – 10 lanes | 25M – 10 lanes)
- Welcoming building (inclusive)
- Meeting place for women groups
- Facilities catering for women's needs
- Women golf clinics
- Place to take grandchildren
- Aqua aerobics
- Affordability

#### Large Family Groups

- Customer service
- Welcoming art – landscape – 6 seasons

- Safe children play
- BBQ, lawn for sitting, gatherings and picnics
- Outdoor exercise equipment
- Outdoor basketball ring
- Soccer / football
- Pathways – roller skating, scooters / skates
- Family change
- Community collective mode for café
- Wellness
- Safety planning – lost and found children

### 3.2.3 Key Desire Lines and Links

- Connection to existing golf course
- Connection to existing lake
- Pedestrian / cycling links to Curtin University campus and precinct
- Connection to mini golf course
- Connection to sporting greens to the north.

### 3.2.4 Key Site Planning

- Retain as many existing trees as possible
- Create a strong sense of arrival:
  - Drop off for various users – crèche, function as well as recreational
  - Focus on passive solar orientation
  - Create strong walkable connection to Curtin University
- Massing and scale to consider the character of the golf course
- Way finding to be self-evident:
  - Arrival (forecourt)
  - Arrival court
  - Reception / retail
  - Car parking ease of access
  - Service (loading areas) discreet
  - Access for all
  - Consider centre is used early morning and late into the evening (safety)
  - Acoustic privacy to golf putting, starting and finishing holes.

### 3.2.5 Micro Planning

The proposed RAF facility will comprise of:

- Forecourt (arrival – drop)
- Arrival court
- Retail – pro-shop
- Café to serve wet, dry and golf course
- Aquatic – indoor, outdoor and stores
- Climbing wall
- Sports hall – 12 courts with one court suitable for 1,500 seats – 2 courts to be isolated.
- Storage for sports hall
- Change rooms for common:
  - Aquatic
  - Golf
  - Dry sports
  - Administration
  - Gymnasium
  - Pro shop
- Community house:
  - Toilets + storage
- Gymnasium – group fitness
- Crèche
- Restaurant / bar
- Function / meeting rooms

- Driving range – 2 tier + lounges – 56 tees
- Adventure play
- Outdoor beach volleyball
- Drop off and pick up
- Car parking (669)
- Loading docks
- Path ways

### 3.2.6 Arrival Court – Open or Enclosed – shelter desirable

A space that becomes the arrival for all the facilities, space physically connects to:

- Aquatic
- Sports hall
- Pro shop
- Community house
- Gymnasium

This space should be:

- Walk through space
- A meeting space short and long time (WiFi essential)

The kiosk / café should serve this space.

It should accommodate community information and the ability to set up 'pop up' events such as:

- Cooking classes
- Exhibitions

Visual link to the arrival road and drop off is an essential requirement.

### 3.2.7 Physical Space

- Connection to public transport, consider option of having buses enter the site. Tourist buses (tourist resort aged).
- Connection to Curtin – due to distance, consider:
  - Seating
  - Shade
  - Lighting
  - Safety
- Wayfinding
  - For vehicle access, pedestrian and cyclists.
  - Wide pathways, concourses and ramps.

### 3.2.8 Sensory

Use of history, indigenous as part of pattern and texture – interpretation plan should be considered (City to appoint Heritage Consultant).

Sense of place – strong indoor / outdoor relationship.

- Maximise views wide, controlled, intriguing (expect the un-expected).
- Activity spaces
- Visual link
- Use of water, nature
- Picnic spaces
- Carefully consider name of place

### 3.2.9 Retail

The retail space becomes the main administration reception area, as well as the retail for the entire facility. From the reception / sales counter visual links to the arrival road, outdoor staging area of golf, mini golf, outdoor food and beverage facilities.

### 3.2.10 Café / Kiosk

The café / kiosk will need to physically and visually connect to the arrival court so it can facilitate the various user requirements:

- Aquatic - wet
- Sports hall, gym, visitors – dry
- Golf course – dry

This café / kiosk will have its own kitchen to prepare food for the café kiosk and driving range lounges.

### 3.2.11 Aquatic Indoor Outdoor

The aquatic facility requires certain water bodies for:

- Warm water
- 25.0M pool
- Learn to swim
- Leisure pool
- 50.0M pool

Water bodies within the pool hall must be arranged to maximum program, efficiency, supervision and to consider the end users satisfaction for:

- Excellent air and water quality
- Welcoming but robust materials
- Pool hall to enjoy controlled natural light – avoid glare
- Considered concourse widths for circulation, supervision and programming

The warm water needs to be contained within one space.

The 25.0M learn to swim is an indoor pool – although the City is investigating combining this 25.0M with the 50.0M outdoor pool (8 lanes).

Leisure can be indoor or outdoor pool. The 50.0M pool will be an outdoor pool.

The 50.0M pool opens the opportunity to create a resort style experience for all age groups to enjoy and if the learn to swim pool is linked to this outdoor pool the leisure pool can add further depth to the resort experience.

The pool hall and outdoor pool needs a direct link to the café / kiosk.

The 50.0M pool can accommodate school carnivals to seating via amphitheater, grass banks or temporary seating needs to be considered within the landscape design.

The aquatic facility requires a separate entry for school carnivals – ideally locate flexible change rooms / meeting areas adjacent to entry.

Acoustics for the aquatic is also a key consideration.

The duty manager should be able to view the pool hall area (consider a raised workstation).

**Note:** Explore options where all pools except for 'learn to swim' are outdoors.

### 3.2.12 Sports Hall

The sports hall needs to consider:

- 12 indoor courts for the variety of sports ranging from netball, basketball, table tennis, volleyball and badminton. 1 court for 1,000 seats ideally 2 courts isolated from the other courts for an acoustic and events use. 6 outdoor beach volleyball courts, these require spaces for marquees and shade structures for spectators and corporate.
- Climbing wall – varying roof heights to a maximum of 17.0M. Allow sufficient space for safety as well as equipment. Climbing wall can be a stand-alone facility but with large change facilities.

### 3.2.13 Change Rooms (Common)

For the sports hall and golf – separate for aquatic.

Change rooms to support wet and dry facilities accessible and family as well as lockers for individual use.

The dry court change rooms need to consider the sports use (indoor / outdoor courts) and golf course. The aquatic require their own wet change room facilities – **Note:** need for 50.0M pool (outdoor).

End of trip facilities bike use will be encouraged, especially from Curtin University, change rooms to consider requirement.

### 3.2.14 Community House

A facility for community based sports:

- Dedicated reception
- Closed offices
- Open work stations
- Hot desk/s
- Lunch room
- Meeting rooms
- Boardroom

#### Ablutions

To support the area of the space

**Meeting rooms** – arranged in such a way that aquatic, sports hall and gymnasium could use – link to function

**Boardroom** – for community house and the centre

These should be arranged to allow external users 'out of hours' as well as these meeting rooms linking to the show court (corporate rooms).

#### Gymnasium – Group Fitness

Space to have controlled natural light, acoustic noise as well, consider impact onto other facilities.

Visual links to external areas, landscaping is an essential requirement especially from the cardio areas.

**Note:** spinning rooms / specific requirements.

Gymnasiums and fitness rooms – air quality and air movement is essential, ceiling wall fans should be implemented within the individual areas. Night time ventilation should be considered due to "odors" that can define these spaces.

#### Crèche

This facility can be a stand-alone building or integrated within the other facilities.

It requires ground level access – be located conveniently off the drop off area.

It requires secure indoor / outdoor spaces.

#### Restaurant / Bar / Function / Meeting Rooms

Ideally this facility should visually link to all the facilities but it has a connection to golf or lake and external playground.

- Course

- Mini golf
- Driving range
- Lake

Ideally it should also link to external playground.

The dining bar spaces whilst linked need to have their own identity, they should link to BOH as well as external terraces, decks and courts.

The function room, meeting rooms and pre-function ideally should be located on an upper level.

Function rooms should be located close to the drop off / arrival.

The restaurant / kitchen - should be located off the main eating area. The kitchen will be the production kitchen for the function room.

A holding and pre-kitchen facility will be required on the level of the function room.

For this reason lifts should be sized to allow for movement of goods.

#### **Driving Range**

A 2 tier driving range will be supported by hospitality areas – 56 tee off position master plan for 80.

The driving range will be rearranged within a 100M x 100M netted environment. The driving range will use change facilities dedicated for golf.

There is a need for this facility to be close to retail kiosk/café and tee position to face either south or north.

#### **Plant Rooms**

Create secure but discreet plant rooms. Plant rooms to be easily accessible with wide stairs for carrying equipment.

Also provide service vehicle parking consider how large plant / equipment can be maintained as well as replaced.

#### **Loading Bays – Service**

Create loading bay/s to facilitate the needs of aquatic, day, food and beverage outlets.

**Note:** allow for 10M – 14M vehicles.

The loading for kitchen can be the loading and back of house of café kiosk – cart path is required to service kitchen to main restaurant.

#### **Buses / Ambulance**

School groups will require provision for buses to drop off and pick up.

Ambulance – allow for dedicated ambulance / or emergency vehicles parking area – ideally it should be discreet.

Generally patrons that require ambulances services are supervised at the point of incidence until the paramedics arrive.

Patrons are only taken to first aid rooms for minor incidences.

#### **Drop Off / Car Parking Access**

Allow for approximately 669 car bays within that allow for parking for disability – master plan to consider expansion to 820 cars.

Allow for:

- Motor cycle parking - 12
- Bike parking - 211

Allow for generous drop off and pick up off main road to support the various facilities, functions and events.

There is no requirement for secure parking.

Allow access for:

- Vehicles
- Service vehicles
- Golf carts
- Cyclist
- Pedestrians

### External Space

Landscaping should respond to existing:

- Tree canopy
- Contours and detail of the golf course
- Way finding from car park to arrival court needs to be transparent and convenient.

### Circulation

Consider end user, visitors and servicing within the buildings and the external areas.

### Security

Safety in design, CCTV, lighting and landscaping need to address the safety of all users.

- Swipe entry
- Fire duress
- Corridor to aquatic, gym, sports, mini golf and external courts.

### 3.2.15 Micro Planning

#### Pedestrian

- Footpath link from the golf course to link to Kent Street and the Curtin University campus.

This path should also allow for cyclists

- Patron movement from car parks, drop off
- Way finding – transparency to entry points

#### Vehicle

- Entry – to comply, need to consider:
  - Way finding
  - Sense of arrival
  - Hierarchy
    - End user
    - Staff
    - Service
- Car parking control - will City apply time constraints (to stop free parking for students). Golfers may require more than 4 hours
- Loading:
  - Pool
  - Food and beverage
  - Others
    - Pool service due to chemicals for pool, there are OHS requirements – drive through highly desired
  - Bikes
  - Motorcycles
  - Service vehicles
    - Waste
    - Delivery

- Maintenance vehicles
- Buses
  - School buses
  - Team buses
  - Tourist buses
- Parking
  - Emergency DFES Requirements – distance from buildings – fire attack.
  - Ambulance service
  - Patrons
  - Short term – drop off and pick up
  - Accessible
  -

### 3.3 DESIGN OBJECTIVES

#### Impact on Site

The building should merge into the golf scape and the tree scape, despite the size of its foot print and large volumes, the building should merge into the site.

#### It's Image

It should reflect community, civic, wellness, retreat, country club.

Building articulation, materials should complement the existing landscape. This building should not reflect a typical recreation or “box” retail.

#### Readability

It should merge into the golf course, despite its mass.

#### Filtered Light

The established trees provide filtered light, there is an opportunity for the armature of the new buildings to encompass such a fine grain.

That is in its detail and fabric.

#### Community

The building should be sensitive, a quality that responds to site, its context and be sustainably welcoming and meet the end user satisfaction – function and form.

#### The City

It needs to be best value for money, offer diversity of opportunities for all in the community, be financially viable (function, maintenance, flexible) and withstand the test of time.

The master plan should be able to be achieved over phases.

#### Landscape

Complement the golf course.

#### External Spaces

Integrated with the golf course – should be seamless.

Opportunity for creating a resort experience within the outdoor pools and or food and beverage areas.

Capture indigenous history, totem poles, use of native plants (food) use of banksia trees.

Use of indigenous humpy, Mia Mia.

### 3.4 ACCESSIBILITY AND INCLUSIVENESS

If the facility is multi-level, a ramp access to upper level is considered as an essential requirement (especially if gymnasium is located on the upper level - whilst lifts will be essential most users prefer using ramps - lifts must be large).

Change facilities need to consider gender equality - especially where carers are involved.

For all facilities the change facilities should be located off the entry to the facility.

Note : a hoist facility should be adopted within each of the facilities (family rooms).

It is essential that all facilities can be used by all (operational issues - climbing wall, access to pools).

A concierge approach to drop off needs to be considered - to enable a carer to drop of a client and that person is under the care of service provider - this drop off must be covered (operationally consider using volunteers to provide this service).

Consider linear drains in wet areas, point drawings create difficulties for some users.

Parking area for ACROD parking should be close to main entry points.

Area should have minimum grade within the paving - allow for wide vehicles as well as longer vehicles - so wheelchairs are not placed on access ways (many wheelchair vehicles open to the rear).

Landscape consider, texture, colour and sensory - use of lavender, herbs etc. but consider allergies.

Create spaces were people that may have a variety of disabilities can be in one area to avoid segregation of family groups.

Dining areas should link to playgrounds, green space - spaces that can allow people to watch other people.

Transparency into the facilities is highly desired.

Creating a place that has strong cultural link - history of the city, the site, to indigenous culture will enhance the place as a regional destination.

Linkages to nature is highly desired, so is natural light, materials that consider safety, hygiene but also that contributes to the vibrancy of the place.

Acoustic consideration in all spaces must be considered, especially in the aquatics area.

Consider all forms of disability not just physical in how spaces are planned, colours, lighting, materials detailing need to consider any adverse impacts.

Making a place - to support both active and non-active activities will go a long way in creating a place for all.

### **Interior Design**

The interior should respond to the exterior as well as to the internal programs.

Acoustics and glare control will be a key requirements.

Materials need to respond to fire requirements – high impact, high humidity and corrosive.

### **Space Planning**

Functionality excellence is a high priority to support flexibility, program and service.

### 3.5 MAINTENANCE

All materials, building components and systems need to comply with Code Requirements and be suitable for their location, place and be mindful of maintenance requirements.

#### Life Expectancy

- Structure 20 – 25 years
- Finishes 10 years
- Mechanical 15 years
- Lighting (city to outline)
- Hydraulics 20 – 25 years

#### Signage

Signage shall meet International and Australian Codes.

A graphic designer should be commissioned for all branding and signage for the development within the site as well as at the perimeter (key nodes).

#### Vehicular Provisions

- Car bays 669
- Staff parking (numbers to be nominated by City – they form part of the 669)
- Motorcycle parking
- Bicycle racks, E scooters, skateboards – 211 Bicycles
- 11 Acrod
- Bus parking
  - Size – school buses
  - Numbers - 3
- Courtesy vehicles – electric cars
- Service vans
  - Service, maintenance, & delivery - 10
- Emergency / DEFS / Ambulance / Security / Police

#### Refuse

- Restaurant, bar function
- Kiosk, pool, mini golf, sports hall, gymnasium

#### Services

- Electricity
- Sewer
- Gas
- Water
- Data
- Solar
- Other..

### 3.6 ARCHITECTS STATEMENT

Our holistic approach to the design has addressed the characteristics of the site, the City's highly considered program, and is using a biophilia approach to the design to achieve the City's vision for promoting health, wellness and safety.

An architecture that sends a message of timelessness, health and wellness, safety – a comfortable environment for all end users.

Our planning has sought to achieve:

- Indoor / outdoor relationship
- Natural light (varied and controlled)

- Natural cross ventilation (campus style planning) with controlled composition of solids and voids
- Material selection use of sustainable timber (natural finishes)
- Façade 2 skins outer skin provide shading (thermal protection) as well as camouflaging solid and voids. Creating shading patterns similar to what the tree canopies creates on the golf course.
- Shade to outdoor spaces.
- Sensory approach to architecture and landscaping.
- Creating a place for local community and the regions.
- Landscape that is part of the architecture not just an add-on.

A bespoke approach has been used to curate the masterplan and base planning, every piece belongs in the space it is placed in (function and aesthetics). We have sought appropriate scale, structural patterning, pattern and texture - the envelope to be in context with the landscape, the golf course, the precinct (inclusive of the Curtin University campus).

19061	SOUTH PERTH RECREATION & AQUATIC FACILITY - option 4D		
REV - 8	FACILITIES SCHEDULE - PRELIMINARY	22.10.2020	CHRISTOU DESIGN GROUP

	no. off	m2	total	comments
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<b>1</b>	<b>COMMUNITY HOUSE</b>			
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RECEPTION	1	40	40	
OFFICES	16	10	160	
OPEN PLAN DESKS	54	6	324	
HOT DESKS	10	6	60	
MEETING ROOM - SMALL	4	20	80	
MEETING ROOM - MEDIUM	1	40	40	
PHOTOCOPY & STATIONARY ROOM	2	50	100	
IT & SERVER ROOM	1	20	20	
LUNCH ROOM	1	100	100	
STORAGE	1	100	100	
AMENITIES	1	100	100	
AREA INCREASE	1	613	613	
CIRCULATION AND ENGINEERING		15%	163	
<b>SUBTOTAL</b>			<b>1900</b>	

<b>2</b>	<b>AQUATIC</b>			
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2A	AQUATIC INDOOR				
	POOL - LEISURE	1	220	220	
	POOL - LEARN TO SWIM	1	190	190	
	POOL - WARM WATER	1	270	270	
	SPA	0	88	0	
	SAUNA	1	20	20	
	AQUATIC OFFICE	1	110	110	
	AIRLOCK	1	30	30	
	FIRST AID	1	15	15	
	STORAGE	1	260	260	
	DINING (WET)	1	90	90	
	CHANGEROOMS	1	220	220	
	FAMILY CHANGE	1	175	175	
	AMENITIES	2	20	40	
	MEETING	2	20	40	
	PLANTROOM	1	560	560	
	CIRCULATION / CONCOURSE	1	1152	1152	
	<b>SUBTOTAL</b>			<b>3392</b>	

2B	AQUATIC OUTDOOR				
	POOL - 50M	1	1430	1430	
	SPLASH PAD	1	150	150	
	<b>SUBTOTAL</b>			<b>1580</b>	

<b>3</b>	<b>CLIMBING CENTRE</b>			
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3A	CLIMBING CENTRE				
	CLIMBING WALL	1	600	600	
	<b>SUBTOTAL</b>			<b>600</b>	

<b>4</b>	<b>SPORTS</b>			
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4A	SPORTS HALL				
	COURT TYPE 1	3	420	1260	
	COURT TYPE 2	3	465	1395	
	SHOWCOURT SEATING	1	40	40	
	OFFICE	1	90	90	
	STORAGE	1	300	300	
	FIRST AID	1	15	15	
	CHANGEROOMS & AMENITIES	1	570	570	
	CIRCULATION / RUNOUTS	1	2275	2275	
	<b>SUBTOTAL</b>			<b>5945</b>	

<b>5</b>	<b>HEALTH CLUB</b>			
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GYM	1	1200	1200	
PROGRAM ROOMS	2	150	300	

	TESTING ROOMS	4	20	80	
	CHANGEROOMS	1	100	100	
	AMENITIES	1	100	100	
	<b>SUBTOTAL</b>			<b>1780</b>	

**6 COMMON FACILITIES**

	RETAIL / PRO SHOP	1	415	415	
	KIOSK	1	110	110	
	KITCHEN	1	175	175	
	OFFICE - ADMINISTRATION	1	100	100	
	OFFICE - F&B	1	90	90	
	CLEANER'S STORE	1	30	30	
	LIFT AND STAIRS	1	50	50	
	CRECHE	1	150	150	
<b>SUBTOTAL</b>			<b>1120</b>		

**7 FOOD & BEVERAGE**

	RESTAURANT	1	200	200	
	BAR	1	200	200	
	BACK OF HOUSE	1	150	150	
	FUNCTION	1	260	260	
	PRE-FUNCTION / BAR	1	235	235	
	FINISHING KITCHEN & B.O.H	1	210	210	
	RESTAURANT AMENITIES	1	80	80	
	FUNCTION AMENITIES	1	80	80	
<b>SUBTOTAL</b>			<b>1415</b>		

**8 DRIVING RANGE**

	DRIVING RANGE (OUTDOOR)	2	800	1600	2 level
	AMENITIES	1	50	50	
	GOLF CART STORAGE	1	340	340	
	<b>SUBTOTAL</b>			<b>390</b>	

**9 PLANT**

	COMMS	1	70	70	estimate only
	SECURITY	1	25	25	estimate only
	PUMPS & TANKS	1	80	80	estimate only
	DISTRIBUTION BOARDS	1	30	30	estimate only
<b>SUBTOTAL</b>			<b>205</b>		

**10 CURTIN FACILITIES**

	CURTIN FACILITIES	1	500	500	provisional
	<b>SUBTOTAL</b>			<b>500</b>	

**11 CAR PARKING**

	CAR PARK	1	17000	17000	690 spaces
	CAR PARK - UPPER DECK	1	10550	10550	optional - not included in total
	DROP-OFF & LOADING	1	3000	3000	approximate only
	<b>SUBTOTAL</b>			<b>20000</b>	

	<b>TOTAL - INDOOR</b>			<b>17247</b>	
	<b>TOTAL - OUTDOOR</b>			<b>23180</b>	

## APPENDIX C – PRECINCT PLANNING STRATEGY

CITY OF SOUTH PERTH  
RECREATION AQUATIC HEALTH & EDUCATION FACILITY  
PROPOSED URBAN DESIGN PRECINCT STRATEGY



**CHRISTOU**

ARCHITECTURE / URBAN DESIGN / INTERIOR DESIGN



Public Version - Redacted



CO-LOCATION AND CONNECTION



CAMPUS LIVING



CAMPUS RECREATION



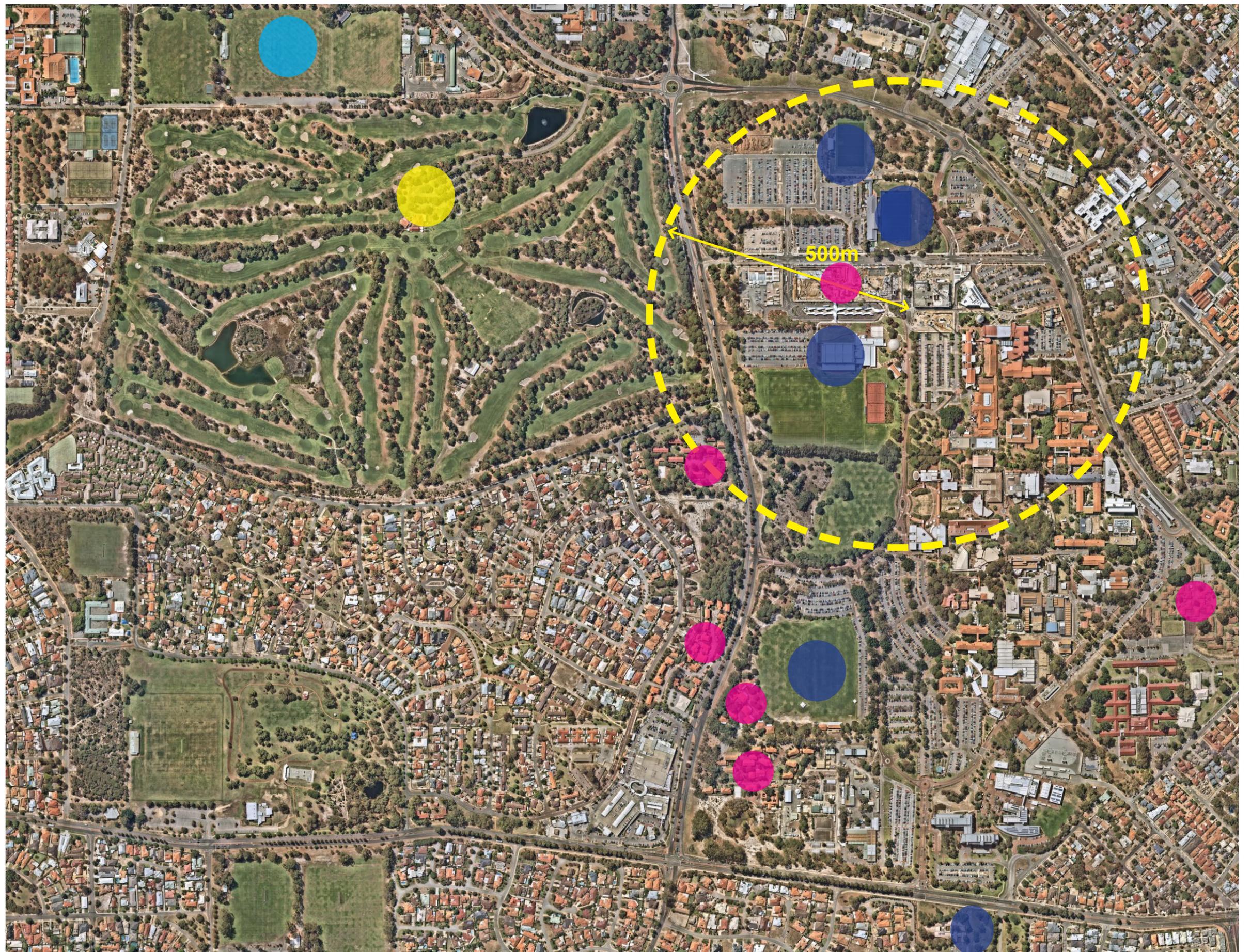
**WALKABILITY\***  
(FROM PINE PLAZA)



\* The radius was defined according to Zacharias (2001), who indicated that people can accept a walking distance of 500–1000 m; we adopted a 500 m radius.

Zacharias, J. (2001) "Pedestrian Behavior Pedestrian Behavior and Perception in Urban Walking Environments"

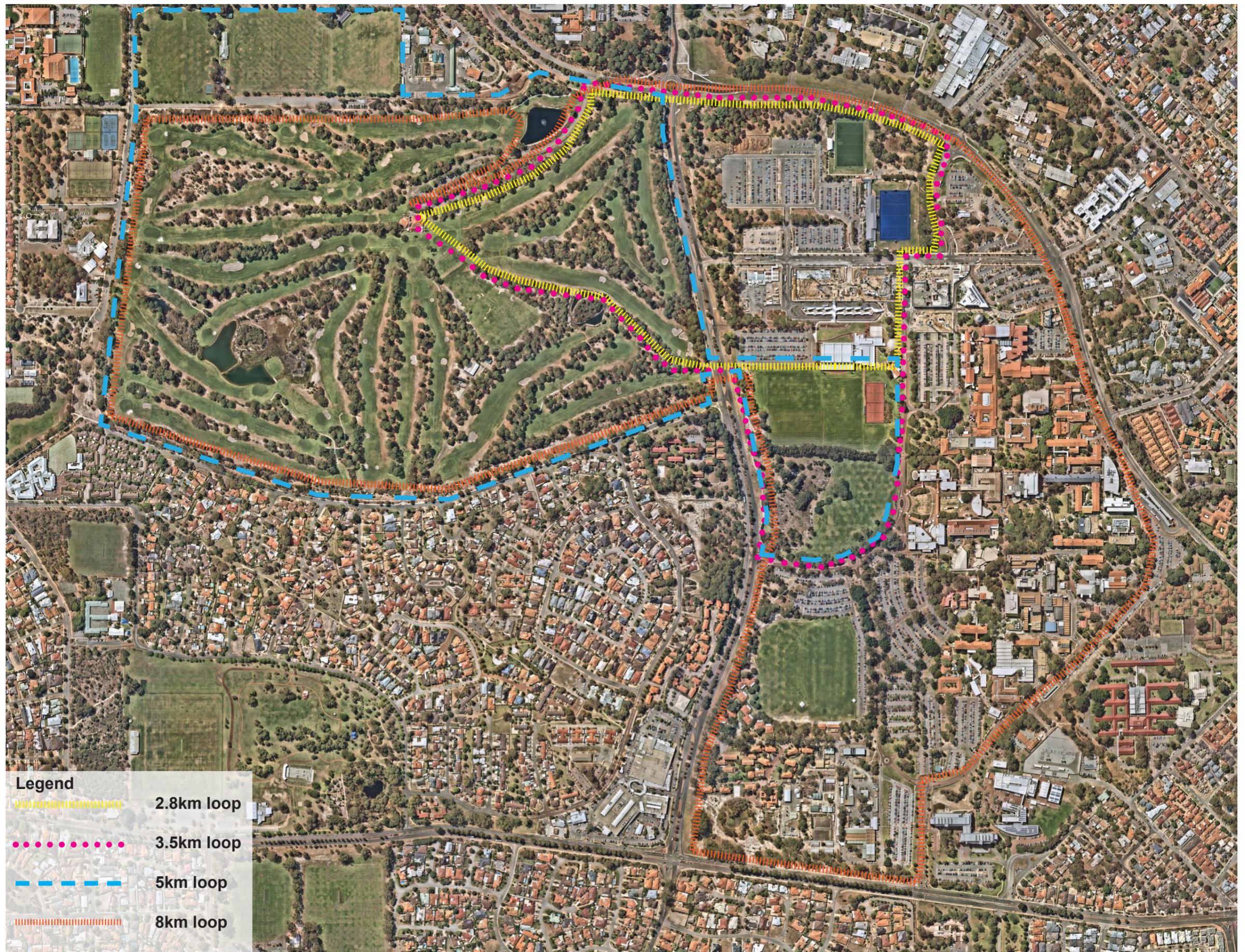
**CONSTELLATION**  
- LIVING, RECREATION  
& WELLNESS



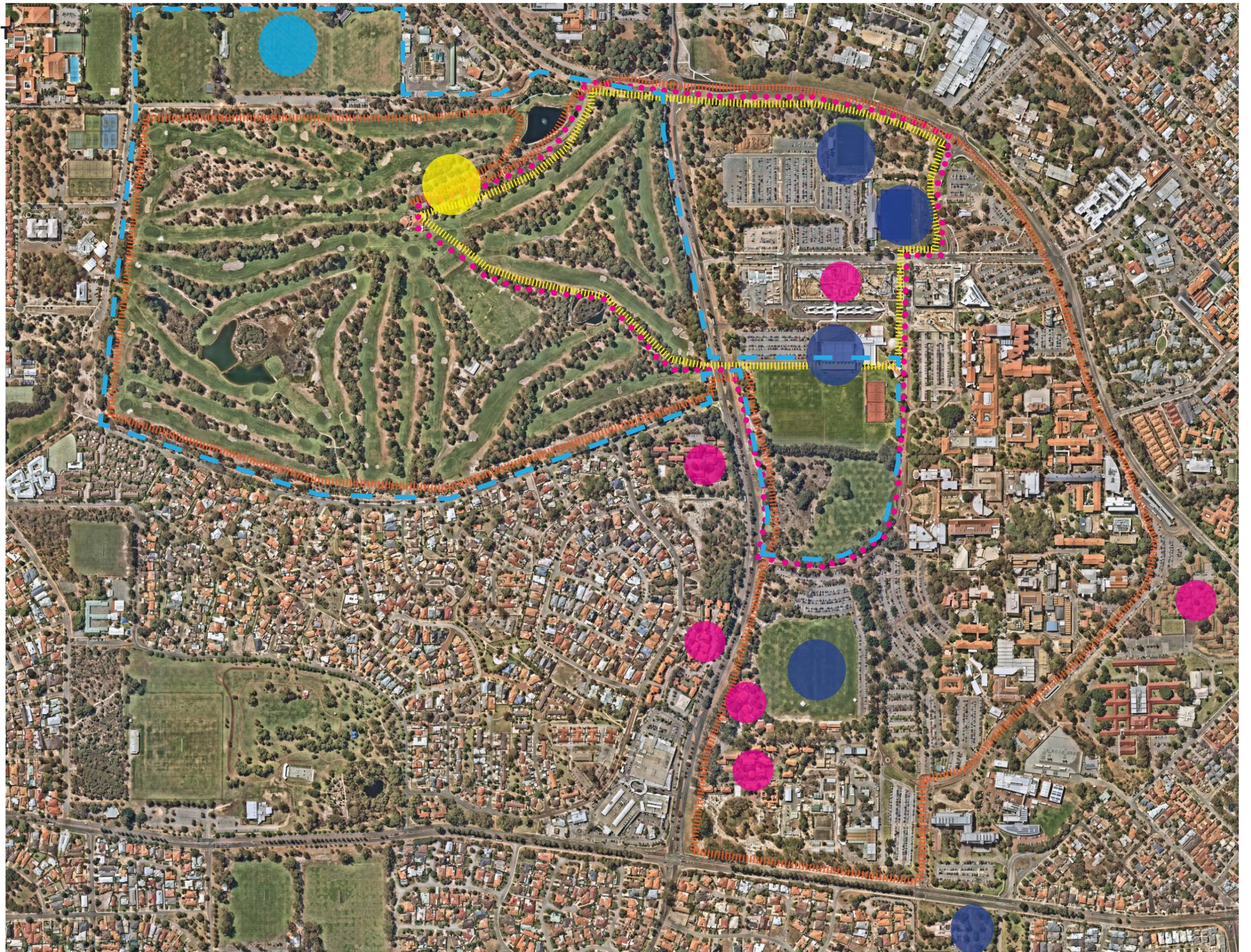
A CONNECTED  
PRECINCT



# WELLNESS NETWORK



INTEGRATED PRECINCT



URBAN DESIGN / PLACE THEMES



MAJOR STREET INTERFACES



MULTI-USE TRAILS



ACTIVITY NODES - POINTS OF INTEREST



WETLAND AND ECOLOGICAL EXPERIENCE



**CONNECTION THROUGH A MANAGED LANDSCAPE**

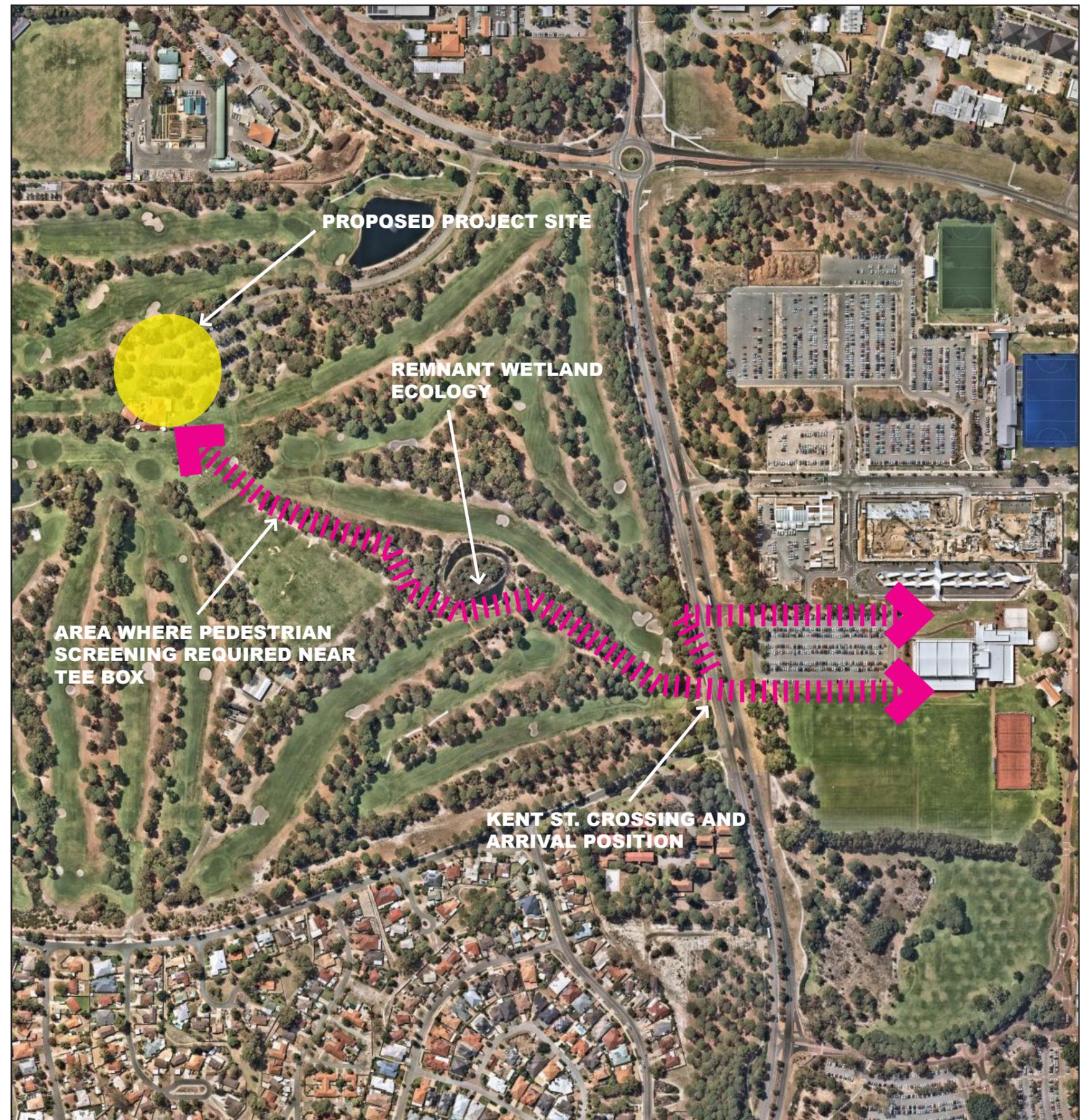
**CONSIDERATIONS:**

- PEDESTRIAN SAFETY
- SCREENING
- MANAGED MOVEMENT
- PROTECTION OF COURSE AND WETLAND ECOLOGY



- DESIGN OPTIONS FOR:**
- SCREENS
  - PROTECTIVE BARRIERS
  - PATHWAYS

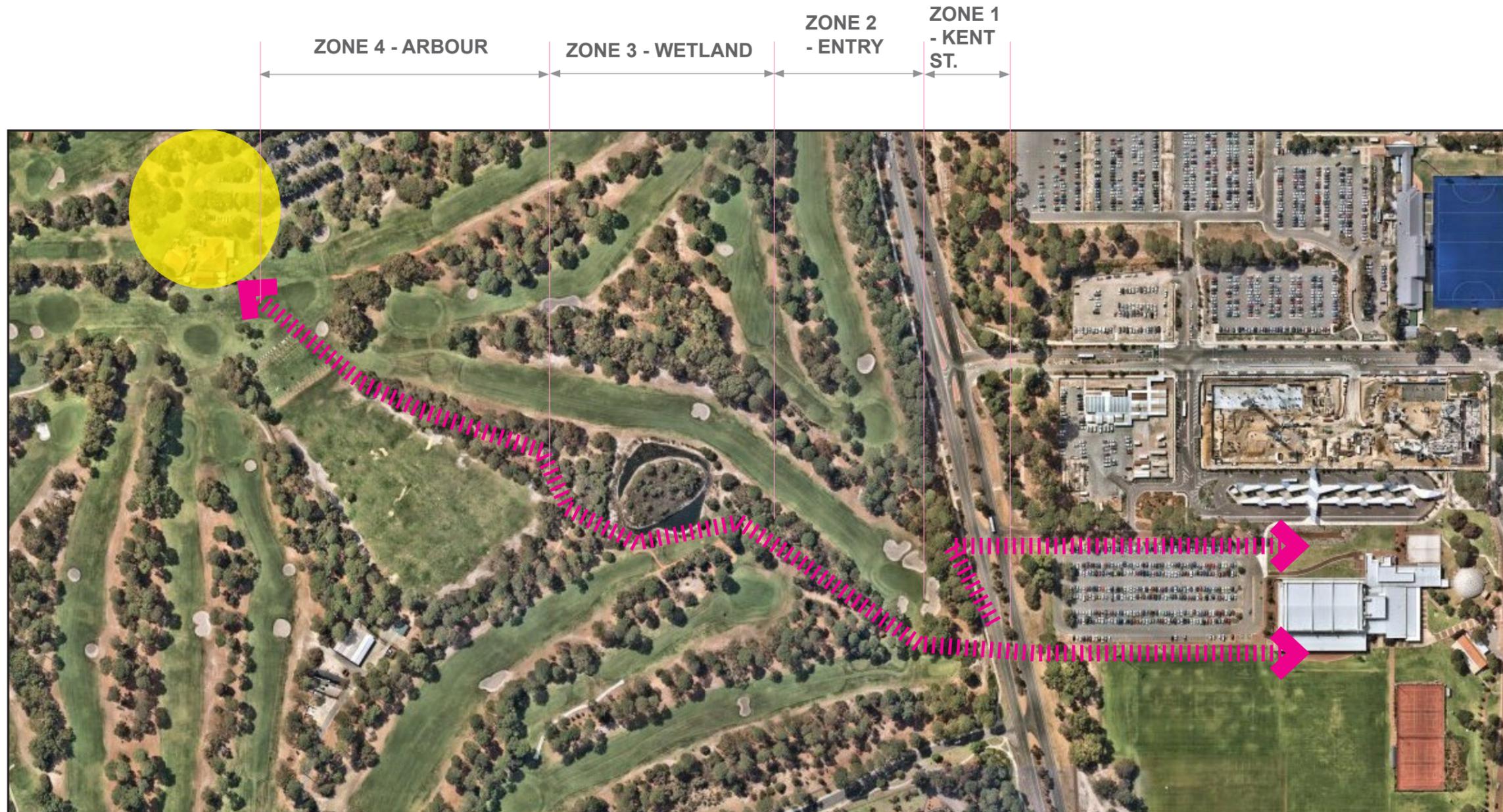
**IT IS ABOUT CREATING AN INTEGRATED LANDSCAPE WHICH ENHANCES USER EXPERIENCE**



## CONNECTION THROUGH A MANAGED LANDSCAPE

### ZONES:

- ZONE 1 - KENT STREET
- ZONE 2 - ENTRY TO GOLF COURSE
- ZONE 3 - WETLAND BOARDWALK
- ZONE 4 - ARBOUR

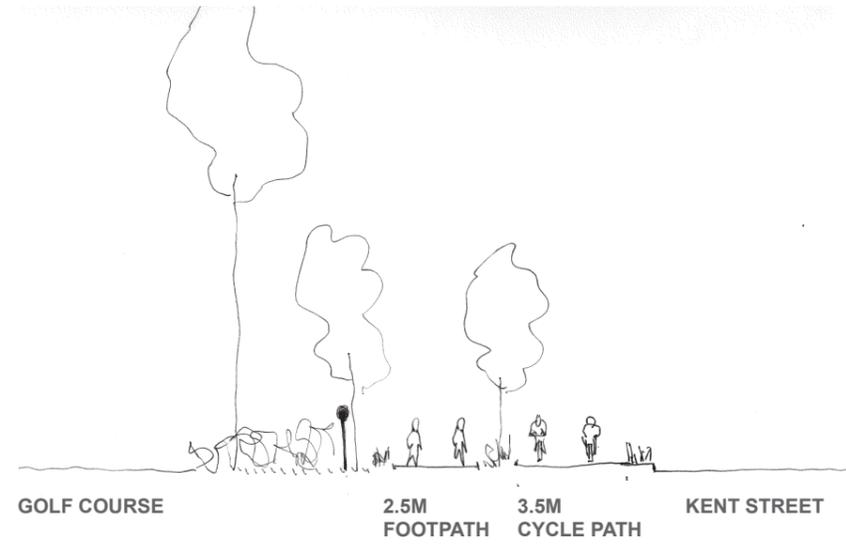


# ZONE 1 - KENT STREET

MULTI-USE STREET - SEPARATE CYCLISTS / PEDESTRIANS



INDICATIVE SECTION SKETCH



SIGNALIZED PEDESTRIAN CROSSING OF KENT STREET

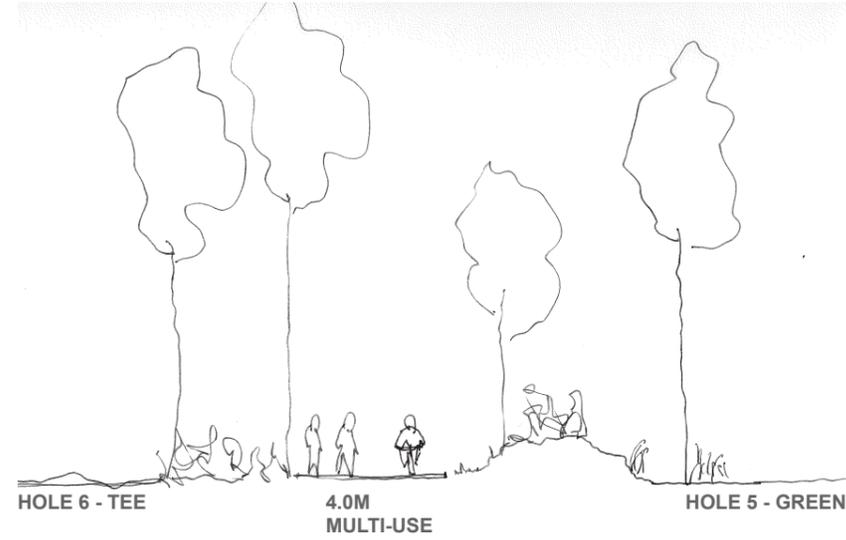


# ZONE 2 - ENTRY TO GOLF COURSE

FOOTPATH THROUGH LANDSCAPE



INDICATIVE SECTION SKETCH



POTENTIAL SEATING - REST AEA

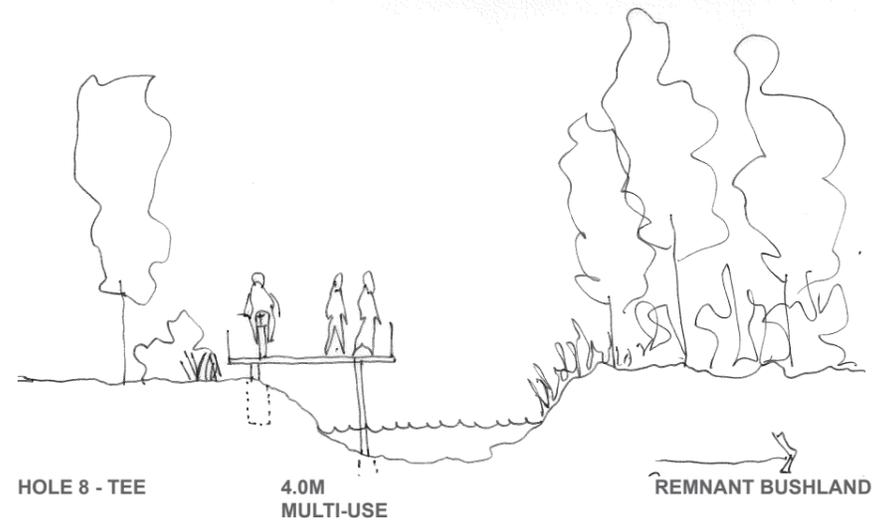


# ZONE 3 - WETLAND BOARDWALK

RAISED BOARDWALK THROUGH BUSH



INDICATIVE SECTION SKETCH



RAISED BOARDWALK OVER WATER

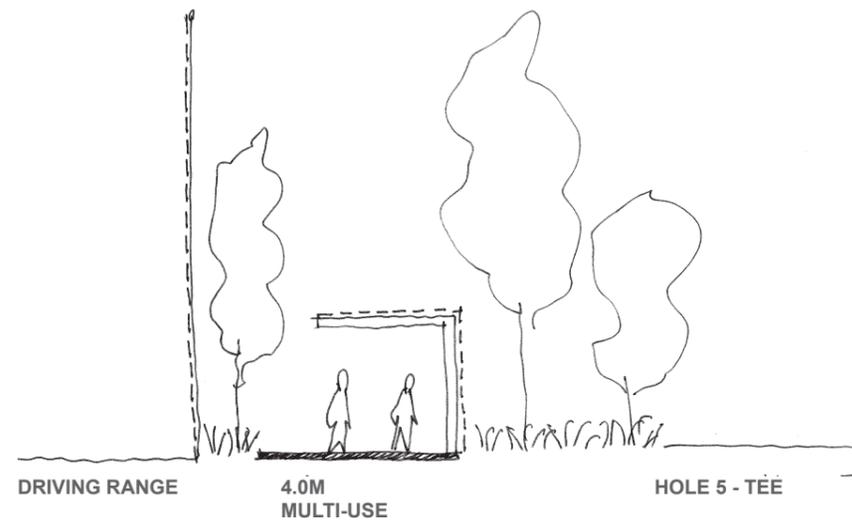


# ZONE 4 - ARBOUR

SCULPTURAL DEVICES FOR PROTECTION / SHADE



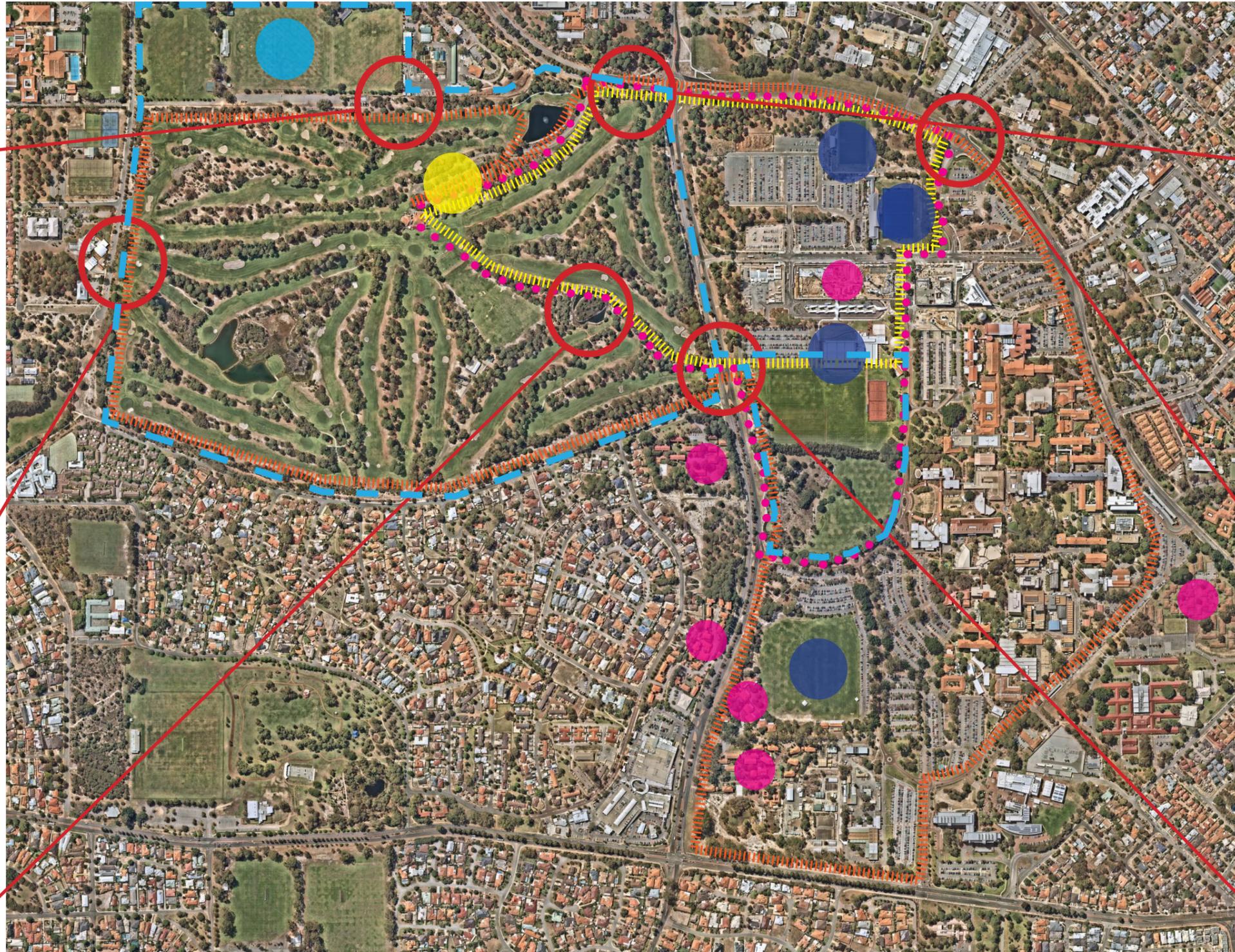
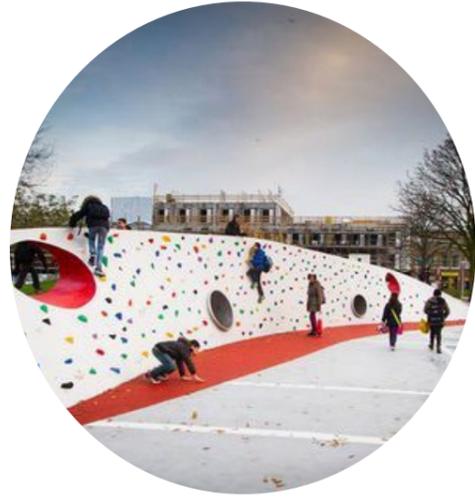
INDICATIVE SECTION SKETCH



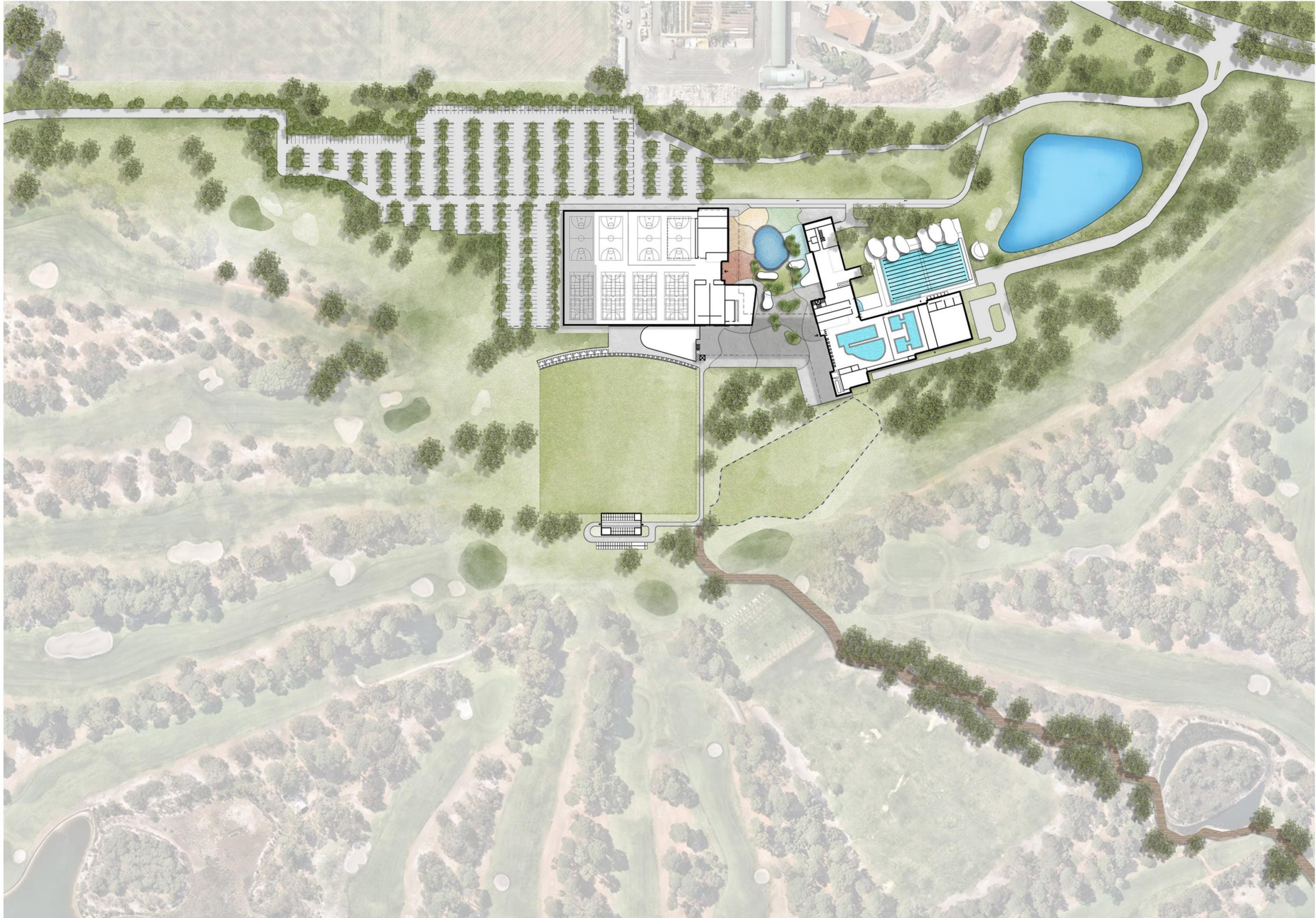
LANDSCAPE TO MERGE STRUCTURES WITH BUSH



**INTEGRATED URBAN PRECINCT**  
HEALTH / FITNESS / WELLNESS / SPORT



## APPENDIX D – CONCEPT DESIGN



**SITE PLAN**

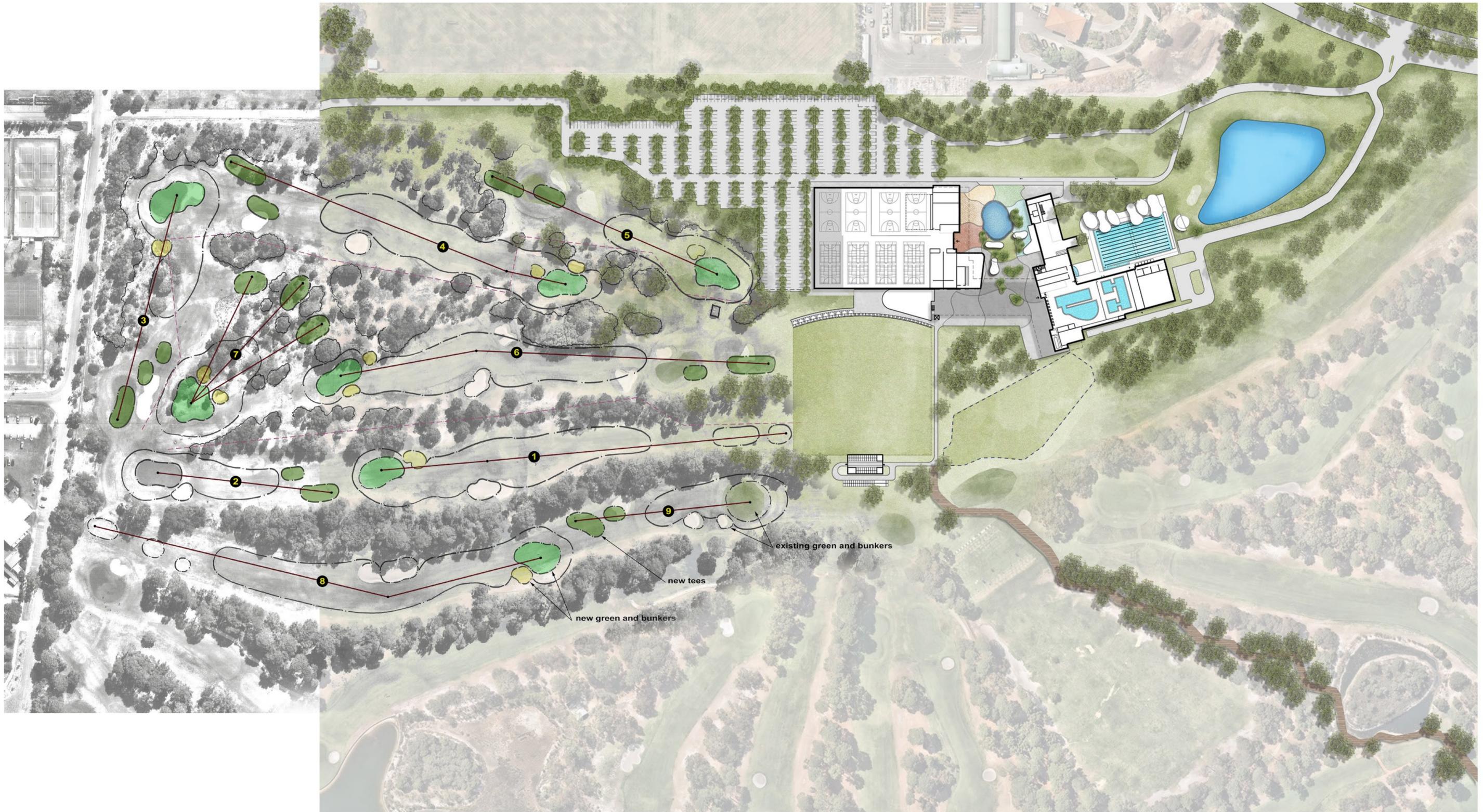
**SOUTH PERTH  
RECREATION & AQUATIC FACILITY**

Public Version - Redacted



ARCHITECTURE / URBAN DESIGN / INTERIOR DESIGN

**CHRISTOU**

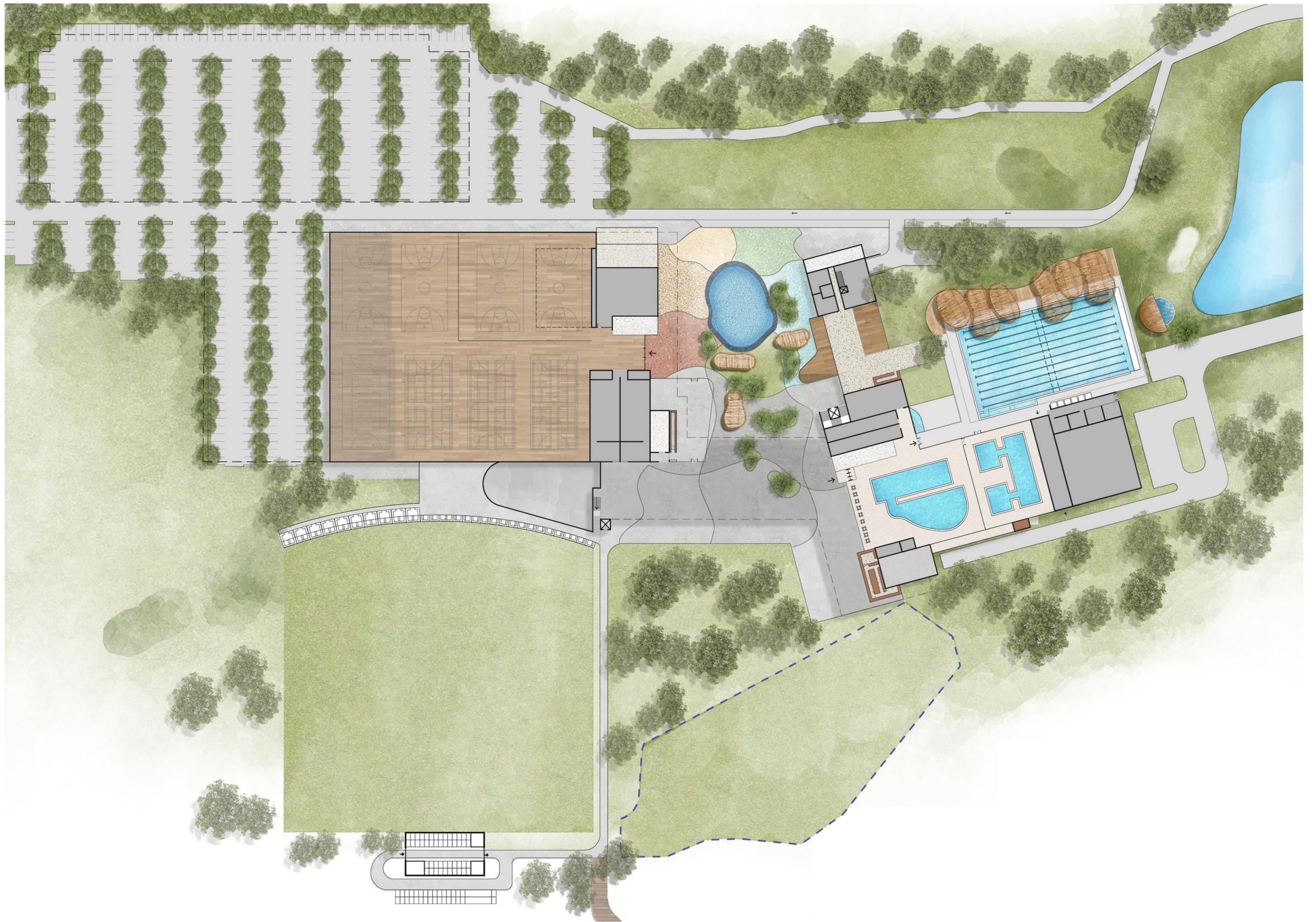


**SITE PLAN**

**SOUTH PERTH  
RECREATION & AQUATIC FACILITY**

Public Version - Redacted



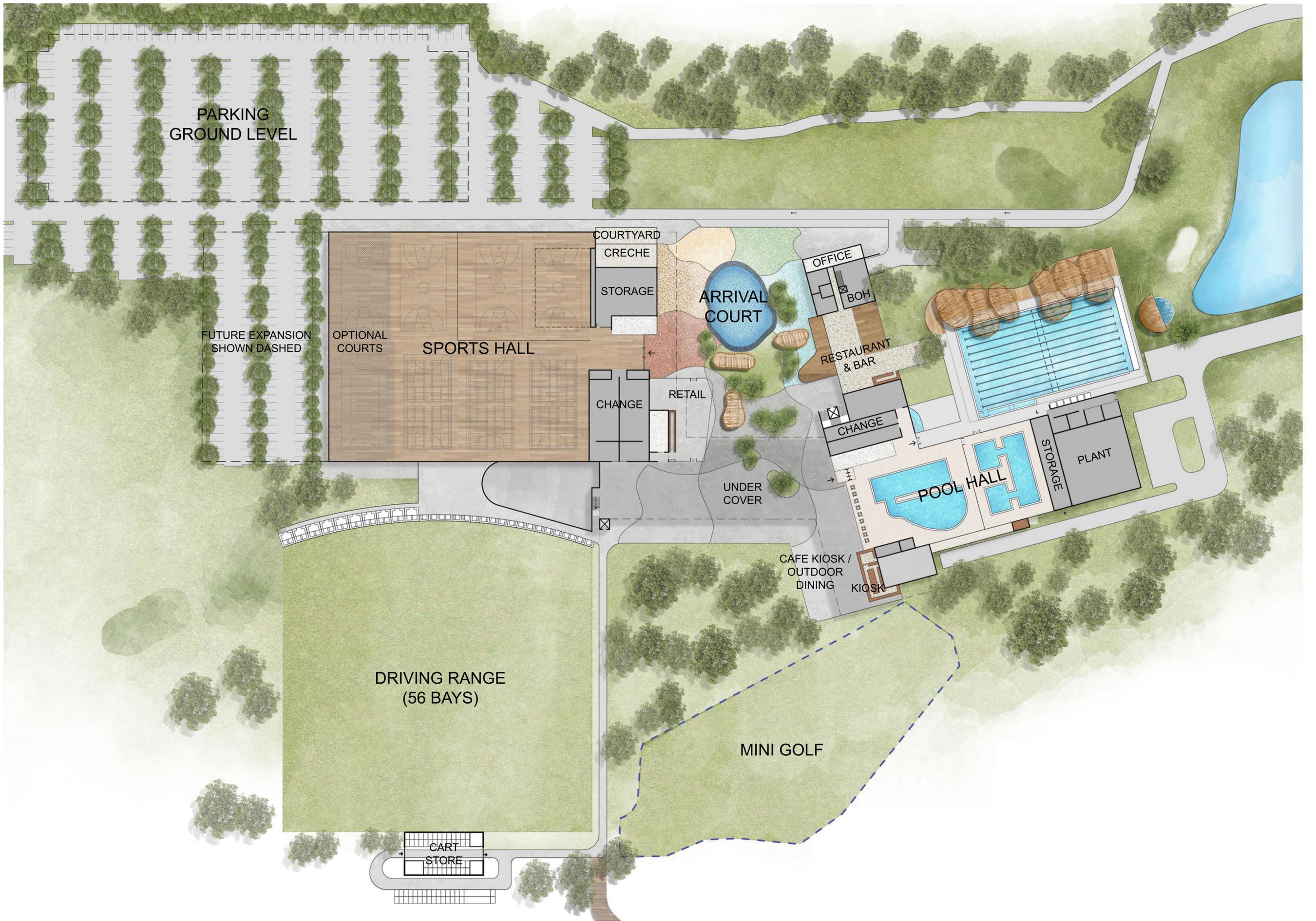


**GROUND FLOOR PLAN**

**SOUTH PERTH  
RECREATION & AQUATIC FACILITY**

Public Version - Redacted



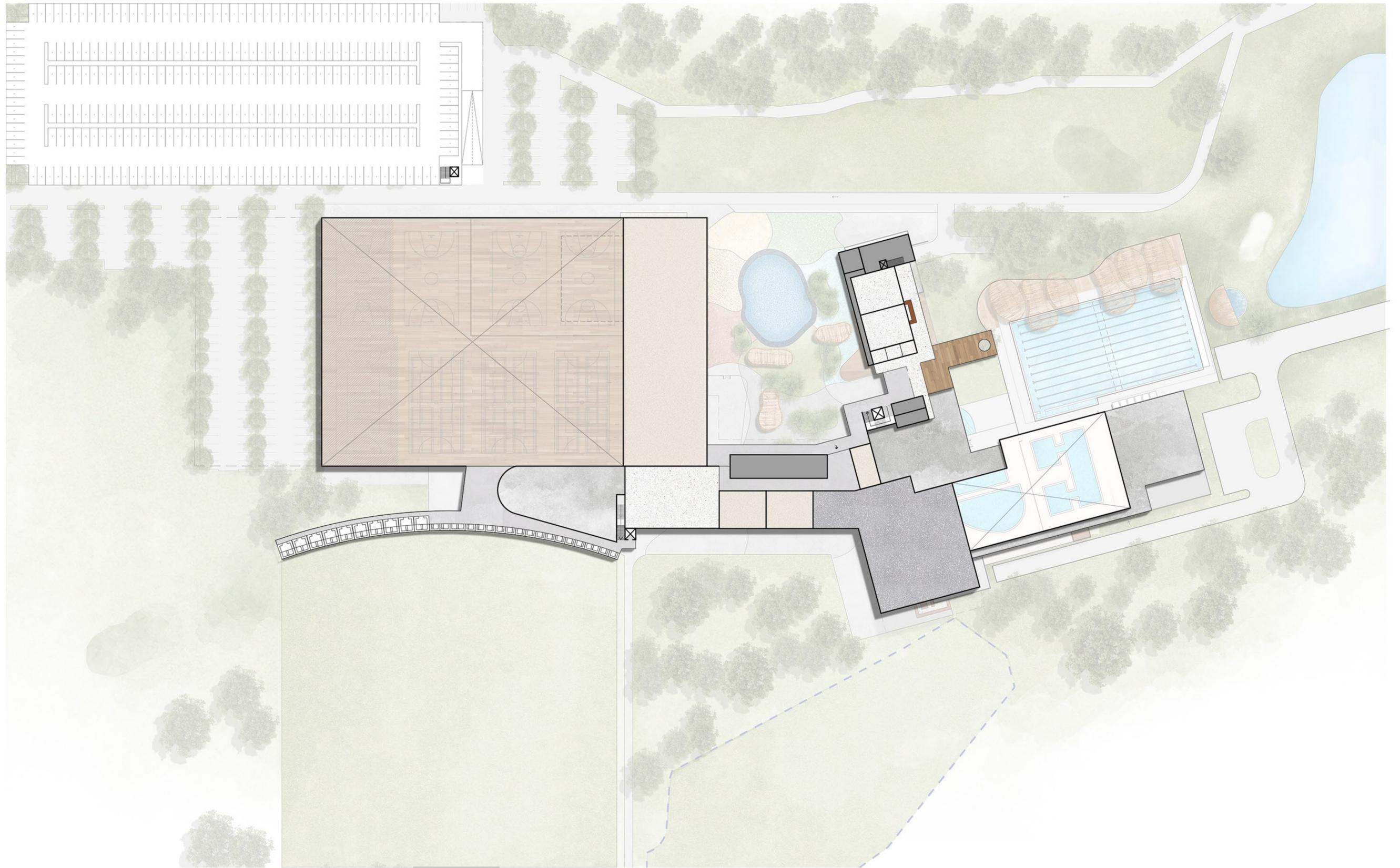


**GROUND FLOOR PLAN**

**SOUTH PERTH  
RECREATION & AQUATIC FACILITY**

Public Version - Redacted





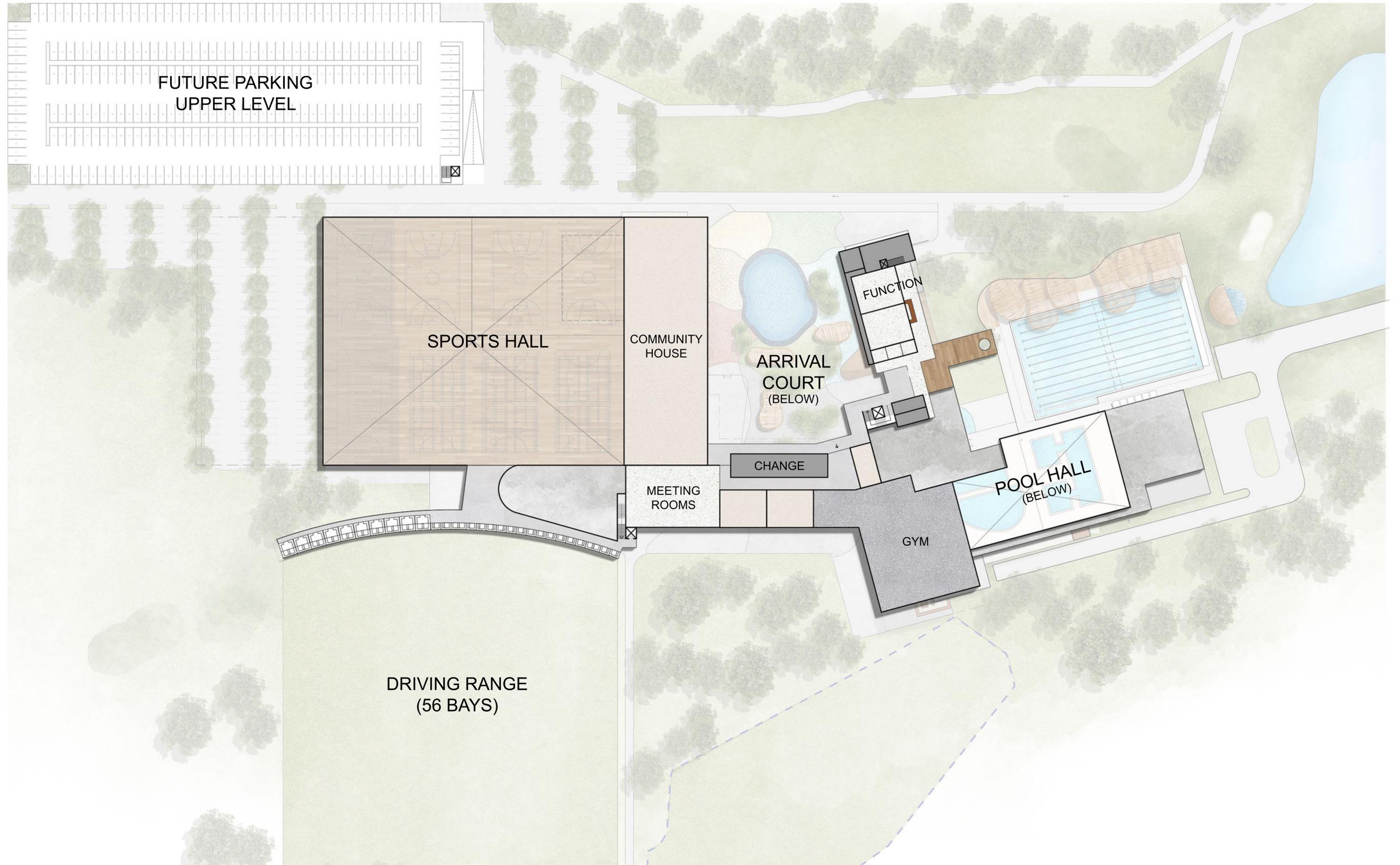
**FIRST FLOOR PLAN**

**SOUTH PERTH  
RECREATION & AQUATIC FACILITY**

Public Version - Redacted



**CHRISTOU**  
ARCHITECTURE / URBAN DESIGN / INTERIOR DESIGN



**FIRST FLOOR PLAN**

**SOUTH PERTH  
RECREATION & AQUATIC FACILITY**

Public Version - Redacted



## APPENDIX E – PRELIMINARY ENVIRONMENTAL INVESTIGATIONS

## Preliminary Site Investigation Proposed Recreational Aquatic Facility, Como, WA



Prepared For: City of South Perth  
Cnr Sandgate St & South  
Tce, South Perth WA 6151

Report Number: AP2020-089

Report Version: V2

Report Date: 14 August 2020

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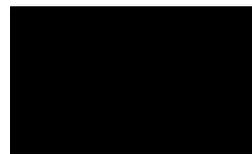
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Document No: CSP2020-001\_PSI\_001\_TR\_V1

Report No: AP2020-089

Author:

  
Environmental Scientist



14 August 2020

Signature

Date

Reviewed by:

  
Senior Environmental  
Scientist



14 August 2020

Signature

Date

Approved by:

  
Manager Contaminated Sites



14 August 2020

Date

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## EXECUTIVE SUMMARY

Aurora Environmental (Aurora) was commissioned by the City of South Perth to undertake a Preliminary Site Investigation (PSI) for the proposed Recreation and Aquatic Facility (RAF) to be located on the northern portion of the Collier Park Golf Course. The proposed location of the RAF is on the southern portion of 145 Thelma Street and the northern portion of Lot 3858 Hayman Road, Como Western Australia (WA) (the Site). The City of South Perth are proposing a larger scale RAF as part of their Strategic Community Plan to provide recreation benefits to the local community.

### Objectives

It is understood that the overarching objective of the PSI is to inform the project definition plan and business case for the proposed RAF. The technical objectives of the PSI are to provide information to the project team in relation to the potential contamination issues associated with current and historical use of the Site, through a desktop review, which may constrain or impede the potential development of the proposed RAF.

### Scope of Work

In order to achieve the above objectives, the following scope of works was undertaken:

- Preparation of a site-specific safety work method statement (SWMS) for the Site inspection.
- Desktop review to identify areas of potential environmental concern, which included:
  - collation of site identification details and general information, including current layout and surrounding land uses, and a description of the existing environmental setting (i.e. climate, geology and hydrogeology etc.);
  - review of site history and condition based on available background information such as dangerous goods licensing, historical aerial photographs, state and federal databases, and Department of Water and Environmental Regulation (DWER) Basic Summary of Records (BSR);
  - review of previous reports and other available information pertaining to the activities conducted at the Site, to assist with understanding potentially contaminating industries, activities and land uses of the Site history;
  - completion of site walkover; and
  - documentation of the objectives, scope of work, findings, conclusion and recommendations in the report.

### Conclusions

A portion of 145 Thelma Road was identified to have been used historically as a landfill prior to its redevelopment as a golf course. Landfills are described by DER (2014a) as potentially contaminating land uses which have the potential to contaminate soil and groundwater and present unacceptable risks to human users where landfill gases have the potential to accumulate. The building associated with the landfill was constructed in the early 1980's which is a time when asbestos containing fibre cement products were still used in construction. Although no fragments of ACM were observed during the site inspection there is uncertainty if these materials (if present) were removed prior to demolition

of the building and as a result if ACM impacted demolition wastes (e.g. building rubble) may remain in the building footprint. The soak well at the Proshop where golf carts were historically washed down was identified as presenting a potential risk if potential contaminants were washed into it and accumulated in the sediments and potentially migrated to groundwater.

It is concluded on the basis of a SPR assessment which shows potentially complete linkages for these PAOEC that potentially unacceptable human health and ecological risks may be present which require further investigation to assess if these risks. present potential development constraints for the proposed RAF development.

The Site has a moderate to low risk of ASS occurring within 3m of the natural soil surface with high to medium risk of ASS beyond 3m of the natural soil surface. Where the proposed RAF development will involve either earthworks extending to beyond 3 mbgl, temporary or permanent lowering of the water table (such as for dewatering) or works within 500m of wetlands further ASS assessment would be required.

Native vegetation has been observed at the Site and remnant pine trees may provide foraging resources for black cockatoos therefore further assessment or approvals may be required.

The proposed redevelopment may involve demolition of the existing Proshop and related outbuildings which may comprise hazardous building materials. It is considered important to ensure that any hazardous materials that maybe present in the building structure are identified and removed prior to demolition of the buildings proper. Additionally, soils beneath the existing Proshop building may have historically been sprayed with pesticides and if present, removal of the building may create an exposure pathway to receptors.

As a consequence, when the building is removed the underlying soils which may have been sprayed may become accessible to future users of the Site. Therefore, soils beneath the building slab should be assessed for the presence of pesticides to determine if they require management as part of the redevelopment works.

It is considered that, soils beneath the building slab should be assessed for the presence of pesticides to determine if they require management as part of the redevelopment works

which should be sampled and assessed prior to redevelopment of the Site.

### **Recommendations**

Based on the information collected in the PSI the following recommendations are made for consideration.

- Given the Site has had a former landfill, a listed potentially contaminating landuse, it is recommended the Site be reported to DWER as a potentially contaminated site via a Form 1.
- Undertake further detailed investigation to characterise the nature and extent of the identified PAOECs. The investigation may need to consider assessment of soils, groundwater and landfill gas.
- Undertake an ASS investigation consistent with DER (2014b) where the proposed redevelopment requires earthworks extending to beyond 3 mbgl, temporary or permanent lowering of the water table (such as for dewatering) or works within 500m of wetlands.

- Assess the potential presence of OCPs beneath the current building pads following demolition (if within the proposed development envelope).
- Undertake a HAZMAT survey on the current buildings to ensure adequate demolition procedures are completed.
- Further assessment or approvals may be required prior to clearing of any vegetation.

## **1 INTRODUCTION**

Aurora Environmental (Aurora) was commissioned by the City of South Perth to undertake a Preliminary Site Investigation (PSI) for the proposed Recreation and Aquatic Facility (RAF) to be located on the northern portion of the Collier Park Golf Course. The proposed location of the RAF is on the southern portion of 145 Thelma Street and the northern portion of Lot 3858 Hayman Road, Como Western Australia (WA) (the Site). The Site boundary is shown on Figures 1 and 2.

### **1.1 BACKGROUND**

The City of South Perth are proposing a larger scale RAF as part of their Strategic Community Plan to provide recreation benefits to the local community. The City of South Perth are currently in possession of one indoor recreation facility (George Burnett Leisure Centre) which is considered below industry standard and there are no local government public aquatic facilities. The proposed location for the RAF is north of the current club house facility at the Collier Park Golf Course. It is understood that a PSI is required to identify potential contamination constraints as part of the due diligence process.

### **1.2 OBJECTIVE**

The overarching objective of the PSI is to inform the project definition plan and business case for the proposed RAF. The technical objectives of the PSI are to provide information to the project team in relation to the potential contamination issues associated with current and historical use of the Site, through a desktop review, which may constrain or impede the potential development of the proposed RAF.

### **1.3 SCOPE OF WORKS**

In order to achieve the above objectives, the following scope of works was undertaken:

- Preparation of a site-specific safety work method statement (SWMS) for the Site inspection.
- Desktop review to identify areas of potential environmental concern, which included:
  - collation of site identification details and general information, including current layout and surrounding land uses, and a description of the existing environmental setting (i.e. climate, geology and hydrogeology etc.);
  - review of site history and condition based on available background information such as dangerous goods licensing, historical aerial photographs, state and federal databases, and Department of Water and Environmental Regulation (DWER) Basic Summary of Records (BSR);
  - review of previous reports and other available information pertaining to the activities conducted at the Site, to assist with understanding potentially contaminating industries, activities and land uses of the Site history;
  - completion of site walkover; and
  - documentation of the objectives, scope of work, findings, conclusion and recommendations in the report.

The scope of work was undertaken in accordance with the below published guidelines to the extent of the stated objectives.

- Assessment and Management of Contaminated Sites (DER, 2014a).
- Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia (Department of Health (DoH), 2009).
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM) [(National Environment Protection Council (NEPC), 1999 as amended 2013)].

## 2 SITE IDENTIFICATION

Site identification details are provided in Table A below and shown on Figure 2. Current certificates of title are included in Appendix 1.

**TABLE A: SITE IDENTIFICATION DETAILS**

IDENTIFICATION FEATURES	DETAILS
Site Location	Collier Park Golf Course, Como, WA
Site Address	145 Thelma Road and Lot 3858 Hayman Road Como, WA.
Lot Details and Certificate of Title	Lot 500 on Deposited Plan 416118, LR3170/620 Lot 3858 on Deposited Plan 218457, LR3102/500
Site Area	Approximately 18.37231 ha
Site Owner	Owner: State of Western Australia Management Order: City of South Perth
Local Government Authority	City of South Perth
Coordinates of Site Boundaries (Approximate)	NE: 32° 0' 2" S, 115° 52' 56" E SE: 32° 0' 2" S, 115° 52' 56" E NW: 31° 59' 54" S, 115° 52' 30" E SW: 32° 0' 0" S, 115° 52' 29" E
Current Zoning	Parks and Recreation under City of South Perth Town Planning Scheme No. 6 and the Metropolitan Region Scheme
Current Site Use	Lot 3858 Hayman Road and the southern portion of 145 Thelma Road are currently used as a golf course. The northern portion of 145 Thelma Road, known as Bill Grayden Reserve, is used by the Trinity Aquinas Amateur Football Club and South Perth Baseball Club.
Current <i>Contaminated Sites Act 2003</i> Classification	Not classified
Previous Environmental Investigations	<ul style="list-style-type: none"> <li>Collier Park Golf Course Environmental Management Plan (Nicole Siemon and Associates, 2004).</li> <li>Water Quality in the City of South Perth Catchment (South East Regional Centre for Urban Landcare Inc, 2019).</li> </ul>

### 2.1 SITE LAYOUT AND SURROUNDING LAND USE

The Site is located approximately 5.7km south of the Perth CBD, with the Site layout illustrated in Figure 2. The Site is currently used as a golf course with the surrounding land uses described below and shown on Figure 3.

- North – City of South Perth Waste Transfer and Recycling Station is located directly north east of the Site. Collier Reserve, Wesley Playing fields and Bill Grayden Reserve are located north of the Site and are used as recreational sporting grounds. Residential land use is present north of Thelma Street.

- East – Collier Park Golf Course, Kent Street then Curtin University which includes the Perth Hockey Stadium.
- South – Collier Park Golf Course followed by Jackson Road and residential.
- West – Murray Street followed by South Perth Tennis Centre and Lifestreams Christian Church, followed by residential area. Penrhos College and Como Secondary College are located to the north-west and south-west, respectively, of Murray Street.

### **3 HISTORICAL REPORTS**

#### **3.1 COLLIER PARK GOLF COURSE ENVIRONMENTAL MANAGEMENT PLAN (NICOLE SIEMON & ASSOCIATES, 2004)**

Nicole Siemon and Associates developed an Environmental Management Plan (EMP) in 2004. The purpose of the EMP was to review the current state of the Collier Park Golf Course with respect to the effectiveness of the management approaches current at the time and offer best management practice (BMP) solutions to maximise environmental benefits to the course. The EMP was developed to identify a wide range of cultural, structural, and mechanical practices to be used to preserve and protect habitat, protect water quality, and to preserve the environmental quality within the property. The management plan focused on surface and groundwater protection; materials and waste management; irrigation management; conservation, landscaping and rehabilitation; and community education and involvement.

Specific information relating to the Site which is informative or relevant for the PSI is discussed below.

- The golf course is sited on a former pine plantation.
- Remnant native vegetation is present in a few areas with only one area identified as able to self-regenerate and in reasonable condition.
- Carnaby's cockatoo and oblong turtles use the site for habitat as well as other duck, geese and bird species.
- One of the three wetlands is natural, Pine 9 (south-west). The Entrance Lake was constructed in 1982 after a natural wetland to the west was filled in.
- Three stormwater drains discharge to the Entrance Lake which are sourced from a Water Corporation main drain from Technology Park, the City of South Perth depot and the clubhouse carpark. The report states a gross pollutant trap is installed on the depot drain and a grease trap for the mechanical workshop however no other traps are known to be present on the other drains.
- A former landfill is present in the north-west of the golf course which accepted assorted domestic waste, building rubble, asbestos sheeting, car batteries, possibly commercial waste and was not inert. The landfill was capped with a thin layer of clay. The report states infiltration of surface water is directed via subsurface pipework to bioswales in areas with no landfill material to reduce water flowing through waste.
- The presence of certain algae species in the lakes indicates there may be an issue with high nitrogen. The report indicated the potential sources of nutrients could be former landuses such as a piggery, leachates from the former landfill, the three stormwater drains entering the Entrance Lake or from other sources within the wider aquifer.
- There are nine bores onsite used to assist with reticulation of the golf course, which are shown on Figure 2.
- Septic tank and/or toilet is positioned within the RAF boundary.

- Golf carts were washed down on a concrete hardstand which drains to a soakwell at the Proshop.
- Two 2,500L fuel storage tanks were present in a fenced compound outside the main maintenance building, one an aboveground storage tank (AST) and the second a belowground storage tank (UST) holding unleaded petrol.

### **3.2 WATER QUALITY IN SOUTH PERTH CATCHMENTS (SOUTH EAST REGIONAL CENTRE FOR URBAN LANDCARE INC (SERCUL), 2019)**

SERCUL conducted the assessment of surface water quality within the City of South Perth catchments in 2018 as part of its annual monitoring program to determine the quality of water from environmental priority catchments that flow into the Swan and Canning Rivers. The report used data that had been collected from the previous six years, where available, to monitor spatial and temporal patterns. Samples during the sampling period were collected from July, August, September and October 2018.

Data was collected from a total of sixteen sites and analysed for nutrients, metals, and physicochemical parameters and compared to trigger values for lowland rivers or protection of freshwater biota from the Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) guidelines. The Collier Pines Main Drain consists of five subareas with two of the subareas located within the Collier Park Golf Course which is at the upgradient end of this drainage system. Three drains enter the Collier Park Entrance Lake subarea with a sample location at each of these drains (SP14, SP15 and SP16) and one sample location at the Collier Park Golf Course Islands Lake outlet (SP8) subarea, as shown on Figure 4. For the Collier Park Golf Course sites (SP8, SP14, SP15 and SP16) the following analytes exceeded the adopted trigger values in 2018:

- total nitrogen (TN) at SP14 and SP15 in September;
- total oxidized nitrogen (NO<sub>x</sub>\_N) at SP14 in August and October;
- ammonia / ammonium nitrogen (NH<sub>3</sub>\_N) at SP8, SP15 and SP16 in August and SP14 in October;
- all four sample sites for total aluminium, whereas only SP8 (August, September, October), SP14 (all months) and SP15 (August only) for dissolved aluminium;
- total and dissolved copper at SP14 and SP15;
- SP14 for total iron whilst SP8 (September), SP14 (September) and SP16 (August) exceeded for dissolved iron; and
- total and dissolved zinc at SP14 and SP15 in July and August.

A sample collected at SP8 for analysis of select herbicides had all results below laboratory limit of reporting (LOR) in 2018.

The study found that many sites within the Swan and Canning River Catchments had high iron and low dissolved oxygen saturation records. Generally high aluminium, high zinc, low pH and high bioavailable forms of nitrogen were recorded within the Collier Pines Main Drain sample sites. The report stated the source of the nutrient and non-nutrient contaminants could be a result of historical land uses such

as the landfill known as Graydon (sic) Reserve abandoned landfill located at Collier Park Golf Course and fertiliser use within the catchment.

### **3.3 SUMMARY**

From the reviewed reports the following issues were identified which may be potential sources of contamination:

- a former City of South Perth landfill was present in the north-west of the golf course which accepted assorted inert and domestic waste, building rubble, asbestos sheeting, car batteries, and possibly commercial waste;
- washdown of golf carts occurred within the Proshop which drained to a soak well;
- mention of a former piggery however it is not clear where this may have been located; and
- water within stormwater drains entering and leaving the golf course site indicate there are elevated concentrations of nutrients, aluminium, copper, iron and zinc.

The reports indicate that fuels were stored near the maintenance compound which is located outside the proposed RAF boundary. Although it was noted that septic tanks and associated leach drains are present at the Site they likely operated at less than 540L/day and in compliance with regulations 15 to 19 of the Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 therefore are not considered capable of enabling contamination as per the Contaminated Sites Regulations 2006, however should be appropriately managed as part of future construction works.

## **4 SITE ENVIRONMENTAL SETTING**

### **4.1 CLIMATE**

Perth has a Mediterranean climate with hot dry summers and mild wet winters with the majority of rainfall experienced during the winter months. The maximum average temperature in summer (December to February) at the nearest Bureau of meteorology (BoM) station (Perth Metro site 009225) (accessed at [http://www.bom.gov.au/climate/averages/tables/cw\\_009225.shtml](http://www.bom.gov.au/climate/averages/tables/cw_009225.shtml) on the 28 May 2020) is 30.7°C with an average minimum temperature of 8.2°C in winter months (June to August). The average annual rainfall from 1993 to 2020 was 733.2mm.

### **4.2 TOPOGRAPHY**

Based on topographic contours presented on National Map (accessed online at <https://nationalmap.gov.au/> on the 28 April 2020) the Site is mapped at an elevation of approximately 8m Australian Height Datum (AHD). The Site was observed to have slight undulating topography, which was likely constructed to facilitate challenges to the golf course.

### **4.3 GEOLOGY AND SOILS**

The 1:50,000 Environmental Geology Series (Gozzard, 1986) maps soils at the Site as very light grey sand at surface with yellow sand at depth, fine to medium grained, subrounded quartz, moderately well sorted of the Bassendean Sand formation. The 1:500 000 State interpreted bedrock geology (accessed online at <https://nationalmap.gov.au/> on 29 April 2020) stated that bedrock beneath the Site is of the Coolyena Group described as chalk, greensand, glauconitic sandstone, siltstone, marl; characteristically glauconitic (National Map, 2020a).

### **4.4 ACID SULPHATE SOILS**

Information obtained from DWER Acid Sulphate Risk Map, Swan Coastal Plain (accessed at <https://nationalmap.gov.au/> on 28 April 2020) indicates a moderate to low risk of acid sulphate soils (ASS) occurring within 3m of natural soil surface but high to moderate risk of potential acid sulphate soils (PASS) beyond 3m of natural soil surface as seen in Figure 5 (National Map, 2020a). Two areas are mapped as high to moderate risk of ASS occurring within 3m of the surface which are the two lakes in the south of the Collier Park Golf Course, approximately 270m south and 315m south-east of the southern RAF boundary.

According to Table 2 within Department of Environment Regulation (DER) (2014b) where the Site is located within a Class 2 (moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface) the following actions trigger further assessment for ASS:

- works involving lowering of water table (temporary or permanent);
- earthworks extending to beyond 3 metres below natural ground surface; and
- works within 500m of wetlands.

The Site has been highly modified therefore natural vegetation species and original topography are no longer present and cannot be used as an indicator of ASS. During the site inspection no other visual

indicators of ASS such as dead or dying pockets of grass or vegetation were observed. It is noted that the SERCO (2019) report identified elevated aluminium and iron, indicators of ASS, within drainage waters within the Collier Park Golf Course however this may be a result of multiple point and non-point sources located on- and off-site and is not necessarily related to the presence of ASS onsite. In addition, the subsurface geology has also been modified as a result of the documented former landfill and this may also affect the presence of ASS/PASS onsite.

Aurora has previous experience working on a neighbouring site where 10 soil samples were analysed for field pH as part of an ASS investigation which found the samples taken from a depth of 1.4m to 9.5m below ground level (bgl) did not indicate the presence of potential PASS.

#### 4.5 HYDROLOGY

No surface water bodies (natural or man made) were observed on the Site during the Site inspection. The golf course lakes are the closest water bodies to the Site located at approximately 136m north-east, 355m south-east and 260m south-west. The Canning River is located approximately 2.23km south of the Site.

#### 4.6 HYDROGEOLOGY

Hydrogeology and Groundwater Resources of the Perth Region Western Australia (Davidson, 1995) details the Site as being underlain by three regional aquifer systems which are segregated into three levels. The aquifer levels (from top to bottom) and the associated geological units, expected groundwater salinity and hydraulic conductivity of each aquifer are summarised in Table B below.

**TABLE B: REGIONAL HYDROGEOLOGY**

LEVEL	AQUIFER	COMMENT	GROUNDWATER SALINITY
1	Superficial (unconfined)	The unconfined superficial groundwater aquifer is hosted within the Bassendean Sand Formation.	250-500 mg/L (fresh – marginal)
2	Leederville (confined)	The Leederville aquifer is a major confined aquifer extending from the north of Perth (Lancelin) to the south Coast at Augusta. General geology is the Cretaceous Leederville Formation.	1000-2000 mg/L (marginal – brackish)
3	Yarragadee North (confined)	The Yarragadee is the largest confined aquifer in the Perth Basin and covers an area stretching between Dongara in the north to Serpentine in the South, its general geology comprises; Cretaceous Gage Road and Parmelia Formations, Jurassic Yarragadee Formation.	1000-2000 mg/L (marginal – brackish)

The groundwater contours in the Perth Groundwater Atlas (accessed online at <https://maps.water.wa.gov.au/#/webmap/gwm> on 28 April 2020) indicate that groundwater is present at a depth of approximately 2 to 3 m AHD below the Site (DWER, 2020a). The 3m AHD contour

is oriented northwest-southeast direction indicating that groundwater appears to flow to the southwest beneath the Site, towards the Canning River.

#### 4.6.1 Register Groundwater Bores

A search of the DWER's WIR database (<http://wir.water.wa.gov.au/Pages/Water-Information-Reporting.aspx>) indicates there are two registered bores located onsite registered and thirty registered bores within 1km of the Site. Details of these bores are listed in Table C below. A map of the registered bores identified in the WIR database search is provided as Appendix 2 along with the bore detailed information.

**TABLE C: SUMMARY OF REGISTERED BORE DETAILS**

BORE WIR ID	SITE OWNER	DEPTH OF BORE (M BGL)	PURPOSE
61600328	Unknown Company	41.15	No specific data available, unknown.
61600570	Private Owner	12.5	No specific data available, unknown.
61601169	Como High School	37.19	Bore Census - Perth - for AQWABase
61601170	Koonawarra Primary School	15.24	No specific data available, unknown.
61601276	Private Owner	3.35	No specific data available, unknown.
61601665	PWD	28.65	No specific data available, unknown.
61601672	Private Owner	10.67	No specific data available, unknown.
61601673	Private Owner	14.94	No specific data available, unknown.
61601969	City of South Perth	42	No specific data available, unknown.
61602056	Department of Water	42	Abandoned landfill Site GW Invstgn for AQWABase
61604492	Conservation and Land Management (CALM)	No Data	No specific data available, unknown.
61604549	City of South Perth	No Data	No specific data available, unknown.
61604836	Private Owner	24.38	No specific data available, unknown.
61604932	Private Owner	25	No specific data available, unknown.
61604998	Department of Agriculture and Food	99	No specific data available, unknown.
61605358	Penrhos Methodist Ladies College	30.48	No specific data available, unknown.
61606275	Private Owner	24.6	No specific data available, unknown.
61606346	Private Owner	24.08	No specific data available, unknown.
61609937	City of South Perth	42	1999 Licence Data
61609974	Department of Water	42	Abandoned landfill Site GW Investing for AQWABase
61609975	Department of Water	42	No specific data available, unknown.

**TABLE C: SUMMARY OF REGISTERED BORE DETAILS**

BORE WIR ID	SITE OWNER	DEPTH OF BORE (M BGL)	PURPOSE
61609976	Department of Water	42	No specific data available, unknown.
61609977	Department of Water	42	No specific data available, unknown.
61610196	Department of Water	No Data	Historical Data from the SWRIS Database
61611218	Department of Water	7.6m bgl	The bore was originally used for Historical Data from the SWRIS Database in 1983. It was then used for Perth Basin Geochemistry Sampling project in 2005. The bore was also used in SGIP Kings Park Formation Investigation in 2017.
61615430	Private Owner	8.23	No specific data available, unknown.
61615667	Collier Park Golf Course	No Data	No specific data available, unknown.
61615668	South Perth Tennis Club	No Data	No specific data available, unknown.
61670853	City of South Perth	25	PRCACS Form 2 & 2A Data Capture
61670859	City of South Perth	42	PRCACS Form 2 & 2A Data Capture
61671795	City of South Perth	45	Water for Food Water Information Conversion
61672210	Unknown	No Data	No specific data available, unknown.

#### 4.6.2 Surface and Abstraction Licences

A search of the DWER’s Water Register (DWER, 2019b) which details current licensed ground and surface water abstraction sites indicates there is two groundwater abstraction license for the Site, with a further 12 abstraction licenses within a 1km radius of the Site.

##### On-site

- Licence 86636 associated with Thelma St Como Collier Park Golf Course (Lot 3858 On Plan 218457) is allocated to City of South Perth, with an allocation of 432,000 KL from the Superficial Swan aquifer, the licence expires on the 31 October 2025.
- Licence 50708 associated with Thelma St Como Collier Park Golf Course (Lot 3817 On Plan 218435) is allocated to City of South Perth, with an allocation of 812,790 KL from the Superficial Swan aquifer, the licence expires on the 13 September 2026.

##### Off-site

- Licence 45914 associated with Mckay St Bentley (Lot 1884 On Plan 213723) is allocated to Curtin University of Technology, with an allocation of 587,290 KL from the Superficial Swan aquifer, the Licence expires on the 10 January 2021.

- Licence 47100 associated with Murray St Como (Lot 3298 On Plan 189041) is allocated to Lifestreams Christian Church, with an allocation of 10,500 KL from Superficial Swan aquifer, the licence expires on the 15 June 2026.
- Licence 50474 associated with Morrison St Como (Lot 2199 On Plan 173604) is allocated to Penrhos College, with allocation of 30,000 KL from the Superficial Swan aquifer, the Licence expires on the 10 May 2028.
- Licence 50475 associated with Thelma St Como (Lot 771 On Plan 4528) is allocated to Penrhos College, with an allocation of 6,000 KL from the Superficial Swan aquifer, the Licence expires on the 10 May 2028.
- Licence 50709 associated with Ranelagh Cr South Perth (Lot 102 On Plan 5947) is allocated to City of South Perth, with an allocation of 225,000 KL from the Superficial Swan aquifer, the Licence expires on the 13 September 2026.
- Licence 62787 associated with Thelma St Como (Lot 3814 On Plan 218435) is allocated to Wesley College, with an allocation of 30,000 KL from the Superficial Swan aquifer, the Licence expires on the 2 October 2028.
- Licence 64179 associated with Western Australia Technology Park is allocated to Department of Biodiversity, Conservation and Attractions, with an allocation of 18,750 KL from the Superficial Swan aquifer, the Licence expires on the 26 November 2028.
- Licence 151647 associated with BrodieHall Drive Bentley (Lot 6 on Plan 15403) is allocated to Department of Biodiversity, Conservation and Attractions, with an allocation of 21,400 KL from the Superficial Swan aquifer, the Licence expires on the 17 May 2028.
- Licence 153841 associated with BaronHay Court, Kensington (Crown Reserve 24727) is allocated to Department of Biodiversity, Conservation and Attractions, with an allocation of 55,650 KL from the Superficial Swan aquifer, the Licence expires on the 13 March 2024.
- Licence 155440 associated with Bruce Street Como (Lot 2139 On Plan 216594) is allocated to Department of Education, with an allocation of 152,250 KL from the Superficial Swan aquifer, the Licence expires on the 28 February 2022.
- Licence 175551 associated with Dick Perry Av Kensington (Lot 15 On Plan 23438) is allocated to Commonwealth Scientific and Industrial Research Organisation, with an allocation of 0 KL from the Superficial Swan aquifer, the Licence expires on the 30 July 2023.
- Licence 203166 associated with KENT ST, BENTLEY (Lot 1884 On Plan 213723) is allocated to Curtin University, with an allocation of 98,496 KL from the Perth Mullaloo aquifer, the Licence expires on the 2 October 2021.

#### **4.6.3 Public Drinking Water Source Areas**

In order to protect the State's drinking water resources, the Department of Water (DoW) has defined certain areas of the state as being 'Public Drinking Water Source Areas' (PDWSAs) using the following three priority rating categories:

- Priority 1 (P1) classification areas are managed to ensure that there is no degradation of the drinking water source by preventing the development of harmful activities in these areas. For P1 areas the guiding principal is risk avoidance.
- Priority 2 (P2) classification areas are managed to ensure that there is no increased risk of water source contamination/pollution. For P2 areas the guiding principal is risk minimisation.
- Priority 3 (P3) classification areas are defined to manage the risk of pollution to the water source from catchment activities.

Review of the DWER (2020) PDWSA online mapping tool, indicates that there no PDWSA areas within a 2km radius of the Site.

#### **4.6.4 Groundwater Dependent Ecosystems**

A review of the BOM (2019b) Groundwater Dependant Ecosystem Atlas did not identify any aquatic, terrestrial or subterranean groundwater dependant ecosystems within the Site boundary or within a 1km radius of the Site.

## 5 SITE HISTORY

During the Site history review, information was requested from public agencies to identify and understand past or present land uses and/or activities at the Site which have potentially caused contamination.

### 5.1 SITE OWNERSHIP

A historical certificate of title (CoT) search completed by Landgate identified the earliest record was granted to Samuel Wood in 1887 with the property staying in the Woods family until it reverted to the Crown in 1979. Two separate reports were received from Landgate.

- Crown Reserve 36435, comprising 145 Thelma Street - The earliest record was from 1979 with the lot used for parks and recreation purposes and vested to the City of South Perth with a 21-year lease in 1979. This reserve is currently leased to the City of South Perth.
- Crown Reserve 38794, comprising Lot 3858 - The earliest record was from 1984 with the lot used for a recreational golf course. The lot was vested to the City of South Perth with a 21-year lease in 1984 which was approved again on 25 June 1993. The vesting was revoked on 25 June 1993 with approval for another 21-year lease for the City of South Perth on 28 June 1994.

The historical CoT information is included in Appendix 1. The Site was owned by the Woods family from 1887 until 1979 whereby it reverted to crown reserves vested to the City of South Perth. Based on the above listed owners there are no indicators of potential contamination.

### 5.2 HISTORICAL AERIAL PHOTOGRAPHS

Aerial photography for the Site from 1953 to 2020 was reviewed using Landgate's Map Viewer Plus online viewing tool (accessed at <https://maps.landgate.wa.gov.au/maps-landgate/registered/> on 28 April 2020). An aerial photograph from 1930 is available on City of South Perth's online intramaps (accessed <https://enterprise.mapimage.net/intramaps98/default.htm?configId=29b80b8c-2c27-4a14-8f10-678c7947f7be&project=Public> on 11 June 2020). Historical images from 1948, 1979, 1983 and 2000 are presented in Appendix 3. Other relevant years as summarised in Table D below are available on the above public online viewing tool.

**TABLE D: SUMMARY OF HISTORICAL AERIAL PHOTOGRAPHS**

DATE	SITE	SURROUNDING AREA
1930	Only the north-western portion of the Site is visible on photograph. Appears to be vegetated.	North and west appear to be similar to the Site, vegetated. South and east portions of the site are not visible.
1948	The Site appears to be used for agricultural farming of pine trees. There is a road through the centre of the Site east to west.	North – pine plantation, undisturbed vegetation and residential area East – lake or wetland and pine plantation South – pine plantation West – end of photo, not visible

**TABLE D: SUMMARY OF HISTORICAL AERIAL PHOTOGRAPHS**

DATE	SITE	SURROUNDING AREA
13 March 1961	Relatively unchanged from 1948 photograph. A small section appears to be cleared in the north of the Site.	North – pine plantation and residential area East – unchanged from 1948 photograph South - unchanged from 1948 photograph West – pine plantation and residential area
6 September 1974	Site used for pine plantation.	North – the lots for South Perth Recycling Centre, Collier Reserve and Wesley Playing Grounds have been cleared. Bill Grayden Reserve still under pine plantation, then residential development East –pine plantation, clearing and some buildings at Western Australian Institute of Technology (Curtin University). South – remains as pine plantation West – Clearing and building development at Penhros College and Como Secondary College sites, then residential area.
29 September 1979	Majority of the Site remains under pine plantation with some areas in the north of the Site cleared with mounds of soil and tracks visible into the centre of the Site, possibly the commencement of the landfill.	North – buildings present at South Perth Recycling Centre and Collier Reserve and Wesley Playing grounds present. East – Kent Street and Hayman Road bituminised through the pine plantation, Curtin University playing fields built South – remains as pine plantation then residential area. West – school sites established.
14 June 1983	The Site has been completely cleared of pine trees. Disturbed soils are present across the majority of the Site with some mounds of soil visible. A building is present in the centre north of the Site.	North – remains relatively unchanged from 1979 East – clearing of pine trees and development of the golf course South – clearing of pine trees and development of the golf course West – remains relatively unchanged from 1979
31 December 1989	Landfill facility appears to be level with no areas of mounding or fresh areas of disturbed soil. Building remains at the northern entrance from Thelma Street. Small circles of different colours are present to the rear/south of the building which are possibly small stockpiles of different material.  Lot 3858 Hayman Road has been developed into the golf course with the admin/proshop building and carpark present.	North – Bill Grayden Reserve under development. East – golf course operational South – golf course operational West – tennis courts developed

**TABLE D: SUMMARY OF HISTORICAL AERIAL PHOTOGRAPHS**

DATE	SITE	SURROUNDING AREA
6 February 1995	The landfill site has been completely cleared including the building. The lake in the north eastern corner has been filled and relocated further east (known as the Entrance Lake, located offsite).	North – Bill Grayden Reserve operational, additional buildings at the recycling centre East – remains relatively unchanged from 1989 South – remains relatively unchanged from 1989 West – development of retirement village
24 February 2000	Development of the Site into part of the golf course.	Remains relatively unchanged from 1995
17 December 2008	Remains relatively unchanged from 2000	Remains relatively unchanged from 2000 except new buildings to the west - 98five fm.
10 February 2020	Remains relatively unchanged from 2008	Remains relatively unchanged from 2008 except additional carparks and construction at Curtin University.

Observations made from the historical aerial photographs show a number of changes to the Site over the past seventy-one years. The initial aerial photograph in 1930 showed the visible north-western portion of the Site was vegetated. In aerial photographs the Site was occupied by a pine plantation from sometime prior to 1948 until between 1979 to 1983. In 1979 an area within the centre of 145 Thelma Street was cleared which is assumed to be the commencement of the landfill. A small building was developed at the Thelma Street entrance to the landfill facility in 1981 which was removed by 1995. The landfill activities appeared to be confined to 145 Thelma Street and did not appear to encroach onto Lot 3858 Hayman Road. Lot 3858 Hayman Road remained as a pine plantation until 1983 when the majority of this lot was cleared to become the Collier Park Golf Course. In 1985 the the golf course clubrooms/proshop was developed. The whole of the Site is currently used as the Collier Park Golf Course.

The historical aerial photograph review confirmed activities consistent with a landfill (presence of broad acre soil disturbance and stockpiles) were undertaken at the Site which were limited to 145 Thelma Street. Additionally a building was present in 1981 and was later removed in 1995 however it is unclear from the aerial photographs the materials used in the building. Asbestos building products were still in use at the time of this build and may have been used within the building.

### 5.3 DANGEROUS GOODS STORAGE RECORDS

Aurora submitted an freedom of information (FOI) request to the Department of Mines, Industry Regulation and Safety (DMIRS) on 28 April 2020 for any current or historical dangerous goods records held for the Site. The DMIRS response is presented in Appendix 4.

The DMIRS response indicates that although dangerous goods are stored on the Collier Park Golf Course there are no items stored within the Site investigation boundaries. Dangerous goods including 3,500kg of ammonium nitrate, 2,400L petrol and 2,400L of diesel are currently stored near the

maintenance shed in the south of Lot 3858 Hayman Road. Collier Park Golf Course first applied to store flammable liquids in 1987 with the first license issued in 1988.

## 5.4 DWER RECORDS

The State Government, through the DWER has the overall responsibility for administering and enforcing the *Contaminated Sites Act 2003* and its associated regulations. Part of this responsibility includes maintenance of the publicly available online Contaminated Sites Database. The Contaminated Sites Database holds information on known contaminated sites that have been classified by the DWER as:

- Contaminated – remediation required;
- Contaminated – restricted use; and
- Remediated for restricted use.

### 5.4.1 On-site

A BSR request for each of the lots making up the Site was submitted to DWER. The response indicated that the Site has not been reported as a known or suspected contaminated site as of 5 May 2020. A copy of the basic summary of records for each of the lots is provided in Appendix 5.

### 5.4.2 Off-Site

Review of the DWER online database

(<https://dow.maps.arcgis.com/apps/webappviewer/index.html?id=c2ecb74291ae4da2ac32c441819c6d47> accessed on 29 April 2020) did not show any properties within a 1km radius to be classified as per the above classifications (DWER,2020b).

The DWER also has the following four classifications not in the database:

- possibly contaminated – investigation required;
- decontaminated;
- not contaminated – unrestricted use; and
- report not substantiated.

As such other offsite classified properties, as per the four classifications above, may be present.

## 5.5 CITY OF SOUTH PERTH FREEDOM OF INFORMATION

An FOI application was submitted to the City of South Perth seeking records relating to planning approvals, development applications (DAs) and complaints history for the Site. The response from the City of South Perth provided 41 documents of which 11 related to complaints and 30 were planning and DAs. Complaints were generally related to the condition of the golf course, bookings and noise. None of the complaints were related to environmental issues. The majority of the DAs were related to continued development and updating of the Collier Park Golf Course ablutions and amenities with building products including brick, steel, timber, concrete and colorbond. None of the FOI

correspondence outlined any potential contamination issues at the Site. A copy of the documents supplied by the City of South Perth is presented in Appendix 6.

## 5.6 FLORA AND FAUNA

Flora and fauna search results are provided in Appendix 7.

### 5.6.1 Flora and Vegetation

#### 5.6.1.1 Vegetation

The Site is located in the Swan Coastal Plain Perth (SWA2) subregion, one of 403 subregions recognised under the Interim Biogeographical Regionalisation for Australia (IBRA) (Australian Government, 2005). SWA2 is composed of colluvial and Aeolian sands, alluvial river flats and coastal limestone. The subregion is dominated by Heath and/or Tuart woodlands on limestone, *Banksia* and Jarrah-*Banksia* woodlands on Quaternary marine dunes of various ages, with Marri on colluvial and alluvials (Mitchell *et al.*, 2002).

At a finer scale the pre-European vegetation in the area is mapped as the Bassendean Complex-Central and South Vegetation Complex which is described as ranging from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - *Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the more damp sites (Heddle *et al.*, 1980).

The Collier Park Golf Course was constructed in a former pine plantation, with remnant *Banksia* woodland and *Melaleuca pressiana* and *M. raphiophylla* dominated wetlands. There are four areas retaining some native vegetation cover, however only one area of native vegetation is reasonably intact and would have the ability to regenerate (Nicole Siemon and Associates, 2004).

#### 5.6.1.2 Significant Flora

The Protected Matters Search Tool (PMST) report (DAWE, 2020) listed twelve conservation significant flora species, as species or species habitat may/likely to/known to occur in the area (including a 2km radius of the Site). These species are listed in Table E below with their conservation status under the *Environment Protection and Biodiversity Act 1999* (EPBC Act).

The Department of Biodiversity, Conservation and Attractions' NatureMap database (DBCA, 2020) search result did not include any flora species of conservation significance listed under the *Biodiversity Conservation Act 2016* (BC Act). The database search result revealed the following three DBCA priority flora species may occur within a 2km radius of the site:

- Priority 2 - *Johnsonia pubescens* subsp. *cygnorum*
- Priority 3 - *Amanita wadjukiorum*, *Angianthus micropodioides*

**TABLE E: CONSERVATION SIGNIFICANT FLORA SPECIES THAT MAY OCCUR IN THE AREA**

SPECIES	CONSERVATION STATUS	PMST COMMENT
<i>Andersonia gracilis</i> Slender Andersonia	Endangered	Species or species habitat may occur within area

**TABLE E: CONSERVATION SIGNIFICANT FLORA SPECIES THAT MAY OCCUR IN THE AREA**

SPECIES	CONSERVATION STATUS	PMST COMMENT
<i>Diuris drummondii</i> Tall Donkey Orchid	Vulnerable	Species or species habitat likely to occur within area
<i>Diuris micrantha</i> Dwarf Bee-orchid	Vulnerable	Species or species habitat may occur within area
<i>Diuris purdiei</i> Purdie's Donkey-orchid	Endangered	Species or species habitat likely to occur within area
<i>Drakaea elastica</i> Glossy-leafed Hammer Orchid	Endangered	Species or species habitat likely to occur within area
<i>Drakaea micrantha</i> Dwarf Hammer Orchid	Vulnerable	Species or species habitat likely to occur within area
<i>Eremophila glabra subsp. chlorella</i>	Endangered	Species or species habitat likely to occur within area
<i>Lepidosperma rostratum</i> Beaked Lepidosperma	Endangered	Species or species habitat likely to occur within area
<i>Macarthuria keigheryi</i> Keighery's Macarthuria	Endangered	Species or species habitat likely to occur within area
<i>Synaphea sp. Fairbridge Farm</i> Sena's Synaphea	Critically Endangered	Species or species habitat may occur within area
<i>Thelymitra dedmaniarum</i> Cinnamon Sun Orchid	Endangered	Species or species habitat may occur within area
<i>Thelymitra stellata</i> Star Sun-orchid	Endangered	Species or species habitat may occur within area

### 5.6.1.3 Threatened and Priority Ecological Communities

The PMST report (DAWE, 2020) indicated that three federally listed Threatened Ecological Communities (TECs) are likely to occur within a 2 km radius of the Site. These TECs are listed in Table F.

**TABLE F: FEDERALLY LISTED TECs LIKELY TO OCCUR**

Listed TEC	Status	Type of Presence
<i>Banksia</i> Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area

**TABLE F: FEDERALLY LISTED TECS LIKELY TO OCCUR**

Listed TEC	Status	Type of Presence
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Tuart ( <i>Eucalyptus gomphocephala</i> ) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered Community likely to occur within area	Community likely to occur within area

The DBCA TEC Database (Australian Government, 2020) indicated that multiple occurrences of State listed TECs occurred within a 2 km radius. The exact location and type of these TEC/s is kept confidential by DBCA for the protection of the TEC.

**5.6.2 FAUNA**

Nicole Siemon and Associates (2004) reported that Ravens, Magpies, Corellas and Magpie larks are common visitors to the Site. Black ducks, Maned geese, Eurasian coot and Grebe utilise the wetlands at the park, while Oblong turtles were still present in the wetlands and lakes.

**5.6.2.1 Significant Fauna**

The PMST<sup>1</sup> report listed seven bird and three mammal species of conservation significance that may or are known to occur in the area (including a 2km radius of the Site). The species and their conservation status under the EPBC Act are listed in Table G below.

The NatureMap database<sup>2</sup> listed three bird species and seven mammal species of conservation significance that are listed under the *Biodiversity Conservation Act 2016* (BC Act) or on the DBCA’s priority fauna list that may occur within a 2km radius of the Site. These species are included in Table G below.

Given the limited vegetation cover and habitat diversity at the Site it is unlikely any of these species would rely on the Site. Nicole Siemon and Associates (2004) recorded Carnaby’s Cockatoo use of the Site for foraging.

**TABLE G: CONSERVATION SIGNIFICANT FAUNA SPECIES THAT MAY OCCUR IN THE AREA**

SPECIES	CONSERVATION STATUS	PMST COMMENT
<b>BIRDS</b>		
<i>Botaurus poiciloptilus</i> Australasian Bittern	Endangered (EPBC Act)	Species or species habitat likely to occur within area

<sup>1</sup> The PMST report included one fish species which has been excluded as there are no water bodies onsite.

<sup>2</sup> The NatureMap database search result listed one fish and one mussel species that have been excluded.

**TABLE G: CONSERVATION SIGNIFICANT FAUNA SPECIES THAT MAY OCCUR IN THE AREA**

SPECIES	CONSERVATION STATUS	PMST COMMENT
<i>Calidris ferruginea</i> Curlew Sandpiper	Critically Endangered (EPBC Act)	Species or species habitat may occur within area
<i>Calyptorhynchus banksii naso</i> Forest Red-tailed Black-Cockatoo	Vulnerable (EPBC Act) Threatened (BC Act)	Species or species habitat known to occur within area
<i>Calyptorhynchus baudinii</i> Baudin's Cockatoo	Endangered (EPBC Act) Threatened (BC Act)	Species or species habitat known to occur within area
<i>Calyptorhynchus latirostris</i> Carnaby's Cockatoo	Endangered (EPBC Act) Threatened (BC Act)	Species or species habitat known to occur within area
<i>Diomedea amsterdamensis</i> Amsterdam Albatross	Endangered (EPBC Act)	Species or species habitat may occur within area
<i>Leipoa ocellata</i> Malleefowl	Vulnerable (EPBC Act)	Species or species habitat may occur within area
<i>Numenius madagascariensis</i> Eastern Curlew	Critically Endangered (EPBC Act)	Species or species habitat may occur within area
<i>Pachyptila turtur subantarctica</i> Fairy Prion	Vulnerable	Species or species habitat likely to occur within area
<i>Rostratula australis</i> Australian Painted Snipe	Endangered	Species or species habitat likely to occur within area
<i>Sternula nereis nereis</i> Australian Fairy Tern	Vulnerable	Species or species habitat known to occur within area
<i>Falco peregrinus</i> Peregrine Falcon	Specially protected (BC Act)	-
<b>MAMMALS</b>		
<i>Dasyurus geoffroii</i> Chuditch	Vulnerable (EPBC Act) Threatened (BC Act)	Species or species habitat may occur within area
<i>Pseudocheirus occidentalis</i> Western Ringtail Possum	Critically Endangered (EPBC Act) Threatened (BC Act)	Species or species habitat may occur within area
<i>Isodon fusciventer</i> Quenda	Priority 4 (DBCA)	-
<i>Oxyura australis</i> Blue-billed Duck	Priority 4 (DBCA)	-
<b>ARACHNIDS</b>		

**TABLE G: CONSERVATION SIGNIFICANT FAUNA SPECIES THAT MAY OCCUR IN THE AREA**

SPECIES	CONSERVATION STATUS	PMST COMMENT
<i>Idiosoma sigillatum</i> Swan Coastal Plain shield-backed trapdoor spider	Priority 3 (DBCA)	-

### 5.6.3 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are specified areas or a class of area declared by the Minister for the Environment under Section 51B of the *Environmental Protection Act 1986* (EP Act). ESAs are generally associated with areas of significant vegetation, conservation significant flora and high value wetlands.

There are no ESAs mapped at the Site (Australian Government 2020). The following ESAs occur within a 2km radius of the Site:

- ESA ID 3526 is located approximately 700m south of the southwest corner of the Site and is associated with the Goss Avenue Bushland which contains a Conservation Category Wetland (CCW) (UFI 6863).
- ESA ID 3767 is located approximately 1km south of the Site and is associated with the Canning River, Bush Forever Site 333 (Canning River Foreshore, Salter Point to Wilson) and a CCW Clontarf River Flats (UFI 15329).
- ESA ID 3571 is located approximately 1km northeast of the Site and is associated with Harold Rossiter Park a Bush Forever Site 48 (Kensington Bushland).

### 5.6.4 Summary of Flora and Fauna

Native vegetation has been observed at the Site with one area recorded by Nicole Siemon and Associates (2004) to be reasonably intact with the ability to regenerate. It is unclear if this area is located within the proposed RAF development envelope. Nicole Siemon and Associates (2004) indicate that Carnaby's Cockatoo may use the Site for foraging.

Based on the above searches the following may or are known to occur within a 2km radius of the Site:

- twelve conservation significant flora species ranging from endangered, vulnerable and critically endangered;
- three federally listed TECs;
- seven bird and three mammal species of conservation significance;
- three bird species and seven mammal species of conservation significance that are listed under the *Biodiversity Conservation Act 2016* (BC Act) or on the DBCA's priority fauna list; and
- no ESAs are mapped at the Site.

Given the limited vegetation cover and habitat diversity at the Site it is unlikely any of the fauna species would rely on the Site.

## 5.7 CULTURAL HERITAGE

### 5.7.1 Aboriginal

An online search of the Department of Indigenous Affairs Aboriginal Heritage Inquiry System (accessed on 25 May 2020) was undertaken. This database incorporates both the Heritage Site Register and the Heritage Survey Database. The Heritage Site Register is held pursuant to Section 38 of the State's *Aboriginal Heritage Act 1972* and contains information on over 22,000 Aboriginal sites throughout Western Australia.

There were no aboriginal heritage sites identified within the Site boundary. One registered aboriginal heritage site, #3865, was identified approximately 425m south of the Site boundary within the Collier Park Golf Course. There have been six heritage surveys completed which may cover the Site. The search results are presented in Appendix 8.

### 5.7.2 European

The presence of historical or current European Heritage sites was investigated using the Department of the Environment and Energy Australian Heritage database (<http://www.environment.gov.au/cgi-bin/ahdb/search.pl> accessed 1 June 2020). The Australian Heritage database contains information regarding more than 20,000 natural, historic and indigenous places throughout Australia and includes sites recorded on the:

- World Heritage List
- National Heritage List
- Commonwealth Heritage List
- Register of National Estate

The search did not identify any European Heritage sites within the boundaries of the Site.

The presence of state historical or current European heritage sites was investigated using the Heritage Council State Heritage Office database (<http://inherit.stateheritage.wa.gov.au/Public/Search/Results?newSearch=True&placeNameContains=&streetNameContains=hayman+rd&suburbOrTownContains=como&lgaContains=&isCurrentlyStateRegistered=false> accessed on 25 May 2020). The inherit search indicated that place number 04820 identified as 'Pine Trees at Collier Park Golf Course' is located on the southern Site boundary. The record indicates that the pine plantation was established in the late 1920s covering an area of 900 acres. Place number 04820 is a municipal inventory listing by the City of South Perth. The search results are presented in Appendix 9.

## 5.8 SUMMARY OF DESKTOP INFORMATION

The following summary is based on the review of the desktop information undertaken above and aims to identify potentially contaminating activities / sources on the Site.

- The Site was owned by the Wood family from 1887 with it used for pine plantation after the 1930s. Ownership reverted to the Crown in 1979 where it was used for parks and recreation.
- Lot 3858 Hayman Road has been used as a golf course since 1985.

- Historical aerial photographs confirmed that 145 Thelma Street was used as a landfill (which accepted a range of domestic and inert wastes) from approximately 1979 to between 1989 and 1995. A building was located within the former landfill area which appeared circa 1981 and was removed by 1995. No evidence of a piggery was observed on or near to the Site in the historical aerial photographs.
- The Site has not been classified within the Contaminated Sites Database and has no other known sites within a 1 km radius.
- The Site has a moderate to low risk of ASS occurring within 3m of the natural soil surface with high to medium risk of PASS beyond 3m of the natural soil surface. Where the proposed RAF development will involve either earthworks extending to beyond 3 mbgl, temporary or permanent lowering of the water table (such as for dewatering) or works within 500m of wetlands further ASS assessment would be required.
- There are no dangerous goods currently stored on the Site.
- The information collected from the City of South Perth FOI did not identify any sources of potential contamination within the Site.
- There are no ESAs mapped at the Site.
- Native vegetation has been observed at the Site and remnant pine trees may provide foraging for black cockatoos.
- There are no Aboriginal Heritage sites present onsite.
- The southern section of the Site is located within a municipal listed heritage site identified as Pine Trees at Collier Park Golf Course (Collier Pine Plantation). Any prospective developer would need to engage with the City of South Perth regarding the listing.

## 6 POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

Based on the desktop review, the three potential areas of environmental concern (PAOEC) have been identified, which are detailed below and presented in Figure 6:

- the former landfill facility which is understood to have accepted assorted inert and domestic wastes including building rubble, asbestos sheeting, car batteries, and possibly commercial waste;
- a former building associated with the landfill which was removed circa 1995; and
- a soak well within the Pro shop building where golf carts were understood to have been washed down.

ASS was mapped as moderate to low risk (within 3mbgl) and is not considered to be a PAOEC at this stage however if the proposed redevelopment requires either temporary or permanent lowering of the water table, earthworks extending to beyond 3mbgl or works within 500m of a wetland then an ASS investigation will be required as per DER (2014b).

Although the Site has been used as a golf course for the past 35 years this is not a potentially contaminating land use, activity or industry as identified by DWER (DER, 2014a). It is understood that herbicides, fungicides, insecticides and fertilisers are applied to the Site, with more information provided in Section 7, however the application rates are considered to be consistent with manufacturer's instructions. Given the proposed development is consistent with the current land use and zoning, i.e. recreation, future receptors are not considered to be any more sensitive than the current situation.

A former piggery was mentioned within the Nicole Siemon & Associates report (2004) however it is not clear if this was located onsite, it was not visible in historical aerial photographs, and no other information on this land use could be identified from general internet searches. Pig and dairy farms were present historically throughout the Como and South Perth area, however these land uses declined prior to residential increase in the 1950s. Given the long timeframe (at least 70 years) since these historical landuses were likely to have last been in use it is considered unlikely potential contaminants such as elevated nutrients would continue to be present from the potential piggery operations.

It is noted that water within stormwater drains entering and leaving the golf course site indicate there are elevated concentrations of nutrients, aluminium, copper, iron and zinc. However, given the drains entering the golf course site also had elevated concentrations of these analytes it is unlikely these results are wholly resultant of the former landfill.

## 7 SITE WALKOVER

A site walkover was undertaken by an Aurora environmental scientist on 17 April 2020 photos of which can be seen in Appendix 10. The Site appeared to be in good condition with no observable signs of contamination such as staining or chemical odours. The golf course fairways were primarily covered in grass and the gardens were covered in low lying shrubs and large trees of varying species which appeared in good health. The Site was observed to have undulating topography in general keeping with a golf course (Photograph 1). The former landfill was inspected with no obvious sign of surface contamination or odour (Photograph 2). The former landfill area, like the remainder of the golf course, was observed to be well maintained and primarily covered in grass. There were no signs of dead or dying growth. No fragments of asbestos containing material (ACM) was observed during the site inspection.

During the site inspection the remainder of the golf course was inspected for evidence (asbestos fragments, surface stains or odours) of potential contamination including the golf course clubrooms<sup>3</sup> (Photograph 3), surrounding lakes (Photograph 4) and maintenance compound<sup>3</sup>. The material used for the golf course club rooms appeared to be in good condition however it is understood a hazardous materials (hazmat) survey has not been undertaken. The golf course lakes visually appeared to be in good condition with minimal algae in the lakes at the time of the inspection.

██████████ (Golf Course Superintendent) provided the following approximate rates of fertiliser and pesticide application:

- the fairways receive a springtime slow release granule complete fertiliser based on soil tests at a rate of 250kg /ha;
- the fairways also receive approximately three foliar sprays per year of iron, potassium and magnesium;
- pesticide use can include one application for winter grass using either Monument or Propyzamide and Steer Herbicide for crabgrass;
- no fungicides are used on the fairways due to the cost;
- the greens receive two slow release applications each year at 250kg/ha;
- the greens also receive liquid or soluble elements foliar sprayed every four weeks mainly for colour and appearance;
- the greens receive applications of paclobutrazol (herbicide) for weed and growth control with fungicides Bayfidan, Chipco GT, Velista, Chlorothalonil applied every 6 to 8 weeks on a rotational basis; and
- insects are sprayed in the summer on the greens with Tempo Extra Systemic Insecticide.

The maintenance compound (located outside the proposed RAF boundary) was observed to contain a range of chemicals including liquid fertiliser containers on banded units, solid fertiliser in bags, vehicle oils, lubricants and coolants, cans of spraypaint, a washdown area with a Water Stax wastewater

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<sup>3</sup> No formal inspection or survey for hazardous materials was undertaken on site structures including the clubrooms and maintenance compound.

recycling system, a workshop and stores multiple vehicles and equipment associated with the golf course. Two double skinned aboveground storage tanks (AST) with associated dispensers were located on an unbunded concrete pad and contained petrol and diesel. It is understood there have been no major incidents, leaks or spills with regard to the stored fuels and there was no evidence of gross contamination observed.

## 8 PRELIMINARY CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, potential receptors, and exposure (uptake) pathways between identified sources and receptors (NEPC, 2013). The CSM is used to assess if soil and groundwater impacts at a site can be considered to pose a potential risk. For there to be a potential risk a site requires a complete linkage between the contamination source and potential receptors via an exposure pathway.

Aurora has developed the following preliminary CSM to identify potential contamination risks at the Site.

### 8.1 SOURCES

A primary source (S) contamination is the first point at which a chemical or hazardous agent (such as asbestos or chemicals) has been introduced via a leak, spill or deliberate disposal released directly from the original source. Based on the information available to Aurora for the purposes of this assessment and the information collected from the desktop survey and site inspection the following potential sources have been identified in Table H below.

**TABLE H: POTENTIAL CONTAMINATION SOURCES AND COPCS**

AREAS OF POTENTIAL CONCERN / POTENTIAL SOURCES	COPCS
(S1) Former landfill 145 Thelma Street	<ul style="list-style-type: none"> <li>• Sulphides</li> <li>• Petroleum hydrocarbons</li> <li>• Metals</li> <li>• Asbestos</li> <li>• Polychlorinated biphenyls (PCBs)</li> <li>• Polycyclic aromatic hydrocarbons (PAHs)</li> <li>• Nutrients</li> <li>• Ammonia</li> <li>• Landfill gases (e.g. methane)</li> <li>• Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)</li> <li>• Phenols</li> </ul>
(S2) Former buildings 145 Thelma Street	<ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Organochlorine pesticides (OCPs) / organophosphorus pesticides (OPPs)</li> </ul>
(S3) Soak well in Proshop washdown area	<ul style="list-style-type: none"> <li>• Petroleum hydrocarbons</li> <li>• BTEXN</li> <li>• Metals</li> </ul>

The current Proshop and associated buildings may be removed as part of the proposed RAF development. It is understood no HAZMAT survey has been completed on the building to ascertain the presence of potentially hazardous building materials such as asbestos containing cement products. Additionally, soils beneath the building may have been historically sprayed with pesticides therefore

the soils comprising the building pad should be assessed for presence of pesticides in the context of planned future land use.

Potential sources which have been discussed and discounted earlier in the report include:

- a former piggery; and
- fertiliser, herbicide, fungicide and insecticide application to the golf course.

## **8.2 PATHWAYS**

For the purpose of this assessment, possible exposure pathways (P) are identified as natural and/or man-made pathways for the preferential migration of COPCs. Potential contaminant migration pathways for the COPCs include:

- (P1) inhalation if soils are disturbed;
- (P2) inhalation of landfill gases;
- (P3) direct contact with impacted soil or groundwater;
- (P4) ingestion of groundwater;
- (P5) vertical migration of contaminants to groundwater; and
- (P6) uptake by flora and/ or fauna.

## **8.3 RECEPTORS**

For the purpose of the assessment for the proposed RAF receptors (R) include persons, structures, utilities, ecological receptors and receptors of shallow groundwater and water supply wells that are, or may be, adversely affected by the COPC. Potential receptors on or in the vicinity of the Site, which have exposure pathways that may be complete are listed below.

- (R1) future construction and/or maintenance workers;
- (R2) future users and visitors of the RAF;
- (R3) future onsite users of abstracted groundwater;
- (R4) future offsite users of abstracted groundwater;
- (R5) general onsite ecology;
- (R6) general offsite ecology including within surface water bodies at the golf course;
- (R7) offsite neighbours.

It is understood that groundwater is currently abstracted from a number of bores across the golf course site for irrigation. Regional groundwater movement is mapped to the south-west therefore hydraulically downgradient land uses include a portion of the golf course, the tennis courts, Lifestreams Church, Como Secondary College and residential areas.

It is noted that current site users such as golf course workers, recreational users, visitors and users of groundwater may also be potential receptors, although it is outside the scope of this assessment.

#### **8.4 SPR LINKAGES**

The preliminary CSM is presented in Table I, which describes the SPR linkages at the Site. The table has been arranged to present and assess the SPR linkages for human health and the environment. The completeness of the SPR linkages have been evaluated in the preliminary CSM using professional judgement by Aurora based on information and data documented in this PSI.

**TABLE I: SPR LINKAGE ASSESSMENT**

Source	Receptor	Transport Mechanism and Pathway	SPR Linkage?	Justification
(S1) Former landfill 145 Thelma Street	(R1) future construction and/or maintenance workers (R2) future users and visitors of the RAF (R3) future onsite users of abstracted groundwater (R4) future offsite users of abstracted groundwater (R5) general onsite ecology (R6) general offsite ecology including with surface water bodies (R7) offsite neighbours	(P1) inhalation if soils are disturbed; (P2) inhalation of landfill gases; (P3) direct contact with impacted soil or groundwater; (P4) ingestion of groundwater; (P5) vertical migration of contaminants to groundwater; and (P6) uptake by flora and/ or fauna.	Possible	There is a known former landfill within the Site that is understood to have potentially had waste including assorted domestic waste, building rubble, asbestos sheeting, car batteries, possibly commercial waste and was not inert. Due to the nature of the proposed development construction or maintenance workers, future users and visitors may inhale or come into direct contact with impacted material if disturbed. Neighbours may inhale contaminants (such as asbestos) if disturbed in an unmanaged manner during the redevelopment process.  Future users and visitors within the proposed buildings may inhale landfill gases, if present.  Groundwater onsite and offsite may be used for irrigation purposes, it is considered unlikely it would be used for drinking water purposes given the surrounding areas are connected to scheme water for domestic use purposes.  On- and off-site ecology may ingest or come into contact with impacted soil (onsite only) or groundwater including in surface water bodies, where groundwater is abstracted and used for irrigation or topping up lakes.
(S2) Former building 145 Thelma Street	(R1) future construction and/or maintenance workers (R2) future users and visitors of the RAF (R3) future onsite users of extracted groundwater (R4) future offsite users of extracted groundwater (R5) general onsite ecology (R6) general offsite ecology including with surface water bodies.	(P1) inhalation if soils are disturbed (P3) direct contact with impacted soil (P4) ingestion of groundwater (P5) vertical migration of contaminants to groundwater (P6) uptake by flora and/ or fauna.	Possible	Based on the era of construction of the former building it may have been constructed using ACM and OCPs may have been applied to the subfloor. If impacts to the soil remain as a result of demolition future workers and site users may be exposed to the contaminants either by inhalation of asbestos or ingestion or direct contact with OCPS, if present. Additionally, OCPs may have migrated to groundwater whereby on-and off-site users of groundwater, including ecology, may ingest or come into contact with potential impacts.
(S3) Soak well in Proshop washdown area	R1) future construction and/or maintenance workers (R2) future users and visitors of the RAF (R3) future onsite users of extracted groundwater (R4) future offsite users of extracted groundwater	(P3) direct contact with impacted soil or groundwater (P4) ingestion of groundwater (P5) vertical migration of contaminants to groundwater; and (P6) uptake by flora and/ or fauna.	Possible	It is understood golf carts were historically washed down within the Proshop however, there is uncertainty if golf carts were historically petroleum fuelled or electric. Additional information may be required to rule out this potential source. If petroleum fuelled carts were used then soils within the soak well may have been impacted by wash down activities. Given the sandy nature of soils at the Site potential contaminants in soil may have migrated to groundwater. Receptors may come into direct contact with or ingest potentially impacted soil or groundwater.

## 9 DISCUSSION

The desktop review and site inspection identified three potential areas of environmental concern at the Site associated with historical and current land uses at the Site including:

- the former landfill;
- a former building which has been removed; and
- a soakwell where golf carts were washed down.

The desktop review indicates that the Site was vegetated before it was used as a pine plantation which was subsequently cleared and used as a golf course in the mid-1980s. Aerial photographs confirmed that 145 Thelma Street (Lot 3858) appears to have been used as a landfill facility between approximately 1979 and the early 1990s. The landfill facility was documented to have accepted inert and domestic waste materials comprising assorted domestic (including possibly putrescible) waste, building rubble, asbestos sheeting, car batteries and possibly commercial waste. Landfill facilities are documented by DER (2014a) as a potentially contaminating activity with associated risks comprising soil and groundwater contamination and landfill gas. Given the varied wastes that were accepted which may have included putrescible materials and that it was capped with clay it is possible landfill gases could have been produced and accumulated within the landfill body. If present, these gases could pose a potential risk to occupants of buildings/structures constructed within or adjacent to the land fill body through the migration to and accumulation in confined spaces, such as buildings. It is noted however, that the information available is limited in nature with other information that maybe useful in determining the presence/absence of landfill gas such as capping thickness, proportion of waste types, and waste volumes and thickness not available at the time of this investigation. Additionally, given the informal age and nature of the landfill it is considered unlikely to have been underlain by a liner which, given the relatively shallow groundwater (approximately 4-8m bgl) and types of wastes received, suggests that impacts to underlying groundwater quality as a result of the landfilling may have occurred.

The building formerly located on 145 Thelma Street and associated with the former landfill was likely constructed at a time (c. 1981) when ACM was still being used as a building material and it is possible therefore that ACM products may have been used in its construction. No records were associated with the design or removal of the building are available and it is therefore uncertain if ACM was present and removed appropriately prior to its demolition in 1995. There was also no information made available regarding the potential application of pesticides being applied to the building footprint as a termiticide. If ACM was present in the building and not removed prior to demolition then the possibility of ACM fragments being in the soils associated with the footprint of the building cannot be discounted. Inspection of the golf course surface in the area of the former building footprint did not reveal the presence of ACM fragments or other construction and demolition wastes on the soil surface however, it is noted that soils in this area may have been reworked for redevelopment of the golf course.

The previous report (Nicole Siemons and Associated, 2004) noted that golf carts were washed down within an area of the Proshop where there was a soak well. It is understood current golf carts are electric however there is uncertainty about whether fuel powered carts may have been used in the past and whether other vehicles were washed down at this location. Any potential contaminants in

the washdown water may have accumulated in soils within the soak well. Additionally, potential washdown contaminants may have migrated to groundwater.

The SPR assessment developed as part of the CSM shows potentially complete linkages for the above three PAOECs and therefore potentially unacceptable human health and ecological risks may be present which require further investigation. These risks may present potential development constraints for the proposed RAF development.

It is understood that redevelopment may involve demolition of the existing Proshop and related outbuildings. If hazardous building materials are present in the existing building it will be important to ensure that they are removed prior to demolition of the buildings proper. This will prevent these materials being broken up and becoming a source of contamination at the Site.

Additionally, soils beneath the existing Proshop building may have historically been sprayed with pesticides. As a consequence, when the building is removed the underlying soils which may have been sprayed may become accessible to future users of the Site. Therefore, soils beneath the building slab should be assessed for the presence of pesticides to determine if they require management as part of the redevelopment works.

The Site has a moderate to low risk of ASS occurring within 3m of the natural soil surface with high to medium risk of ASS beyond 3m of the natural soil surface. Where the proposed RAF development will involve either earthworks extending to beyond 3 mbgl, temporary or permanent lowering of the water table (such as for dewatering) or works within 500m of wetlands further assessment of the potential presence of ASS would be required.

Native vegetation has been observed at the Site and remnant pine trees may provide foraging resources for black cockatoos therefore approvals or assessment may be required as discussed below.

#### Native Vegetation

- Native vegetation is protected under the *Environmental Protection Act 1986*.
- Clearing of native vegetation requires an application to the DWER, unless a valid exemption under the Clearing Regulations is available.
- Many of the exemptions do not apply to areas mapped as an environmentally sensitive area (ESA).
- There are limits (5 ha in total) to how much clearing can be undertaken in any financial year in accordance with a valid exemption.

#### Black Cockatoos

- *Pinus pinaster* (Pine trees) provide foraging resources and potentially roosting habitat for Black Cockatoos. The impact on Black Cockatoos related to the removal of Pine trees and the obligations under the *Environment Protection and Biodiversity Conservation Act 1999* should be considered.

The southern section of the Site is located within a municipal listed heritage site identified as Pine Trees at Collier Park Golf Course. Any prospective developer would need to engage with the City of South Perth regarding the listing.

Additional issues identified throughout the report but ruled out as PAOECs are listed below:

- septic tanks and associated leach drains were present at the Site however were not considered capable of enabling contamination as per the Contaminated Sites Regulations 2006;
- application of herbicides, fungicides, insecticides and fertilisers to the golf course were considered to be applied consistent with manufacturers instructions; and
- a former piggery mentioned within a previous report was considered unlikely given the time lapsed since it may have potentially been in use.

## 10 CONCLUSIONS AND RECOMMENDATIONS

Aurora completed a PSI which involved a desktop review of existing information and a site inspection of the proposed location of the RAF which spans across portions of 145 Thelma Street and Lot 3858 Hayman Road.

The investigation identified three PAOECs comprising a former landfill, a building (now demolished) associated with the landfill formerly located at 145 Thelma Street and a soakwell located at the Proshop. A portion of 145 Thelma Road was identified to have been used historically as a landfill prior to its redevelopment as a golf course. Landfills are described by DER (2014b) as potentially contaminating land uses which have the potential to contaminate soil and groundwater and present unacceptable risks to human users where landfill gases have the potential to accumulate. The building associated with the landfill was constructed in the early 1980's which is a time when asbestos containing fibre cement products were still used in construction. Although no fragments of ACM were observed during the site inspection there is uncertainty if these materials (if present) were removed prior to demolition of the building and as a result if ACM impacted demolition wastes (e.g. building rubble) may remain in the building footprint. The soak well at the Proshop where golf carts were historically washed down was identified as presenting a potential risk if potential contaminants were washed into it and accumulated in the sediments and potentially migrated to groundwater.

It is concluded on the basis of a SPR assessment which shows potentially complete linkages for these PAOEC that potentially unacceptable human health and ecological risks may be present which require further investigation to assess if these risks present potential development constraints for the proposed RAF development.

The Site has a moderate to low risk of ASS occurring within 3m of the natural soil surface with high to medium risk of ASS beyond 3m of the natural soil surface. Where the proposed RAF development will involve either earthworks extending to beyond 3 mbgl, temporary or permanent lowering of the water table (such as for dewatering) or works within 500m of wetlands further ASS assessment would be required.

Native vegetation has been observed at the Site and remnant pine trees may provide foraging resources for black cockatoos therefore further assessment or approvals may be required.

The proposed redevelopment may involve demolition of the existing Proshop and related outbuildings which may comprise hazardous building materials. It is considered important to ensure that any hazardous materials that maybe present in the building structure are identified and removed prior to demolition of the buildings proper. Additionally, soils beneath the existing Proshop building may have historically been sprayed with pesticides and if present, removal of the building may create an exposure pathway to receptors. Therefore, soils beneath the building slab should be assessed for the presence of pesticides to determine if they require management as part of the redevelopment works.

## 10.1 RECOMMENDATIONS

Based on the information collected in the PSI the following recommendations are made for consideration.

- Given the Site has had a former landfill, a listed potentially contaminating landuse, it is recommended the Site be reported to DWER as a potentially contaminated site via a Form 1. A Form 1 is included in Appendix 11.
- Undertake further detailed investigation to characterise the nature and extent of the identified PAOECs. The investigation may need to consider assessment of soils, groundwater and potentially landfill gas.
- Undertake an ASS investigation consistent with DER (2014b) where the proposed redevelopment requires earthworks extending to beyond 3 mbgl, temporary or permanent lowering of the water table (such as for dewatering) or works within 500m of wetlands.
- Assess the potential presence of OCPs beneath the current building pads following demolition (if within the proposed development envelope).
- Undertake a HAZMAT survey on the current buildings to ensure adequate demolition procedures are completed.
- Further assessment or approvals may be required prior to clearing of any vegetation.

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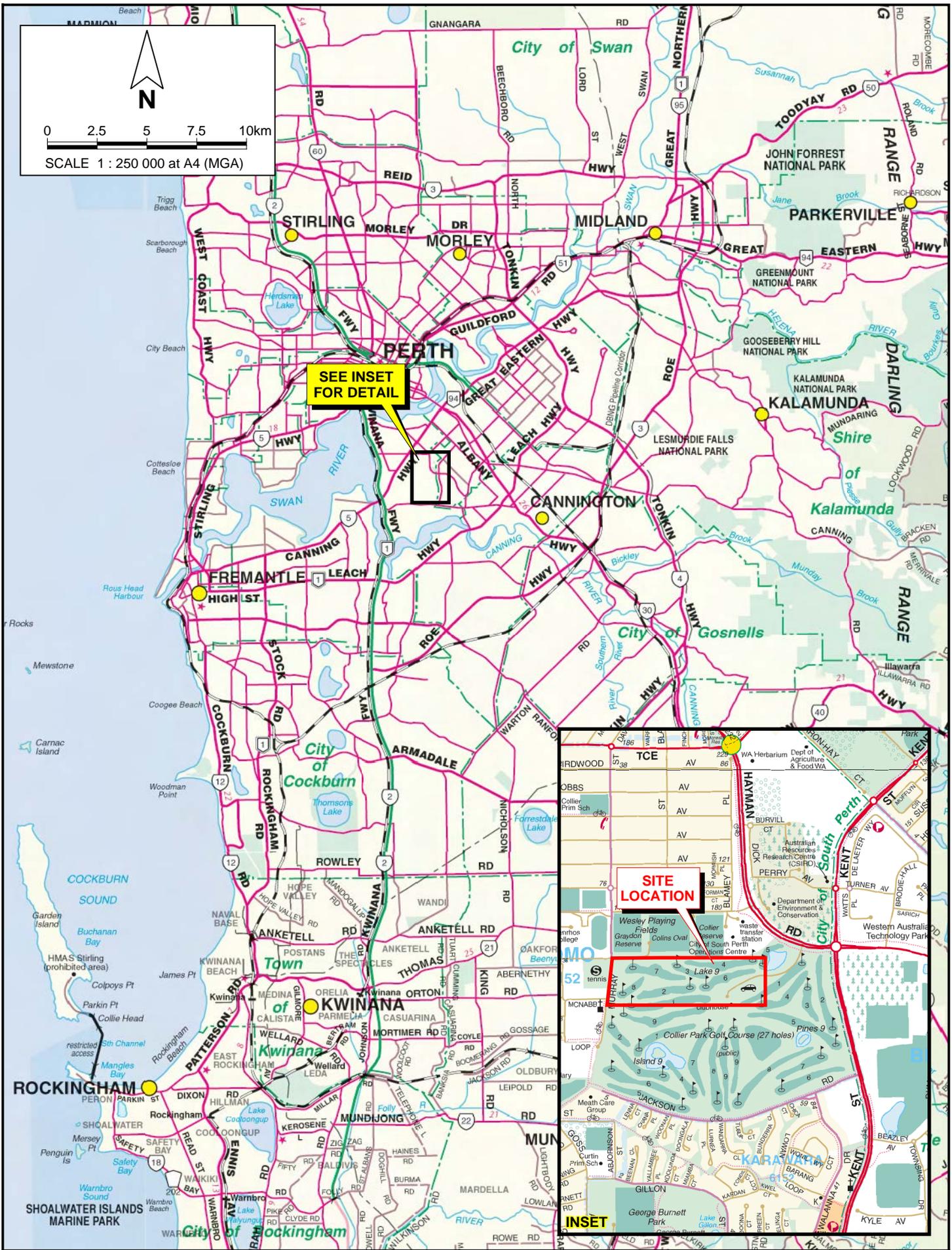
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**National Map (2020b)** DWER Acid Sulphate Risk Map, Swan Coastal Plain (DWER-)55) <https://nationalmap.gov.au/> [accessed 28/4/2020].

# FIGURES



CSP2020-001\_PSI\_001\_lr-101.dgn  
PINPOINT CARTOGRAPHICS (08) 9562 7136

**Aurora**  
environmental  
ASSESS • ADVISE • APPLY

Drawn: [Redacted] Date: 4 Jun 2020

City of South Perth  
PRELIMINARY SITE INVESTIGATION  
PROPOSED RECREATIONAL AQUATIC FACILITY, COMO, WA

**SITE LOCATION**

**Figure 1**

Job: CSP2020-001

Public Version - Redacted



N

0 50 100 150 200m

SCALE 1 : 4 000 at A3 (MGA)

**Legend**

- - - Site Boundary
- Collier Park Golf Course Boundary
- Cadastral Boundary
- Easement Boundary
- 10 Hole Number
- + Bore Location

CSP2020-001\_PSI\_001\_r102.dgn  
PINPOINT CARTOGRAPHICS (08) 9562 7136

CADASTRAL SOURCE: Landgate, April, 2020.  
AERIAL PHOTOGRAPH SOURCE: NearMap, flown March 2020.

Aurora

environmental

ASSESS • ADVISE • APPLY

Drawn:            Date: 4 Jun 2020

City of South Perth  
PRELIMINARY SITE INVESTIGATION  
PROPOSED RECREATIONAL AQUATIC FACILITY, COMO, WA

SITE FEATURES

Figure 2

Job: CSP2020-001



N

0 50 100 150 200 250m

SCALE 1 : 8 000 at A3 (MGA)

**Legend**

- - - Site Boundary
- Collier Park Golf Course Boundary
- Cadastral Boundary
- Easement Boundary

CSP2020-001\_FS\_001\_r1r03.dgn  
 PINPOINT CARTOGRAPHICS (08) 9562 7136

CADASTRAL SOURCE: Landgate, April, 2020.  
 AERIAL PHOTOGRAPH SOURCE: NearMap, 11own March 2020.

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Drawn:            Date: 4 Jun 2020

City of South Perth  
 PRELIMINARY SITE INVESTIGATION  
 PROPOSED RECREATIONAL AQUATIC FACILITY, COMO, WA

SURROUNDING LAND USE

Figure 3

Job: CSP2020-001



PINPOINT CARTOGRAPHICS (08) 9562 7136  
CSP2020-001\_PSI\_001\_r104.dgn

CADASTRAL SOURCE: Landgate, April, 2020.  
AERIAL PHOTOGRAPH SOURCE: NearMap, flown March 2020.

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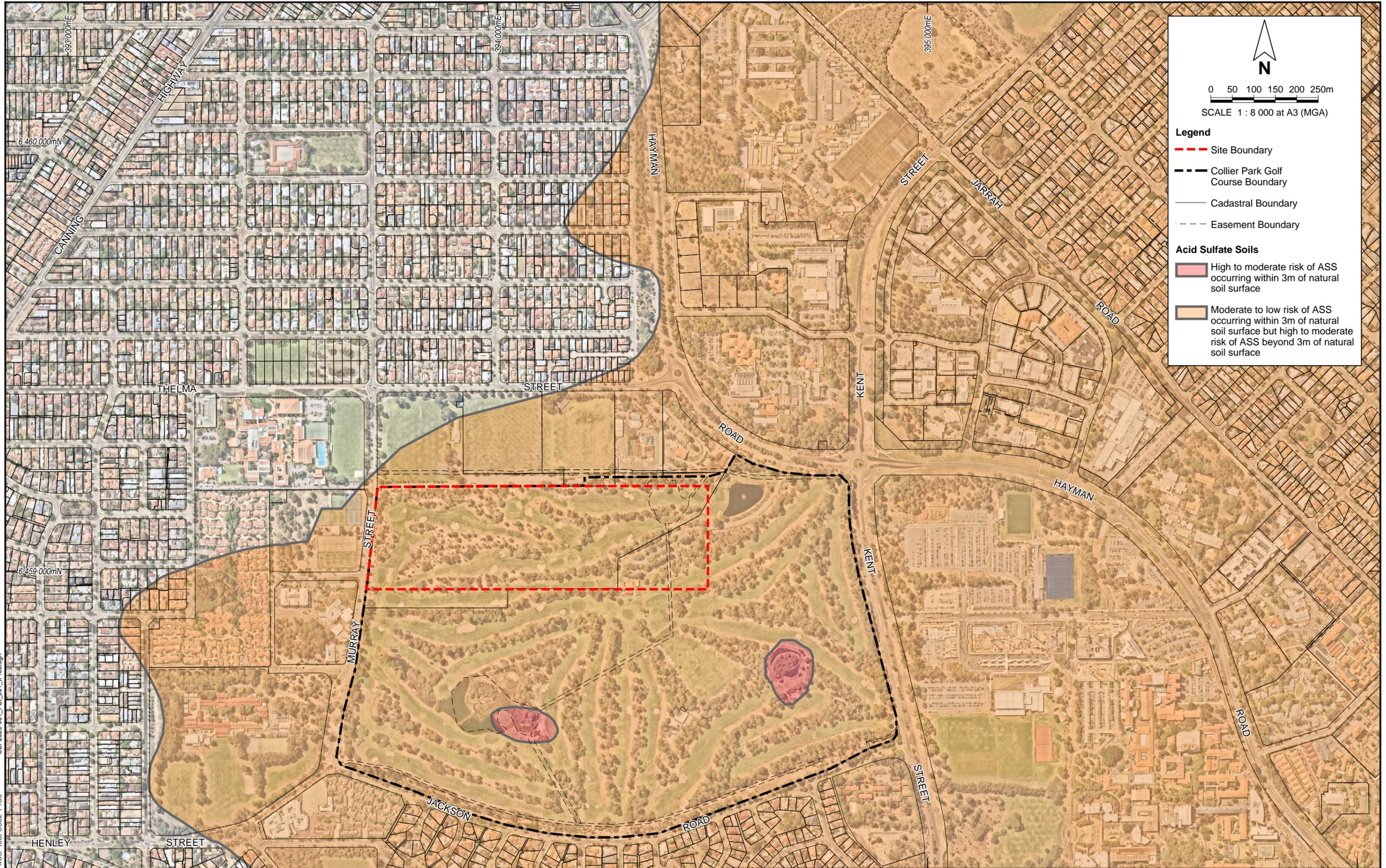
Drawn: [Redacted] Date: 4 Jun 2020

City of South Perth  
PRELIMINARY SITE INVESTIGATION  
PROPOSED RECREATIONAL AQUATIC FACILITY, COMO, WA

**CATCHMENT WATER QUALITY SAMPLING SITES**

**Figure 4**

Job: CSP2020-001



N

0 50 100 150 200 250m

SCALE 1 : 8 000 at A3 (MGA)

**Legend**

- - - Site Boundary
- Collier Park Golf Course Boundary
- Cadastral Boundary
- Easement Boundary

**Acid Sulfate Soils**

- High to moderate risk of ASS occurring within 3m of natural soil surface
- Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface

CSP2020-001\_FS\_001\_r1r05.dgn  
PINPOINT CARTOGRAPHICS (08) 9562 7136

ASS SOURCE: DWER, October 2019.  
 CADASTRAL SOURCE: Landgate, April, 2020.  
 AERIAL PHOTOGRAPH SOURCE: NearMap, flown March 2020.

Aurora

environmental

ASSESS • ADVISE • APPLY

Drawn: XXXXXXXXXX Date: 4 Jun 2020

City of South Perth  
 PRELIMINARY SITE INVESTIGATION  
 PROPOSED RECREATIONAL AQUATIC FACILITY, COMO, WA

ACID SULFATE SOIL RISK MAP

Figure 5

Job: CSP2020-001



N

0 50 100 150 200m

SCALE 1 : 4 000 at A3 (MGA)

**Legend**

- - - Site Boundary
- Collier Park Golf Course Boundary
- Cadastral Boundary
- Easement Boundary
- Old Building Location
- Approximate Former Landfill Location

PINPOINT CARTOGRAPHICS (08) 9562 7136  
CSP2020-001\_PSI\_001\_r106.dgn

CADASTRAL SOURCE: Landgate, April, 2020.  
AERIAL PHOTOGRAPH SOURCE: NearMap, 11own March 2020.

**Aurora**

environmental  
ASSESS • ADVISE • APPLY

Drawn: XXXXXXXXXX Date: 4 Jun 2020

City of South Perth  
PRELIMINARY SITE INVESTIGATION  
PROPOSED RECREATIONAL AQUATIC FACILITY, COMO, WA

**POTENTIAL AREAS OF CONCERN**

**Figure 6**

Job: CSP2020-001

## APPENDIX F – GEOTECHNICAL INVESTIGATIONS

4 August 2020

**PROPOSED RECREATION AND AQUATIC FACILITY  
DEVELOPMENT  
COLLIER PARK GOLF COURSE  
HAYMAN ROAD, COMO, WA 6152  
GEOTECHNICAL INVESTIGATION REPORT**

City of South Perth  
PER2020-0172AB Rev 0

PER2020-0172AB		
Date	Revision	Comments
4 August 2020	0	Final Issue

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Figure 1 – Site Investigation Plan

## Appendices

Appendix A – Hand Auger Borehole Logs

Appendix B – CPT Investigation Results In-situ

Appendix C – In-situ Permeability Test Results

## 1 INTRODUCTION

CMW Geosciences Pty Ltd (CMW) was authorised by City of South Perth to carry out a geotechnical investigation of a site located at Hayman Road, Como, WA 6152 by way of confirmation email. The scope of work and associated terms and conditions of our engagement were detailed in our services proposal document Quote RFQ 112020 – Company Offer – CMW Geosciences Rev 1 dated 14 May 2020.

## 2 SITE DESCRIPTION

The approximately 7.5ha site currently occupies part of the Collier Park Golf Course. In the south west corner, there is the club house and a café. The site is relatively level, however in the northern section, the golf course also contains fill embankments (up to approximately 1m high).

The current ground levels range from 5.3mAHD to 8.8mAHD across the site. It is bound to the north by existing facilities such as Collier Reserve, Wesley school playing fields and a City of South Perth facility, to the south and west by the existing golf course and to the east by Kent Street.

A Site Investigation Plan showing the current layout and location of the site is attached to this report as Figure 1.

## 3 PROPOSED DEVELOPMENT

We understand the proposed development will comprise a recreation and aquatic centre which will include a multi-court facility, outdoor and indoor swimming pool, gymnasium and fitness spaces. There will also be a leisure water and sauna pools, interactive water play area and associated supporting infrastructure. We anticipate that the proposed structures will be supported on shallow strip and pad footings or pile foundations. We understand that excavations to reach pool finished levels will be required. No architecture or engineering drawings have been supplied at this stage.

## 4 GEOTECHNICAL INVESTIGATION

Following a dial before you dig search, and onsite service location, the field investigation was carried out on 13 of July 2020. All fieldwork was carried out under the direction of CMW Geosciences Pty Ltd in general accordance with AS1726 (2017), Geotechnical Site Investigations. The scope of fieldwork completed was as follows:

- A walkover survey of the site was completed to assess the general landform and site conditions;
- Ten hand auger boreholes were drilled using a 100 mm hand auger to depths of up to 2.4m to observe the subsurface profile. Hand augers were also undertaken to facilitate in-situ permeability testing. Hand auger borehole logs are also presented in Appendix A;
- In-situ falling head permeability testing was completed in HA04 and HA08 and depths of 1.0m and 2.4m respectively. Results of the permeability tests are presented in Appendix B;
- Twelve Cone Penetrometer Tests (CPT) were advanced to depths of up to 8.0m to assess the deeper soil profile of the ground. Groundwater monitoring wells were installed in CPT4 and CPT9A at depths of 4m and 5.5mbgl respectively to measure long term ground water levels. CPT traces are presented in Appendix C.

The approximate locations of the respective investigation sites referred to above are shown on the attached Site Investigation Plan (Figure 1). Test locations were measured using hand held GPS to an accuracy of  $\pm 3\text{m}$ .

## 5 GROUND MODEL

### 5.1 Geology

A review of the available geological references suggests the natural ground comprises Bassendean Sand.

### 5.2 Historic Land Use

Available aerial photographs indicate the north west corner comprised a waste collection area until the late 1990's. The existing land was developed through the 2000's and has remained unchanged since then. Superficial fill (less than approximately 1m thick) is expected throughout the golf course area.

### 5.3 Subsurface Conditions

The ground conditions encountered and inferred from the investigation were considered to be generally consistent with the published geology for the area and can be generalised according to the following subsurface sequence:

**FILL: SAND** with varying silt content, with gravel, dark brown, fine to coarse grained; gravel, fine to coarse grained, of plastic, bricks and glass. The interferred distribution of Fill is shown on Figure.1. HA01 to HA04 and HA08 refused prior to the target depth, HA1/a and HA04 refused on fill material. Two additional hand augers were attempted near HA01 and HA04 with shallow refusal on fill material;

**SAND (MD-D, D) (Bassendean Sand)** with silt and gravel content, grey to dark brown, fine to coarse grained, trace roots. Cemented layers of sand were present which were interpreted from CPT test results. The presence of these layers is variable in both horizontal and vertical extents.

The distribution of these units is summarised in Table 1.

Description	Depth to base of layer (m)			Average elevation of base of layer (m AHD)
	Minimum	Maximum	Average	
FILL: SAND	0	3.0	2.7	RL 4.1
SAND (MD - D) (Bassendean Sand)	2.8	5.4	4.4	RL 2.3
SAND (D) (Bassendean Sand)	> 8.6			-
Notes:				
FILL: SAND only visually observed in HA01 and HA04 and interpreted in CPT1/a/b, CPT4 and CPT7. The interferred distribution of the fill material is shown of Figure 1.				
L – Loose; MD – Medium Dense; D - Dense				

### 5.4 Groundwater

The Perth Groundwater Atlas suggests groundwater levels seasonally vary from approximately RL 6.5m AHD to RL 7.0m AHD. These levels equate to depths of approximately 0.5m to 1.2m below existing ground levels.

During the investigation, which was completed in winter conditions (July 2020), groundwater was encountered within the CPTs and boreholes at the depths summarised in Table 2.

<b>Location ID</b>	<b>Easting (m)</b>	<b>Northing (m)</b>	<b>Approximate Elevation of Groundwater on Completion (m AHD)</b>
HA02	394365.00	6459186.00	RL 4.00
HA03	394433.00	6459193.00	RL 4.85
CPT3	394399.34	6459190.07	RL 4.12
CPT4	394456.20	6459194.02	RL 4.34
CPT5	394463.40	6459120.89	RL 4.47
CPT6	394404.43	6459105.89	RL 3.81
CPT7	394340.14	6459085.63	RL 3.36
CPT8	394271.73	6459054.55	RL 3.54
CPT9A	394257.38	6458988.59	RL 5.14
CPT10	394354.20	6458970.63	RL 3.92
CPT11	394401.21	6458996.17	RL 4.16
CPT12	394424.34	6459015.06	RL 4.37

It is important to note that the groundwater elevations reported above are based on ground surface levels at each test location inferred from The Perth Groundwater Atlas (2003) and have not been verified by specific survey.

## 5.5 Permeability

The results of the falling head permeability tests carried out were used to estimate the soil coefficient of permeability in accordance with the methods described in Hvorslev (1951). Table 3 summarises the results obtained.

<b>Standpipe</b>	<b>Screen Depth (mbgl)</b>	<b>Screened Formation</b>	<b>Test Method</b>	<b>Approximate Permeability</b>	
				<b>(m/sec)</b>	<b>(m/day)</b>
HA04	0.0 to 1.1	FILL: SAND	Hvorslev	5.54E <sup>-05</sup>	4.78
HA08	0 to 2.5	SAND	Hvorslev	4.84E <sup>-06</sup>	0.42

## 6 GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

### 6.1 Geohazards

#### 6.1.1 Uncontrolled Fill

Fill material was visually identified in HA01 and HA04 and interpreted from the CPT plots in CPT1, a, b, CPT2 and CPT7. Based on this approximately 2ha in the north west contains the fill material associated with the former landfill. To better define the extended depths of the unsuitable material, we have recommended that additional geotechnical investigations to be completed, which is detailed in Section 8. In the absence of any construction records or fill certification, we consider all fill to be uncontrolled and therefore susceptible to excessive settlement under earth fill or foundation loads. The fill material was observed in HA01 and HA04 and included varying sized fragments. After reviewing historical aerial images, we understand these test locations may be within the boundary of a waste collection pit as discussed in Section 5.2. The pit occupied the land immediately west of the site during the 1970's and was filled in by the end of the 1980's.

The removal and reuse of fill materials is subject to the recommendations provided in Section 6.2.

#### 6.1.2 Shallow Groundwater and Dewatering

Shallow groundwater was identified at the following locations: CPT3,4,6,11, 12 and HA02, 03. The groundwater levels at those locations are less than 2m below the current ground level. As the elevation of the proposed building and depth of excavations of pool and other structures are currently unknown, shallow groundwater is a potential geohazard that should be addressed during the project development. The presence of shallow groundwater may necessitate dewatering for construction beneath groundwater levels and soil compaction will be difficult. In addition, allowable bearing pressures for structure foundations will be reduced and uplift pressures may need to be considered during the design process.

### 6.2 Earthworks

Earthworks operations are anticipated to generally comprise stripping of topsoil, the removal of uncontrolled fill followed by filling with imported, un-reactive granular sand fill. We understand that significant excavation depths will be required to reach design subgrade levels for the pool and we anticipate the required retained heights between 2.0m and 3.0m for the pool construction. Recommendations associated with this work are summarised as follows:

- Excavation, stockpile and reuse of uncontrolled fill is recommended. This can be completed under geotechnical engineering supervision. The material may be suitable for reuse subject to it meeting the requirements provided below;
- Excavations to design subgrade levels are expected to recover predominantly medium dense sand and uncontrolled fill that should be readily excavated using conventional earthmoving plant. During the investigation 4 CPTs refused above 3mbgl, it is most likely 3 of the refusals were on fill material and the remaining refusal occurred on weakly cemented sands. Due to this we recommend a rock breaker or bucket is available onsite during the excavation work;
- At the completion of excavation to design levels, including foundation excavations, and where sand is encountered, the upper 300mm of the exposed subgrade must be moisture conditioned and compacted to achieve at least 95% compaction with respect to Modified Maximum Dry Density (MMDD). This shall be judged to occur where at least 8 blows per 300mm penetration is achieved when tested with a PSP. Any loose / soft, weak or organic materials observed during compaction shall be removed and replaced with compacted clean fill;

- To be compatible with the in-situ soil conditions and the retaining wall and building foundation recommendations provided herein, all fill material should comprise clean granular material with <10% fines content (<75 micron) and a maximum particle size of 100mm. The area of Uncontrolled Fill identified within the north west corner of the site is not considered to meet this definition at present and must be excavated and screened to remove oversize material <100mm and organics; plastic and any other deleterious material. It must also be tested to ensure compliance with the material specification contained herein. All proposed fill must be moisture conditioned and compacted in layers not exceeding 300mm to achieve at least 95% compaction with respect to MMDD, as defined above. Care must be exercised when compacting in the vicinity of existing structures, particularly if vibratory compaction is being carried out;
- Temporary cut batters in natural sand above the water table may be excavated to a gradient of up to 1v:1.5h (33.5 degrees) to maximum heights of 3m, provided no load bearing structures are located within 3m of the batter crest. Cut batters exceeding this 3m height must be benched (minimum 1.5m wide level benches);
- The sandy nature of the site soils means that these materials will dry quickly where exposed which will lead to significant rutting under construction vehicle loads. Therefore, across the building platform, consideration to the over-excavation and placement of a 150 mm thick wearing course of crushed limestone gravel or similar should be made following subgrade compaction.

The technical and control requirements for Engineered Fill, including site observation and compaction testing, are outlined in AS3798. We recommend that this work, and in particular, determining the depth and extent of any Uncontrolled Fill removal during site earthworks, is completed under the direction and control of a suitably experienced Geotechnical Engineer familiar with the contents of this report. CMW would be pleased to perform this function if required.

### 6.3 Retention Systems

Design parameters for permanent and temporary retaining walls are summarised in Table 4.

Table 4: Retaining Wall Design Parameters								
Soil Unit	Y (kN/m <sup>3</sup> )	Ø' (deg)	K <sub>0</sub>	E' (MPa)	No wall friction		Wall friction = 2/3Ø	
					K <sub>a</sub>	K <sub>p</sub>	K <sub>a</sub>	K <sub>p</sub>
Engineered Fill	18	34	0.4	40	0.28	3.5	0.25	8.95
Sand (MD-D)	18	34	0.4	40	0.28	3.5	0.25	8.95
Sand (D)	18	37	0.4	70	0.25	4.02	0.23	12.55

Notes:

1. Refer to Table 1 for definition of soil unit levels
2. Y – soil unit weight; Ø' - angle of internal soil friction; K<sub>0</sub> - coefficient of earth pressure at rest, K<sub>a</sub> - coefficient of active earth pressure, K<sub>p</sub> - coefficient of passive earth pressure; E' – long term Young's modulus.
3. Values of K<sub>0</sub> are based on initial conditions following construction of the perimeter retention system.
4. The retaining wall designer must adopt the above set of K<sub>a</sub> and K<sub>p</sub> parameters relevant to the actual construction method adopted
5. The above parameters are based on the condition of a horizontal ground surface behind the retaining structure. Applicable surcharge loads behind the wall must also be considered in the design.

Retaining structures should be designed in accordance with AS 4678-2002 “*Earth Retaining Structures*” or an alternate approved factor of safety approach. Should any fill be placed against the

permanent basement retaining wall after construction, it is expected that the compaction induced pressures will be much greater than the above active earth pressures. The compaction equipment used to compact backfill behind the wall must be carefully selected and preferably light-weight compaction equipment should be used. The load on the retaining wall due to compaction equipment may be estimated from Figure J5 in AS4678-2002 “*Earth Retaining Structures*”.

It is noted that some ground movement will occur behind temporary or permanent retaining walls. By definition, movement of the wall must occur to fully mobilise the active and passive earth pressure coefficients provided in Table 4 above. The extent of this movement is dependent on the height of retaining, type of wall selected and construction methodology. This must be considered during the design and construction of the retaining walls to ensure adjacent facilities are not adversely affected.

## 6.4 Subsoil Classification

Based on our understanding of the general geology beneath the site, the results of our investigation and the recommendations provided in AS1170.4-1993, a site subsoil class of Ce (shallow soil site) to Section 4.2 of AS1170.4 is recommended for seismic design purposes.

## 6.5 Strip and Pad Foundations

The design of available foundation bearing pressures for isolated strip and pad footings at this site has been carried out using the Terzaghi Bearing Capacity Equation. It should be noted that these bearing pressures assume isolated vertical, non-eccentric loads and a groundwater level of >1m below footing level. Subject to completing the earthworks and foundation preparation recommendations provided herein, shallow strip or pad footings founded within medium dense to dense sand / engineered fill may be designed on the basis of the maximum allowable bearing pressures provided in Table 5.

Table 5: Summary of Shallow Footing Design Bearing Pressure			
Embedment Depth (m)	Footing Width (m)	Footing Length (m)	Allowable Bearing Pressure (kPa)
0.5	1.0 strip		190
	1.0	1.0	170
	2.0	2.0	200
	3.0	3.0	250
1.0	1.0 strip		240
	1.0	1.0	230
	2.0	2.0	260
	3.0	3.0	290

These values are based on a geotechnical strength reduction factor of 0.5 and an average load factor of 1.5 (Factor of Safety = 3.0).

Subject to the earthworks and foundation preparation works being undertaken as described above, it has been calculated that the total elastic settlement of the footing configurations and design pressures outlined in Table 5 above is unlikely to exceed approximately 20mm to 25mm. Differential settlements are unlikely to exceed approximately one half of these values.

## 6.6 Site Classification

A site classification of Class A with little or no ground movement to AS2870, is recommended for the portion of the site not affected by uncontrolled fill, subject to the foundation preparation recommendations provided herein.

A site classification of Class P to AS2870 is recommended for the north west corner of the site based on the current condition where greater than 0.8m of Uncontrolled Fill exists below design foundation level. The extended depth of these materials needs to be better defined.

However, subject to completing the earthworks and foundation preparation recommendations outlined in Sections 6.2 of this report, the site may be reclassified and designed in accordance with AS2870 to the equivalent of Class A.

A Class P classification to AS 2870 is for sites with uncontrolled fill, sites with deep soft soils, sites of inadequate bearing strength or where ground movement may be significantly affected by factors other than reactive soil movements due to normal moisture conditions.

## 6.7 Soak Wells

On-site soakwells may be designed on the basis of a soil coefficient of permeability of 2m/day subject to being located a distance of at least 3m away from any building foundations. This does not allow for the clogging / silting of the system.

Note that permeability can differ significantly with a minor change in fines content and compaction / density.

## 6.8 Floor Slabs

On the basis that appropriate levels of compaction are maintained during site preparation, as described in Section 6.2 above, an average long-term Young's Modulus value of 40MPa is considered appropriate for the soils below at grade (non-basement) floor slabs with respect to the design of a proposed slab-on-ground.

## 6.9 Pavement CBR

Based on the in-situ test results across the site, it is recommended that pavements be designed on the basis of a subgrade CBR value of 12%.

This design CBR value is subject to the exposed subgrade being moisture conditioned and compacted in accordance with the recommendations provided in Section 6.2 above. It is recommended that QA / QC testing be undertaken on subgrade materials during construction.

## 7 ALTERNATIVE UNCONTROLLED FILL RECOMMENDATIONS

As mentioned in 6.1.1 there is currently insufficient information on the uncontrolled fill material to provide detailed information. As an alternative to bulk excavation of a potentially large volume of uncontrolled fill, consideration of other solutions could be made. The methods could include:

- Limiting excavations to beneath the building footprints or foundations;
- Adopting piled foundations to transfer load through the fill to the underlying natural soil;
- Adopting deeper pad foundations to transfer load through the fill to the underlying natural soil;
- Adopting stiffened raft foundations;
- Adopting suspended floor slabs.

## 8 FURTHER WORK

We recommend undertaking additional site investigation work including the excavation of additional test pits to a target depth of 4m to visually observe the uncontrolled fill material and to map its extent. This will allow further exploration into the alternative solutions described in Section 7.

In addition, once the final designs have been completed, CMW must be contacted to confirm the advice provided in this report. Particularly with respect to groundwater levels and its effect on bearing pressures and earthworks.

## 9 CLOSURE

The findings contained within this report are the result of limited discrete investigations conducted in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, can it be considered that these findings represent the actual state of the ground conditions away from our investigation locations.

If the ground conditions encountered during construction are significantly different from those described in this report and on which the conclusions and recommendations were based, then we must be notified immediately.

This report has been prepared for use by City of South Perth in relation to the Collier Park Golf Course, Hayman Road, Como, WA 6152 project in accordance with generally accepted consulting practice. No other warranty, expressed or implied, is made as to the professional advice included in this report. Use of this report by parties other than City of South Perth and their respective consultants and contractors is at their risk as it may not contain sufficient information for any other purposes.

**For and on behalf of  
CMW Geosciences Pty Ltd**



**Geotechnical Engineer**



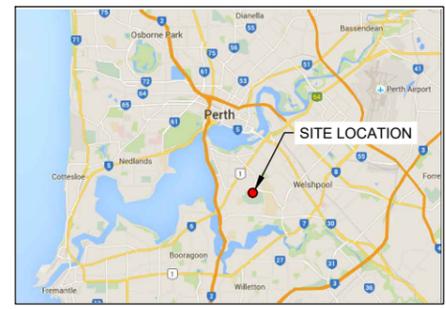
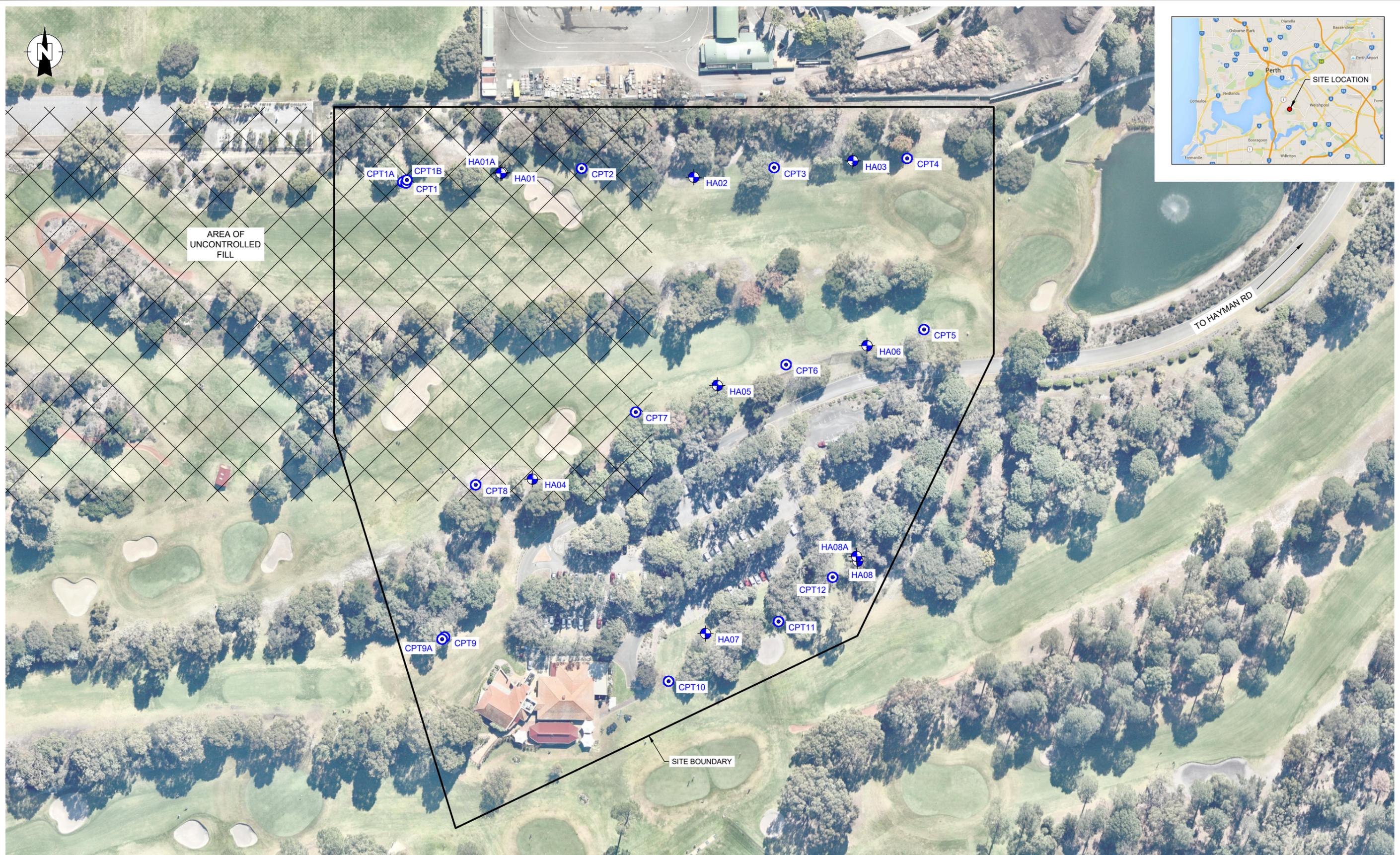
**Principal Geotechnical Engineer**

Distribution: 1 copy to City of South Perth (electronic)  
Original held by CMW Geosciences Pty Ltd



# Figure 1

## Site Investigation Plan



- LEGEND:**
- HA01 HAND AUGER (HA) LOCATION
  - CPT01 CONE PENETROMETER TEST (CPT) LOCATION

**NOTES:**

1. AERIAL FROM NEARMAP 03.05.20



CLIENT:	<b>CITY OF SOUTH PERTH</b>	DRAWN:		PROJECT:	PER2020-0172
PROJECT:	<b>RECREATION AND AQUATIC FACILITY HAYMAN RD, COMO, WA</b>	CHECKED:		DRAWING:	01
TITLE:	<b>SITE INVESTIGATION PLAN</b>	REVISION:	A	SCALE:	1:1500
		DATE:	20.07.20	SHEET:	A3 L

## APPENDIX G – ENGINEERING SERVICING STUDY

# Recreation and Aquatic Facility (RAF) Collier Park Golf Course

Engineering Servicing Report  
Project No. 20-086

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- Appendix Two: Feature Survey
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Revision	Description	Author	Date
A	Initial Issue	[REDACTED]	27/08/20
B	Updated Issue	[REDACTED]	03/09/20
C	Final Issue	[REDACTED]	04/09/20



# 1

## Introduction

At the request of the client City of South Perth, this Engineering Services Report has been prepared in support of the development of a Recreation and Aquatic Facility (RAF) on a portion of the "Lake 9" at Collier Park Golf Course.

The area of interest is situated in the northern sector of the overall landholding between the existing Clubhouse infrastructure and the City's Operations Centre (and Recycling Centre) near the intersection of Hayman Road and Thelma Road in Como.

The parent site is made of two main lots, the larger is Lot 3858 Hayman Road (P218457 approximately 72ha) and P.145 Thelma Road (P416118 - approximately 14ha set to course operations)

The intended development site for the RAF (and other upgraded recreation, amenity and golf operations) is bound by the existing carpark, ornamental lake (linked by Water Corporation Main Drains) and the Operation Centre landholding (199 Thelma Road and neighbouring recycling centre to east).

The following assessment has been based on the Architectural Plan (Draft Option 4B) prepared for the site by Christou which includes a multi pool aquatic centre, eight multicourt sports hall with associated café/restaurant, offices, pro shop, operational and maintenance requirements and an at grade carpark of the order of 550 bays.

The information contained in this report is compiled using information from major service providers using Dial-Before-You-Dig, information from the City of South Perth, Department of Environment, Western Power, Department of Water, Australian Geological Mapping and National Map.

## 2 Site Conditions

### 2.1 Geology

The 1:50,000 Perth Environmental Geology map also indicates that the site is located on Bassendean Sands. It has few limitations. It is noted that through the redevelopment of the course during the 1990's and the addition of this third 'nine' that the former lake structure was backfilled and a new one established.

It is noted that components of the site were used for landfill waste operations and the extent of that uncontrolled fill has been identified by CMW Geosciences in their report PER2020-0172AB R0. This will need to be further delineated and resolved for remediation and also structural requirements.

Pritchard Francis recommend getting further geotechnical investigation (which will require intrusion into the playing area of the course) in order to confirm the extent of uncontrolled fill as part of design and value management.

Soil composition and infiltration rates as well as bearing pressures and structural design considerations have been provided.

### 2.2 Topography

Site survey by JBA has been conducted on the site to date, as well as historical data from service providers shows the levels range across the subject area 9 to 5.14m AHD – most of which is unnatural and has been formed as part of the aesthetic of the course. It is noted that that lake edge is 6m AHD and the water level nominated by the Corporation is between 4.6-5.35m AHD.

The design levels will need to be considerate of tree retention; noting that all were planted and are therefore at oldest 25 years.

### 2.3 Groundwater Levels

Historical groundwater levels obtained from the Department of Water (GW Contours, Historical Max-DOW), identified the historic maximum groundwater levels at between 6mAHD to 7mAHD across the site. Groundwater was encountered between 3.36-5.14m AHD during CMW testing toward winter peak. Clearance to the maximum groundwater level has potential to daylight.



## 2.4 Earthworks and Retaining

Localised earthworks will be required in order to meet the levels for construction. Appropriate construction method will be required in order to prepare foundations during excavation and construction. Remediation is suggested for the uncontrolled fill to allow for more traditional structural footing configuration.

## 2.5 Other On-Site Constraints

From a review of National Map, the following environmental datasets were reviewed:

- Moderate to Low risk of Acid Sulphate Soils has been identified.
- Presence of Threatened Ecological Community (TEC) – Banksia Woodland
- Presence of conservation significant flora and fauna.
- No known Environmentally Sensitive areas within the boundary extent of the site.
- One of the Geomorphic Wetlands within the boundary extent of the site is natural (Pine “Nine”)
- No known Contaminated sites that are currently reported to DWER are within the boundary extent of the site however will need to review whether landfill is inert / benign / impacted / contaminated. Ultimately Canning River is a receptor.
- No known Heritage sites within the boundary extent of the site.
- Not in a bushfire prone area.

## 3 Infrastructure

### 3.1 Stormwater Drainage

The stormwater produced on the site will be fully detained on site utilising attenuation devices. It is noted that there is currently a Water Corporation main drain (Collier Pines – AG94) that links between the two larger lakes on site.

It is linked from the north and egresses into Lurnea Place for ultimate discharge through compensating structures into the Canning River near Roscrea Close in Waterford.

The proposed footprint of the RAF (and the mini-golf course) impact upon the alignment of this drain and engagement with the Water Corporation has confirmed that this will need to be relocated (and provided with an operational easement) at the cost of the development. It is preferred that this works occurs prior to any construction over the existing main. The realignment will be able to be constructed in parallel until connection and handover. It is suggested that works occur in the summer months so as not be detrimentally impacted by need to dewater.

The Corporation will expect that the introduced increase in impervious area will be limited to pre-development flows into the Corporation main drains.

Existing link drains and indeed Corporation infrastructure that is going to be made redundant will be augmented / removed to facilitate development.

It is expected that the RAF will be drained into attenuation devices for reuse as part of operations and then disposal by discharge and soakage.



### 3.2 Sewerage Reticulation

A desktop review of the existing infrastructure shows 150mm sewer gravity pipe on Thelma Street connecting into a 225mm main and crossing to the east side of Hayman Road to WWPS “Hayman Road PS3” near the corner of Kent Street.

It is apparent that the course is not connected to Minister’s Infrastructure and is expected to currently be served by septic systems or appropriate aerobic treatment units (ATU).

Initial calculations based on the fixtures and fittings list provided which notably doesn’t include kitchens / dishwashers etc and is based on occupancy is in the order of 125kl/day.

This loading; on the face of it is high; and assumes full occupancy – if that is unrealistic then that will need to be considered against the potential waste water loading.

It is expected that an internal gravity system will be plumbed to a private waste water pump station which will then either discharge to Minister’s Infrastructure or potentially to a private waste water treatment plant. Assumption would be provision of a “Type 10” station which would be in the order of \$300k

There is the opportunity for the reuse of the water to supplement bore water and be more sustainable with a guaranteed water supply however there is a cost component that must be considered. The capital cost of the Waste Water Treatment Plant would be in the order of \$1m and operational costs at \$100k/pa where as a discharge to external sewer would be at Minister’s rates.

It is proposed that the pressure main discharge be co-ordinated through the Depot site as this is the nearest immediate compliant main (225m) and would be most cost effective overall under the assumption that contiguous connection between the part titles remained. Otherwise a connection could be made across Hayman Road for a sole use connection.

It is also to be noted that the ARMAGH ST waste water pressure main (900mm Steel) crosses the site to the north of the Hayman Road lake and then straddles the northern edge of the golf course and through the ovals / carpark.

Standard Water Corporation headworks will apply.

### 3.3 Water Reticulation

A desktop review of the potable water infrastructure shows four connections from the 200mm main in Thelma Street into the Operations and Recycling Centre. It is assumed that one connects through to the Clubhouse.

Based on the calculations of the fixture list – a upgrade to an 80mm connection with a 470l/min (or a 100mm – 600l/min) guaranteed supply would be required as would a separate fire meter.

Pritchard Francis recommends a hydraulic engineer undertake flow tests for further assessment of the water supply network. It is noted that due to size of the integrated building that the site will have an independent fire system under NCC 2019.

Consideration needs to be given to the footprint of the additional water meter and RPZD backflow prevention valve to ensure minimum offsets and functionality are met.

Standard Water Corporation headworks will apply.

### 3.4 Local Authority Requirements – Roadworks and Footpaths

The existing external road network is complete and does not require any upgrades or extensions. The new development will construct a link from the main access through to the new carparking and operational access points. It will need to be designed in accordance with consideration to required service vehicles.

It is suggested that a pedestrian link be introduced.



### 3.5 Gas Supply

There are existing reticulated ATCO gas mains in the verge of Thelma Street. There is a High Pressure (HP) main which has works and separation constraints and then also a smaller medium pressure (MP) line that would be appropriate to connect to.

The opportunity would, as with potable water and sewer discharge, is to bring the connection through the Operations Centre just before where the pressure is reduced for residential part of Thelma Street rather than to create an extension and expense.

### 3.6 Electrical Supply

The existing supply to the Collier Park Golf Course is off Jackson St, through a HV switchgear which feeds a substation located within the southern compound within the golf course site. This point of connection could be maintained to supply the southern compound if the existing LV interconnection between the compound and existing club house is disconnected (Figure 1).

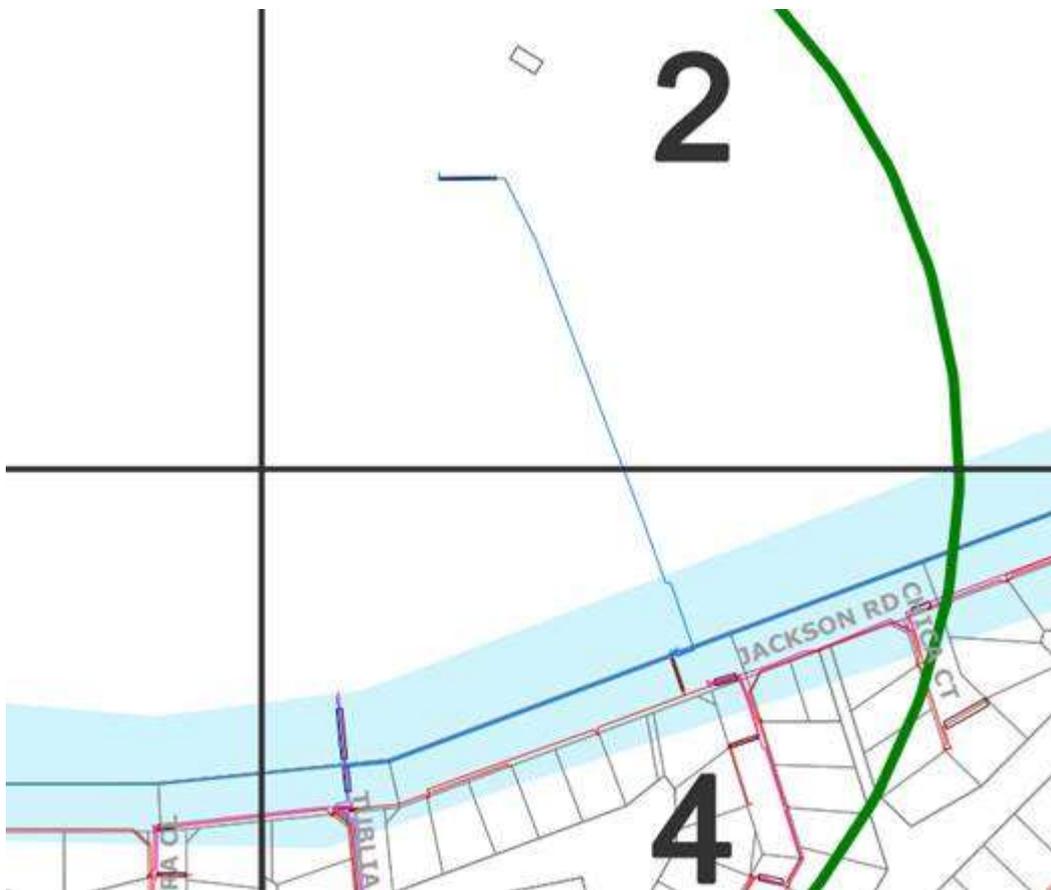


Figure 1 – Existing Aerial Supply Jackson Rd

This will also require the creation of a zone diagram that covers the multiple points of connection to the site. The overall HV network that surrounds the site is connected through HV cables that run to the Collier Zone Substation (marked with Yellow diamond below in Figure 2).



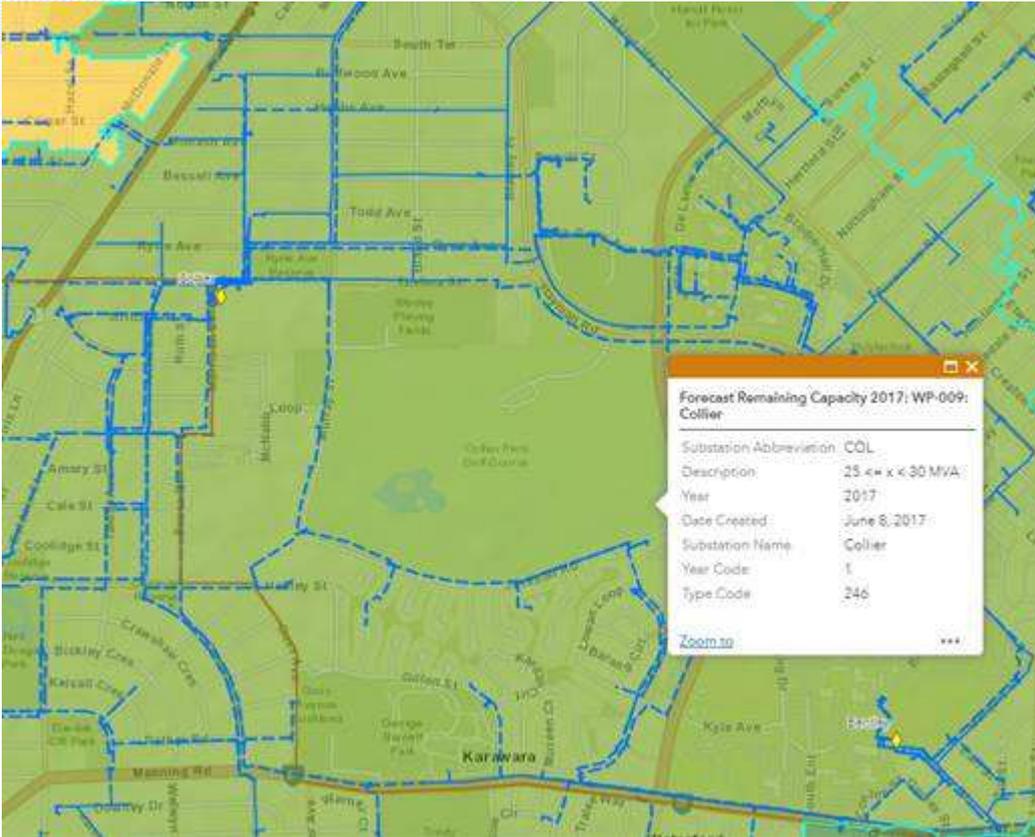


Figure 2: Western Power Network Planning Tool

There is overall capacity within the zone substation and surrounding network to permit the installation of an upgraded supply to this site. We just need to note that the overall Golf Course has multiple points of supply, for remote irrigation pumps and other services on site.

The RAF development will require the installation of substations to service the site. The load for such a development, depending on the final set of equipment will exceed 1MVA and thus will need the installation of a substation site that contains 2 transformers. Based on the location of the development within the super lot (Golf Course), a HV switchgear will need to be installed on Hayman Road, which will feed 2 x 35HV cables that will run within a Western Power easement into the site and 2 x Sole Use Transformers will be installed within the site, adjacent to the largest load centre (Figure 3).





Figure 3: HV Supply Sketchup

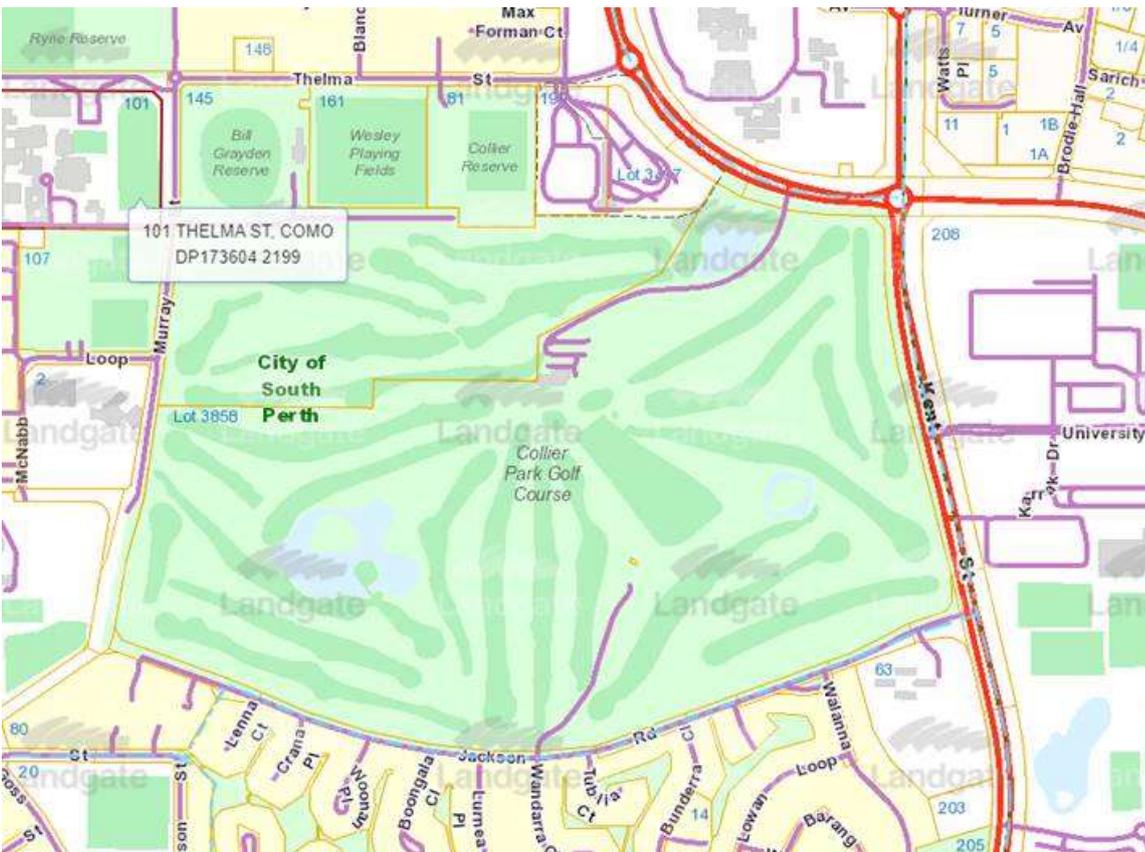


Figure 4: Land Holding



Figure 4 indicates the multiple parcels of land that make up the overall reserve, we just need to make sure that any private electrical network that is to cross those boundaries is documented, and appropriate easements/zone diagrams are prepared to protect it.

The cost associated with supplying this site with 1.4MVA of Load, based on pre-existing Aquatic Precincts under the DLVCS Policy is \$310k which includes the Gifted Asset Tax of 13.9%.

Based on the surface area available on the buildings, I would recommend the installation of solar PV to offset as much daytime energy usage as possible.

### 3.7 Communications

This site is within the NBN Fixed Line footprint. Most of the surrounding area has been converted to FTTN (Fibre to the Node) under the brownfields rollout and thus connection to the NBN network is available

Note as per figure 5; that there are HFC (Hybrid Fibre Connection) to the Operations Centre to the north, and FTTP (Fibre to the Premises) north-east of the roundabout so development will need to confirm what connection it will receive based on demand and operation requirements.



Figure 5 – NBN Service Area.

## 4 Conclusion

The subject site; being a redevelopment requires elements of the site to be remediated and earth-worked.

Based on the investigations completed all of these works can be completed safely and effectively. The site is serviced by sufficient stormwater, and can extend gas, water and sewer discharge infrastructure through neighbouring Operations Centre. Power will need augmentation from Hayman Road to support the development. It will require a Waste Water Pump Station to collect sewer from development and discharge to boundary.

Based on all items within this Engineering Services Report, Pritchard Francis Pty Ltd believes that the proposed development is capable of being provided with essential services.



## Appendices

Appendix One:	Architectural Ground Plate
Appendix Two:	Feature Survey
Appendix Three:	Proposed Service Links / Extensions



Appendix One: Architectural Ground Plate



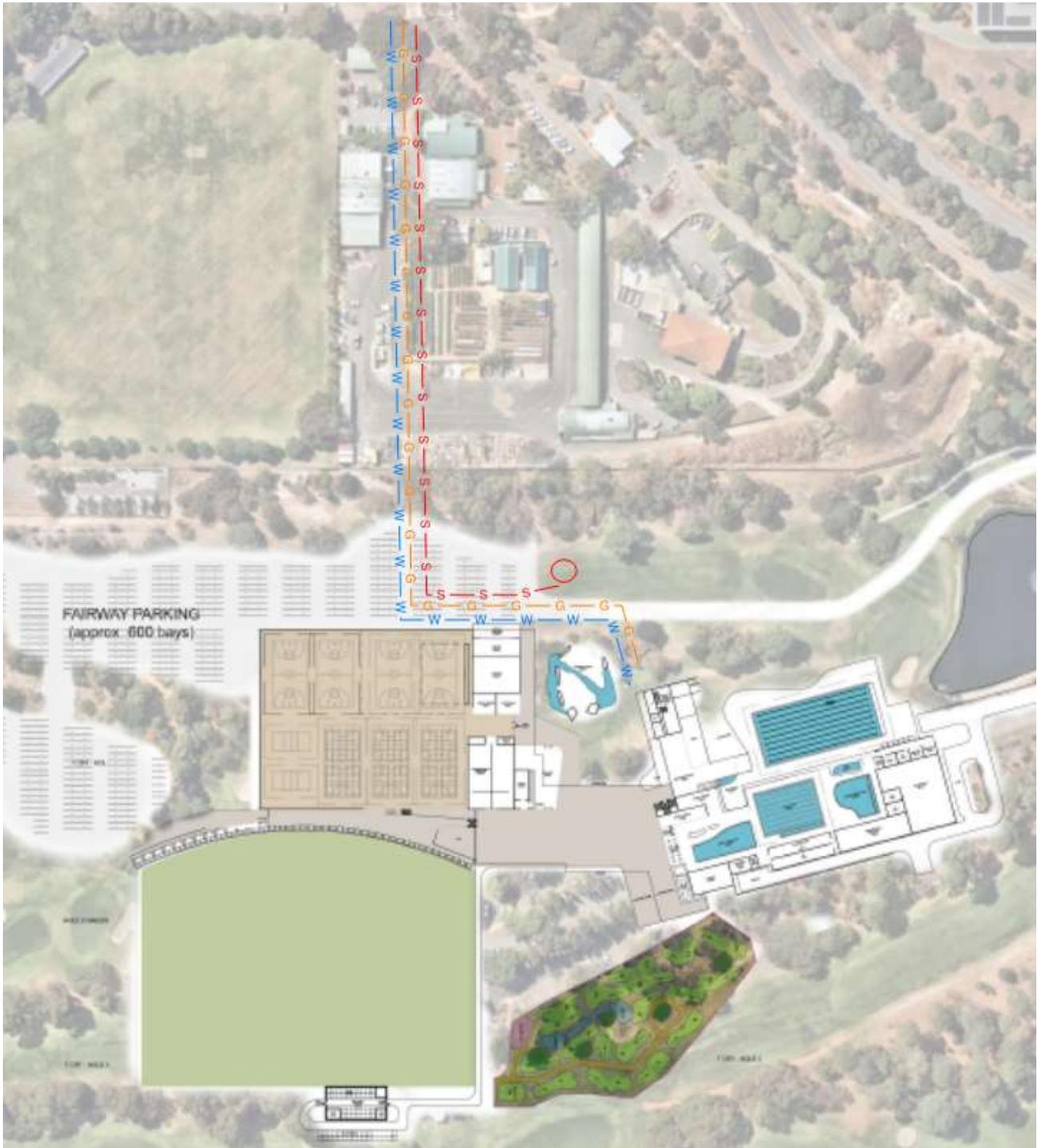
Appendix Two:

Feature Survey



Appendix Three:

Proposed Service Links / Extensions



## APPENDIX H – TRANSPORT IMPACT ASSESSMENT

# TRANSPORT IMPACT ASSESSMENT

Hayman Road

Como

September 2020

Rev C



**HISTORY AND STATUS OF THE DOCUMENT**

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## Appendices

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**Appendix 1** - The layout of the proposed development

**Appendix 2** - Transport Planning and Traffic Plans

**Appendix 3** - Vehicle Turning Circle Plans

**Appendix 4** - SIDRA Intersection Analysis

## 1. Executive Summary

### Site Context

- The proposed multi-purpose Recreation and Aquatic Facility (RAF) is intended to be located at the Collier Park Golf Course north of the Clubhouse.
- The RAF will consist of various indoor courts, outdoor and indoor swimming pools, spa/sauna and other recreational and aquatic facilities.
- The intended time for completion of the project and opening the RAF to the public is August 2023.

### Technical Findings

- The proposed development is expected to generate additional 3,753 vehicle trips per day, 568 vehicle trips in the AM peak and 637 vehicle trips in the PM peak. According to the WAPC guidelines this is considered high impact on the surrounding road network.  
Having in mind the capacity and the existing traffic volumes, KCTT believe that the surrounding road network would successfully absorb the additional traffic from the proposed development. Channelised right turn treatment of 95m would be required upon development construction on Hayman Road. A short-left turn deceleration lane would also be warranted. However, a full-length left turn deceleration lane is already provided on Hayman Road.
- Internal access road should be designed as a shared zone, ensuring that vehicular operating speed is kept at a very low level.

### Relationship with Policies

- KCTT have reviewed parking requirements in accordance with City of South Perth Town Planning Scheme No 6 and Guide to Traffic Management Part 11: Parking.  
It is expected that the complex will not operate at full capacity upon opening, therefore the proposed 550 car parking bays would be sufficient to cater for the needs of staff and patrons of the subject site until the development reaches full operational capacity. Additional 350 parking bays will be provided on upper level as part of a future car parking expansion once parking demand increases.
- In order to comply to Building Code of Australia requirement, 11 accessible parking bays should be provided throughout the parking area.
- End of trip facilities should be provided for visitors and staff. It is anticipated that 34 staff bays and 211 bicycle parking bays should be provided in order to promote alternative transportation modes. Having in mind that the subject site is a recreational facility it is highly likely patrons would cycle to their destination.
- Service and delivery parking provision of 10 bays is suggested. Some of the services which are co-located can share the delivery and service vehicle bays. As it is anticipated that deliveries will be run occasionally and that delivery vehicles will not dwell for prolonged periods of time, basic set down areas can be designated.

## **Conclusion**

- As stated above the additional traffic attracted to the subject site is expected to increase by 3,753 vehicle trips per day, 568 vehicle trips in the AM peak and 637 vehicle trips in the PM peak.
- Hayman Road is classified as Distributor A as per MRWA classification. Currently there are around 17,000 vehicles per day on weekdays and around 15,500 vehicles per day on weekends on Hayman Road (west of Kent Street).
- The peak operation of the proposed development would happen on weekends. Therefore, it is expected that the added traffic volume of the development would bring the weekend traffic on Hayman Road to approximately 18,500 vehicles per day.
- SIDRA analysis (Appendix 4) showed that the proposed development will not make a significant impact on Hamyan Road operation. Some queuing is anticipated on Access Road, however the maximum delay in 2033 does not exceed 60s. This is based on a fairly conservative assumption that traffic volumes will grow by 1.5% per annum. Given that evidence shows steady decline of traffic volumes on Hayman Road since 2016, should this trend continue, delays are likely to be even lower.
- In summary KCTT believe that even though the proposed development traffic impact would be high, the surrounding network has sufficient capacity to absorb the additional traffic volumes. For additional information on intersection delays and levels of service refer to Appendix 4 of this report.

## 2. Transport Impact Assessment

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### 2.1 Location

Road Name	Hayman Road
Suburb	Como
Description of Site	The proposed multi-purpose Recreation and Aquatic Facility (RAF) is intended to be located at the Collier Park Golf Course north of the Clubhouse. The RAF will consist of various indoor courts, outdoor and indoor swimming pools, spa/sauna and other recreational and aquatic facilities. The intended time for completion of the project and opening the RAF to the public is August 2023.

### 2.2 Technical Literature Used

Local Government Authority	City of South Perth
Type of Development	multi-purpose recreation
Are the R-Codes referenced?	NO
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation / attraction rates for various land uses) referenced?	YES
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments Volume 5 - Technical Guidance
Are there applicable LGA schemes for this type of development?	YES
<i>If YES, Nominate:</i>	
Name and Number of Scheme	Town Planning Scheme No. 6
Are Austroads documents referenced?	YES
Is the Perth Transport Plan for 3.5 million and Beyond referenced?	NO

## 2.3 Land Uses

Are there any existing Land Uses

YES

If YES, Nominate:

Collier Park Golf Course

### Proposed Land Uses

Land Use	No of	Yield m <sup>2</sup>	Total
<b>SPORTSHOUSE</b>			
Reception	1	40	40
Offices	16	10	160
Open Plan Desks	54	6	324
Hot Desks	10	6	60
Meeting Room - Small	4	20	80
Meeting Room - Medium	1	40	40
Photocopy & Stationary Room	2	50	100
IT & Server Room	1	20	20
Lunch Room	1	100	100
Storage	1	100	100
Amenities	1	100	100
Circulation and Engineering		15%	163
<b>SUBTOTAL</b>			<b>1,287</b>
<b>AQUATIC INDOOR</b>			
Pool - 25m	1	533	533
Pool - Learn to Swim	1	220	220
Pool - Hydrotherapy	1	270	270
Spa	1	88	88
Sauna	1	20	20
Aquatic Office	1	110	110
Airlock	1	30	30
First Aid	1	15	15
Storage	1	260	260
Dining (Wet)	1	90	90
Changerooms	1	220	220
Family Change	1	175	175
Amenities	2	40	80
Amenities	2	20	40
Meeting	2	20	40
Plantroom	1	660	660
Circulation / Concourse	1	1090	1090
<b>SUBTOTAL</b>			<b>3941</b>

<b>AQUATIC OUTDOOR</b>			
Pool - 50m	1	1,200	1,200
Splash Pad	1	150	150
<b>SUBTOTAL</b>			<b>1,350</b>
<b>SPORTS HALL</b>			
Court Type 1	4	420	1680
Court Type 2	4	465	1860
Showcourt Seating	1	38	38
Climbing Centre	1	800	800
Office	1	90	90
Storage	1	300	300
First Aid	1	15	15
Changerooms & Amenities	1	575	575
Circulation / Runouts	1	3060	3060
<b>SUBTOTAL</b>			<b>8,418</b>
<b>HEALTH CLUB</b>			
Gym	1	1,500	1,500
Program Rooms	2	250	500
Testing Rooms	4	20	80
Changerooms	1	100	100
Amenities	1	100	100
<b>SUBTOTAL</b>			<b>2,280</b>
<b>COMMON FACILITIES</b>			
Retail / Pro Shop	1	415	415
Kiosk	1	110	110
Kitchen	1	175	175
Administration Office	1	100	100
Office F&B	1	90	90
Cleaner's Store	1	45	45
Lift and Stairs	1	50	50
Creche (assumed 13 employees and 50 children)	1	150	150
<b>SUBTOTAL</b>			<b>1,045</b>

<b>FOOD &amp; BEVERAGE</b>			
Restaurant	1	200	200
Bar	1	200	200
Back of House	1	150	150
Function	1	300	300
Pre-Function / Bar	1	300	300
Finishing Kitchen	1	110	110
Restaurant Amenities	1	80	80
Function Amenities	1	80	80
<b>SUBTOTAL</b>			<b>1,420</b>

<b>GOLF</b>			
Existing Golf Course	18 holes	-	-
Mini Golf	18 holes	-	4500
Driving Range (Outdoor)	2 - 80 bays	1000	2000
Amenities	1	50	50
Golf Cart Storage	1	340	340
<b>SUBTOTAL</b>			<b>6,890</b>

<b>PLANT</b>			
Comms	1	70	70
Security	1	25	25
Pumps & Tanks	1	80	80
Distribution Boards	1	30	30
<b>SUBTOTAL</b>			<b>205</b>

<b>CURTIN FACILITIES</b>			
Curtin Facilities	1	500	500
<b>SUBTOTAL</b>			<b>500</b>

## 2.4 Local Road Network Information

How many roads front the subject site? The proposed development is accessed via internal network.

*Name of Other Roads within 400m radius of site, or roads likely to take increased traffic due to the development.*

### Road 1

Road Name	Hayman Road
Number of Lanes	two way, two lanes per direction, divided
Road Reservation Width	60m
Road Pavement Width	9.0m per direction inclusive of bicycle lanes 10.0 median
Classification	Distributor A
Speed Limit	70kph
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	33, 34, 284
On-street parking	NO

### Road 2

Road Name	Murray Street
Number of Lanes	two way, one lane (no linemarking), undivided
Road Reservation Width	30m
Road Pavement Width	7.5m SLK [0.83-1.06] 8.7 SLK [1.06-1.27] – inclusive of bicycle lanes
Classification	Access Road
Speed Limit	50kph or State Limit 40kph School zone signposted speed limit (valid on school days 7:30-09:00 and 14:30-16:00)
Bus Route	NO
On-street parking	NO

### Road 3

Road Name	Thelma Street
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	20m
Road Pavement Width	9.5m
Classification	Access Road
Speed Limit	50kph or State Limit
Bus Route	NO
On-street parking	NO

**Road 4**

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<b>Road Name</b>	<b>Kent Street</b>
Number of Lanes	two way, two lanes per direction, divided
Road Reservation Width	60m
Road Pavement Width	8.5m per direction inclusive of bicycle lanes 10.0 median
Classification	Distributor A
Speed Limit	70kph
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	33, 34, 100, 284, 960
On-street parking	NO

## 2.5 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)				Heavy Vehicle % <i>If HV count is Not Available, are HV likely to be in higher volumes than generally expected?</i>	Date of Traffic Count	If older than 3 years multiply with a growth rate
			AM Peak Time	AM Peak VPH	PM Peak Time	PM Peak VPH			
<b>Traffic Volume – Average Monday to Friday</b>									
<b>Hayman Road</b>	South of South Terrace	16,140	07:45 – 1,666	16:15 – 1,501	4.5	2018/2019	–		
	West of Kent Street	16,909	17:45 – 1,688	16:15 – 1,436	3.9	2019/2020	–		
	East of Kent Street	11,632	08:00 – 1,109	16:30 – 1,073	6.2	2018/2019	–		
<b>Kent Street</b>	South of Jarrah Road	12,119	07:45 – 1,119	16:45 – 1,168	5.6	2018/2019	–		
	South of Hayman Road	19,705	07:45 – 1,745	16:45 – 1,743	5.8	2018/2019	–		
	North of Manning Road	20,038	07:30 – 1,713	15:45 – 1,647	4.7	2018/2019	–		
<b>Traffic Volume – Average Monday to Sunday</b>									
<b>Hayman Road</b>	South of South Terrace	15,111	07:45 – 1,559	16:15 – 1,403	4.5	2018/2019	–		
	West of Kent Street	15,575	08:00 – 1,378	16:15 – 1,213	3.3	2019/2020	–		
	East of Kent Street	10,557	08:00 – 1,006	16:30 - 974	6.2	2018/2019	–		
<b>Kent Street</b>	South of Jarrah Road	11,000	07:45 – 1,015	16:45 – 1,059	5.6	2018/2019	–		
	South of Hayman Road	17,892	07:45 – 1,585	16:45 – 1,582	5.8	2018/2019	–		
	North of Manning Road	18,210	07:30 – 1,404	16:30 – 1,448	4.4	2018/2019	–		
<b>Traffic Volume – Average on Weekends</b>									
<b>Hayman Road</b>	West of Kent Street	11,984	09:45 – 1,048	12:00 - 996	2.3	2019/2020	–		
<b>Kent Street</b>	North of Manning Road	13,722	11:15 – 1,064	17:00 – 1,125	3.6	2018/2019	–		

*Note\** - Traffic counts have been requested from the City of South Perth via e-mail, no data has been received at the time of writing this report.

## 2.6 Vehicular Crash Information

Is Crash Data Available on Main Roads WA website? YES

If YES, nominate important survey locations:

Location 1 Hayman Road SLK [0.82-1.32] – midblock

Location 2 Thelma Street SLK [0.00-0.73] – midblock

Location 3 Murray Street SLK [0.85-1.51] – midblock

Period of crash data collection 01/01/2014 - 31/12/2018

Road / Intersection Name	SLK	Road Hierarchy	Speed Limit	Crash Statistics			
				No of KSI Crashes	No of Medical Attention Crashes	No of PDO Major Crashes	No of PDO Minor Crashes
<b>Hayman Road</b>	0.82-1.32	Distributor A	70kph	0	2	9	1
<b>MR Type</b>	Involving Overtaking	Involving Parking	Involving Animal	Involving Pedestrian	Entering / Leaving Driveway	Other / Unknown	
<b>Count</b>	1	1	1	1	2	6	
No of MVKT Travelled at Location			≈16,500 VPD * 365 * 5 years * 0.5 km = 15.05 MVKT				
KSI Crash Rate			0 KSI crashes / 15.05 MVKT = 0 KSI crashes/MVKT				
All Crash Rate			12 crashes / 15.05 MVKT = 0.797 crashes/MVKT				
Comparison with Crash Density and Crash Rate Statistics			0.797 crashes/MVKT crash rate is lower than the network average of 0.81 crashes/MVKT.				
<b>Thelma Street</b>	0.00-0.73	Access Road	50kph or State Limit	0	1	1	0
<b>MR Type</b>	Involving Overtaking	Involving Parking	Involving Animal	Involving Pedestrian	Entering / Leaving Driveway	Other / Unknown	
<b>Count</b>	0	0	0	0	2	0	
No of MVKT Travelled at Location			≈3,000 VPD * 365 * 5 years * 0.73 km = 3.99 MVKT				
KSI Crash Rate			0 KSI crashes / 3.99 MVKT = 0 KSI crashes/MVKT				
All Crash Rate			2 crashes / 3.99 MVKT = 0.5 crashes/MVKT				
Comparison with Crash Density and Crash Rate Statistics			0.5 crashes/MVKT crash rate is lower than the network average of 0.81 crashes/MVKT.				
<b>Murray Street</b>	0.85-1.51	Access Road	50kph or State Limit	0	0	3	0
<b>MR Type</b>	Involving Overtaking	Involving Parking	Involving Animal	Involving Pedestrian	Entering / Leaving Driveway	Other / Unknown	
<b>Count</b>	0	1	0	0	0	2	
No of MVKT Travelled at Location			≈1,500 VPD * 365 * 5 years * 0.66 km = 1.8 MVKT				
KSI Crash Rate			0 KSI crashes / 1.8 MVKT = 0 KSI crashes/MVKT				
All Crash Rate			3 crashes / 1.8 MVKT = 1.66 crashes/MVKT				
Comparison with Crash Density and Crash Rate Statistics			1.66 crashes/MVKT crash rate is higher than the network average of 0.81 crashes/MVKT.				

The following table shows the Crash Density and Crash Rates on Metropolitan Local Roads as obtained from Main Roads WA on the 14<sup>th</sup> May 2018 by email request: -

**Crash Density and Crash Rate on Metropolitan Local Roads Network only**

	All Crashes		Serious Injury Crashes (Fatal+Hospital)	
	Average Annual Crash Density (All Crashes/KM)	Average Annual Crash Rate (All Crashes/MVKT)	Average Annual Crash Density (Ser. Inj. Crashes/KM)	Average Annual Crash Rate (Ser. Inj. Crashes/MVKT)
Metro Local Road - Midblock	2.99	0.81	0.13	0.03
Metro Local Road - All	6.41	1.73	0.26	0.07

Note: Based on 5-years data for the period 2013 to 2017.

## 2.7 Vehicular Parking

Local Government

City of South Perth

Local Government Document Utilised

Town Planning Scheme No. 6

Description of Parking Requirements in accordance with Scheme:

Town Planning Scheme No. 6:

- Café/Restaurant - 1 per 5m<sup>2</sup> of dining area
- Child Day Care Centre - 1 per required employee; plus 1 per 10 children permitted to receive care
- Local Shop - 1 per 25m<sup>2</sup> GFA
- Office - 1 per 25m<sup>2</sup> GFA of which not less than 10% with a minimum of 2 bays shall be reserved for visitors
- Reception Centre - 1 per 5m<sup>2</sup> GFA
- Small Bar - 1 per 3m<sup>2</sup> of public floor space used as bars, lounges, dining and function areas, beer gardens and areas used predominantly for games.

Since the Town Planning Scheme does not offer rates for all the land uses proposed, KCTT have referred to Guide to Traffic Management Part 11: Parking in order to assess parking requirements of the proposed development.

Guide to Traffic Management Part 11: Parking:

- Indoor sport and recreation:
  - Indoor cricket or other court game - 20 spaces per pitch or court
  - Swimming - 15 spaces plus 1 space per 100 m<sup>2</sup> GFA
  - Gymnasium - 1 space per 10m<sup>2</sup> GFA
- Outdoor sport and recreation:
  - Swimming - 15 spaces plus 1 space per 100 m<sup>2</sup> of site area
- Golf course – 4 car spaces to each hole\*
- Recreation and leisure - 1 space per 30 m<sup>2</sup> GFA

Note \* - The existing Golf course has 18 holes. A Driving range is proposed with 56 driving range bays. Since the driving range is designed for one person at a time a rate of 1 parking bay per driving range bay is suggested. It is expected that 40% of the patrons of the proposed driving range are Golf patrons waiting their turn at the course. Additionally, events with organised transportation such as birthday or corporate parties are expected often. Therefore, a reciprocity of 40% has been applied to Driving range parking requirements making the requirement 0.6 parking bays per driving range bay.

A Mini Golf course of 18 holes is also proposed. KCTT believe that the same rate of 1 parking bay per mini golf hole will be sufficient to accommodate the parking demand of the Mini Golf course as it will mostly be attended by families with children arriving by one car.

**Calculation of Parking**

Land Use*	No of	Yield* m <sup>2</sup>	Total	Requirements	Total Parking
<b>SPORTSHOUSE</b>					
Reception	1	40	40	1 per 25m <sup>2</sup> GFA	1.6
Offices	16	10	160	1 per 25m <sup>2</sup> GFA	0.4
Open Plan Desks	54	6	324	1 per 25m <sup>2</sup> GFA	0.24
Hot Desks	10	6	60	1 per 25m <sup>2</sup> GFA	0.24
Meeting Room - Small	4	20	80	1 per 25m <sup>2</sup> GFA	0.8
Meeting Room - Medium	1	40	40	1 per 25m <sup>2</sup> GFA	1.6
Photocopy & Stationary Room	2	50	100	-	-
IT & Server Room	1	20	20	-	-
Lunch Room	1	100	100	-	-
Storage	1	100	100	-	-
Amenities	1	100	100	-	-
Circulation and Engineering		15%	163	-	-
<b>SUBTOTAL</b>			<b>1,287</b>		<b>5</b>

<b>AQUATIC INDOOR</b>					
Pool - 25m	1	533	533	15 spaces plus 1 space per 100 m <sup>2</sup> GFA	20.33
Pool - Learn to Swim	1	220	220	15 spaces plus 1 space per 100 m <sup>2</sup> GFA	17.2
Pool - Hydrotherapy	1	270	270	15 spaces plus 1 space per 100 m <sup>2</sup> GFA	17.7
Spa	1	88	88	1 space per 30 m <sup>2</sup> GFA	2.9
Sauna	1	20	20	1 space per 30 m <sup>2</sup> GFA	0.7
Aquatic Office	1	110	110	1 per 25m <sup>2</sup> GFA	7.3
Airlock	1	30	30	-	-
First Aid	1	15	15	-	-
Storage	1	260	260	-	-
Dining (Wet)	1	90	90	-	-
Changerooms	1	220	220	-	-
Family Change	1	175	175	-	-
Amenities	2	40	80	-	-
Amenities	2	20	40	-	-
Meeting	2	20	40	-	-
Plantroom	1	660	660	-	-
Circulation / Concourse	1	1090	1090	-	-
<b>SUBTOTAL</b>			<b>3941</b>		<b>66</b>

<b>AQUATIC OUTDOOR</b>					
Pool - 50m	1	1,200	1,200	15 spaces plus 1 space per 100 m <sup>2</sup> GFA	27
Splash Pad	1	150	150	15 spaces plus 1 space per 100 m <sup>2</sup> GFA	16.5
<b>SUBTOTAL</b>			<b>1,350</b>		<b>43.5</b>

<b>SPORTS HALL</b>					
Court Type 1	4	420	1680	20 spaces per pitch or court	80
Court Type 2	4	465	1860	20 spaces per pitch or court	80
Showcourt Seating	1	38	38	-	-
Climbing Centre	1	800	800	-	-
Office	1	90	90	1 per 25m <sup>2</sup> GFA	3.6
Storage	1	300	300	-	-
First Aid	1	15	15	-	-
Changerooms & Amenities	1	575	575	-	-
Circulation / Runouts	1	3060	3060	-	-
<b>SUBTOTAL</b>			<b>8,418</b>		<b>164</b>

<b>HEALTH CLUB</b>					
Gym	1	1,500	1,500	1 space per 10m <sup>2</sup> GFA	150
Program Rooms	2	250	500	1 space per 10m <sup>2</sup> GFA	25
Testing Rooms	4	20	80	1 space per 10m <sup>2</sup> GFA	2
Changerooms	1	100	100	-	-
Amenities	1	100	100	-	-
<b>SUBTOTAL</b>			<b>2,280</b>		<b>177</b>

<b>COMMON FACILITIES</b>					
Retail / Pro Shop	1	415	415	1 per 25m <sup>2</sup> GFA	16.6
Kiosk	1	110	110	1 per 25m <sup>2</sup> GFA	4.4
Kitchen	1	175	175	-	-
Administration Office	1	100	100	1 per 25m <sup>2</sup> GFA	4
Office F&B	1	90	90	1 per 25m <sup>2</sup> GFA	3.6
Cleaner's Store	1	45	45	-	-
Lift and Stairs	1	50	50	-	-
Creche (assumed 13 employees and 50 children)	1	150	150	1 per required employee; plus 1 per 10 children permitted to receive care	18
<b>SUBTOTAL</b>			<b>1,045</b>		<b>47</b>

<b>FOOD &amp; BEVERAGE</b>					
Restaurant	1	200	200	1 per 5m <sup>2</sup> GFA	40
Bar	1	200	200	1 per 3m <sup>2</sup>	67
Back of House	1	150	150	-	-
Function	1	300	300	1 per 5m <sup>2</sup> GFA	60
Pre-Function / Bar	1	300	300	1 per 3m <sup>2</sup>	100
Finishing Kitchen	1	110	110	-	-
Restaurant Amenities	1	80	80	-	-
Function Amenities	1	80	80	-	-
<b>SUBTOTAL</b>			<b>1,420</b>		<b>266.7</b>

<b>GOLF</b>					
Existing Golf Course	18 holes	-	-	4 car spaces to each hole	72
Mini Golf	18 holes	-	4500	1 car spaces to each hole	18
Driving Range (Outdoor)	2 - 80 bays	1000	2000	0.6 car spaces to driving range bay	48
Amenities	1	50	50	-	-
Golf Cart Storage	1	340	340	-	-
<b>SUBTOTAL</b>			<b>6,890</b>		<b>138</b>

<b>PLANT</b>					
Comms	1	70	70	-	-
Security	1	25	25	-	-
Pumps & Tanks	1	80	80	-	-
Distribution Boards	1	30	30	-	-
<b>SUBTOTAL</b>			<b>205</b>		<b>0</b>

<b>CURTIN FACILITIES</b>					
Curtin Facilities	1	500	500	1 space per 10m <sup>2</sup> GFA	50
<b>SUBTOTAL</b>			<b>500</b>		<b>50</b>

Note \* - The nominated land uses and yields are currently in an early planning stage. Some of the facilities within the complex are not expected to generate any traffic on their own and they are considered ancillary uses to other facilities.

<b>Total Car Parking Requirement (no reciprocity)</b>	<b>956</b>
<b>Total Car Parking Requirement (with 30% reciprocity)</b>	<b>669</b>
<b>Proposed number of parking bays</b>	<b>550 (+350)</b>

#### Justification

Given it is not likely that all indoor and outdoor activities will be occupied concurrently, and moreover it is likely that visitors would be using more than one of the provided activities, KCTT believe a minimum of 30% reciprocity should be applied across the complex.

It is expected that the complex will not operate at full capacity upon opening, therefore the proposed 550 car parking bays would be sufficient to cater for the needs of staff and patrons of the subject site until the development reaches full operational capacity. Additional 350 parking bays will be provided on upper level as part of a future car parking expansion once parking demand increases.

The proposed development might be eligible for a car parking requirement reduction as per point 6 in Table 1 Permitted Car Parking Reduction from Policy P315 Car Parking Reductions for Non-Residential Development stating:

- *Percentage Reduction - 10 per cent*
- *Adjustment Factor - 0.90*
- *Factors to be successfully justified by the applicant to the City of South Perth - The proposed development provides 'end-of-trip' facilities\* for bicycle users, in addition to any facilities required under Clause 6.4 (5);*
- *\* Minimum requirement: 1 male and 1 female shower in separate change rooms with at least one secure clothes locker per change room.*

Eligibility for the reduction will be determined once details of end of trip facilities are known.

## 2.8 Compliance with AS2890.1:2004 and AS2890.6

<b>Number of Parking Bays on-site</b>	550 parking bays (+350 future bays on upper floor parking) Class 2 - Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
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Which Austroads documents are referenced?

- Australian/New Zealand Standard, Parking facilities, Part 1: Off-street car parking - Originated as AS 2890.1
- Australian/New Zealand Standard, Parking facilities, Part 6: Off-street parking for people with disabilities - Originated as AS2890.6

AS2890.1:2004 Off-street car parking						
AS2890.6 Off-street parking for people with disabilities						
Parking Bay Type	Parking Bay Length		Parking Bay Width		Aisle Width	
	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90°	5.4m	5.5m	2.5m	2.5m	5.8m	6.0m / 6.75m
ACROD Parking	5.4m	-	2.4m-ACROD 2.4m-shared space		5.8m	-
Other considerations	Requirement			Compliance	Comment	
Single-sided aisles	increased by 300 mm			✓	-	
Blind aisle	extended by a minimum of 1 m			✗	Blind aisles to be extended by 1m.	
Reversing bay	if a blind aisle is longer than 6 bays + 1m at public parking			✗	Reversing bays indicated in Appendix 3.	
Ramp grades	Straight ramps: public car parks—as follows: (i) Longer than 20 m—1 in 6 (16.7%) maximum. (ii) Up to 20 m long—1 in 5 (20%) maximum. Grade change transitions will usually be required. The allowable 20 m maximum length shall include any parts of grade change transitions at each end that exceed 1 in 6 (16.7%).			N/A	Ramps to be designed in accordance with AS2890.1:2004	
Parking aisle length	If a parking aisle exceeds 100 m in length, traffic control devices such as speed humps placed along the parking aisle to control vehicle speeds. Where vehicle negotiation of such devices may lead to structural damage, compliance with this requirement may be waived. <sup>1</sup>			✗	Installation of 3 speed humps recommended as indicated in Appendix 3.	

*Note <sup>1</sup> - To limit traffic volumes and consequent congestion in parking aisles to acceptable levels it is good practice not to have parking aisles provide access for circulating traffic to other parking aisles where those aisles together have more than 75 for a Class 2 facility or 100 for a Class 1 or 1A facility. Circulation roadways should be provided in lieu.*

KCTT reviewed the layout for the proposed development and conclude that dimensions of all car parking bays and isle widths generally comply with the Australian Standard AS/NZS 2890.1/2004.

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**Have Vehicle Swept Paths been checked for Parking?** YES

*If YES, provide description of performance:*

Parking area has been checked with a B99 Passenger Vehicle (5.2m) and Service Vehicle (8.8m).

Service road has been amended to suit Service Vehicle (8.8m) as this is a standard service vehicle. However, it is expected that the largest vehicle accessing the development would be a 12 tonne flat top or tautliner which is 7.2 metres long and 2.4 metres high. Refer to Appendix 3 for swept paths and recommendations.

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## **2.9 Bicycle Parking**

**Local Government**

City of South Perth

**Reference Document Utilised**

Town Planning Scheme No. 6

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**Description of Parking Requirements in accordance with Scheme:**

Town Planning Scheme No. 6:

- *Café/Restaurant - 1 per 40m<sup>2</sup> of dining area for visitors*
- *Child Day Care Centre - Not applicable*
- *Local Shop - 1 per 25m<sup>2</sup> GFA for visitors*
- *Office:*
  - *Staff: 1 per 200m<sup>2</sup> GFA; and*
  - *Visitors: 1 per 750m<sup>2</sup> GFA*
- *Reception Centre - Not applicable*
- *Small Bar:*
  - *1 per 25m<sup>2</sup> of bar floor are.*
  - *1 per 100m<sup>2</sup> of lounges, dining and function areas, beer gardens and areas used predominantly for games.*

Since the Town Planning Scheme does not offer rates for all the land uses proposed, KCTT have referred to Guide to Traffic Management Part 11: Parking in order to assess parking requirements of the proposed development.

Guide to Traffic Management Part 11: Parking:

- *Indoor recreation facility:*
  - *Staff: 1 per 4 employees*
  - *Visitors: 1 per 200 m<sup>2</sup> GFA*
- *Swimming pool - 2 per 20 m<sup>2</sup> of pool area for visitors*

Bicycle parking rate for Golf is not available, however having in mind patrons are likely to carry their own equipment, KCTT believe that cycling to the proposed development is highly unlikely.

**Bicycle Parking Requirement in accordance with regulatory documents**

Land Use*	Yield*		Requirements		Total Parking		
<b>SPORTSHOUSE</b>							
Reception	1	40	40	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.2	0.1
Offices	16	10	160	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.8	0.2
Open Plan Desks	54	6	324	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	1.6	0.4
Hot Desks	10	6	60	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.3	0.1
Meeting Room - Small	4	20	80	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.4	0.1
Meeting Room - Medium	1	40	40	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.2	0.1
Photocopy & Stationary Room	2	50	100	-	-	-	-
IT & Server Room	1	20	20	-	-	-	-
Lunch Room	1	100	100	-	-	-	-
Storage	1	100	100	-	-	-	-
Amenities	1	100	100	-	-	-	-
Circulation and Engineering		15%	163	-	-	-	-
<b>SUBTOTAL</b>			<b>1,287</b>			<b>3.5</b>	<b>0.9</b>

<b>AQUATIC INDOOR</b>							
Pool - 25m	1	533	533	-	2 per 20 m <sup>2</sup> of pool area for visitors	-	53.3
Pool - Learn to Swim	1	220	220	-	2 per 20 m <sup>2</sup> of pool area for visitors	-	22.0
Pool - Hydrotherapy	1	270	270	-	2 per 20 m <sup>2</sup> of pool area for visitors	-	27.0
Spa	1	88	88	1 per 4 employees (assumed 10)	1 per 200 m <sup>2</sup> GFA	2.5	0.4
Sauna	1	20	20	1 per 4 employees (assumed 3)	1 per 200 m <sup>2</sup> GFA	0.8	0.1
Aquatic Office	1	110	110	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.6	0.1
Airlock	1	30	30	-	-	-	-
First Aid	1	15	15	-	-	-	-
Storage	1	260	260	-	-	-	-
Dining (Wet)	1	90	90	-	-	-	-
Changerooms	1	220	220	-	-	-	-
Family Change	1	175	175	-	-	-	-
Amenities	2	40	80	-	-	-	-
Amenities	2	20	40	-	-	-	-
Meeting	2	20	40	-	-	-	-
Plantroom	1	660	660	-	-	-	-

**Transport Impact Assessment**  
**KC01102.000 City of South Perth, Aquatic Facility**

Circulation / Concourse	1	1090	1090	-	-	-	-
<b>SUBTOTAL</b>			<b>3941</b>			<b>3.8</b>	<b>103.0</b>

**AQUATIC OUTDOOR**

Pool - 50m	1	1,200	1,200	-	<i>2 per 20 m<sup>2</sup> of pool area for visitors</i>	-	120.0
Splash Pad	1	150	150	-	<i>2 per 20 m<sup>2</sup> of pool area for visitors</i>	-	15.0
<b>SUBTOTAL</b>			<b>1,350</b>			<b>0</b>	<b>135.0</b>

**SPORTS HALL**

Court Type 1	4	420	1680	<i>1 per 4 employees (assumed 25)</i>	<i>1 per 200 m<sup>2</sup> GFA</i>	6.3	8.4
Court Type 2	4	465	1860	<i>1 per 4 employees (assumed 25)</i>	<i>1 per 200 m<sup>2</sup> GFA</i>	6.3	9.3
Showcourt Seating	1	38	38	-	-	-	-
Climbing Centre	1	800	800	-	-	-	-
Office	1	90	90	<i>1 per 200m<sup>2</sup> GFA</i>	<i>1 per 750m<sup>2</sup></i>	0.5	0.1
Storage	1	300	300	-	-	-	-
First Aid	1	15	15	-	-	-	-
Changerooms & Amenities	1	575	575	-	-	-	-
Circulation / Runouts	1	3060	3060	-	-	-	-
<b>SUBTOTAL</b>			<b>8,418</b>			<b>13.0</b>	<b>17.8</b>

**HEALTH CLUB**

Gym	1	1,500	1,500	<i>1 per 4 employees (assumed 15)</i>	<i>1 per 200 m<sup>2</sup> GFA</i>	3.8	7.5
Program Rooms	2	250	500	<i>1 per 4 employees (assumed 5)</i>	<i>1 per 200 m<sup>2</sup> GFA</i>	1.3	2.5
Testing Rooms	4	20	80	<i>1 per 4 employees (assumed 4)</i>	<i>1 per 200 m<sup>2</sup> GFA</i>	1.0	0.4
Changerooms	1	100	100	-	-	-	-
Amenities	1	100	100	-	-	-	-
<b>SUBTOTAL</b>			<b>2,280</b>			<b>6.0</b>	<b>10.4</b>

<b>COMMON FACILITIES</b>								
Retail / Pro Shop	1	415	415	-	1 per 25m <sup>2</sup> GFA for visitors	-	-	16.6
Kiosk	1	110	110	-	1 per 25m <sup>2</sup> GFA for visitors	-	-	4.4
Kitchen	1	175	175	-	-	-	-	-
Administration Office	1	100	100	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.5	-	0.1
Office F&B	1	90	90	1 per 200m <sup>2</sup> GFA	1 per 750m <sup>2</sup>	0.5	-	0.1
Cleaner's Store	1	45	45	-	-	-	-	-
Lift and Stairs	1	50	50	-	-	-	-	-
CRECHE (Assumed 13 Employees And 50 Children)	1	150	150	-	-	-	-	-
<b>SUBTOTAL</b>			<b>1,135</b>				<b>1.0</b>	<b>21.3</b>
<b>FOOD &amp; BEVERAGE</b>								
Restaurant	1	200	200	-	1 per 40m <sup>2</sup> of dining area	-	-	5.0
Bar	1	200	200	1 per 25m <sup>2</sup> GFA	1 per 100m <sup>2</sup> GFA	8.0	-	2.0
Back of House	1	150	150	-	-	-	-	-
Function	1	300	300	-	-	-	-	-
Pre-Function / Bar	1	300	300	1 per 25m <sup>2</sup> GFA	1 per 100m <sup>2</sup> GFA	12.0	-	3.0
Finishing Kitchen	1	110	110	-	-	-	-	-
Restaurant Amenities	1	80	80	-	-	-	-	-
Function Amenities	1	80	80	-	-	-	-	-
<b>SUBTOTAL</b>			<b>1,420</b>				<b>20.0</b>	<b>10.0</b>
<b>GOLF</b>								
Existing Golf Course	1	-	-	-	-	-	-	-
Mini Golf	1	-	-	-	-	-	-	-
Driving Range (Outdoor)	2	610	1,220	-	-	-	-	-
Amenities	1	50	50	-	-	-	-	-
Golf Cart Storage	1	340	340	-	-	-	-	-
<b>SUBTOTAL</b>			<b>1,610</b>					

PLANT							
Comms	1	70	70	-	-	-	-
Security	1	25	25	-	-	-	-
Pumps & Tanks	1	80	80	-	-	-	-
Distribution Boards	1	30	30	-	-	-	-
<b>SUBTOTAL</b>			<b>205</b>				

CURTIN FACILITIES							
Curtin Facilities	1	500	500	<i>1 per 4 employees (assumed 5)</i>	<i>1 per 200 m<sup>2</sup> GFA</i>	1.3	2.5
<b>SUBTOTAL</b>			<b>500</b>			<b>1.3</b>	<b>2.5</b>

Note \* - The nominated land uses and yields are currently in an early planning stage. Some of the facilities within the complex are not expected to generate any traffic on their own and they are considered ancillary uses to other facilities.

<b>Total Volume of Bicycle Parking Required (no reciprocity)</b>	<b>48</b>	<b>301</b>
<b>Total Volume of Bicycle Parking Required (with 30% reciprocity)</b>	<b>34</b>	<b>211</b>

#### Justification

Given it is not likely that all indoor and outdoor amenities will be fully utilised concurrently, and moreover it is likely that visitors would be using more than one of the provided activities, we believe that a minimum of 30% reciprocity should be applied across the complex.

## 2.10 ACROD Parking

<b>Class of Building</b>	Class 9b - an assembly building, including a trade workshop, laboratory or the like in a primary or secondary school, but excluding any other parts of the building that are of another Class
--------------------------	---

Does this building class require specific provision of ACROD Parking? YES

Reference Document Utilised Building Code of Australia

#### Description of Parking Requirements:

Class 9b — (b) Other assembly building — (i) up to 1000 carparking spaces; - 1 space for every 50 carparking spaces or part thereof

#### Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Multi-purpose RAF	<i>1 space for every 50 carparking spaces or part thereof</i>	550	11
<b>Total Volume of ACROD Parking Required</b>			<b>11</b>

#### Justification

Based on the calculated total carparking requirement KCTT suggest having 11 parking bays marked as accessible throughout the complex in order to comply with Building Code of Australia requirements.

## 2.11 Delivery and Service Vehicles

Guideline Document used as reference  
 Requirements

NSW RTA Guide to Traffic Generating Developments

*Other uses - 1 space per 2,000m<sup>2</sup>*

### Parking Requirement in accordance with regulatory documents

Land Use	Minimum Requirements	Yield	Total Parking
Multi-purpose RAF	<i>1 space per 2,000m<sup>2</sup></i>	19,576m <sup>2</sup> GFA (indoor)	10
<b>Total Volume of Service and Delivery Parking Required</b>			<b>10</b>

#### Justification

These rates have been provided as guidance only, once more detailed areas are known service and delivery parking provision can be reassessed. Some of the co-located amenities can share the delivery and service vehicle bays. As it is anticipated that deliveries will be run occasionally and that delivery vehicles will not dwell for prolonged periods of time, basic set down areas can be designated.

## 2.12 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?	Monday – Friday: 05:30 – 20:00 Weekends: 07:00 – 19:00
What are the likely peak hours of operation?	11:00 – 12:00 AM Peak 16:00 – 17:00 PM Peak It is expected that the proposed development peak activity would be on weekends.
Do the development generated peaks coincide with existing road network peaks?	NO
Guideline Document Used <i>Rates from above document:</i>	NSW RTA Guide to Traffic Generating Developments <b>3.5 Office and commercial.</b> <ul style="list-style-type: none"> <li>Daily vehicle trips = 10 per 100 m<sup>2</sup> GFA</li> <li>Evening peak hour vehicle trips = 2 per 100 m<sup>2</sup> GFA</li> </ul> <b>3.7.2 Restaurants</b> <ul style="list-style-type: none"> <li>Evening peak hour vehicle trips = 5 per 100 m<sup>2</sup> GFA.</li> <li>Daily vehicle trips = 60 per 100m<sup>2</sup> GFA.</li> </ul> <b>3.8 Recreational and tourist facilities.</b> <b>Overview.</b> <i>Recreational and tourist facilities are site and type specific in their operation and traffic generation, often with seasonal variations in usage. Ideally, analysis of proposed developments should be based on surveys of similar developments. If this is not possible a first principles analysis is required.</i> <b>3.8.1 Recreation facilities.</b> <i>Analysis should be based on the predicted 85 percentile usage rather than usage at capacity, taking into account weekly and seasonal variations. For example, the weekly peak hour traffic generation of a proposed golf course</i>

might be assessed over several months, to establish a distribution of usage.

**3.8.2 Gymnasiums.**

**-Metropolitan Regional (CBD) Centres**

- Daily Vehicle Trips = 20 trips per 100m<sup>2</sup> GFA
- Evening Peak Hour Vehicle Trips = 3 trips per 100m<sup>2</sup> GFA.

**3.11.3 Child care centres**

- 0.8 trips in AM Peak per child
- 0.7 trips in PM Peak per child

It should be noted that these rates are given for a 2-hour peak period. For the purposes of this report KCTT will use the worst case scenario where the two-hour traffic volume will be attracted to the development within one hour.

**Guideline Document Used**

Transportation Engineers (ITE) Common Trip Generation Rates (9th edition)

**Golf Course**

- Daily vehicle trips = 35.74 per hole
- AM peak vehicle trips = 2.06 per hole (79%IN / 21% OUT)
- PM peak vehicle trips = 2.92 per hole (51%IN / 49% OUT)

Rates from above document:

**Health/Fitness Club**

- Daily vehicle trips = 32.93 per KSF<sup>2</sup> = 31.42 per 100m<sup>2</sup> GFA
- AM peak vehicle trips = 1.41 per KSF<sup>2</sup> = 1.3 per 100m<sup>2</sup> GFA (50%IN / 50% OUT)
- PM peak vehicle trips = 3.53 per KSF<sup>2</sup> = 3.28 per 100m<sup>2</sup> GFA (57%IN / 43% OUT)

Having in mind the lack of appropriate rates for the proposed land uses, KCTT believe that it would be appropriate to analyse pools and sauna areas using Health/Fitness Club rates from the ITE manual. It is expected that the traffic attracted to these land uses would be similar in volume and patrons' behaviour.

The existing Golf course has 18 holes. A Driving range is proposed with 56 driving range bays. It is expected that 40% of the patrons of the proposed driving range are Golf patrons waiting their turn at the course. Additionally, events with organised transportation such as birthday or corporate parties are expected often. Therefore, a reciprocity of 40% has been applied to Driving range traffic generation. A Mini Golf course with 18 holes is also proposed. Patrons of Mini Golf will mostly be families with children. For the purposes of traffic generation calculations, the standard rate from ITE was used for all golf related land uses with a 40% reduction for driving range.

Since there are no rates for indoor courts KCTT have derived rates based on previous experience with similar projects. For the purposes of calculating the worst case scenario a basketball tournament scenario is analysed as it is expected to attract the most traffic. Having in mind the duration of the games and additional time for the set up of a new game it is assumed that no more than 6 games per court could be organised, with 20 players and 3 umpires per game. Two additional employees are likely to be assigned to each court during the day.

The patrons of indoor courts will make one vehicular trip arriving to the development and one vehicular trip departing from the development. It is expected that the peak period of the development would be at the start or end of a tournament. It is assumed that the average car occupancy would be approximately 3 persons per car for spectators and 1 person per car for players/umpires/employees. Parents dropping of their children to games will not generate additional traffic. It should be noted that that players/umpires and employees would not all arrive at

the same time their arrivals and departures would be spread out throughout the day; therefore, they are excluded from peak hour traffic calculations.

Therefore, traffic generation rate can be derived as follows:

- Peak traffic generation:
  - 1 VPH / 3 spectators = 0.33 VPH/spectator
- Daily traffic generation:
  - 2 VPD / 3 spectators = 0.67 VPD/spectator
  - 2 VPD / player/umpire/employee

Childcare centres vehicular daily trips can be assumed to be 4 VPD per child and 2 VPD per employee. Each parent will make 2 vehicular trips when dropping off the child to the day care centre and 2 vehicular trips when picking the child up. Employees will make 1 vehicular trip arriving to work, and another vehicular trip when leaving work. In our experience, childcare centres tend to operate with an 85% utilisation rate of the licenced capacity over the year due to a number of days that children attend (this ranges from 2 to 5 days a week) and seasonal adjustments (end of year and when people return to work from maternity leave). Therefore, the expected average daily operative maximum of this childcare facility can be estimated as 60 children. However, in the calculations below, a conservative approach has been applied showing the theoretical maximum number of children, under assumption that all children are driven to school and there are no siblings in the centre.

KCTT believe that 30% reduction of total traffic generation would adequately represent the usual of the subject site, accounting for reciprocity between land uses, car sharing and occupancy variations.

Land Use *	Yield *			Requirements			Total Parking		
	No of	m <sup>2</sup>	Total	Rate - Daily	Rate - AM peak	Rate - PM peak	VPD	AM VPH	PM VPH
<b>SPORTSHOUSE</b>									
Reception	1	40	40	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	4	1	1
Offices	16	10	160	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	16	3	3
Open Plan Desks	54	6	324	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	32	6	6
Hot Desks	10	6	60	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	6	1	1
Meeting Room - Small	4	20	80	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	8	2	2
Meeting Room - Medium	1	40	40	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	4	1	1
Photocopy & Stationary Room	2	50	100	-	-	-	-	-	-
IT & Server Room	1	20	20	-	-	-	-	-	-
Lunch Room	1	100	100	-	-	-	-	-	-
Storage	1	100	100	-	-	-	-	-	-
Amenities	1	100	100	-	-	-	-	-	-
Circulation and Engineering		15%	163	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>1,287</b>				<b>70</b>	<b>14</b>	<b>14</b>

<b>AQUATIC INDOOR</b>									
Pool - 25m	1	533	533	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	167	7	17
Pool - Learn to Swim	1	220	220	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	69	3	7
Pool - Hydrotherapy	1	270	270	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	85	4	9
Spa	1	88	88	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	28	1	3
Sauna	1	20	20	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	6	0	1
Aquatic Office	1	110	110	10 VPD / 100m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	2 VPH / 100 m <sup>2</sup> GFA	11	2	2
Airlock	1	30	30						
First Aid	1	15	15	-	-	-	-	-	-
Storage	1	260	260	-	-	-	-	-	-
Dining (Wet)	1	90	90	-	-	-	-	-	-
Changerooms	1	220	220	-	-	-	-	-	-
Family Change	1	175	175	-	-	-	-	-	-
Amenities	2	40	80	-	-	-	-	-	-
Amenities	2	20	40	-	-	-	-	-	-
Meeting	2	20	40	-	-	-	-	-	-
Plantroom	1	660	660	-	-	-	-	-	-
Circulation / Concourse	1	1090	1090	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>3,941</b>				<b>366</b>	<b>17</b>	<b>39</b>

<b>AQUATIC OUTDOOR</b>									
Pool - 50m	1	1,200	1,200	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	377	16	39
Splash Pad	1	150	150	31.42 VPD/ 100m <sup>2</sup> GFA	1.3 VPH/ 100m <sup>2</sup> GFA	3.28 VPH/ 100m <sup>2</sup> GFA	47	2	5
<b>SUBTOTAL</b>			<b>1,350</b>				<b>424</b>	<b>18</b>	<b>44</b>

<b>SPORTS HALL</b>									
Court Type 1 (assumed 200 spectators + 25 employees per court)	4	420	1,680	0.67 VPD/spectat or + 2 VPD / player /umpire /employee	0.33 VPH/ spectator	0.33 VPH/ spectator	184	66	66
Court Type 2 (assumed 200 spectators + 25 employees per court)	4	465	1,395	0.67 VPD/spectat or + 2 VPD / player	0.33 VPH/ spectator	0.33 VPH/ spectator	184	66	66

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	<i>employees per court)</i>			<i>/umpire /employee</i>						
Showcourt Seating	1	38	38	-	-	-	-	-	-	-
Climbing Centre	1	800	800	-	-	-	-	-	-	-
Office	1	90	90	<i>10 VPD / 100m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	9	2	2	
Storage	1	300	300	-	-	-	-	-	-	-
First Aid	1	15	15	-	-	-	-	-	-	-
Changerooms & Amenities	1	570	570	-	-	-	-	-	-	-
Circulation / Runouts	1	3060	3060	-	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>8,413</b>				<b>1,481</b>	<b>530</b>	<b>530</b>	

<b>HEALTH CLUB</b>										
Gym	1	1,500	1,500	<i>20 VPD / 100m<sup>2</sup> GFA</i>	<i>3 VPH / 100m<sup>2</sup> GFA</i>	<i>3 VPH / 100m<sup>2</sup> GFA</i>	300	45	45	
Program Rooms	2	250	500	<i>20 VPD / 100m<sup>2</sup> GFA</i>	<i>3 VPH / 100m<sup>2</sup> GFA</i>	<i>3 VPH / 100m<sup>2</sup> GFA</i>	100	15	15	
Testing Rooms	4	20	80	<i>20 VPD / 100m<sup>2</sup> GFA</i>	<i>3 VPH / 100m<sup>2</sup> GFA</i>	<i>3 VPH / 100m<sup>2</sup> GFA</i>	16	2	2	
Changerooms	1	100	100	-	-	-	-	-	-	-
Amenities	1	100	100	-	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>2,280</b>				<b>416</b>	<b>62</b>	<b>62</b>	

<b>COMMON FACILITIES</b>										
Retail / Pro Shop	1	415	415	<i>10 VPD / 100m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	42	8	8	
Kiosk	1	110	110	<i>10 VPD / 100m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	11	2	2	
Kitchen	1	175	175	-	-	-	-	-	-	-
Office - Administration	1	100	100	<i>10 VPD / 100m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	10	2	2	
Office - F&B	1	90	90	<i>10 VPD / 100m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	<i>2 VPH / 100 m<sup>2</sup> GFA</i>	9	2	2	
Cleaner's Store	1	45	45	-	-	-	-	-	-	-
Lift And Stairs	1	50	50	-	-	-	-	-	-	-
Creche <i>(assumed 13 employees and 50 children)</i>	1	150	150	<i>4 VPD per child+2 VPD per employee</i>	<i>0.8 VPH AM Peak per child</i>	<i>0.7 VPH PM Peak per child</i>	226	40	35	
<b>SUBTOTAL</b>			<b>1,045</b>				<b>298</b>	<b>54</b>	<b>49</b>	

<b>FOOD &amp; BEVERAGE</b>										
Restaurant	1	200	200	<i>60 VPD / 100m<sup>2</sup> GFA</i>	<i>5 VPH / 100 m<sup>2</sup> GFA</i>	<i>5 VPH / 100 m<sup>2</sup> GFA</i>	120	10	10	

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Bar	1	200	200	60 VPD / 100m <sup>2</sup> GFA	5 VPH / 100 m <sup>2</sup> GFA	5 VPH / 100 m <sup>2</sup> GFA	120	10	10
Back of House	1	150	150	-	-	-	-	-	-
Function	1	300	300	-	-	-	-	-	-
Pre-Function / Bar	1	300	300	60 VPD / 100m <sup>2</sup> GFA	5 VPH / 100 m <sup>2</sup> GFA	5 VPH / 100 m <sup>2</sup> GFA	180	15	15
Finishing Kitchen	1	110	110	-	-	-	-	-	-
Restaurant Amenities	1	80	80	-	-	-	-	-	-
Function Amenities	1	80	80	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>1,420</b>				<b>420</b>	<b>35</b>	<b>35</b>

<b>GOLF</b>									
Existing Golf Course	18 holes			35.74 per hole	2.06 per hole	2.92 per hole	643	37	53
Mini Golf	18 holes			35.74 per hole	2.06 per hole	2.92 per hole	643	37	53
Driving Range (Outdoor)	2 80 holes	1000	2000	21.4 per hole	1.24 per hole	1.75 per hole	1,716	99	140
Amenities	1	50	50	-	-	-	-	-	-
Golf Cart Storage	1	340	340	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>1,610</b>				<b>3,002</b>	<b>173</b>	<b>245</b>

<b>PLANT</b>									
Comms	1	70	70	-	-	-	-	-	-
Security	1	25	25	-	-	-	-	-	-
Pumps & Tanks	1	80	80	-	-	-	-	-	-
Distribution Boards	1	30	30	-	-	-	-	-	-
<b>SUBTOTAL</b>			<b>205</b>				<b>-</b>	<b>-</b>	<b>-</b>

<b>CURTIN FACILITIES</b>									
Curtin Facilities	1	500	500	20 VPD/ 100m <sup>2</sup> GFA	3 VPH/ 100m <sup>2</sup> GFA	3 VPH/ 100m <sup>2</sup> GFA	100	15	15
<b>SUBTOTAL</b>			<b>500</b>				<b>100</b>	<b>15</b>	<b>15</b>

Note \* - The nominated land uses and yields are currently in an early planning stage. Some of the facilities within the complex are not expected to generate any traffic on their own and they are considered ancillary uses to other facilities.

<b>TOTAL TRAFFIC (no reciprocity)</b>							<b>6,280</b>	<b>864</b>	<b>985</b>
<b>TOTAL TRAFFIC (with 30% reciprocity)</b>							<b>4,396</b>	<b>605</b>	<b>690</b>

Does the site have existing trip generation / attraction? YES

No of Daily Trips Golf (18 holes) = 643 vehicle trips per day

No of AM Peak Hour Trips Golf (18 holes) = 37 vehicle trips in the AM peak

No of PM Peak Hour Trips Golf (18 holes) = 53 vehicle trips in the PM peak

**ADDITIONAL TRAFFIC (TOTAL – EXISTING) 3,753 568 637**

What is the total impact of the new proposed development?

The proposed development is expected to generate additional 3,753 vehicle trips per day, 568 vehicle trips in the AM peak and 637 vehicle trips in the PM peak. According to the WAPC guidelines this is considered high impact on the surrounding road network.

Having in mind the capacity and the existing traffic volumes, KCTT believe that the surrounding road network would successfully absorb the additional traffic from the proposed development.

## 2.13 Traffic Flow Distribution

How many routes are available for access / egress to the site? Two routes  
 4,396 VPD / 605 AM VPH / 690 PM VPH

### Route 1

Provide details for Route No 1 To/from the north via Hayman Road  
 Percentage of Vehicular Movements via Route No 1 50% (2,198 VPD / 302 AM VPH / 345 PM VPH)

### Route 2

Provide details for Route No 2 To/from the south via Hayman Road  
 Percentage of Vehicular Movements via Route No 2 50% (2,198 VPD / 302 AM VPH / 345 PM VPH)

Note - For a more detailed plans of the estimated vehicular traffic volumes and distribution please refer to the plans provided in Appendix 2.

## 2.14 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road networks? YES

How many existing crossovers? 2

How many proposed crossovers? 1

How close are proposed crossovers to existing intersections? 140m or more

Does this meet existing standards? YES

### Justification

Access/egress points to the proposed development would be provided to/from Hayman Road via existing access to Collier Park Golf parking area. The existing access road would be repurposed as a service road, while a new road would be constructed leading to the RAF parking area. The proposed new road speed should be limited to 20 km/h by adjusting the geometry or providing speed humps and/or other speed reduction methods.

For the purposes of suggesting any surrounding street upgrade caused by the construction of the RAF facility, KCTT have calculated warrants for turn treatments.

Are auxiliary lanes warranted? YES

## 2.15 Warrants for BA, AU and CH Turn Treatments

Warrants for auxiliary lanes have been examined for AM and PM traffic flow for the following intersection(s):

- Hayman Road / Driveway

in accordance with *MRWA Supplement to Austroads Guide to Road Design - Part 4, Appendix A Intersections - General* section A.8.

As per MRWA methodology the following equation should be used to determine the turning treatment warranted:

$$x = \frac{1}{471.50} \times Q_M^{0.912} \times Q_i^{1/2.46} \times (1 + 0.75 \times \%HV/100)$$

where:

1.  $Q_M$  is calculated based on Austroads GTM Part 6 – 2017, Figure 2.27.
2. %HV, calculated as the weighted average % heavy vehicles for  $Q_M$ .
3.  $Q_i$  is either  $Q_R$  or  $Q_L$ .
4. If  $Q_i$  is less than 3, only a basic treatment is warranted.
5. For four lane and six lane single carriageways refer to *Austroads Guide to Traffic Management Part 6*, (2017), Figure 2.27, for adjustments to  $Q_M$ .

*“On four- or six-lane two-way roads: the major road traffic volume parameter ( $Q_M$ ) for right turns uses the full opposing flow  $Q_{T2}$  and only the traffic flow in the nearest lane of the following flow  $Q_{T1}$ . For left turns, the major road traffic volume parameter ( $Q_M$ ) uses only the traffic flow in the leftmost through lane of the following flow  $Q_{T2}$ ”*

Hayman Road has a speed limit of 70kph in this location i.e. the design speed would be 80kph. Therefore, the following formula is used:

For Design Speeds  $70 \text{ km/h} \leq \text{Design Speed} < 100 \text{ km/h}$

- If  $x < 1.5$ , only a BAR / BAL treatment is warranted
- If  $1.5 \leq x < 3.3$ , an AUR / AUL(S) treatment is warranted
- If  $x \geq 3.3$ , a CHR / (AUL or CHL) treatment is warranted

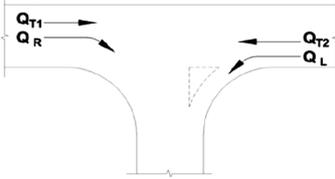
The left and right-turn warrants have been analysed for the expected year of completion of the proposed development 2023 (with the highly optimistic assumption that the proposed development reaches the full traffic generation in the same year).

The expected peak hours of the development 11:00-12:00 in the AM and 16:00-17:00 in the PM peak on weekends. Passing traffic volumes used to determine the warrants are the directional traffic data from the MRWA traffic map. The traffic on Hayman Road (west of Kent Street – weekend 2019/2020) is 1,039 VPH in the AM peak and 709 VPH in the PM peak on weekend. These figures have been increased using a 1.5% growth rate per annum to assess the warrants in the opening year of the proposed development - 2023. Historic data from MRWA traffic map for Hayman Road West of Kent Street show a decrease in traffic volumes of 5% per year since 2014/2015. The suggested growth rate maintains a level of conservatism in intersection analysis.

A traffic distribution of 50% IN / 50% OUT was applied for both AM and PM peak.

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume  $Q_M$



Road type	Turn type	Splitter island	$Q_M$ (veh/h)	
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$	
		Yes	$= Q_{T1} + Q_{T2}$	
Four-lane two-way	Left	Yes or no	$= Q_{T2}$	
		Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
			Yes	$= 50\% \times Q_{T1} + Q_{T2}$
Six-lane two-way	Left	Yes or no	$= 50\% \times Q_{T2}$	
		Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
			Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$	

Source: TMR (2016a).

### Calculation of turn treatment warrants

	Four-lane two way	
	Hayman Road / Driveway	
	Weekend 2023	
	AM	PM
$Q_{T1}$	485	310
HV% - $Q_{T1}$	2.0	0.7
$Q_R$	151	173
HV% - $Q_R$	1.0	1.0
$Q_{T2}$	618	443
HV% - $Q_{T2}$	1.5	1.9
$Q_L$	151	173
HV% - $Q_L$	1.0	1.0
$Q_{M-RIGHT TURN}$ no splitter island for left turns	1,011	771
HV% - $Q_{MR}$ no splitter island for left turns	1.51	1.20
$Q_{M-LEFT TURN}$	309	221
HV% - $Q_{ML}$	1.55	1.92
$X_R$ no splitter island for left turns	9.07	7.46
$X_L$	3.08	2.40
<b>Right turn treatment</b> no splitter island for left turns	<b>CHR</b>	<b>CHR</b>
<b>Left turn treatment</b>	<b>AUL(s)</b>	<b>AUL(s)</b>

Channelised right turn treatment of 95m as per table below would be required upon development construction. It is important to design the median noses to assist turning movements of the design vehicle and to encourage the drivers of vehicles turning right from the minor road to stand at the appropriate angle in the median (i.e. not at a low observation angle).

A short-left turn deceleration lane would also be warranted. However, a full-length left turn deceleration lane is already provided on Hayman Road.

It should be noted that the existing left turn deceleration lane also accommodates bus stop for routes 33 and 284. Peak development operation is expected on weekends when route 33 operates in on an hourly frequency and route 284 does not offers services. Therefore, queuing behind the bus within the deceleration lane shouldn't be an issue.

Table 5.2: Deceleration distances required for cars on a level grade

Design speed of approach road (km/h)	Length of deceleration D – including diverge taper T (m)										Diverge length $L_d^{(3)}$ for lane widths (m)	
	Stop condition <sup>(1)</sup> (m)		Design speed of exit curve (km/h) <sup>(2)</sup>									
	0	0	20	30	40	50	60	70	80	90	3.5 m <sup>(4)</sup>	3.0 m <sup>(4)</sup>
	Comfortable 2.5 m/s <sup>2</sup>	Maximum 3.5 m/s <sup>2</sup>	Comfortable average rate of deceleration 2.5 m/s <sup>2</sup>									
50	40	30	30	25	15						33	27
60	55	40	50	40	30	15					40	33
70	75	55	70	60	50	40	20				47	40
80	100	70	95	85	75	60	45	25			54	44
90	125	90	120	110	100	85	70	50	25		60	50
100	155	110	150	140	130	115	100	80	55	30	67	57
110	185	135	180	175	160	150	130	110	90	60	74	62

## 2.16 Public Transport Accessibility

How many bus routes are within 400 metres of the subject site? 5 routes  
 How many rail routes are within 800 metres of the subject site? None

Bus / Rail Route	Description	Peak Frequency	Off-Peak Frequency
33	Perth – Karawara via Kensington & Curtin Central Bus Station	20 minutes	1 hour
34	Perth - Cannington Station via Como Canning Bridge Station -Cannington Station	15 minutes	30 minutes
100	via Curtin Central Bus Station & Curtin University Bus Station	10 minutes	20 minutes
284	Belmont Forum Shop Centre – Curtin Central Bus Station via Albany Hwy	1 hour	no service
960	Mirrabooka Bus Station - Curtin University Bus Station via Alexander Drive, Edith Cowan University Mt Lawley & Perth	10 minutes	30 minutes

**Walk Score Rating for Accessibility to Public Transport**  
 49 | Some Transit. A few nearby public transportation options.

## 2.17 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Classification	Road Name
<i>“ Other Shared Path(Shared by Pedestrians and Cyclists)”</i>	Hayman Road, Kent Street
<i>Unclassified pedestrian path</i>	Thelma Street, Bland Street, Ryrie Avenue, Blamey Place, Murray Street
Does the site have existing pedestrian facilities	NO
Does the site propose to improve pedestrian facilities?	N/A

While it may not be expected that many people arrive on foot, pedestrian movement inside complex will be high. It is important to designate parking areas as shared space through choice of materials and signage where required. Speed humps can be designed as wombat crossings allowing pedestrians to safely cross from one area to another.

**What is the Walk Score Rating?**  
 13 | Car-Dependent. Almost all errands require a car.

## 2.18 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site? YES

If YES, describe:

Classification	Road Name
“ Other Shared Path (Shared by Pedestrians and Cyclists)”	Hayman Road, Kent Street, Thelma Street, Murray Street, Henley Street
“ Good Road Riding Environment”	Thelma Street, Murray Street, Jackson Road, Dick Perry Avenue, Ryrie Avenue, Walanna Drive
“ Bicycle Lanes or Sealed Shoulder Either Side”	Hayman Road, Kent Street, Thelma Street, Murray Street, Dick Perry Avenue, Ryrie Avenue, Walanna Drive

Are there any PBN Routes within a 400m radius of the subject site? YES

If YES, describe:

Classification	Road Name
“ Other Shared Path (Shared by Pedestrians and Cyclists)”	Hayman Road, Kent Street
“ Good Road Riding Environment”	Thelma Street, Murray Street, Dick Perry Avenue
“ Bicycle Lanes or Sealed Shoulder Either Side”	Hayman Road, Kent Street, Thelma Street, Murray Street, Dick Perry Avenue, Ryrie Avenue

Does the site have existing cyclist facilities? NO

Does the site propose to improve cyclist facilities? N/A

End of trip facilities should be considered in order to promote alternative transportation modes. Additionally, having in mind that the subject site is a recreational facility it is highly likely patrons would cycle to their destination.

## 2.19 Site-Specific Issues and Proposed Remedial Measures

How many site-specific issues need to be discussed? One

### Site-Specific Issue No 1

Remedial Measure / Response

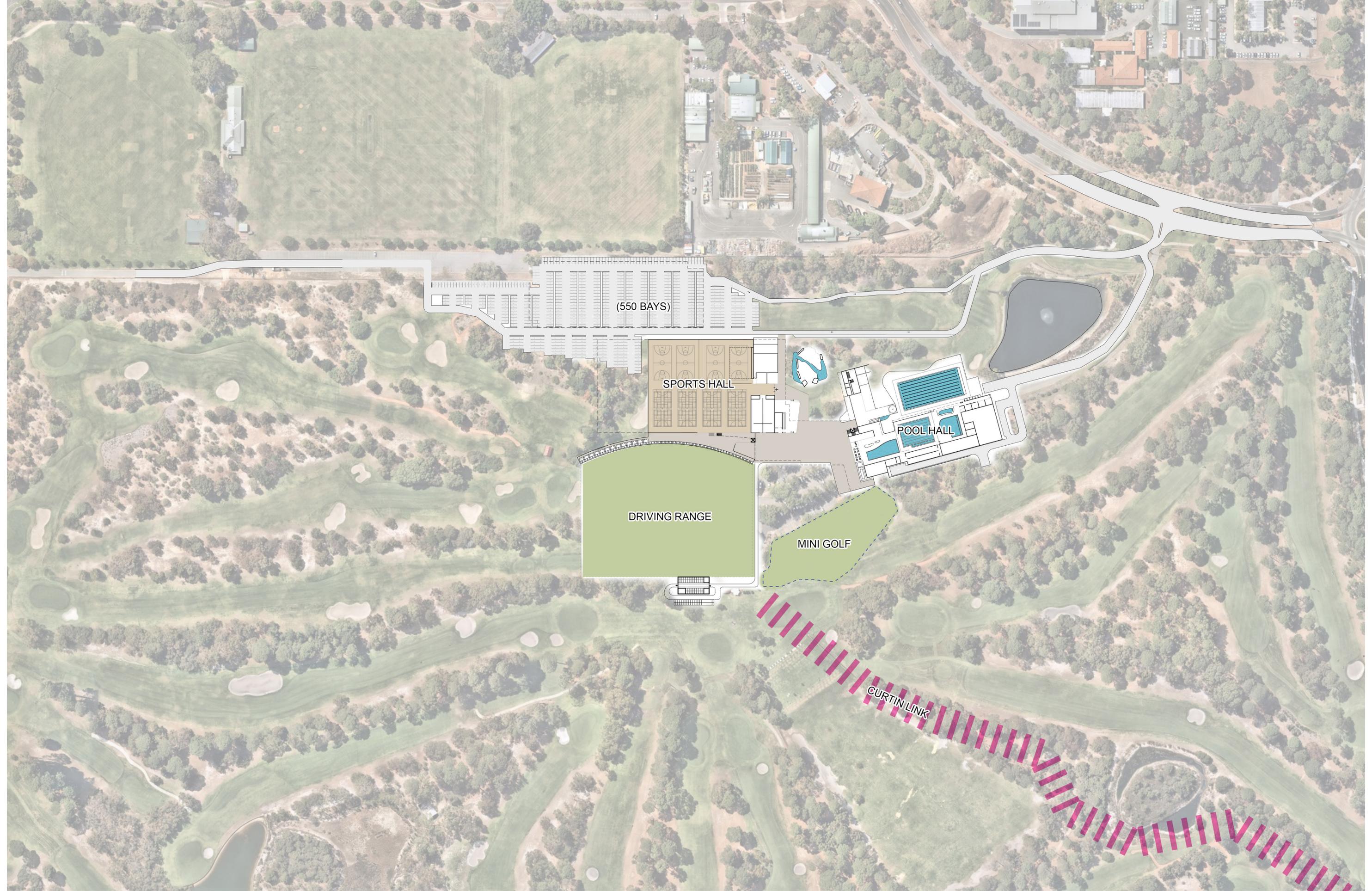
### Traffic impact

The proposed development is expected to generate additional 3,753 vehicle trips per day, 568 vehicle trips in the AM peak and 637 vehicle trips in the PM peak. According to the WAPC guidelines this is considered high impact on the surrounding road network.

Having in mind the capacity and the existing traffic volumes, KCTT believe that the surrounding road network would successfully absorb the additional traffic from the proposed development.

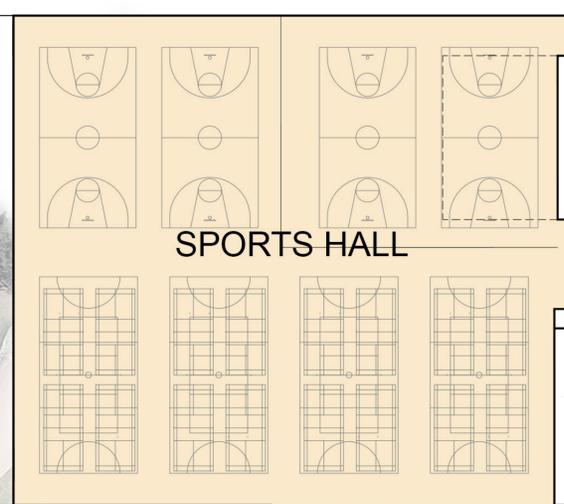
# **Appendix 1**

## **The Layout of the Proposed Development**



FUTURE CARPARK EXPANSION ABOVE SHOWN DASHED

PARKING  
GL- 550 BAYS



SPORTS HALL

pedestrian access  
(covered)

pedestrian access

ARRIVAL COURT

PRO SHOP

RESTAURANT  
& BAR

POOL HALL

potential  
pedestrian access

FUTURE EXPANSION  
SHOWN DASHED



DRIVING RANGE  
(80 BAYS)

KIOSK

MINI GOLF

to golf course



CART  
STORE

T OFF - HOLE 3

HOLE 2 GREEN

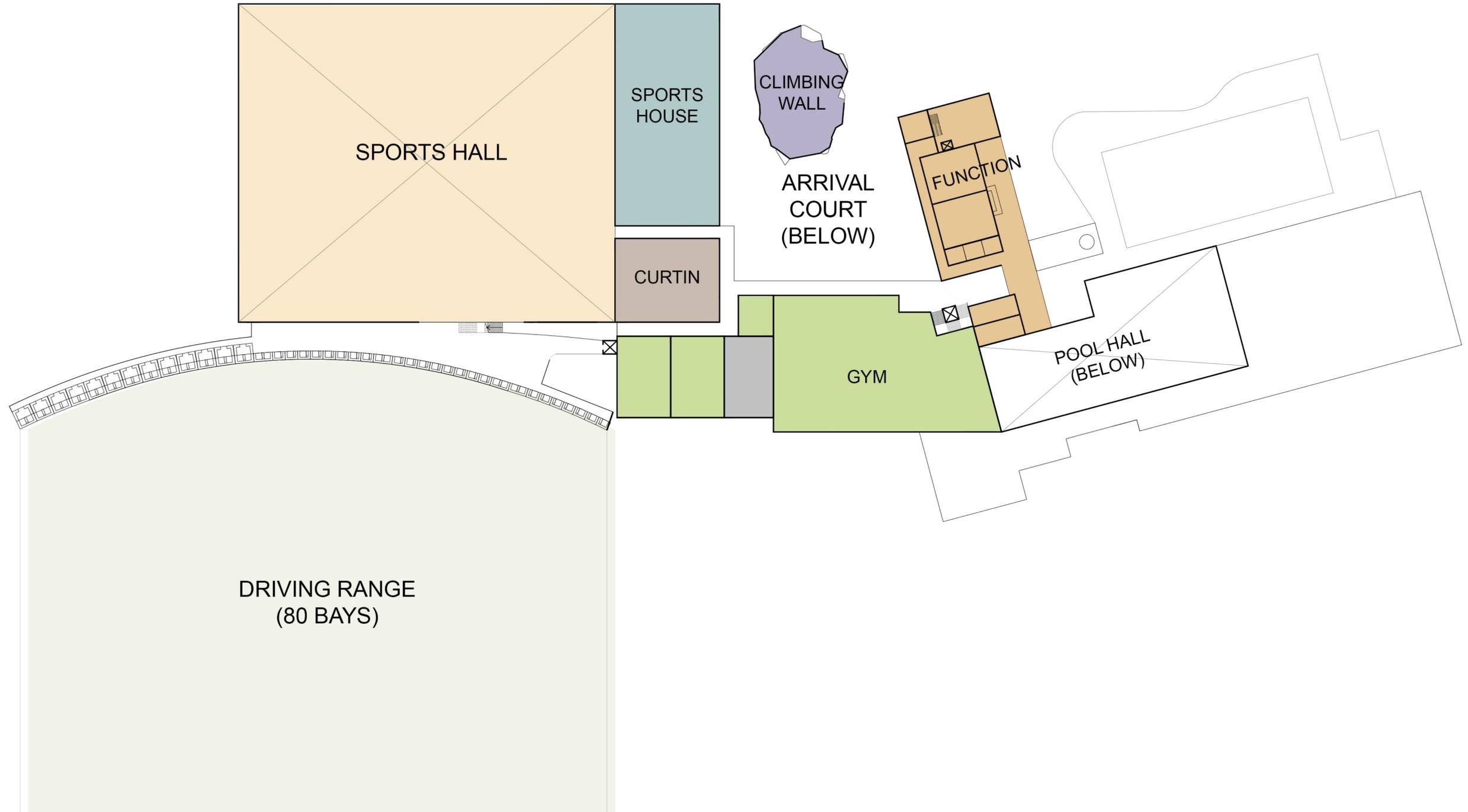
T OFF - HOLE 1

HOLE 9 GREEN

PRACTICE GREEN

T OFF - HOLE 1

HOLE 4 GREEN



19061	SOUTH PERTH RECREATION & AQUATIC FACILITY – option 4B		
REV - 6	FACILITIES SCHEDULE - PRELIMINARY	04.08.2020	CHRISTOU DESIGN GROUP

no. off      m2      total      area in Opt 3      diff.      comments

1	<b>SPORTSHOUSE</b>		
---	--------------------	--	--

1	RECEPTION	1	40	40			
	OFFICES	16	10	160			
	OPEN PLAN DESKS	54	6	324			
	HOT DESKS	10	6	60			
	MEETING ROOM – SMALL	4	20	80			
	MEETING ROOM – MEDIUM	1	40	40			
	PHOTOCOPIY & STATIONARY ROOM	2	50	100			
	IT & SERVER ROOM	1	20	20			
	LUNCH ROOM	1	100	100			
	STORAGE	1	100	100			
	AMENITIES	1	100	100			
	CIRCULATION AND ENGINEERING		15%	163			
<b>SUBTOTAL</b>			<b>1287</b>			<b>0</b>	

2	<b>SPORTS</b>		
---	---------------	--	--

2A	<b>AQUATIC INDOOR</b>						
	POOL – 25M	1	533	533			
	POOL – LEARN TO SWIM	1	220	220			
	POOL – HYDROTHERAPY	1	270	270			
	SPA	1	88	88			
	SAUNA	1	20	20			
	AQUATIC OFFICE	1	110	110			
	AIRLOCK	1	30	30			
	FIRST AID	1	15	15	0	15	
	STORAGE	1	260	260			
	DINING (WET)	1	90	90	210	-120	
	CHANGEROOMS	1	220	220	200	20	
	FAMILY CHANGE	1	175	175			
	AMENITIES	2	40	80			
	AMENITIES	2	20	40			
	MEETING	2	20	40	0	40	meeting and change for school carnivals formalised
	PLANTROOM	1	660	660			
CIRCULATION / CONCOURSE	1	1090	1090	836	254		
<b>SUBTOTAL</b>			<b>3941</b>			<b>209</b>	

2B	<b>AQUATIC OUTDOOR</b>					
	POOL – 50M	1	1200	1200		
	SPLASH PAD	1	150	150		
<b>SUBTOTAL</b>			<b>1350</b>			

3	<b>SPORTS</b>		
---	---------------	--	--

3A	<b>SPORTS HALL</b>						
	COURT TYPE 1	4	420	1680			
	COURT TYPE 2	4	465	1860			
	SHOWCOURT SEATING	1	38	38	125	-87	
	CLIMBING CENTRE	1	800	800			
	OFFICE	1	90	90	0	90	not included in option 3
	STORAGE	1	300	300			
	FIRST AID	1	15	15	0	15	
	CHANGEROOMS & AMENITIES	1	575	575	590	-15	
	CIRCULATION / RUNOUTS	1	3060	3060	3006	54	
<b>SUBTOTAL</b>			<b>8418</b>			<b>57</b>	

**4 HEALTH CLUB**

GYM	1	1500	1500		
PROGRAM ROOMS	2	250	500		
TESTING ROOMS	4	20	80		
CHANGEROOMS	1	100	100		
AMENITIES	1	100	100		
<b>SUBTOTAL</b>			<b>2280</b>		<b>0</b>

**5 COMMON FACILITIES**

RETAIL / PRO SHOP	1	415	415	400	15
KIOSK	1	110	110	145	-35
KITCHEN	1	175	175	0	175
OFFICE - ADMINISTRATION	1	100	100		
OFFICE - F&B	1	90	90	0	90
CLEANER'S STORE	1	45	45	0	45
LIFT AND STAIRS	1	50	50		
CRECHE	1	150	150		
<b>SUBTOTAL</b>			<b>1135</b>		<b>290</b>

**6 FOOD & BEVERAGE**

RESTAURANT	1	200	200		
BAR	1	200	200		
BACK OF HOUSE	1	150	150	180	-30
FUNCTION	1	300	300		
PRE-FUNCTION / BAR	1	300	300	150	150
FINISHING KITCHEN & B.O.H	1	110	110		
RESTAURANT AMENITIES	1	80	80	0	80
FUNCTION AMENITIES	1	80	80	0	80
<b>SUBTOTAL</b>			<b>1420</b>		<b>280</b>

will reduce back to 150  
part of BOH in option 3  
part of BOH in option 3

**7 DRIVING RANGE**

DRIVING RANGE (OUTDOOR)	2	1000	2000	1200	800
AMENITIES	1	50	50		
GOLF CART STORAGE	1	340	340		
<b>SUBTOTAL</b>			<b>2390</b>		<b>800</b>

**8 PLANT**

COMMS	1	70	70		
SECURITY	1	25	25		
PUMPS & TANKS	1	80	80		
DISTRIBUTION BOARDS	1	30	30		
<b>SUBTOTAL</b>			<b>205</b>		<b>0</b>

**9 CURTIN FACILITIES**

CURTIN FACILITIES	1	500	500		
<b>SUBTOTAL</b>			<b>500</b>		<b>0</b>

**10 CAR PARKING**

CAR PARK	1	15000	15000		
CAR PARK - FAIRWAY SCHEME	1	18100	18100		
CAR PARK - UPPER DECK	1	10550	10550		
DROP-OFF & LOADING	1	3000	3000		
<b>SUBTOTAL</b>			<b>18000</b>		<b>-</b>

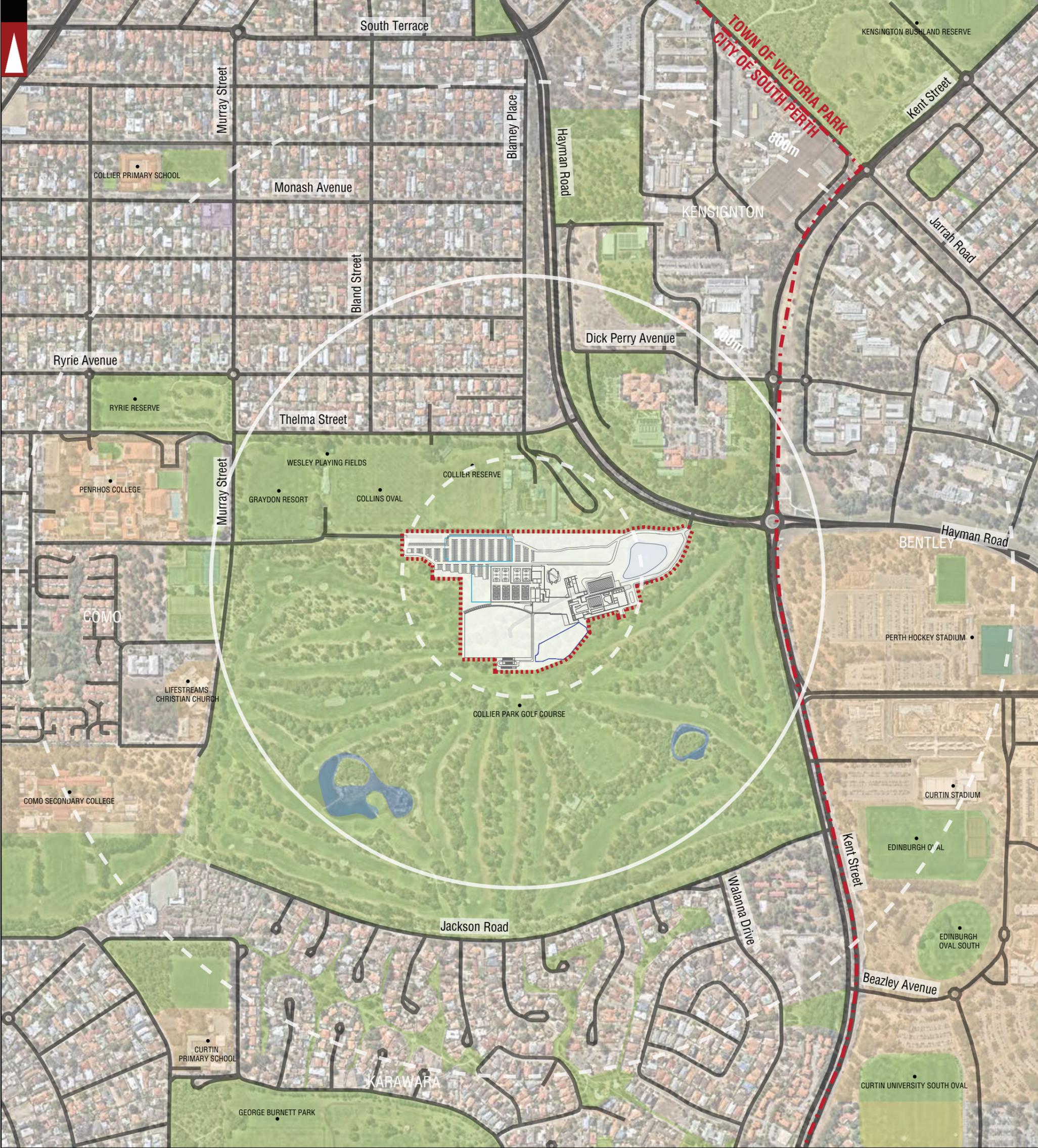
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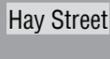
<b>TOTAL - INDOOR</b>			<b>19576</b>		<b>1636</b>
-----------------------	--	--	--------------	--	-------------

TOTAL - OUTDOOR	21350
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# **Appendix 2**

## **Transport Planning and Traffic Plans**



	PARKS AND RECREATION		ROAD		<b>CITY OF SOUTH PERTH</b>	LOCAL GOVERNMENT NAME
	WATERWAYS		STREET NAME		COMO	SUBURB NAME
	PUBLIC PURPOSE		APPROXIMATE LOCATION BOUNDARY			LOCAL AUTHORITY BOUNDARY
	SHOPPING AREA		DISTANCE FROM LOCATION			



Quality ISO 9001  
SAI GLOBAL

**LEGEND**

No	DATE	AMENDMENT
C	27-08-2020	PROPOSED LAYOUT AMENDED
B	31-07-2020	ISSUED FOR REVIEW
A	31-03-2020	ISSUED FOR REVIEW

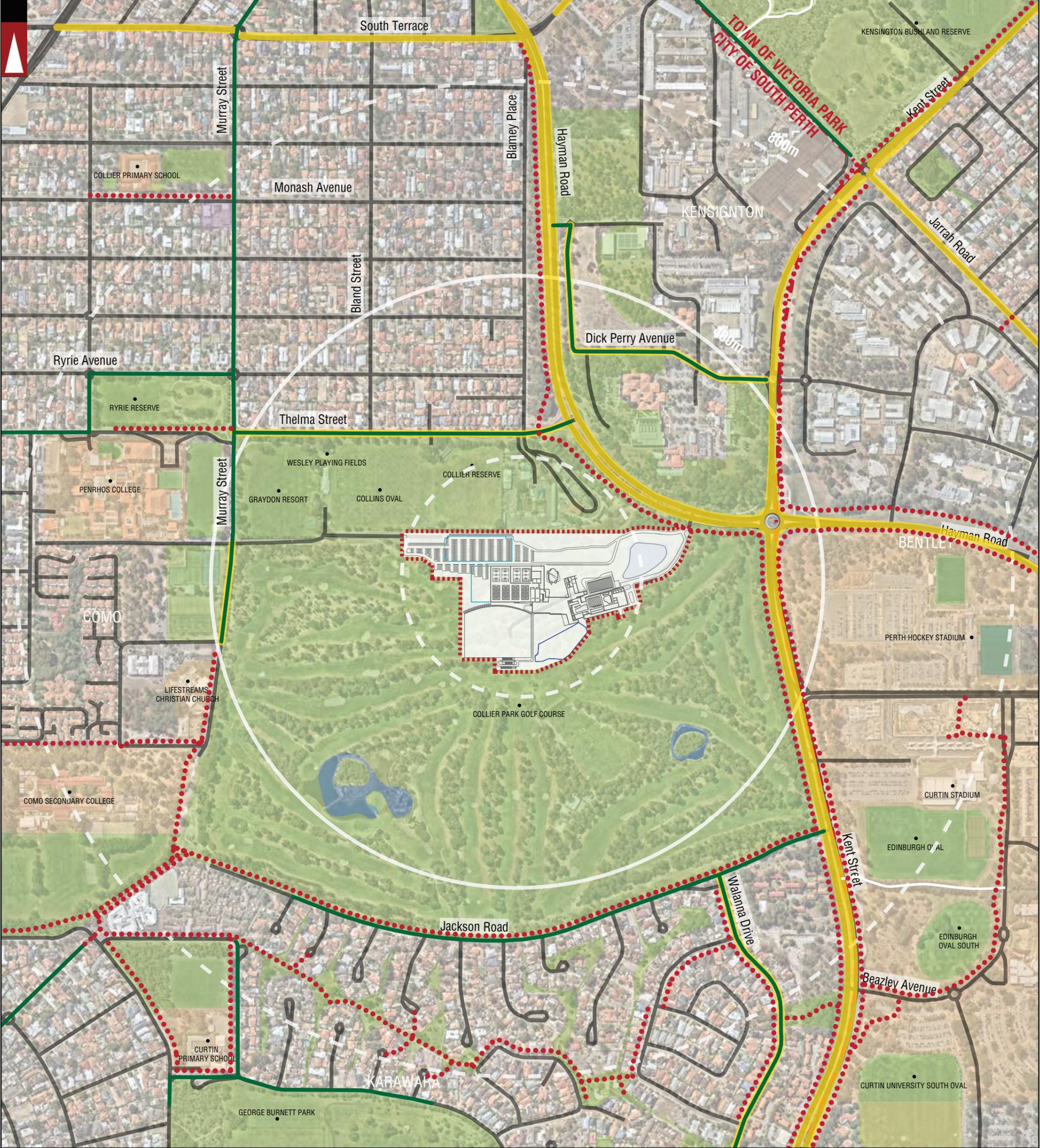
PROJECT:	<b>CITY OF SOUTH PERTH AQUATIC FACILITY</b>
TITLE:	<b>LOCALITY PLAN - 800M RADIUS</b>
DRAWING NUMBER:	<b>KC01102.000_S01</b>

DRAWN BY: 

Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au





	PARKS AND RECREATION		ROAD		OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)
	WATERWAYS		STREET NAME		GOOD ROAD RIDING ENVIRONMENT
	PUBLIC PURPOSE		APPROXIMATE LOCATION BOUNDARY		BICYCLE LANES OR SEALED SHOULDER EITHER SIDE
	SHOPPING AREA		DISTANCE FROM LOCATION		WALKING TRAIL
	<b>CITY OF SOUTH PERTH</b>		LOCAL GOVERNMENT NAME		
	COMO		SUBURB NAME		
	LOCAL AUTHORITY BOUNDARY		LOCAL GOVERNMENT NAME		



**LEGEND**

No	DATE	AMENDMENT
C	27-08-2020	PROPOSED LAYOUT AMENDED
B	31-07-2020	ISSUED FOR REVIEW
A	31-03-2020	ISSUED FOR REVIEW

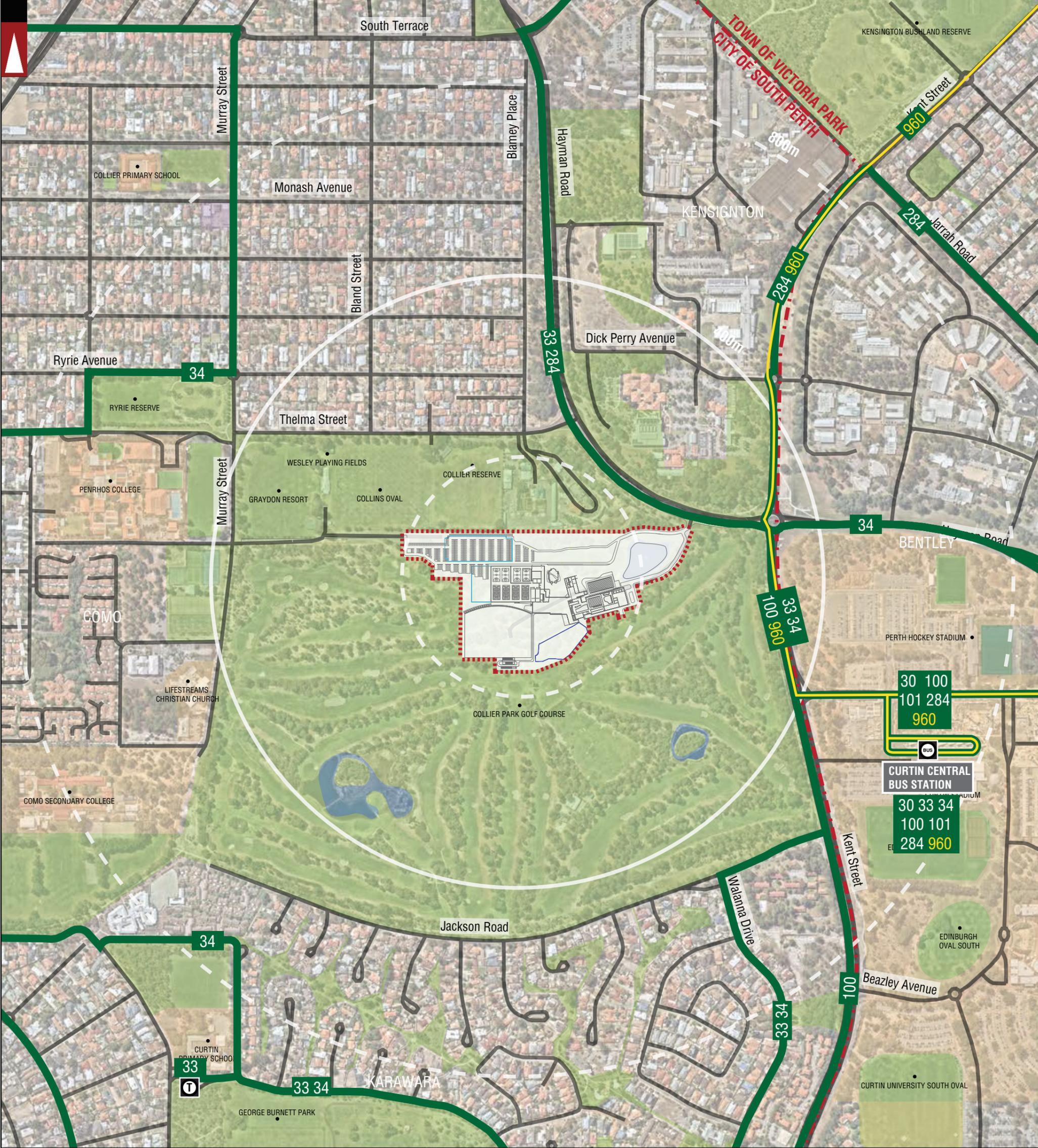
PROJECT:	CITY OF SOUTH PERTH AQUATIC FACILITY
TITLE:	BICYCLE NETWORK PLAN - 800M RADIUS
DRAWING NUMBER:	KC01102.000_S02

DRAWN BY:

Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au





	PARKS AND RECREATION		ROAD		<b>CITY OF SOUTH PERTH</b>	LOCAL GOVERNMENT NAME		BUS ROUTES		BUS STATION
	WATERWAYS		STREET NAME		COMO	SUBURB NAME		HIGH FREQUENCY BUS ROUTE		BUS TERMINUS
	PUBLIC PURPOSE		APPROXIMATE LOCATION BOUNDARY			LOCAL AUTHORITY BOUNDARY		BUS ROUTE NUMBER		
	SHOPPING AREA		DISTANCE FROM LOCATION					HIGH FREQUENCY BUS ROUTE NUMBER		

NOTE: FOR MORE INFORMATION REGARDING THE DESCRIPTION OF BUS ROUTES AND THEIR INDICATIVE PEAK AND OFF-PEAK FREQUENCIES REFER TO THE REPORT.

**LEGEND**

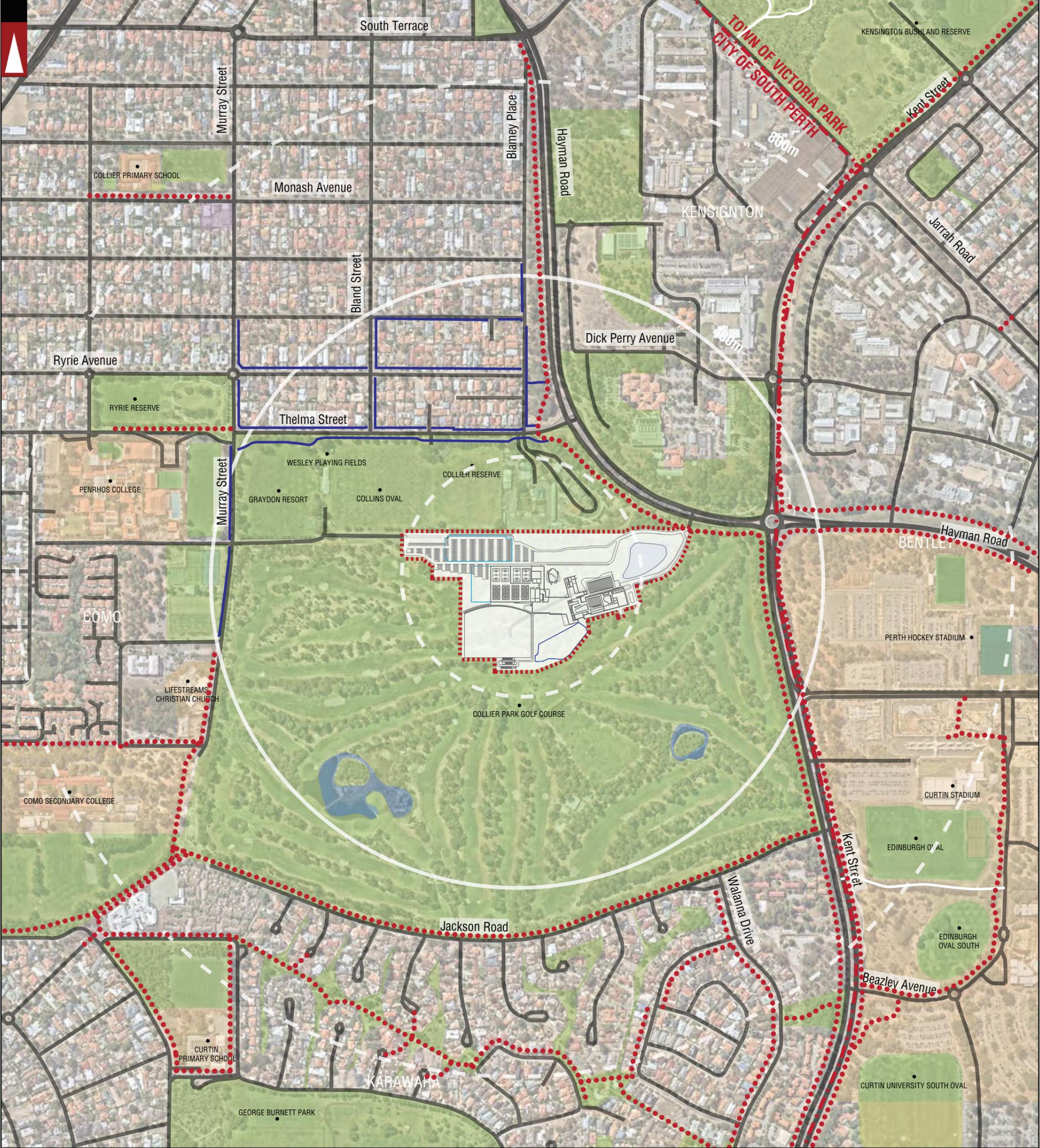
No	DATE	AMENDMENT
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B	31-07-2020	ISSUED FOR REVIEW
A	31-03-2020	ISSUED FOR REVIEW

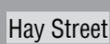
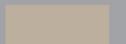
PROJECT:	<b>CITY OF SOUTH PERTH AQUATIC FACILITY</b>
TITLE:	<b>PUBLIC TRANSPORT PLAN - 800M RADIUS</b>
DRAWING NUMBER:	<b>KC01102.000_S03</b>

DRAWN BY:

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PH: 08 9441 2700  
WEB: www.kctt.com.au



	PARKS AND RECREATION		ROAD		OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)
	WATERWAYS		STREET NAME		PEDESTRIAN PATH
	PUBLIC PURPOSE		APPROXIMATE LOCATION BOUNDARY		WALKING TRAIL
	SHOPPING AREA		DISTANCE FROM LOCATION		

**CITY OF SOUTH PERTH**

LOCAL GOVERNMENT NAME

COMO

SUBURB NAME

LOCAL AUTHORITY BOUNDARY



OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)



PEDESTRIAN PATH



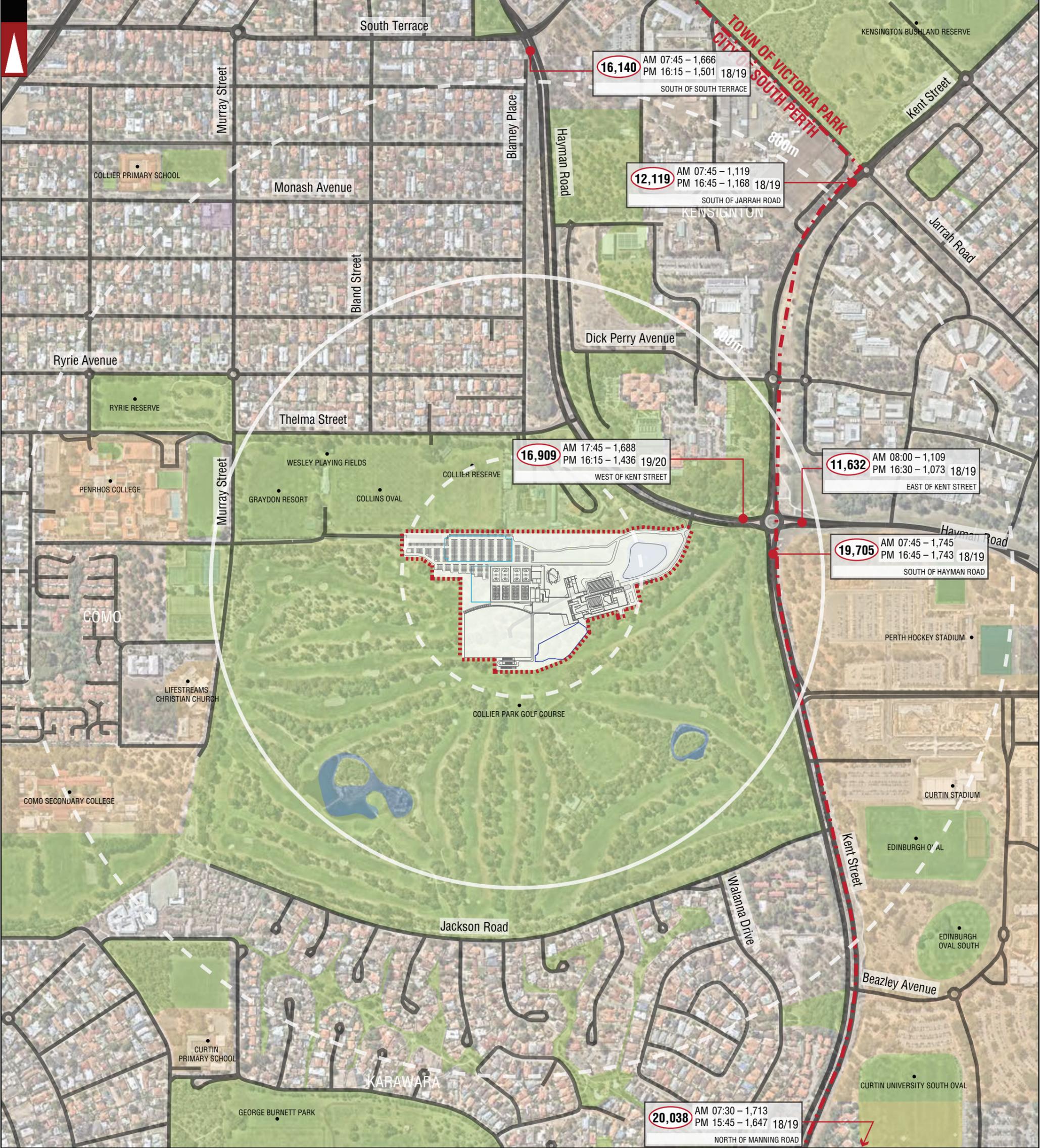
WALKING TRAIL



**LEGEND**

C	27-08-2020	PROPOSED LAYOUT AMENDED	PROJECT: <b>CITY OF SOUTH PERTH AQUATIC FACILITY</b>	DRAWN BY: 	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021  PH: 08 9441 2700 WEB: www.kctt.com.au
B	31-07-2020	ISSUED FOR REVIEW	TITLE: <b>PEDESTRIAN PATHS PLAN - 800M RADIUS</b>		
A	31-03-2020	ISSUED FOR REVIEW	DRAWING NUMBER: <b>KC01102.000_S04</b>		
No	DATE	AMENDMENT			

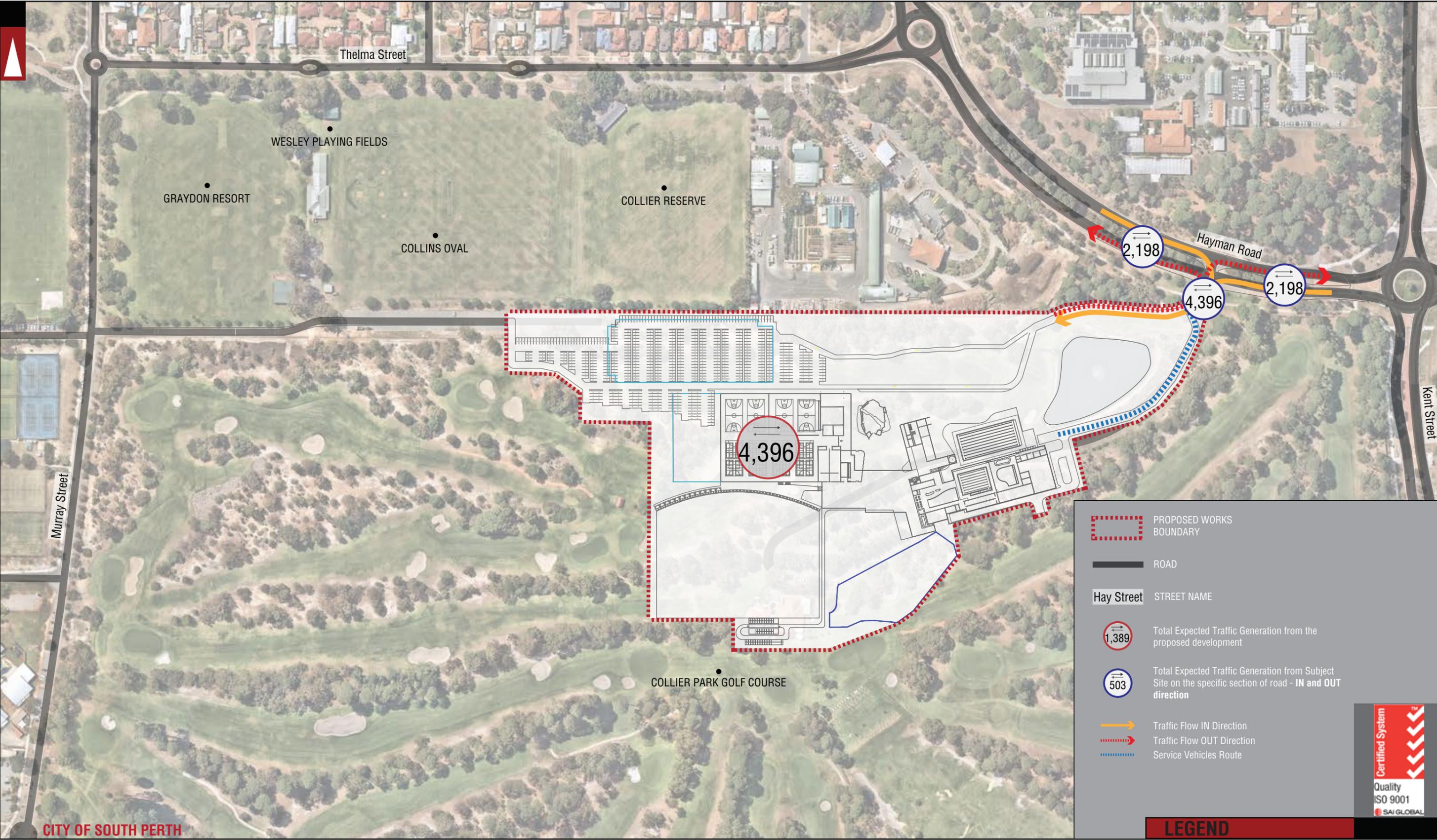




PARKS AND RECREATION	ROAD	CITY OF SOUTH PERTH LOCAL GOVERNMENT NAME	5,512 NUMBER OF VEHICLES PER DAY	
WATERWAYS	Hay Street STREET NAME	COMO SUBURB NAME	AM 1145 - 381 PM 1630 - 480	
PUBLIC PURPOSE	APPROXIMATE LOCATION BOUNDARY	LOCAL AUTHORITY BOUNDARY	2014 YEAR	
SHOPPING AREA	DISTANCE FROM LOCATION	EAST OF HARLOW ROAD LOCATION	NOTE - WEEKDAY TRAFFIC DATA SHOWN, FOR MONDAY-SATURDAY AND WEEKEND DATA REFER TO THE TIA REPORT.	

No	DATE	AMENDMENT	PROJECT:	DRAWN BY:
C	27-08-2020	PROPOSED LAYOUT AMENDED	CITY OF SOUTH PERTH AQUATIC FACILITY	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
B	31-07-2020	ISSUED FOR REVIEW	TITLE: EXISTING TRAFFIC COUNTS - 800M RADIUS	
A	31-03-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01102.000_S05	
No	DATE	AMENDMENT		





**LEGEND**

- PROPOSED WORKS BOUNDARY
- ROAD
- Hay Street STREET NAME
- 1,389 Total Expected Traffic Generation from the proposed development
- 503 Total Expected Traffic Generation from Subject Site on the specific section of road - IN and OUT direction
- Traffic Flow IN Direction
- Traffic Flow OUT Direction
- Service Vehicles Route

**Certified System**  
Quality ISO 9001  
SAI GLOBAL

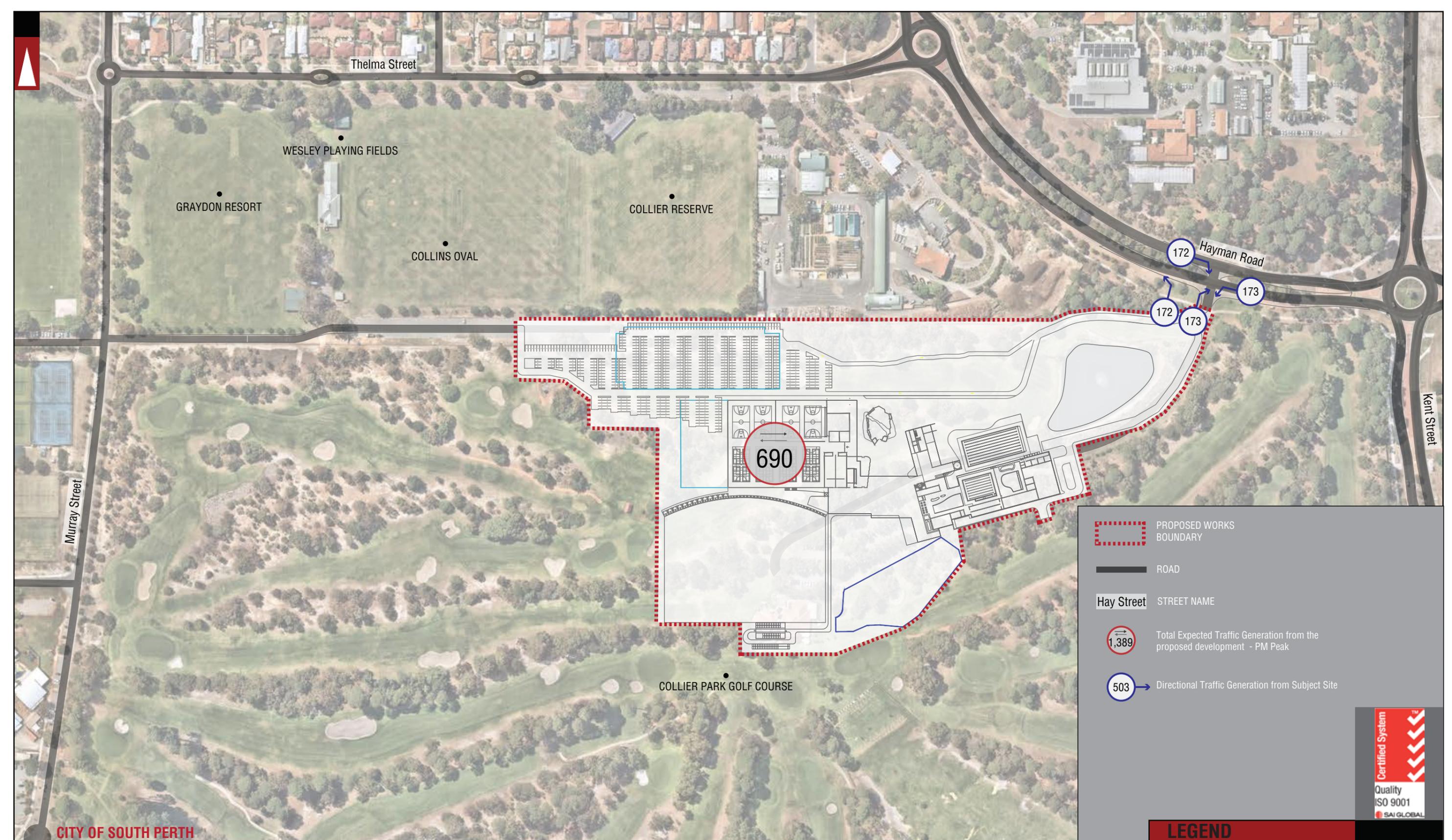
No	DATE	AMENDMENT
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B	30-07-2020	ISSUED FOR REVIEW
A	31-03-2020	ISSUED FOR REVIEW

PROJECT: <b>CITY OF SOUTH PERTH AQUATIC FACILITY</b>	DRAWN BY: 
TITLE: <b>TRAFFIC FLOW DIAGRAM</b>	
DRAWING NUMBER: <b>KC01102.000_ S06</b>	

**Civil & Traffic Engineering Consultants**  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au





CITY OF SOUTH PERTH

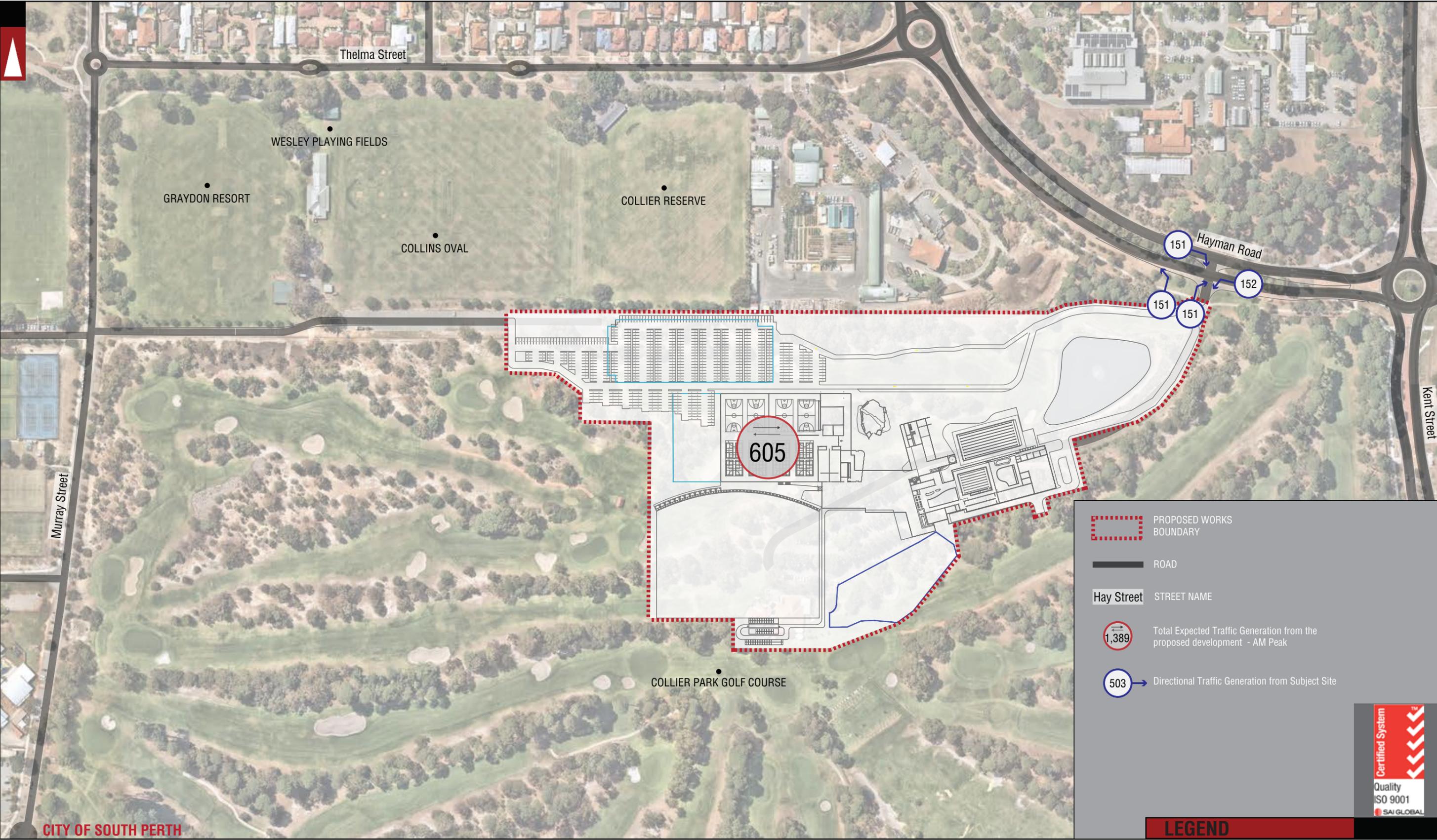
C	27-08-2020	PROPOSED LAYOUT AMENDED	PROJECT: CITY OF SOUTH PERTH AQUATIC FACILITY
B	30-07-2020	ISSUED FOR REVIEW	TITLE: TRAFFIC FLOW DIAGRAM - PM PEAK
A	31-03-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01102.000_ S07
No	DATE	AMENDMENT	

DRAWN BY:

Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au





**LEGEND**

- PROPOSED WORKS BOUNDARY
- ROAD
- STREET NAME
- Total Expected Traffic Generation from the proposed development - AM Peak
- Directional Traffic Generation from Subject Site

**Certified System**  
Quality ISO 9001  
SAI GLOBAL

No	DATE	AMENDMENT
C	27-08-2020	PROPOSED LAYOUT AMENDED
B	30-07-2020	ISSUED FOR REVIEW
A	31-03-2020	ISSUED FOR REVIEW

PROJECT: <b>CITY OF SOUTH PERTH AQUATIC FACILITY</b>
TITLE: <b>TRAFFIC FLOW DIAGRAM - AM PEAK</b>
DRAWING NUMBER: <b>KC01102.000_ S08</b>

DRAWN BY:

Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au

**kctt**

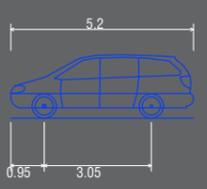


# **Appendix 3**

## **Vehicle Turning Circle Plan**



GROUND FLOOR



Passenger vehicle (5.2 m)  
 Overall Length 5.200m  
 Overall Width 1.940m  
 Overall Body Height 1.804m  
 Min Body Ground Clearance 0.295m  
 Track Width 1.840m  
 Lock to Lock Time 4.00s  
 Kerb to Kerb Turning Radius 6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chassis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chassis Envelope (Reverse Vehicle Motion)



LEGEND

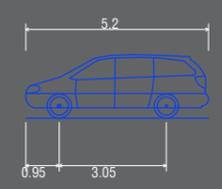
			PROJECT: City of South Perth Aquatic Facility	DRAWN BY: 
			TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	
B	27-08-2020	PROPOSED LAYOUT AMENDED	DRAWING NUMBER: KC01102.000_S20	
A	07-08-2020	ISSUED FOR REVIEW		
NO	DATE	AMENDMENT		

Civil & Traffic Engineering Consultants  
 Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
 WEB: www.kctt.com.au



**GROUND FLOOR**



Passenger vehicle (5.2 m)  
 Overall Length 5.200m  
 Overall Width 1.940m  
 Overall Body Height 1.804m  
 Min Body Ground Clearance 0.295m  
 Track Width 1.840m  
 Lock to Lock Time 4.00s  
 Kerb to Kerb Turning Radius 6.300m

- - - - - Lot boundary
- — — — — Wheel Path (Forward Vehicle Motion)
- — — — — Vehicle Chasis Envelope (Forward Vehicle Motion)
- — — — — Wheel Path (Reverse Vehicle Motion)
- — — — — Vehicle Chasis Envelope (Reverse Vehicle Motion)



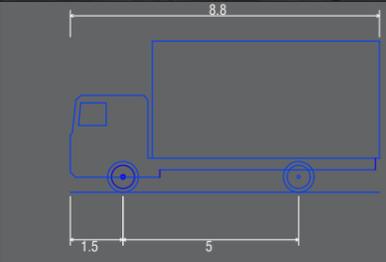
**LEGEND**

			PROJECT: City of South Perth Aquatic Facility	DRAWN BY: 
			TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	
B	27-08-2020	PROPOSED LAYOUT AMENDED	DRAWING NUMBER: KC01102.000_S21	
A	07-08-2020	ISSUED FOR REVIEW		
NO	DATE	AMENDMENT		

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 Suite 7 No 10 Whipple Street Balcatta WA 6021  
 PH: 08 9441 2700  
 WEB: www.kctt.com.au



GROUND FLOOR



Service Vehicle (8.8 m)	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	12.500m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chassis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chassis Envelope (Reverse Vehicle Motion)

Recommended amendments



LEGEND

NO	DATE	AMENDMENT
B	27-08-2020	PROPOSED LAYOUT AMENDED
A	07-08-2020	ISSUED FOR REVIEW

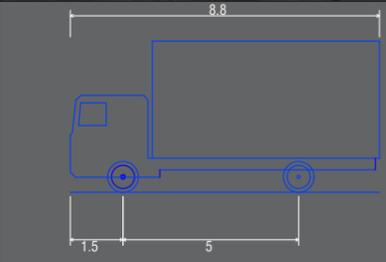
PROJECT: City of South Perth Aquatic Facility		DRAWN BY: 
TITLE: Vehicle Turning Circle Plan - Service Vehicle (8.8m)		
DRAWING NUMBER: KC01102.000_S22a		

Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au



GROUND FLOOR



Service Vehicle (8.8 m)	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	12.500m

Lot boundary	—
Wheel Path (Forward Vehicle Motion)	—
Vehicle Chassis Envelope (Forward Vehicle Motion)	—
Wheel Path (Reverse Vehicle Motion)	—
Vehicle Chassis Envelope (Reverse Vehicle Motion)	—

Recommended amendments



LEGEND

NO	DATE	AMENDMENT
B	27-08-2020	PROPOSED LAYOUT AMENDED
A	07-08-2020	ISSUED FOR REVIEW

PROJECT: City of South Perth Aquatic Facility		DRAWN BY: 
TITLE: Vehicle Turning Circle Plan - Service Vehicle (8.8m)		
DRAWING NUMBER: KC01102.000_S22b		

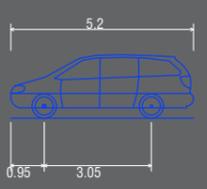
Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021

PH: 08 9441 2700  
WEB: www.kctt.com.au



UPPER LEVEL  
PARKING  
304 SPACES

FUTURE UPPER FLOOR



Passenger vehicle (5.2 m)  
Overall Length 5.200m  
Overall Width 1.940m  
Overall Body Height 1.804m  
Min Body Ground Clearance 0.295m  
Track Width 1.840m  
Lock to Lock Time 4.00s  
Kerb to Kerb Turning Radius 6.300m

-  Lot boundary
-  Wheel Path (Forward Vehicle Motion)
-  Vehicle Chasis Envelope (Forward Vehicle Motion)
-  Wheel Path (Reverse Vehicle Motion)
-  Vehicle Chasis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: City of South Perth Aquatic Facility	DRAWN BY: 
			TITLE: KCTT recommended amendments	
B	27-08-2020	PROPOSED LAYOUT AMENDED	DRAWING NUMBER: KC01102.000_S23	
A	07-08-2020	ISSUED FOR REVIEW		
NO	DATE	AMENDMENT		

Civil & Traffic Engineering Consultants  
Suite 7 No 10 Whipple Street Balcatta WA 6021  
PH: 08 9441 2700  
WEB: www.kctt.com.au







Recommended amendments

Dimensions

Speed hump

**FUTURE UPPER FLOOR**

			PROJECT: City of South Perth Aquatic Facility		DRAWN BY: 
B	27-08-2020	PROPOSED LAYOUT AMENDED	TITLE: KCTT recommended amendments		Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021  PH: 08 9441 2700 WEB: www.kctt.com.au
A	07-08-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01102.000_S41		
NO	DATE	AMENDMENT			



# Appendix 4

SIDRA Intersection Analysis

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## 1. Introduction

This short report provides details on the SIDRA Analysis conducted to support the findings of the report KC01102.000\_R01\_Rev C. The intersection of Hayman Road and Access Drive has been modelled in AM and PM peak hours for the assessment years of 2020, 2023 and 2033.

The dimensions of the existing intersection elements have been scaled from aerial imagery which was obtained through our commercial arrangement with Nearmap and through publicly available Intramaps. These images are suitable for use in concept drafting applications with a level of accuracy to within +/- 10 centimetres.

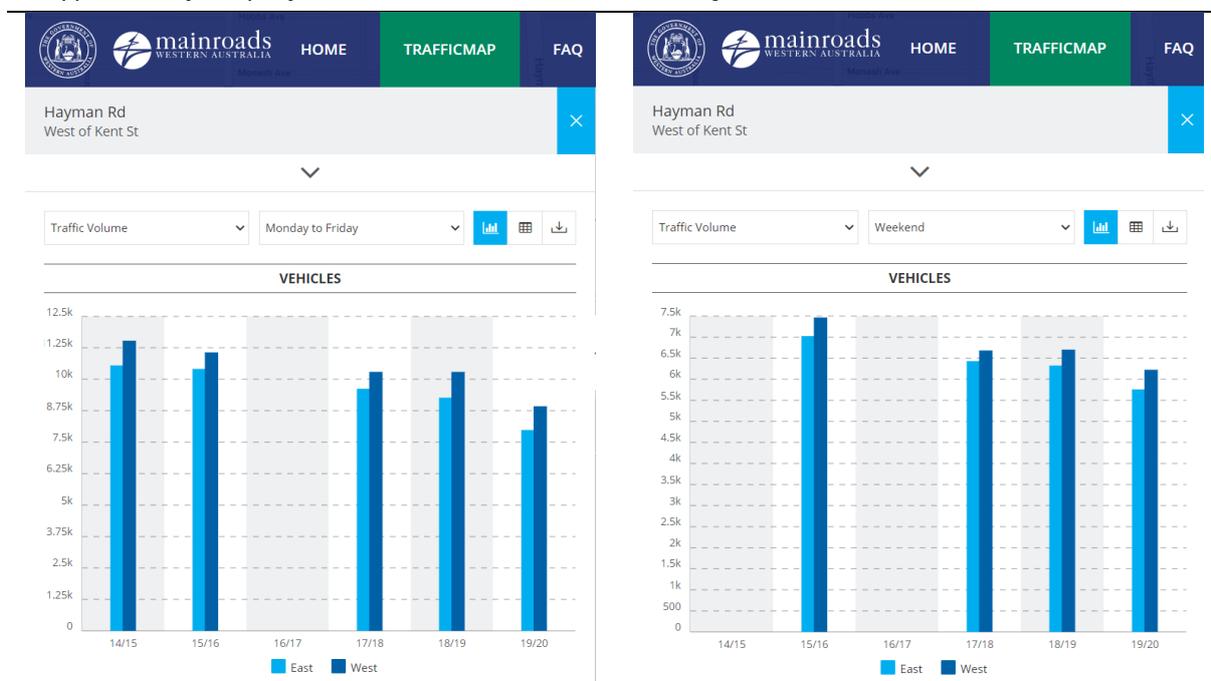
## 2. Traffic Generation and Distribution Analysis

What are the likely peak hours of operation?	Monday – Friday: 05:30 – 20:00 Weekends: 07:00 – 19:00						
Peak times traffic impact of the proposed development:	<table border="1"> <thead> <tr> <th>AM peak</th> <th>PM peak</th> </tr> </thead> <tbody> <tr> <td>11:00 – 12:00 AM Peak</td> <td>16:00 – 17:00 PM Peak</td> </tr> <tr> <td colspan="2">It is expected that the proposed development peak activity would be on weekends.</td> </tr> </tbody> </table>	AM peak	PM peak	11:00 – 12:00 AM Peak	16:00 – 17:00 PM Peak	It is expected that the proposed development peak activity would be on weekends.	
AM peak	PM peak						
11:00 – 12:00 AM Peak	16:00 – 17:00 PM Peak						
It is expected that the proposed development peak activity would be on weekends.							
How many routes are available for access / egress to the site?	Two routes 4,396 VPD / 605 AM VPH / 690 PM VPH						
<b>Route 1</b>							
Provide details for Route No 1	To/from the north via Hayman Road						
Percentage of Vehicular Movements via Route No 1	50% (2,198 VPD / 302 AM VPH / 345 PM VPH)						
<b>Route 2</b>							
Provide details for Route No 2	To/from the south via Hayman Road						
Percentage of Vehicular Movements via Route No 2	50% (2,198 VPD / 302 AM VPH / 345 PM VPH)						

### 3. Traffic Volumes

MRWA Traffic Map Data								
Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)	Heavy Vehicle %	Date of Traffic Count	Year		
			SIDRA analysis Peak Times			Estimate Peak Traffic Volumes in the Assessment Year(s) using the nominated annual traffic growth rate		
			PM 16:00			2020	2023	2033
						PM Peak	PM Peak	PM Peak
Hayman Road	West of Kent Street (weekend)	11,984	16:00 – 709	1.4	2019/2020	720	764	941

Historic data from MRWA traffic map for Hayman Road West of Kent Street show a decrease in traffic volumes of approximately 5% per year since 2014/2015 as shown in the figures below.



MRWA ROM24 Data										
Road Name	Location of Traffic Volume in ROM24 model	ROM24 Traffic Volumes								
		2016			2021			2031		
		EB	WB	Total	EB	WB	Total	EB	WB	Total
Hayman Road	West of Kent Street	11,800	11,100	22,900	12,700	11,200	23,900	14,800	13,800	28,600

Based on the current and historical traffic data available through MRWA Traffic Map, KCTT believe the ROM24 model predictions cannot be adopted as presented. As shown in the tables above the total traffic on Hayman Road presented for the year 2021 would require approximately 30% annual growth (having in mind the current traffic volumes for weekday are 16,909 VPD in the same location). This is considered highly unlikely as the surrounding area is mostly a densely developed urban area.

In order to account for the changes in traffic volumes KCTT suggest increasing the current traffic counts with a growth rate of 1.5% per annum. This rate coincides with the traffic growth from MRWA ROM24 model.

## 4. Summary of Results

Nominate the analysed intersections and intersection controls

M01. Hayman Road & Access Driveway – Sign controlled

Describe the models analysed in SIDRA

The intersection of Hayman Road & Access Driveway is analysed for the following years in the PM peak:

- 2020 – Base year (current intersection configuration)
- 2023 – Year of completion (right turn deceleration lane on Hayman Road added)
- 2033 – 10 years after completion (right turn deceleration lane on Hayman Road added)

Input traffic volumes for SIDRA models were obtained through MRWA Traffic Map for the development peak hour and augmented by a growth rate of 1.5% per annum as per MRWA ROM24 model.

The intersection of Hayman Road & Access Driveway has been modelled as per SIDRA Intersection recommended template for Staged Crossing as a Network and adjusted to suit the subject intersection geometry and other conditions. The inability of a standard standalone intersection to account for median storage queuing area warrants the use of the two stage crossing.

As stated in SIDRA INTERSECTION 9 User Guide, Section 9.4.5 Staged Crossings the degree of saturation, average delay and level of service values for the two stages need to be considered in assessing the overall conditions of the staged crossing movement:

- The degree of saturation is the higher of the values for the two stages.
- The overall average delay is the sum of the average delay values for the two stages.
- The level of service for the staged crossing could be assessed using the average delay calculated as the sum of delays at the two stages of crossing.

Describe the Level of Service and Delay results

- 2020 – Base year  
All lanes operate under LOS A, no significant issues currently present at the intersection.
- 2023 – Year of completion  
Average intersection delay of 11.7s.  
Access Driveway approach operates under LOS C with a delay of 24.4s. This is considered an acceptable level of service.
- 2033 – 10 years after completion  
Access Driveway approach would operate under LOS E and a delay of 41.4s A queue of approximately 7 vehicles would form at development approach to the intersection.  
The reduction in level of service is due to Hayman Road passing traffic increase. However, having in mind the expected queue length major issues at the intersection are unlikely.

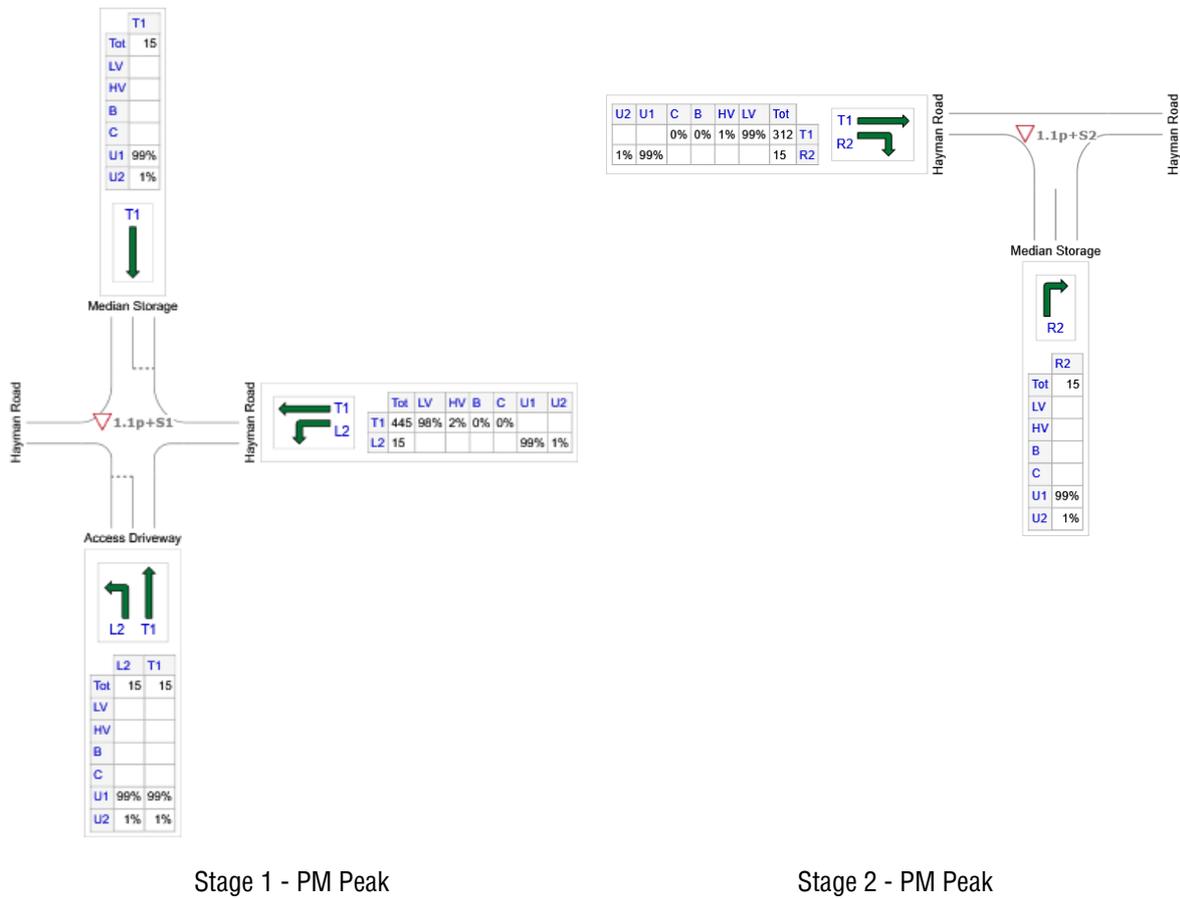
A summary of the results of the SIDRA analysis are shown on the following pages. For purposes of clarity we will provide intersection summaries below. The full SIDRA output report can be provided on request.

*Note\* - SIDRA graphic is not an accurate representation of the intersection geometry. It is a simplified tool and its main purpose is to roughly illustrate main intersection elements. The graphic might show median breaks where there are none in reality, oversized splitter islands and central islands for roundabouts etc. The graphic representation does not influence the calculations nor any other output.*

## 5. Demand Flows

Below are extracts from KCTT SIDRA models, showing demand flows with percentages for following user classes:

- U1 - Proposed Development's Light Vehicles
- U2 - Proposed Development's Heavy Vehicles



**Transport Impact Assessment**  
 KC01102.000 City of South Perth Aquatic Facility

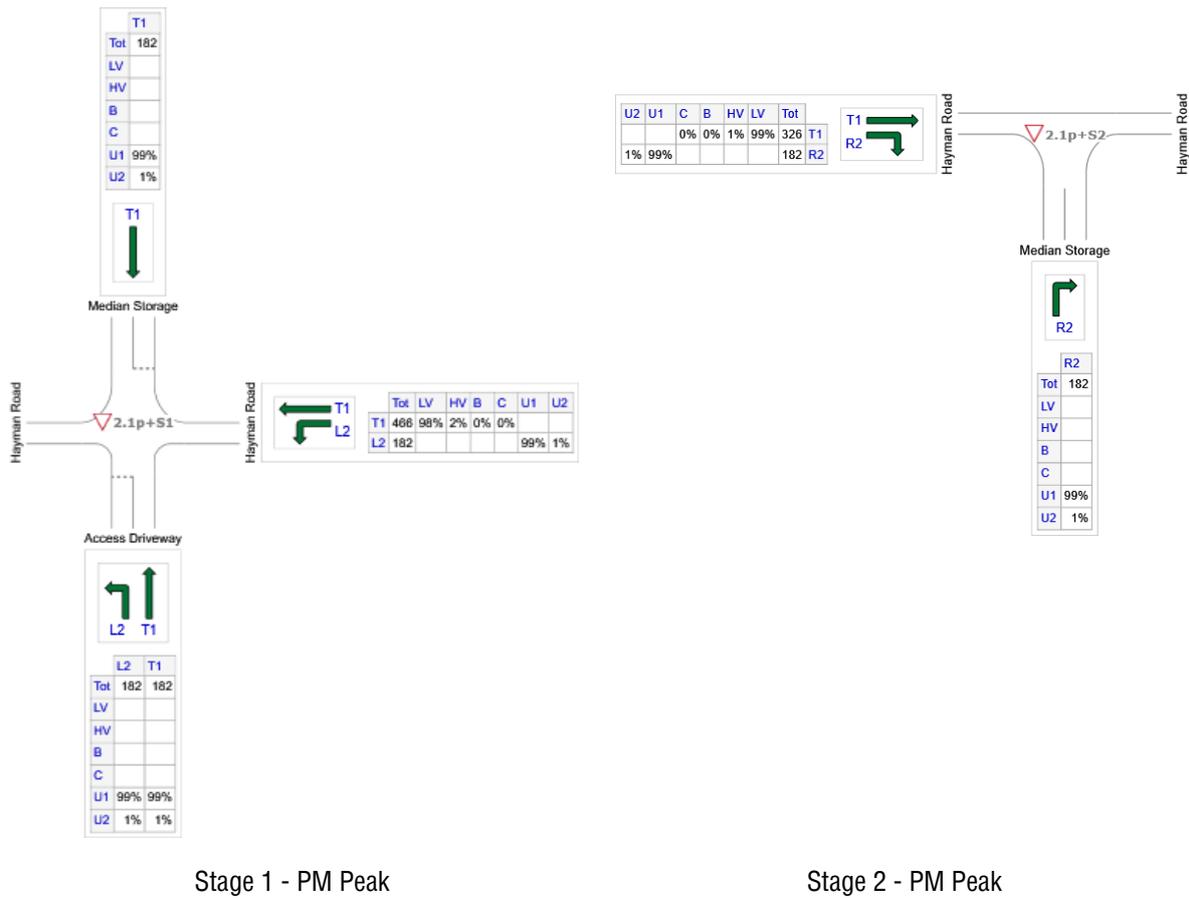


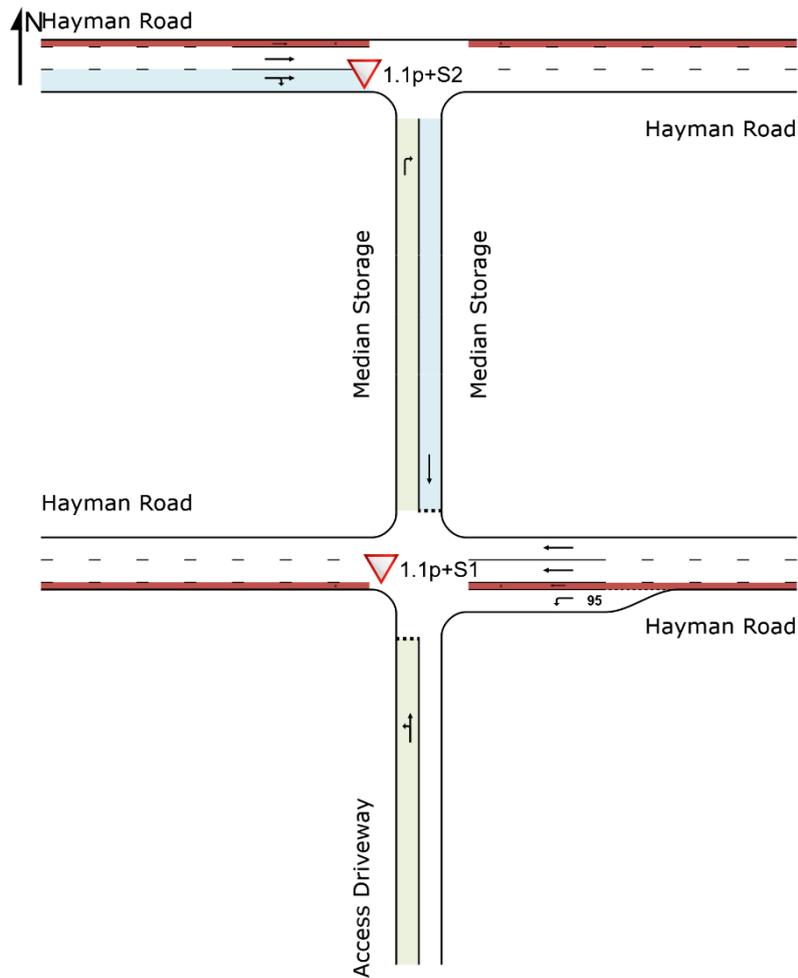
Figure 2 – Hayman Road/ Access Driveway - Demand Flows – 2023

\* Note – Results for 2033 obtained using Demand and Sensitivity option - Design Life Analysis for Final Year within SIDRA Intersection.

## 6. SIDRA Intersection Analysis – Output

### 6.1 M01 Hayman Road – Access Driveway

#### 6.1.1 1.1p+ Hayman Road / Access Driveway – 2020 PM peak



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽ 1.1p+S2	NA	1.1p+S2 Hayman Road & Access Driveway Stage 2 - 2020 PM peak
▽ 1.1p+S1	NA	1.1p+S1 Hayman Road & Access Driveway Stage 1 - 2020 PM peak

Figure 3 – Hayman Road / Access Driveway – SIDRA Schematic Geometry - year 2020

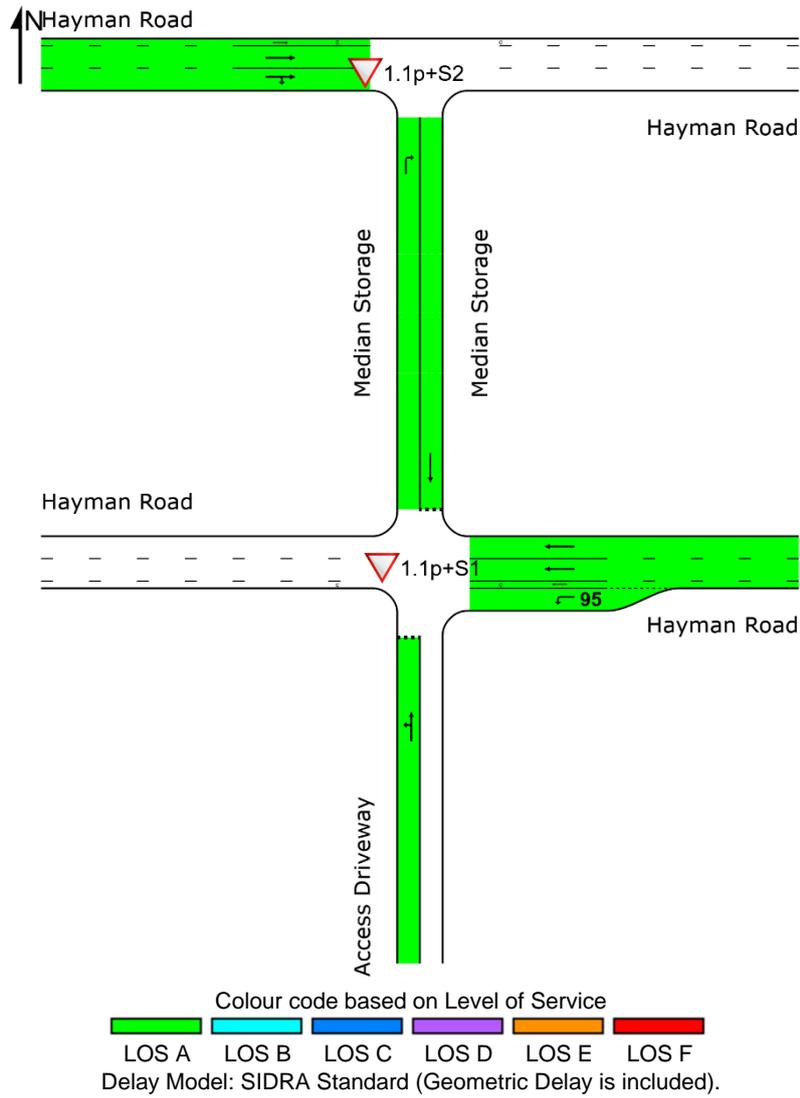


Figure 4 – Hayman Road / Access Driveway – Lane Level of Service - year 2020 PM peak

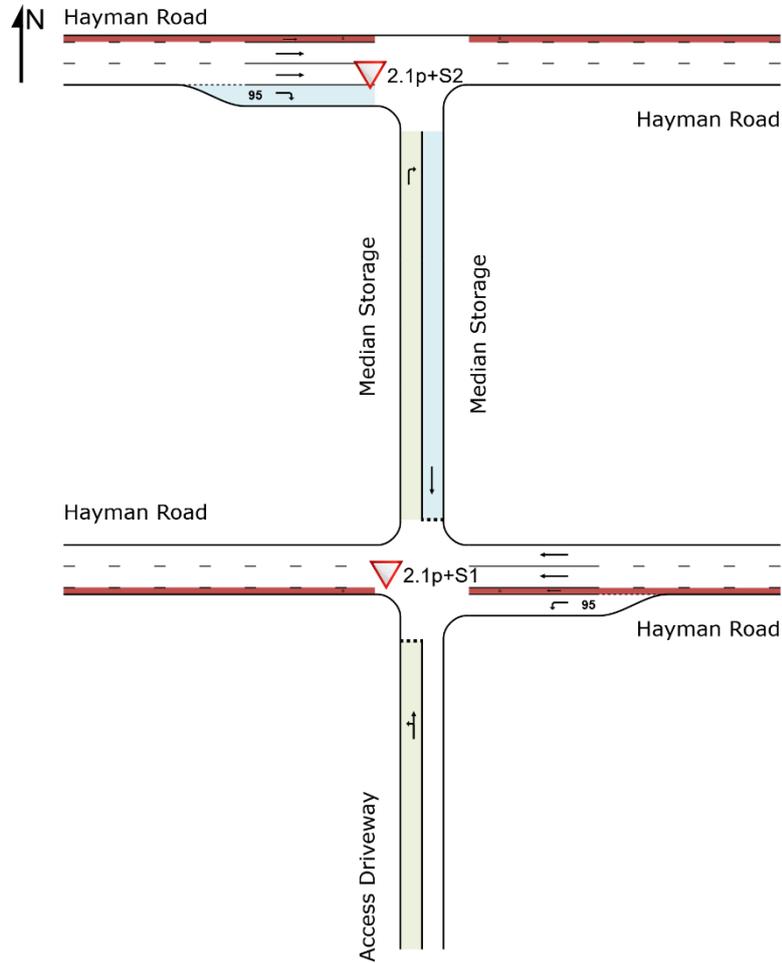
Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]						[ Veh	Dist ]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Access Driveway															
Lane 1	29	1.0	29	1.0	708	0.042	100	2.9	LOS A	0.1	0.5	Full	25	0.0	0.0
Approach	29	1.0	29	1.0		0.042		2.9	LOS A	0.1	0.5				
East: Hayman Road															
Lane 1	15	1.0	15	1.0	1892	0.008	100	6.4	LOS A	0.0	0.0	Short	95	0.0	NA
Lane 2 (C)	1	0.0	1	0.0	6196	0.000	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 3	222	2.3	222	2.3	1971	0.113	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 4	222	1.9	222	1.9	1976	0.113	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Approach	460	2.1	460	2.1		0.113		0.2	NA	0.0	0.0				
North: Median Storage															
Lane 1	15	1.0	15	1.0	688	0.021	100	5.7	LOS A	0.0	0.2	Full	8	0.0	0.0
Approach	15	1.0	15	1.0		0.021		5.7	LOS A	0.0	0.2				
Intersection	504	2.0	504	2.0		0.113		0.5	NA	0.1	0.5				

Figure 5 – Lane Summary (Model 1.1p+ Hayman Road / Access Driveway Stage 1 – 2020 PM peak)

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total	HV ]	[ Total	HV ]						[ Veh	Dist ]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Median Storage															
Lane 1	15	1.0	15	1.0	1892	0.008	100	0.7	LOS A	0.0	0.0	Full	8	0.0	0.0
Approach	15	1.0	15	1.0		0.008		0.7	NA	0.0	0.0				
West: Hayman Road															
Lane 1 (C)	1	0.0	1	0.0	6196	0.000	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 2	164	1.3	164	1.3	1984	0.082	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 3	162	0.7	162	0.7	1961	0.082	100	0.6	LOS A	0.0	0.3	Full	303	0.0	0.0
Approach	326	1.0	326	1.0		0.082		0.3	NA	0.0	0.3				
Intersection	341	1.0	341	1.0		0.082		0.3	NA	0.0	0.3				

Figure 6 – Lane Summary (Model 1.1p+ Hayman Road / Access Driveway Stage 2 – 2020 PM peak)

**6.1.2 2.1p+ Hayman Road / Access Driveway – 2023 PM peak**



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽2.1p+S2	NA	2.1p+S2 Hayman Road & Access Driveway Stage 2 - 2023 PM peak
▽2.1p+S1	NA	2.1p+S1 Hayman Road & Access Driveway Stage 1 - 2023 PM peak

Figure 7 – Hayman Road / Access Driveway – SIDRA Schematic Geometry - year 2023

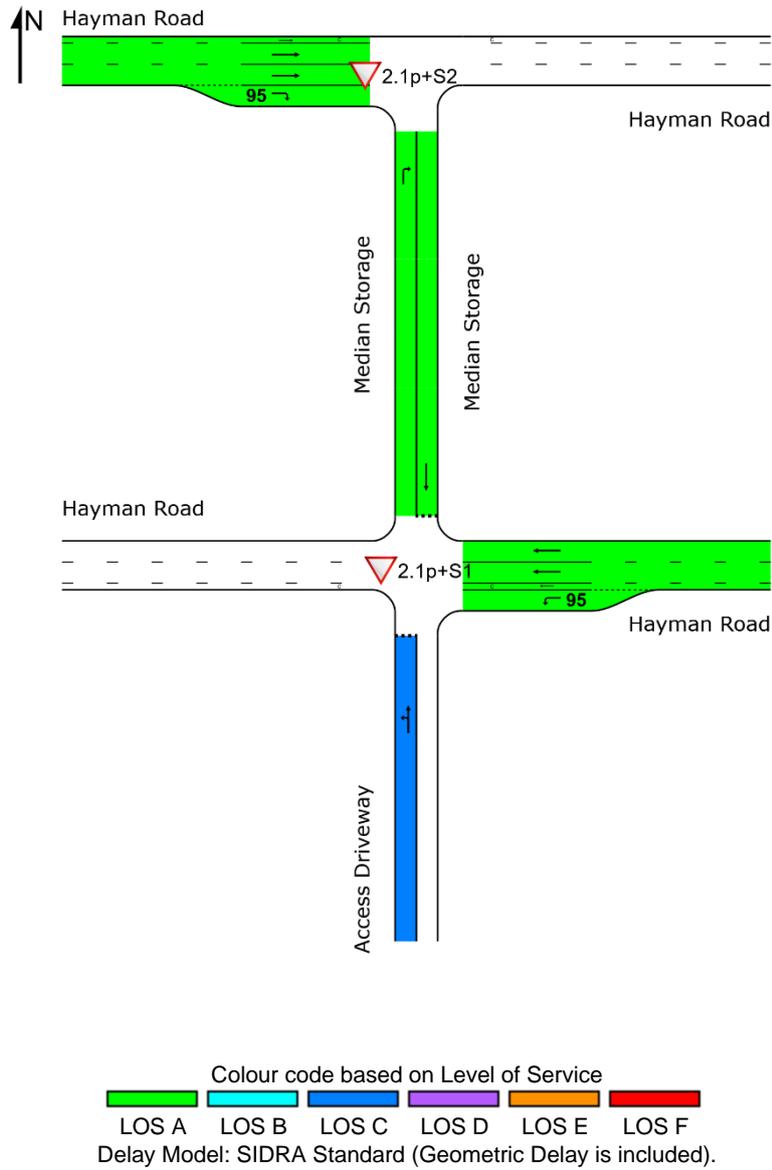


Figure 8 – Hayman Road / Access Driveway – Lane Level of Service - year 2023 PM peak

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]						[ Veh ]	[ Dist ]				
South: Access Driveway															
Lane 1	364	1.0	364	1.0	482	0.755	100	23.7	LOS C	4.5	31.5	Full	25	0.0	100.0
Approach	364	1.0	364	1.0		0.755		23.7	LOS C	4.5	31.5				
East: Hayman Road															
Lane 1	182	1.0	182	1.0	1892	0.096	100	6.4	LOS A	0.0	0.0	Short	95	0.0	NA
Lane 2 (C)	1	0.0	1	0.0	6196	0.000	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 3	232	2.3	232	2.3	1971	0.118	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 4	233	1.9	233	1.9	1976	0.118	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Approach	648	1.8	648	1.8		0.118		1.8	NA	0.0	0.0				
North: Median Storage															
Lane 1	182	1.0	182	1.0	535	0.341	100	9.7	LOS A	0.7	4.9	Full	8	0.0	19.4
Approach	182	1.0	182	1.0		0.341		9.7	LOS A	0.7	4.9				
Intersection	1195	1.4	1195	1.4		0.755		9.7	NA	4.5	31.5				

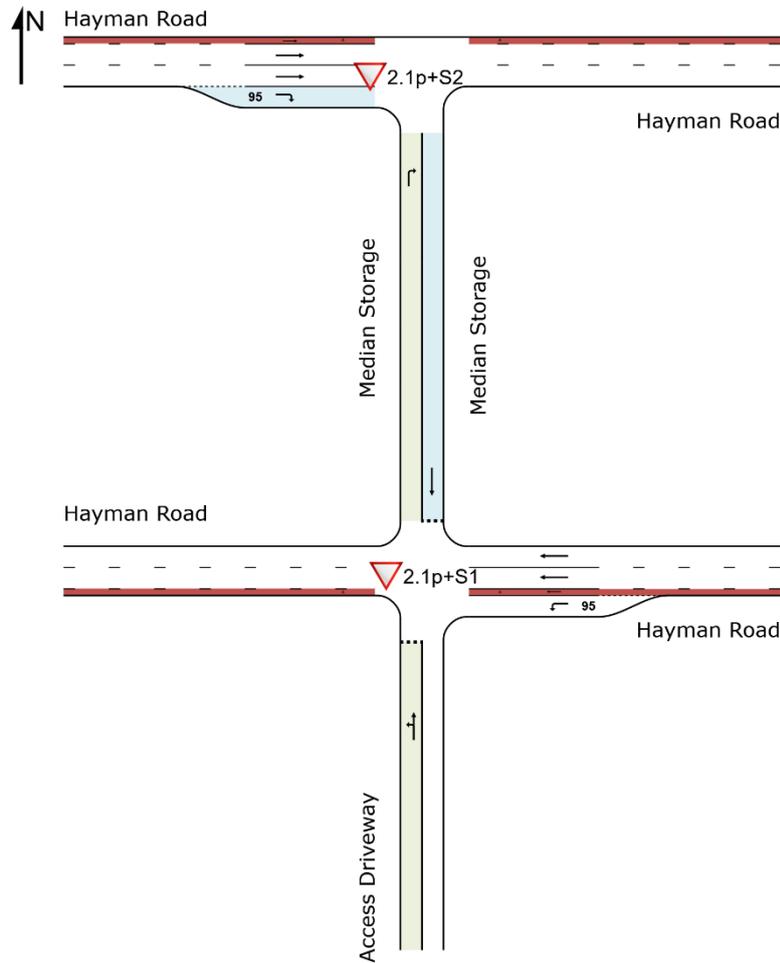
Figure 9 – Lane Summary (Model 2.1p+ Hayman Road / Access Driveway Stage 1 – 2023 PM peak)

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]						[ Veh ]	[ Dist ]				
South: Median Storage															
Lane 1	182	1.0	182	1.0	1892	0.096	100	0.7	LOS A	0.0	0.0	Full	8	0.0	0.0
Approach	182	1.0	182	1.0		0.096		0.7	NA	0.0	0.0				
West: Hayman Road															
Lane 1 (C)	1	0.0	1	0.0	6196	0.000	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 2	163	1.3	163	1.3	1984	0.082	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 3	162	0.7	162	0.7	1967	0.082	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 4	182	1.0	182	1.0	1225	0.149	100	6.8	LOS A	0.2	1.6	Short	95	19.4 <sup>N3</sup>	NA
Approach	508	1.0	508	1.0		0.149		2.5	NA	0.2	1.6				
Intersection	691	1.0	691	1.0		0.149		2.0	NA	0.2	1.6				

Figure 10 – Lane Summary (Model 2.1p+ Hayman Road / Access Driveway Stage 2 – 2023 PM peak)

**6.1.3 2.1p+ Hayman Road / Access Driveway – 2033 PM peak**

\* Note – Results for 2033 obtained using Demand and Sensitivity option - Design Life Analysis within SIDRA Intersection.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽2.1p+S2	NA	2.1p+S2 Hayman Road & Access Driveway Stage 2 - 2023 PM peak
▽2.1p+S1	NA	2.1p+S1 Hayman Road & Access Driveway Stage 1 - 2023 PM peak

Figure 11 – Hayman Road / Access Driveway – SIDRA Schematic Geometry - year 2033

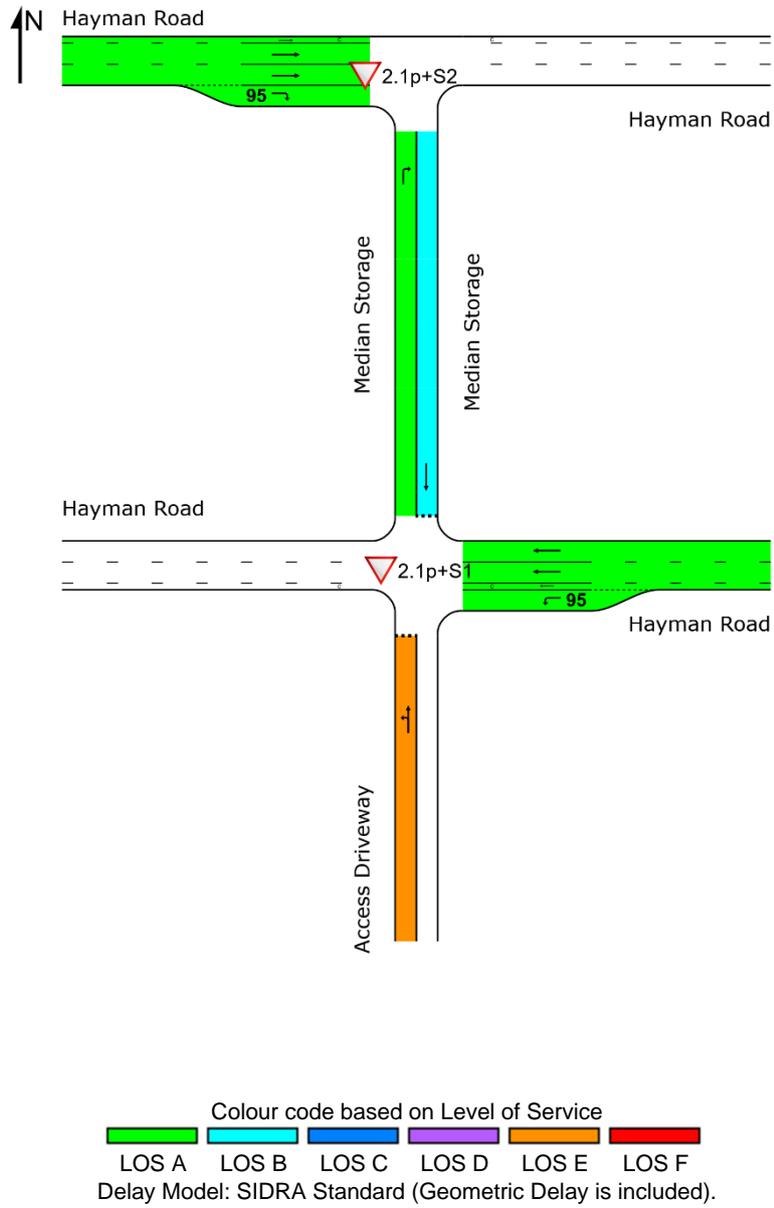


Figure 12 – Hayman Road / Access Driveway – Lane Level of Service - year 2033 PM peak

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]						[ Veh ]	[ Dist ]				
South: Access Driveway															
Lane 1	364	1.0	364	1.0	424	0.859	100	40.7	LOS E <sup>11</sup>	6.6	46.4	Full	25	0.0	100.0
Approach	364	1.0	364	1.0		0.859		40.7	LOS E <sup>11</sup>	6.6	46.4				
East: Hayman Road															
Lane 1	182	1.0	182	1.0	1892	0.096	100	6.4	LOS A	0.0	0.0	Short	95	0.0	NA
Lane 2 (C)	1	0.0	1	0.0	6196	0.000	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 3	270	2.3	270	2.3	1971	0.137	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 4	270	1.9	270	1.9	1976	0.137	100	0.0	LOS A	0.0	0.0	Full	130	0.0	0.0
Approach	723	1.8	723	1.8		0.137		1.6	NA	0.0	0.0				
North: Median Storage															
Lane 1	182	1.0	182	1.0	477	0.382	100	11.5	LOS B	0.8	5.6	Full	8	0.0	25.2
Approach	182	1.0	182	1.0		0.382		11.5	LOS B	0.8	5.6				
Intersection	1270	1.5	1270	1.5		0.859		14.2	NA	6.6	46.4				

Figure 13 – Lane Summary (Model 2.1p+ Hayman Road / Access Driveway Stage 1 – 2033 PM peak)

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]						[ Veh ]	[ Dist ]				
South: Median Storage															
Lane 1	182	1.0	182	1.0	1892	0.096	100	0.7	LOS A	0.0	0.0	Full	8	0.0	0.0
Approach	182	1.0	182	1.0		0.096		0.7	NA	0.0	0.0				
West: Hayman Road															
Lane 1 (C)	1	0.0	1	0.0	6196	0.000	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 2	190	1.3	190	1.3	1984	0.096	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 3	188	0.7	188	0.7	1969	0.096	100	0.0	LOS A	0.0	0.0	Full	303	0.0	0.0
Lane 4	182	1.0	182	1.0	1136	0.160	100	6.8	LOS A	0.2	1.6	Short	95	25.2 <sup>N3</sup>	NA
Approach	561	1.0	561	1.0		0.160		2.2	NA	0.2	1.6				
Intersection	743	1.0	743	1.0		0.160		1.8	NA	0.2	1.6				

Figure 14 – Lane Summary (Model 2.1p+ Hayman Road / Access Driveway Stage 2 – 2033 PM peak)

# APPENDIX I – TOWN PLANNING CONSIDERATIONS REPORT

# City of South Perth Recreation and Aquatic Facility

## Town Planning Considerations Report



Prepared for City of South Perth  
Prepared by Taylor Burrell Barnett  
August 2020



Public Version - Redacted

# Document History & Status

City of South Perth Recreation & Aquatic Facility

Town Planning Considerations Report

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# 1.0 Introduction

## 1.1 Project Overview

The City of South Perth engaged Taylor Burrell Barnett (TBB) to undertake a review of the City's proposal to develop a Recreation and Aquatic Facility within a portion of Crown land currently occupied by the Collier Park Golf Course.

The requested review is to consider all relevant town planning considerations with respect to seeking an approval for the proposed facility, inclusive of:

- a) The current land use and integration with the operations of the existing Collier Park Golf Course;
- b) The strategic planning considerations within the broader area and how the facility is supported by these broader considerations;
- c) The requirements for an application for development approval of the facility; and
- d) The necessary supporting information to be prepared as a component of the application package.

## 1.2 Project Scope

The project has been designed as a desktop review of available existing information on the proposal and the relevant planning framework, in addition to liaison with the City of South Perth planning officers and the Department of Planning, Lands and Heritage.

The project scope comprises of the following tasks:

- a) A project inception meeting to ensure a full understanding of the any relevant information or background on the project, and in particular to understand the opportunities and constraints associated with the development of the proposed facility.

- b) A review of the local and State government planning frameworks with respect to the subject site, including Schemes, strategies and policies, to provide a summary of the planning influences on the subject proposal;
- c) A meeting with the City of South Perth Strategic and Statutory Planning Managers to confirm the understanding of the relevant planning framework and seek additional relevant inputs;
- d) A meeting with the Department of Planning, Lands and Heritage officers to discuss the State government planning framework and seek additional relevant inputs;
- e) Preparation of a briefing paper outlining a summary of the review and recommendations for progression of the development application;
- f) Finalisation and updates to the briefing paper as required.

## 1.3 Project Inputs

In consideration of the brief the following project inputs have been made available:

- City of South Perth *Local Planning Scheme No. 6* (LPS6), strategic planning framework and relevant local planning policies;
- *Metropolitan Region Scheme* (MRS) and relevant WAPC policies; and
- Copies of the draft building site plans and building floor plans (Option 4 – provided 17 July 2020).

# 2.0 Site Context

## 2.1 Site Description

The subject site is located within City of South Perth and within the suburb of Como. The site is proposed to be accessed from the north via Hayman Road, which is identified as a District Distributor Road and is understood to be under the management of the City of South Perth.

To the south, east and west of the development site are the existing Golf Course operations which are understood to be retained for the foreseeable future.

To the north of the subject site is:

- State Government offices on the opposite side of Hayman Road, housing the Department of Biodiversity, Conservation and Attractions (DBCA);
- The City of South Perth Transfer Station / Recycling Centre;
- Three public recreation reserves, being Collier Reserve, Wesley Playing Fields and Bill Grayden Reserve.

## 2.2 Land Details

The site currently includes the grounds of the Collier Park Golf Course across two portions of Crown Land as shown in **Figure 1**. The details of these land parcels are outlined in **Table 1**.

**Table 1: Crown Land Details**

Lot Number	Reserve Number	Management	LR
500	R36435	DPLH / City of Perth	3170/620
3858	R38794	DPLH / City of Perth	3102/500



**Figure 1:** Subject site for proposed Recreation and Aquatic Facility

# 3.0 Planning Context

## 3.1 Statutory Context

A review of the development proposal under both the applicable planning schemes has been undertaken, being the *Metropolitan Region Scheme* and the *City of South Perth's Local Planning Scheme No. 6*.

### 3.1.1 Metropolitan Region Scheme

The subject site is reserved Parks and Recreation under the MRS which is identified as 'Land of regional significance for ecological, recreation or landscape purposes'. The key consideration for development within the reservation will be its consistency with the purpose of the reservation.

The surrounding area is predominantly zoned 'Urban' under the MRS with the exception of sites reserved for 'Public Purposes', including Curtin University to the east, the City of South Perth Depot site to the north and Como Secondary School to the south-west.

### 3.1.2 Local Planning Scheme

The subject site is also reserved Parks and Recreation under the City of South Perth's LPS6, reflecting the region scheme zoning of the site.

Zoning/reservations surrounding the subject site are:

- Residential to the immediate north and south, representing the existing suburban areas;
- Public purpose to the north-east, encapsulating the South Perth Transfer Station;
- Technology Park further to the north-east, representing the government departments adjacent to the Curtin University campus;
- Private institution to the west, representing Penrhos College, the South Perth Tennis Centre and Lifestreams Christian Church; and
- Public Purpose reservation to the south-west, representing Como Secondary College.

The key consideration under the Local Planning Scheme will be the consistency of the proposed use with the purpose of the reservation, in addition to the anticipated positive and negative impacts on the surrounding land users.

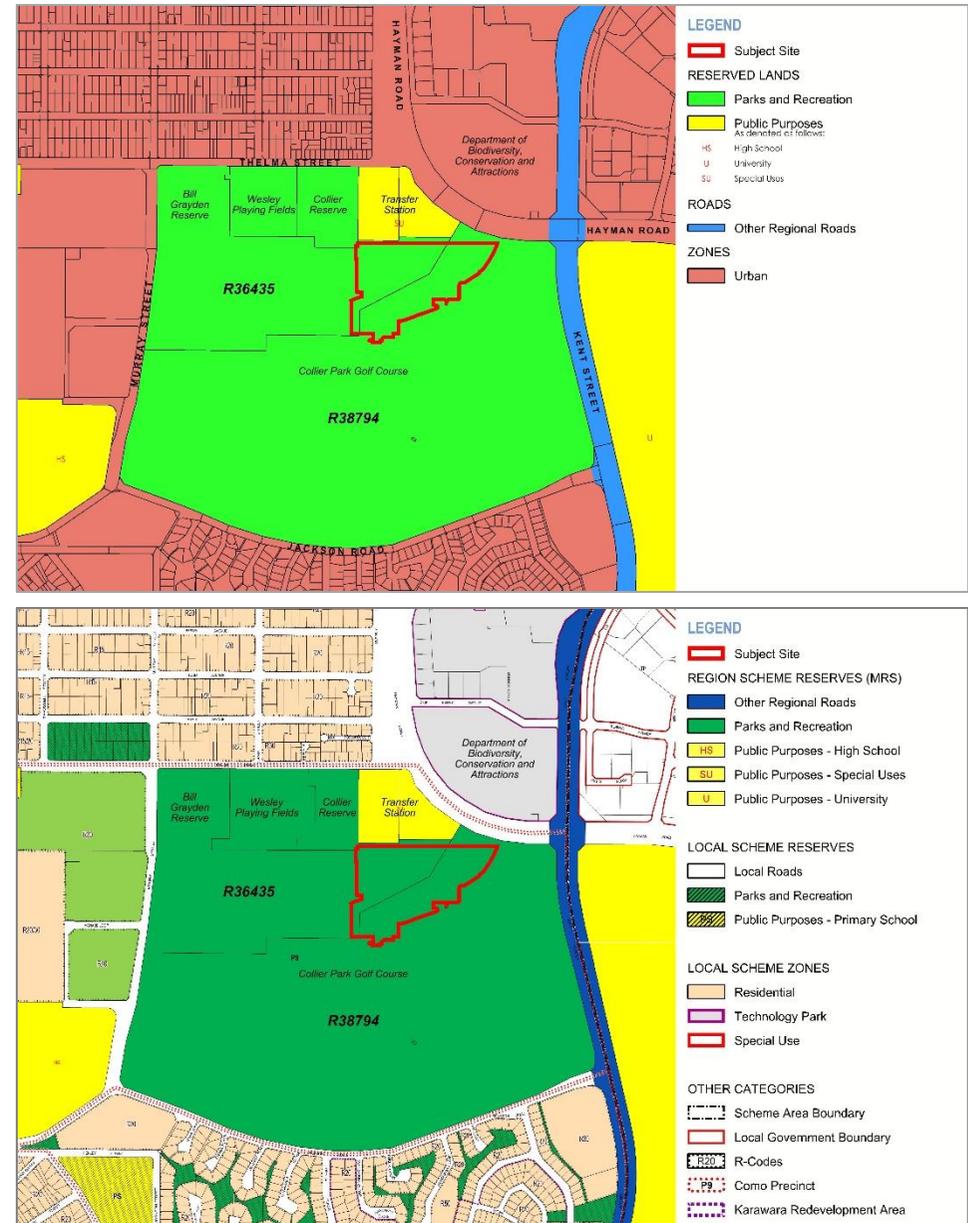


Figure 2: Metropolitan Region Scheme (top) and Local Planning Scheme No. 6 (bottom)

## 3.2 Strategic and Policy Context

A review of the relevant strategic and policy context has been undertaken, and a summary of the key considerations is outlined within the following sections.

### 3.2.1 Perth and Peel @ 3.5 Million

The *Perth and Peel @3.5 million* suite of documents establishes a detailed framework for the delivery of its objectives. It provides a spatial plan for the Perth and Peel regions to accommodate a City of 3.5 million people, which is anticipated to occur by approximately 2050.

*Perth and Peel @ 3.5 million* identifies the subject site as ‘Green Network (MRS Only) which is proposed to *‘Preserve and enhance, where appropriate, the green network of parks, rivers, sport/recreation areas, facilities for active open space, conservation and biodiversity areas, and areas with a high level of tree canopy coverage, considered important for the health and wellbeing of the community.’*

Of assistance in supporting the development of the Recreation and Aquatic Facility, the plan also notes that the green network:

- provides venues for events, sports, recreation and the arts;
- contributes to social connectedness, mental and physical health and wellbeing;
- contributes to creating communities with unique identities and high amenity;
- protects and enhances conservation and biodiversity values, cultural heritage, character and tourism; and
- mitigates climate change factors (such as a drying climate and urban heat islands).

### 3.2.2 Strategic Community Plan (2020 – 2030)

The City’s Strategic Community Plan (2020-2030) provides an outline of the City’s goals, objectives and strategies to meet the needs of the existing and future community. The plan is intended as an overarching strategy and planning document that outlines the community’s aspirations and priorities for the future and set out key strategies required to achieve these.

Whilst the Strategic Community Plan doesn’t make specific reference to the proposed Recreation and Aquatic Facility, or the presumed demand for such a facility, it does

provides three key strategies with respect to the delivery of community infrastructure as follows:

- 1.2.1 *Plan, develop and facilitate community infrastructure to respond to changing community needs and priorities*
- 1.2.2 *Manage the provision, use and development of the City’s properties, assets and facilities*
- 1.2.3 *Plan for and promote the development of recreation and aquatic facilities to service City of South Perth needs*

The Plan also notes the extent of community growth anticipated over the next 10 years, whereby the City is anticipated to increase its population by approximately 9,400 new residents, an increase of approximately 21% from 2019.

### 3.2.3 City of South Perth Local Planning Strategy

It is understood the City of South Perth began preparing its first Local Planning Strategy in 2018, and following the necessary engagement and consent stages, the Strategy was finalised ready for WAPC endorsement in July 2020.

The purpose of the Local Planning Strategy is to establish a plan that best accommodates this forecast growth and responds to forecast demand. A growing population offers the City an opportunity to strengthen local communities socially, economically and environmentally.

The Strategy identifies the subject site as a Parks and Recreation Reservation and notes the Collier Park Golf Course as a major recreational facility.

The Strategy also notes that *‘there is a large amount of land (in varying locations) available, that is zoned and reserved under the City’s Local Planning Scheme to accommodate future community facilities. While the City has many opportunities to provide new or enhanced community facilities, there is currently limited understanding of what the communities needs will be into the future. However, this is being addressed by the City through the development of a Strategic Community Recreation Facilities Plan.’*

The strategy also notes that the preliminary stakeholder engagement activities undertaken as a component of preparing the LPS identified that *‘providing more shared-use community facilities in and around activity centres is a key priority. Access to a multi-court indoor stadium and aquatic facilities within the City was also raised during the engagement. A clear message of limiting development on public open space was also identified.’*

### 3.2.4 Development Control Policy 5.3

The WAPC's *Development Control Policy 5.3* provides guidance and procedures on the use of land reserved for Parks and Recreation and Regional Open Space under the MRS and other regional schemes.

The policy provides a range of advice on the various different land use and development proposals which may be entertained within Parks and Recreation reservations, and provides the following guidance which is specifically relevant to the subject proposal:

- A Form 1 application for approval to commence development should be lodged with the local government which forwards the application and its recommendation to the WAPC for determination.
- In the case of sporting facilities, it is desirable for the proponent to consult with the Department of Sport and Recreation at this stage. Where leasing arrangements are required it is also desirable to consult with the Department of Lands at this stage.
- The application may be referred to any relevant agency by the WAPC for its comment and recommendations.
- The WAPC makes a decision on the application based on a planning assessment and the comments of the local government and other referral agencies.

The policy also provides the following qualifications as to where the WAPC will grant approval for development proposals:

- 1) The proposal is consistent with the planning framework.
- 2) The proposal is suitably planned and designed. Plans should clearly show information about the planning context including the setbacks of buildings, impacts on adjoining land uses, location of playing fields, landscaping and car parking requirements. If located in a bushfire prone area, BAL assessments and/or a Bushfire Management Plan should be submitted with the application demonstrating the proposal is of low risk or measures can be implemented to ensure that it is classified as such.
- 3) The use of reserved land is restricted to:
  - (a) incorporated sporting clubs and/or community groups, which:
    - (i) have a constitution which does not restrict membership (by way of sex, race or creed);

- (ii) provide public access to sporting facilities;
    - (iii) includes provision for finance and membership of club/organisation; and
    - (iv) includes wind up provisions for the club; and
  - (b) private businesses, which:
    - (i) are in accordance with a management plan endorsed by the WAPC;
    - (ii) are open to and provide services for the public; and
    - (iii) have a purpose which is ancillary and incidental to the primary purposes of the reservation.
- 4) Building plans include access for the disabled and siting complements other facilities in the complex, e.g. public access to 5 toilets from the outside and sharing of parking facilities and playing fields.
- 5) The design of the building is consistent with the building standard applied to other buildings in the complex.
- 6) The sporting grounds and facilities, when not in club use, are available to the public (with prior agreement where necessary with the sporting and social groups).
- 7) No development should commence unless and until all planning approvals have been obtained and conditions met.

# 4.0 Consultation

The project brief outlined the need for consultation and engagement with the relevant government agencies. The relevant agencies were considered to be the City of South Perth Planning Services section and the Department of Planning, Lands and Heritage. The consultation undertaken is summarised in the following sections

## 4.1 Department of Planning, Lands and Heritage

TBB and NS Projects met with the Department of Planning, Lands and Heritage Chief Lands Officer, [REDACTED], on 29 July 2020 to discuss the project and its consideration under the *Metropolitan Region Scheme*.

The project team members outlined the nature of the project, including the location, uses, site design and intended progression to development approval. During discussions [REDACTED] noted that:

- The subject proposal in his view would not constitute public works otherwise exempt from development approval given the nature of uses proposed and the intent to lease and sub-lease portions of the building for a range of incidental purposes;
- The Crown Land used for the operation of Collier Park is not currently subject to a Management Plan under the *Metropolitan Region Scheme*.
- The nature of the proposal would not, in the view of the DPLH, warrant the preparation of a Management Plan for the precinct unless additional future development was anticipated throughout the reserve which would otherwise benefit from strategic planning.
- The application forms could potentially be signed by the City of South Perth as the responsible agency under the Management Order for the Parks and Recreation reservation. If this proves incorrect, the Department of Lands have delegation to sign the application forms.
- The DPLH did not consider there were any fatal flaws with the proposal based on the information provided, and considered the application process could be reasonably straightforward subject to consideration and review of the justification and technical supporting information provided.

The project team also further discussed the proposal with the Metropolitan Central Planning Team who would be the assessing officers for a development application, The Senior Planning Officer, [REDACTED], advised as follows:

- The City may wish to further consider whether the proposal may constitute public works under the *Public Works Act 1902*, as this includes ‘*parks or gardens or grounds for public recreation or places for bathing, and for the reclamation of land for or in connection therewith*’ provided that the primary purpose is not for commercial purposes aimed at making a profit, as it should provide some service or benefit to the public which would not be otherwise provided, though noting that fees may still be charged and incidental profits may still be made.
- They noted that the above definition previously been extended to include incidental offices and cafes when part of a broader public recreation facility, provided any profit from the uses is not the driving motive behind the development.
- They noted that if the City were satisfied that it was properly considered public works it would be exempt from requiring approval under the *Planning and Development Act 2005*. We have suggested further investigation of this in our recommendations in **Section 6.1** of this report.
- They noted that DPLH policy generally requires Crown Reserves to be used for community benefit or in the public interest, and that it should not be used for commercial purposes by the management body except where a clear community benefit will be achieved and the primary purpose of the reserve is not compromised (ie ancillary or beneficial to the Reserve’s purpose).
- They advised that the City may need to demonstrate that the café on land within the Reserve will be of sufficient benefit to the public through:
  - Revenue generation which will be applied to the provision and maintenance of public facilities (either on the reserve or in the near vicinity); and
  - Provision of a facility which will be enjoyed by the general public in a location which would not otherwise be available for that use.

- The DPLH advised that if and when an application is lodged, they recommend:
  - Pre-lodgement discussion with the DPLH as a component of finalising the development plans and preparing the supporting information.
  - An assessment against SPP7.0 (Design of the Built Environment) and Development Control Policy 5.3 to assist in the officer assessment.
  - The application be supported by a range of technical analysis, including but not limited to a Geotechnical Report, Environmental Assessment, Bushfire Management Plan, Transport Impact Assessment, Engineering Summary Report and Stormwater Management Plan.

## 4.2 City of South Perth Planning Services

TBB and NS Projects met with officers of the City of South Perth on 21 July 2020 to discuss the project and its consideration in accordance with the City's planning framework. In attendance were Project Director [REDACTED], Manager Strategic Planning [REDACTED] and Manager Development Services [REDACTED].

The project team members provided an overview of the development proposal, including a review of the draft site plans and elevations, along with the expectation with respect to the need for development approval.

During discussions the City officers noted the following:

- The subject proposal in their view would not constitute public works, and would require planning approval under the *Metropolitan Region Scheme*. Separate approval under the Local Planning Scheme is not required by virtue of the exemption under Part 6 of the *Planning and Development Act 2005*.
- The City's updated Local Planning Strategy is in the final stages of completion, and is due to be presented to Council for their final approval in July 2020, after which it will be submitted to the Western Australian Planning Commission for final endorsement.
- There are a number of developments within the surrounding area that will likely support the demand for this facility, and would also benefit from consideration with respect to ease of access. These include connections from the Waterford Plaza area, the suburban Karawara area to the south, the Curtin Student Housing Precinct and broader operation of Curtin University and the Bentley Park West area (Technology Park) to the east and the existing suburban development to the west.
- Consideration should also be given to relevant transport and access guidance, including the Town of Victoria Park and City of South Perth Bike Plan and the proposed City of South Perth Integrated Transport Strategy.

# 5.0 Development Proposal

## 5.1 Overview

We have reviewed the subject development as outlined in **Appendix 1** and have noted the following relevant planning considerations.

### 5.1.1 Applicable Legislative Instrument

Development within the Perth Metropolitan Region generally requires approval under both the *Metropolitan Region Scheme* and the applicable Local Planning Scheme. There are a number of exemptions for these requirements, however, and one of these applies to Parks and Recreation Reservations under the MRS, which only require approval under the MRS.

The exemption for the purpose of the Local Planning Scheme is specified in Schedule 2, Part 7, clause 61(1)(a) of the *Planning and Development (Local Planning Schemes) Regulations 2015* which specifies that:

- (1) *Development approval of the local government is not required for the following works:*
  - a) *The carrying out of works that are wholly located on an area identified as a regional reserve under a region planning scheme.*

As a result, the subject proposal only requires approval under the Metropolitan Region Scheme, and is not subject to a requirement for approval under the provisions of the City of South Perth's *Local Planning Scheme No. 6*.

### 5.1.2 Land Use

The development is proposed to accommodate a broad variety of land uses, including the provision of facilities to accommodate:

- Recreational uses, including swimming pools, sporting courts, rock climbing wall, gym, golf driving range, mini golf course and other recreational and amenity facilities;
- Offices intended to be used for management of the facility (and the broader golf course operations) and for complementary businesses and not for profit organisations;
- An onsite café/restaurant;

- A function centre; and
- Onsite childcare via a creche.

The *Metropolitan Region Scheme* does not define uses for the purpose of land use permissibility within the applicable zones and reservations, and as such provides no guidance as to the categorisation or acceptability of uses proposed.

The City of South Perth *Local Planning Scheme No. 6*, however, does provide a list of uses and definitions which do assist in categorising the land use proposal. In consideration of the uses listed and the nature of that proposed we are of the view that the proposal falls within the primary definition of 'Civic Use' which is defined as follows:

*'Civic Use means any land or building used by a Government Department, an instrumentality of the Crown, or the local government, for administrative, recreation or other purpose.'*

In our view Civic Use generally covers multiple components of the facility, including all of the recreational uses, the creche and the function centre.

The office and café uses likely fall outside of the definition of Civic Use, but given their minor nature in the broader proposal, and their reliance upon the primary recreational use, we are of the view that these are properly characterised as incidental uses and can be considered as such for the purpose of development approval.

On this basis we consider the land use for the purpose of the application should be identified as 'Civic Use', inclusive of incidental café and offices.

### 5.1.3 Built Form Considerations

The *Metropolitan Region Scheme* does not contain any guidance on built form considerations for Parks and Recreation reservations, and as there is no other Management Plan applicable to the subject site, the State provides only generic guidance to built form development through *State Planning Policy 7.0 Design of the Built Environment*. The policy sets out the objectives, measures, principles and processes which apply to the design and assessment of built environment proposals through the planning system.

The policy outlines 10 key design principles which are intended to be used to guide and assess built form in the Western Australian planning system. It is recommended that, in the absence of any more specific policy guidance, an application for approval of the Recreation and Aquatic Facility should be justified against each of the principles to assist in coordinating and expediting assessment.

### 5.1.4 Parking and Access

There are no parking or access standards applicable to the Parks and Recreation reservation under the Metropolitan Region Scheme. There are, however, Transport Impact Assessment Guidelines provided by the Western Australian Planning Commission which provide clear guidance on the expectations and requirements of Transport Impact Assessments.

The guidelines provide a table of land uses and the threshold level of intensity for which a Transport Impact Statement is required (for lower traffic generation proposals) and for a Transport Impact Assessment (for higher traffic generation proposals).

Thresholds are unfortunately not provided for a 'Civic Use' (or anything sufficiently similar to that proposed) within the guidelines, and would otherwise fall within the 'Other Uses' category for which it is recommended that applicants discuss the information required with the determining authority.

In considering the likely response we anticipate the DPLH will require a Transport Impact Assessment for the proposed development, given the likely high number of vehicle trips generated by the facility during peak hour.

The Transport Impact Assessment will also be an opportunity to further consider:

- a) The ease of access from key surrounding areas which are likely to seek access to the Recreation and Aquatic Facility, and whether additional access points or upgrades in infrastructure may be beneficial to facilitate this demand. Areas likely to seek access include residential areas to the north and south; schools within the surrounding area including Como Secondary College, Penrhos College and Clontarf College; Curtin University students and residents; and potential mixed-use development within the Technology Park precinct to the northeast;
- b) Onsite parking demand, for which guidance is not provided under LPS6 for the Civic Use definition or for the existing golf course operation, but guidance is provided for components of the use, including Child Day Care Centre, Office and Café/Restaurant

## 5.2 Approvals Process

### 5.2.1 Requirement for Approval

Development under the MRS is required to seek approval in accordance with clause 13 which states that:

- (13) *Except as provided in Division 2 of this Part no person shall commence or carry out any development on reserved land, other than the erection of a boundary fence, without first applying for and obtaining the written approval of the Commission to do so.*

Applications lodged under the MRS are required to be accompanied by an MRS Form 1 and signed by the authorised party. As previously outlined, the authorised party will either be the delegated officer of the City of South Perth, as the vesting authority under the Management Order, or by the Department of Lands as the agency responsible for the management of Crown Land within Western Australia.

### 5.2.2 Joint Development Assessment Panel Determination

As the development proposal exceeds the minimum threshold value of \$10 million the determination of the proposal under the MRS is required to be undertaken by the applicable Joint Development Assessment Panel (JDAP).

The requirement for JDAP determination is contained within clause 171A of *Planning and Development Act 2005* which states that where an application is of a class or kind prescribed by regulations the development application:

- (iii) *must be determined by a DAP as if the DAP were the responsible authority under the relevant planning instrument in relation to the development; and*
- (iv) *cannot be determined by a local government or the Commission.*

As an application with an estimated value of \$80 million the proposal will be required to be submitted as JDAP application and for the consideration of the Inner Metropolitan South JDAP.

In practice this will not lead to any change in the assessment process by the DPLH, and will simply require the preparation of a Responsible Authority Report (RAR) by the DPLH officers for consideration of the JDAP.

# 6.0 Recommendations

## 6.1 Confirmation of Public Works Status

The advice of the DPLH (Section 4.1) with respect to whether this proposal would constitute public works for the purpose of the *Public Works Act 1902* indicated that there may be opportunity for the City to define it as public works, subject to a number of criteria that were summarised by the DPLH Officer.

We understand that this is based on legal advice that the DPLH has received on previous applications of a similar nature, which would be subject to legal privilege and as such wouldn't be directly shared by the DPLH.

In our view the proposal is not likely to constitute public works otherwise exempt from development approval, largely due to the nature of uses proposed and the intent to lease and sub-lease portions of the building for a range of incidental purposes.

We also anticipate that the City may not wish to commit to reinvestment of any profit derived from the facility to be spent on the facility, as suggested by the DPLH, as this provides limited flexibility in the City's overall fiscal management.

If the City does wish to pursue the option of defining the proposal as public works we recommend seeking the advice of a solicitor experienced in these types of matters to provide clear and comprehensive advice as to their view of consistency of the proposal with the public works definition, and any restrictions upon that definition for the ongoing operation and management of the facility.

The remainder of our recommendations are on the basis that the City intends to pursue development approval rather than defining the proposal as public works.

## 6.2 Application

We recommend preparing a comprehensive application package inclusive of an overarching supporting report outlining the:

- Planning Background and Context;
- Land Use and Development Considerations;
- Technical and Supporting Information; and

- Any other relevant matters, including anticipated management and implementation measures proposed to address any potential concerns.

This application package should be prepared by an experienced town planner and to a high standard, as it will be used for the purpose of any required public advertising, and will likely be published within the Responsible Authority Report to be considered by the JDAP.

## 6.3 Supporting Documentation

In considering the relevant supporting documentation we anticipate that the following will be required to support the proposal, particularly where separate site analysis has identified risks or protection measures are required. The anticipated documentation is as follows:

- a) **Geotechnical assessment** to demonstrate that the site is capable of accommodating the development as proposed, or outlining the measures that will need to be undertaken to bring the site to the required standards.
- b) **Environmental assessment** to identify any sensitive environmental considerations, including flora, fauna, soil conditions, surface and groundwater considerations or other natural features which require further analysis. We recognise that the site is likely to hold little environmental significance given its function as a golf course, but this will need to be demonstrated to the DPLH and their referral agencies, including the Department of Water and Environmental Regulation (DWER). Potential referral to the Commonwealth Government for consideration under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) should also be considered at this stage.
- c) **Bushfire Management Plan** to identify the relative bushfire risk associated with the site and its surrounds, and the management measures to be put in place to reduce this risk to a manageable level. This is likely to require a secondary emergency access/egress point to be provided to the subject site, and we would anticipate this could occur to the west via the adjacent existing car park to Collins Oval and Collier Reserve.
- d) **Transport Impact Assessment** as previously outlined in Section 5, which would need to address the anticipated trip generation of the facility, analyse how this will be

accommodated within the existing road network and inform the extent of onsite parking required to be provided, in addition to identifying the optimal linkages and supporting infrastructure for public transport, cycling and pedestrians (as recommended by the City of South Perth planning officers). It is likely this will also be referred to Main Roads WA to confirm their view on the impact on the operation of Kent Street.

- e) **Engineering Summary Report** outlining the demand and capacity for essential services to support the proposed development, and the extent of earthworks that are required.
- f) **Stormwater Management Strategy** outlining the proposed method of accommodating stormwater drainage on site in accordance with the guidance provided by the DWER's *Better Urban Water Management*.

## 6.4 Pre-Lodgement Engagement

As a follow-up to the engagement undertaken within the current stage, we would strongly recommend the project team undertake regular and detailed pre-lodgement engagement with the DPLH officers to ensure they are sufficiently informed of the proposal and have the opportunity to provide their advice and guidance in the preparation of the application.

The Department often encourage applicants to undertake this level of engagement prior to lodgement of a major development application, and it will provide mutual assistance to both the City in preparing the application and the DPLH in streamlining their assessment following lodgement.

In considering community inputs, the City may also seek to undertake a period of community engagement prior to the application being lodged. This is particularly important to consider given there is no mandatory advertising requirement as a component of a development application being lodged under the *Metropolitan Region Scheme* alone, and as such the pre-lodgement period may be a good opportunity for the City to undertake final engagement with its residents prior to approval.

In undertaking any advertising of the development application, the City is likely to benefit from facilitating the advertising beyond the otherwise standard process of letters to surrounding residents and a sign being erected onsite. Given the significance of the proposal and the nature of the facility, we presume that substantial community engagement is being undertaken to provide opportunities to input into the design in any

event, but the facilitation of pre lodgement engagement is likely to be of further benefit to the City in conveying the final vision to the community prior to approval.

## 6.5 Post Lodgement Monitoring

A development application of this significance is likely to require substantial post lodgement monitoring to ensure that the DPLH maintain timeframes and processes with respect to assessment of the application; referral agencies provide informed and appropriate recommendations; and that the draft conditions of approval are valid, implementable, reasonable and consistent.

We would recommend identifying an experienced town planner within the project team as responsible for this task to provide consistency and efficiency in the post lodgement monitoring, and to coordinate and present to the JDAP at the scheduled meeting to determine the application.

## 6.6 Approval Timeframes

An application lodged under the *Metropolitan Region Scheme* is subject to a 60-day determination period in accordance with clause 31(2) as follows:

*An application shall be deemed to have been refused where a decision is not conveyed to the applicant by the local authority or the Commission, as the case required, within 60 days of the receipt of this application –*

- a) *by the local authority, if the application can be determined by the local authority; or*
- b) *by the Commission, if the application is required by this Scheme to be determined by the Commission, or within such further time as may be agreed in writing between the applicant and the local authority or the Commission, as the case requires, within that period of 60 days.*

As a JDAP application it is likely to be under even greater scrutiny with respect to timeframes, as the DAP Secretariat otherwise enforces the requirements of Regulation 12 of the *Planning and Development (Development Assessment Panels) Regulations 2011* which require the submission of the Responsible Authority Report within 48 days from the day of lodgement, and the JDAP meeting to occur within the statutory timeframe (60 days).

We have outlined the anticipated breakdown of the approval times in **Figure 3** below.



**Figure 3:** Anticipated timeframes for determination of the application from lodgement.

# 7.0 Conclusion

In reviewing the proposed Recreation and Aquatic Facility we have not identified any fatal flaws from a planning perspective and consider that a development application, if supported by sufficient justification and detailed technical advice, is capable of approval by the JDAP under the provisions of the *Metropolitan Region Scheme*.

In summary our recommendations for consideration of the project team are as follows:

- a) An application for planning approval is required under the *Metropolitan Region Scheme* only, and it is recommended the proposed development be described as a 'Civic Use' with incidental office and café/restaurant facilities. This use is considered to be consistent with the purpose of the Parks and Recreation reservation.
- b) The application will be required to be lodged as a Joint Development Assessment Panel application due to its estimated value exceeding the \$10 million threshold prescribed in the *Planning and Development (Development Assessment Panel) Regulations 2011*.
- c) Preliminary engagement with the Department of Planning, Lands and Heritage should be undertaken as the proposal is prepared to ensure that their feedback and input is provided at an early stage, and that the assessment process post lodgement is as efficient as possible. Additional engagement with the Department of Sport and Recreation and the Department of Lands may also be beneficial to assist in justifying the proposal and addressing any feedback provided.
- d) The application should be prepared to include an assessment of the proposal in accordance with SPP7.0 Design of the Built Environment and Development Control Policy 5.3, as these are the likely tools the DPLH will use to undertake assessment of the built form and land use elements of the proposal.
- e) The application will need to be supported by a range of technical analysis as outlined within Section 6.2.

In particular it is recommended that:

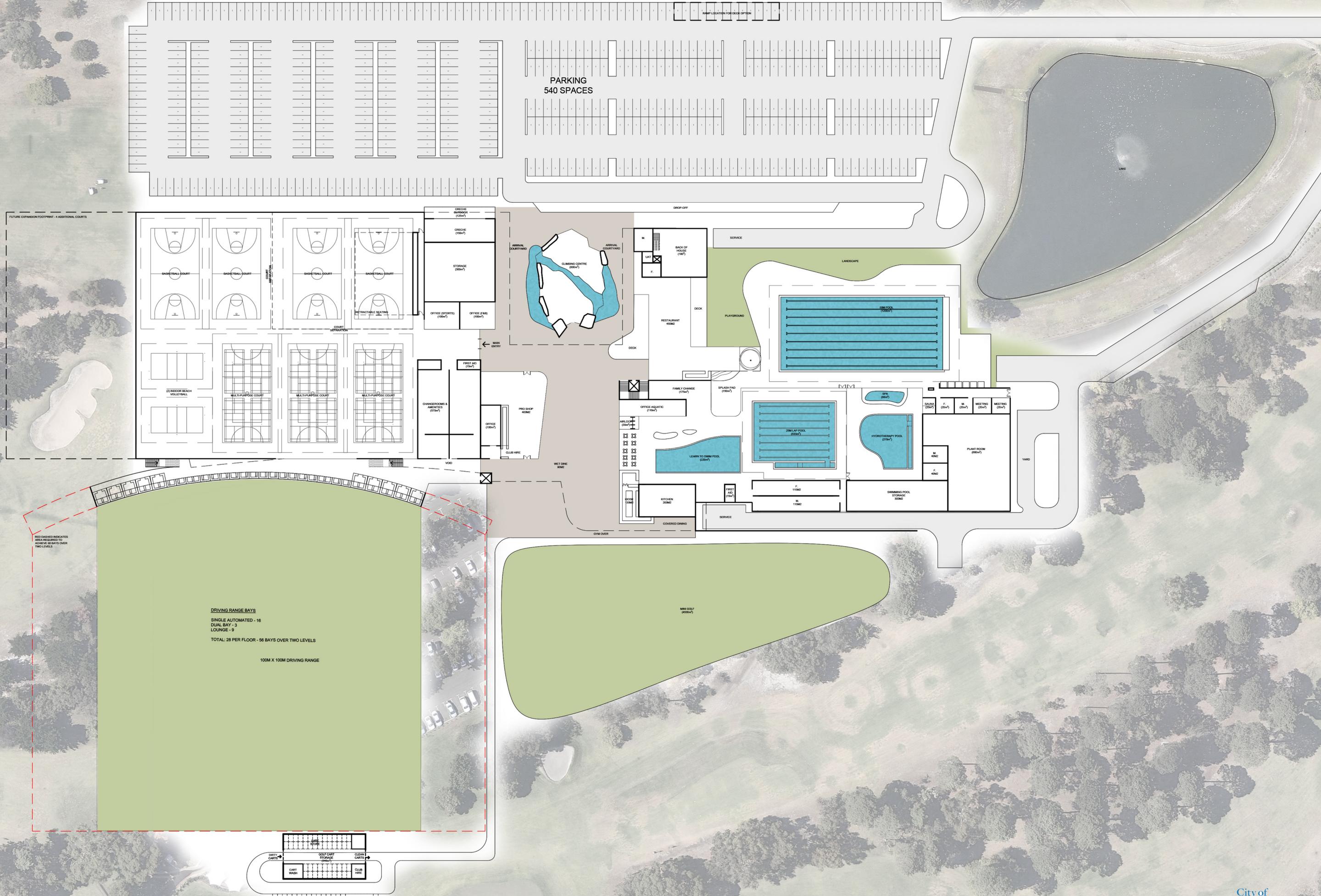
- i) an additional vehicle access/egress point to the west be considered for emergency vehicles, though it is recognised this may be a beneficial connection for the flow of traffic in any event;

- ii) Consideration of demand for access from surrounding areas should be undertaken, with particular focus on key pedestrian and cycle movements within the surrounding residential and housing areas to be considered as a component of the design.
- f) Capacity for an experienced planner to manage the application through to approval should be provided, particularly with respect to the preparation of the application package and the negotiation of the approvals with the DPLH and the JDAP. This will make the process more efficient, and will provide the City with a greater level of confidence in the final approval and the conditions required.

# APPENDIX A

Draft Site Plans and Elevations



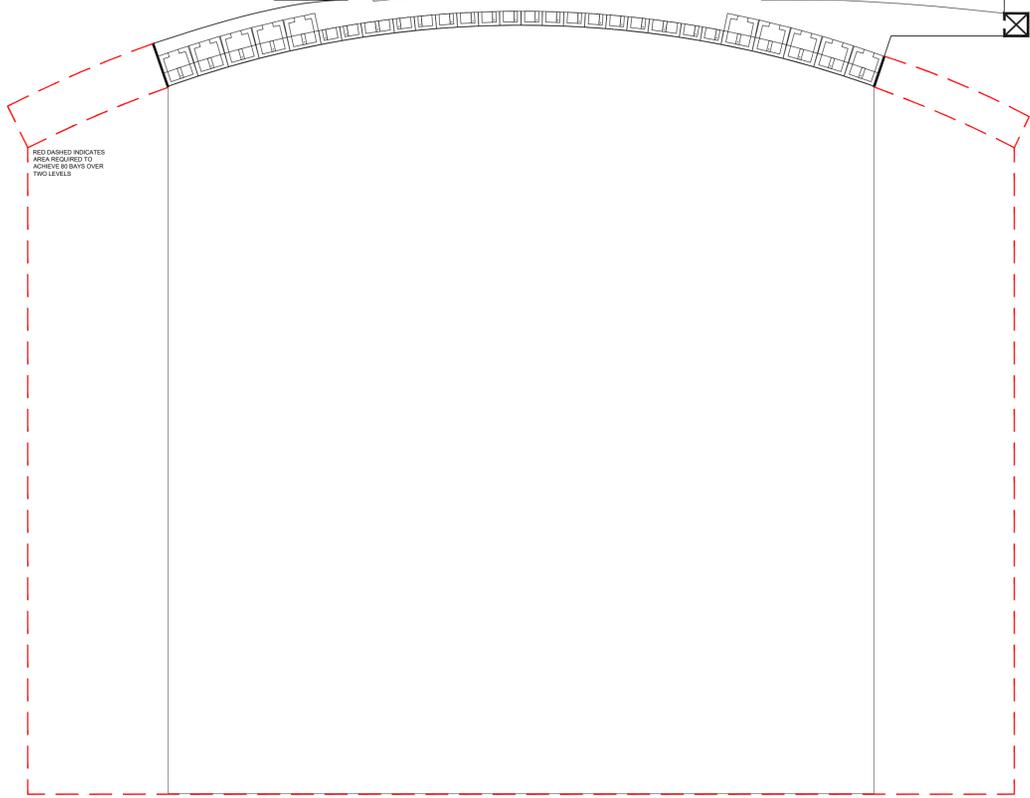
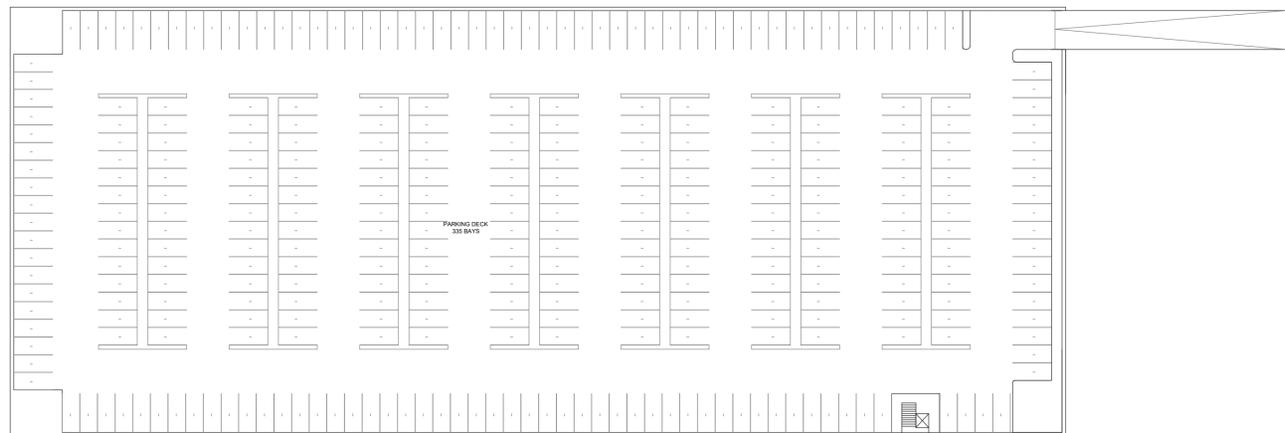


GROUND FLOOR PLAN  
OPTION 4

CITY OF SOUTH PERTH  
RECREATION, AQUATIC HEALTH, & EDUCATIONAL FACILITY



Public Version - Redacted



RED DASHED INDICATES AREA REQUIRED TO ACHIEVE 8% SLOPE OVER TWO LEVELS

## APPENDIX J – RENEWABLE ENERGY SYSTEM FEASIBILITY



# Recreation and Aquatic Facility, South Perth

## Integrated Renewable Energy System High-Level Feasibility

### Draft Report

DOCUMENT NO.: SOU001-DEA-RPT-IRES-10001

REV . NO	DATE ISSUED	REASON FOR ISSUE	DOCUMENT HISTORY	Prepared By	Checked By	Approved By
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REASON FOR ISSUE:	STATUS
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<b>IFA</b> Issued for Approval	<b>A</b> Approved

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## 1 EXECUTIVE SUMMARY

Direct Energy Australia (DEA) has been appointed to present a high-level analysis of an integrated renewable energy system for a new recreation and aquatic centre in South Perth.

The purpose is to provide the City of South Perth (CoSP) with an understanding of the project energy requirements, and potential integrated design opportunities. A range of sustainable and conventional technologies are investigated, and the most appropriate systems selected based on the main project drivers. Financial and energy analysis is performed on the most suitable systems.

Energy efficiency technologies are highly recommended to decrease operating costs due to the high heating and cooling requirements of the facility.

The following list summaries the inclusions:

- A range of proven energy generation technologies, including but not limited to;
  - a) Geothermal heat pump system (open loop and closed loop configurations)
  - b) Standard Air source heat pump system
  - c) Direct geothermal heating system
  - d) Solar Thermal
  - e) Solar Photovoltaic (PV)
  - f) Energy Storage solutions
  - g) Natural gas boiler
- Financial impact of gas and electrical connection
- Mix of technologies to meet the site heating and cooling requirements
- Carbon emission reductions
- Other energy initiatives

## 2 DESIGN PARAMETERS

The project is in concept stage without resolved details of the exact building configuration. For the building heating and cooling loads estimates and assumptions have been made based on a thermally well-designed building and based on single glazed major windows. The basic parameters are:

## 2.1 BCA Standard DTS

The total installation is based on a compliant “deemed-to-satisfy” (DTS) solution with the BCA/NCC 2019 and AS 1668, and glazing shading ventilation and insulation meeting or exceeding the BCA.

## 2.2 Air Conditioning Loads

### 2.2.1 Design Ambient Temperatures:

Based on AIRAH design conditions and BOM data:

- Summer: Not to exceed 24 deg C at 36.6 deg C DB, 22.4 deg C WB ambient.
- Winter: Shall be above 20 deg C, at 7 deg C ambient.

### 2.2.2 Room Control Settings

Indoor temperatures: 23 deg C +/- 2 deg C total control range.

### 2.2.3 Ventilation

Ventilation: To meet or exceed BCA and AS 1668 requirements.

Outside Air: 7.5 l/s per person based on F6 or better air filtration

Changerooms: 5 L/s per sq.m

WCs & Showers: 12 L/s per sq.m

## 2.3 Swimming Pool Criteria

### 2.3.1 Design Temperatures:

- 50m multipurpose swimming pool: 25dC
- 25m indoor swimming pool: 25dC
- Program and learn-to-swim pool: 28dC
- Children aquatic play area and splash pad: 28dC
- Hydrotherapy pool and aquatic recovery pools: 35dC
- Spa: 38dC

### 2.3.2 Pool Covering or Pool Blanket

It was assumed that this site maintained appropriate use of a pool cover year-round.

### 3 CALCULATION OF ENERGY DEMAND

The energy calculations give the electrical energy for the entire site including all uses normally expected for the facility. This is based on a “Business as Usual” (BAU) model assuming BCA compliant air conditioning and lighting using commercial standard equipment.

These are:

- the swimming pool related facilities heating and ventilation
- the hot water use for offices and the changerooms
- the building energy for local power PCs appliances and kitchen equipment
- the energy for internal lights & security lighting
- the air conditioning cooling and heating electrical energy

#### 3.1 Electrical Energy Consumption – Business as Usual (BAU)

The electrical energy consumption for this site was estimate, and broken down into the following elements, presented in the table below.

Item	kWh-e/yr
Sauna	10,500
Evaporative cooling	84,000
Kitchen exhaust	7,500
Toilet exhaust	23,250
Internal lighting - main	180,000
External & security lighting	21,900
Pc's normal hours	45,000
Pc's after hours	1,500
Kitchen equip	10,000
Chargers & small parasitic loads	15,660
Office equip	4,000
Pool cleaning equipment	672,600
Pool hall fan	45,000
Others	20,000
<b>TOTAL</b>	<b>1,140,910</b>

The Pie chart below shows the estimated proportion of electrical load consumed by each item.

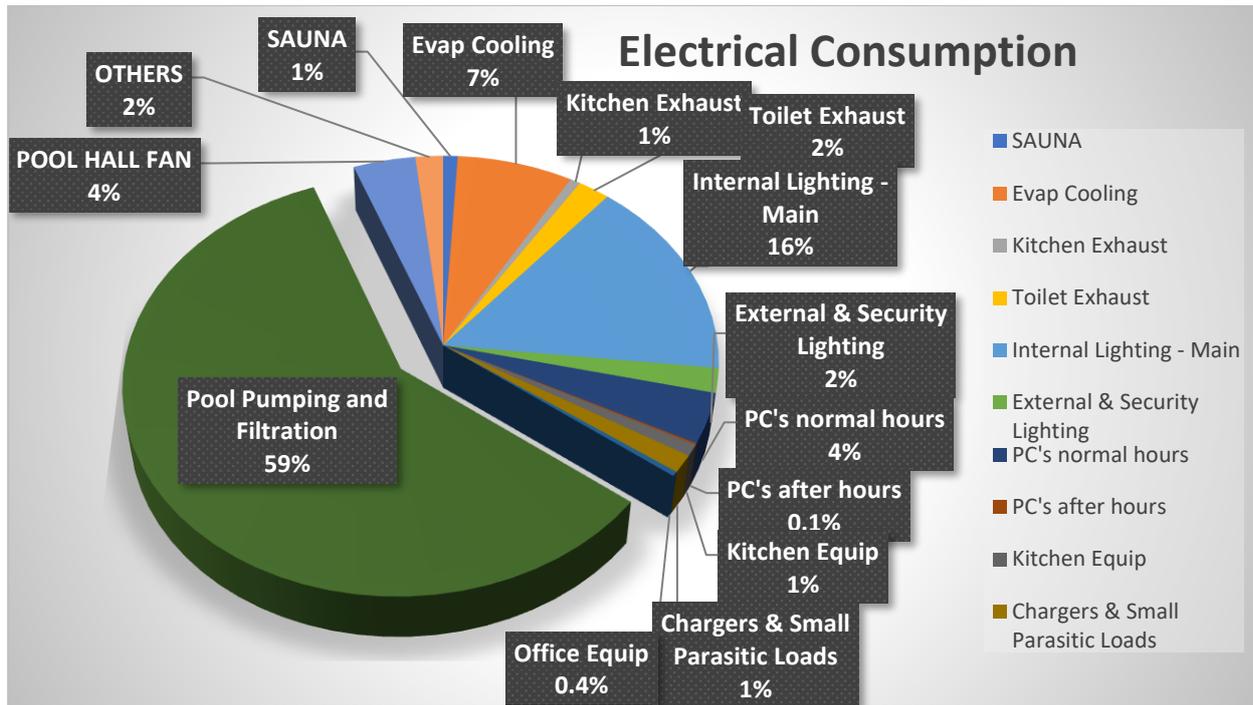


Figure 1: Electrical energy users

The graph below shows the estimated monthly electrical consumption. The electrical consumption considers the items in the table above and does not consider thermal energy requirements.

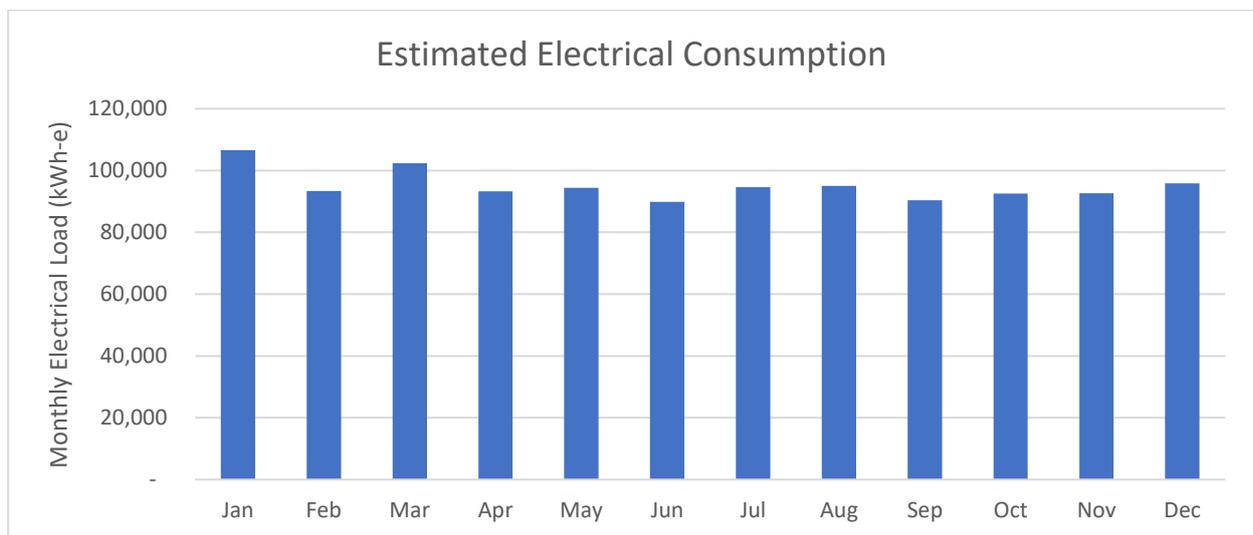


Figure 2: Estimated Monthly Electrical load

The annual hourly electrical load profile gives a good indication of the spread of electrical demand throughout the day. Pool cleaning equipment is operational throughout the day and contributes

the bulk of the base load power requirements. Night-time loads are typically lower as the building becomes unoccupied.

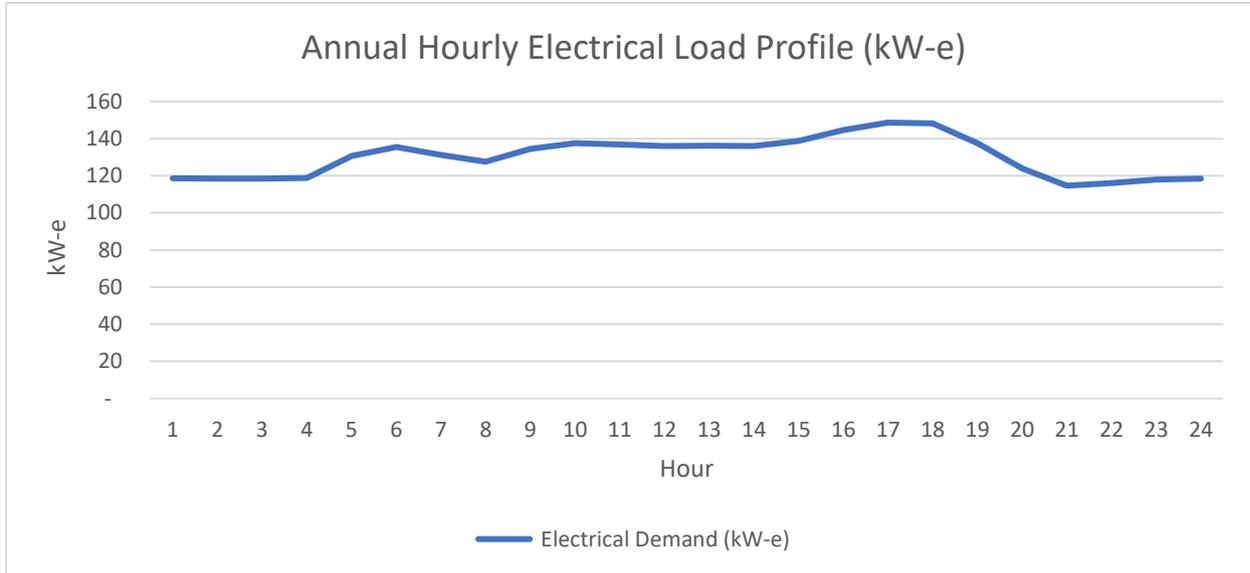


Figure 3: Estimated Annual Hourly Electrical Demand

The peak electrical capacity for the items considered in the pie chart above has been estimated at 130 kW.

### 3.2 Thermal Energy Calculations

The air conditioning electrical energy above is derived from the calculated air conditioning energy loads as follows:

Thermal Energy: MWh (Mega Watt hours)

MWh	Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
<b>Cool</b>	<b>448</b>	113	121	77	0	0	0	0	0	0	0	61	76
<b>Heat</b>	<b>79</b>	0	0	0	1	11	17	21	19	8	1	0	0

The thermal energy into the domestic hot water service (kitchens, showers & changerooms)

Thermal Energy: MWh (Mega Watt hours)

MWh	Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
<b>Change</b>	<b>324</b>	23	23	24	26	28	30	30	30	29	28	26	25
<b>Other</b>	<b>16</b>	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.4	1.3	1.2

The below graph presents the estimated monthly pool and DHW load profile. The DHW load is expected to remain fairly constant at 25,000 kWh per month.

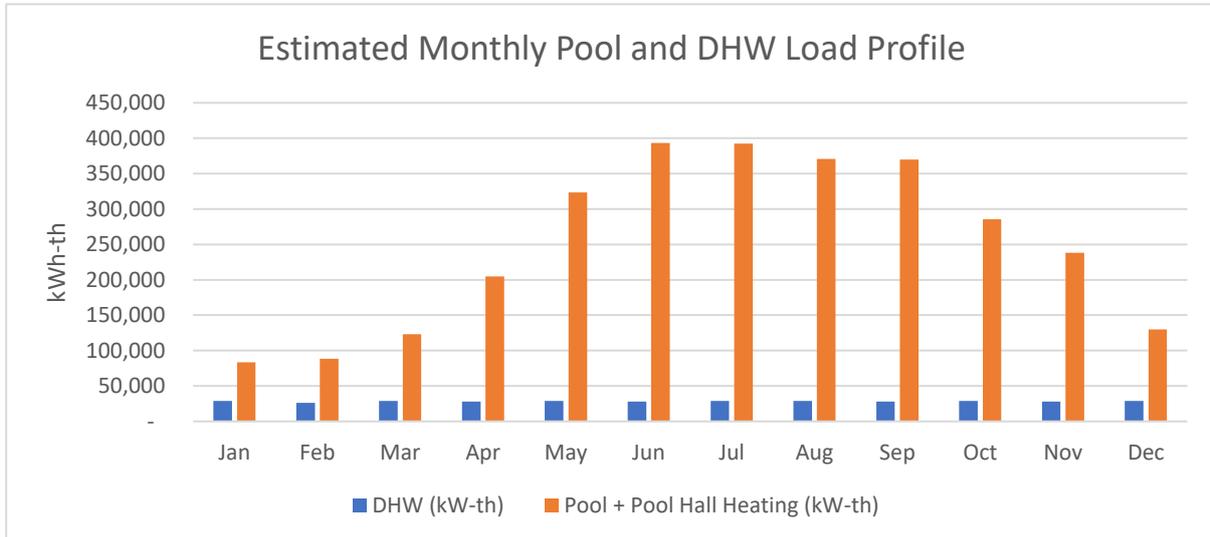


Figure 4: Estimated Monthly Thermal Load Profiles

The estimated monthly space heating and cooling loads are presented in the graph below. The conditioned spaces are expected to be cooling dominant.

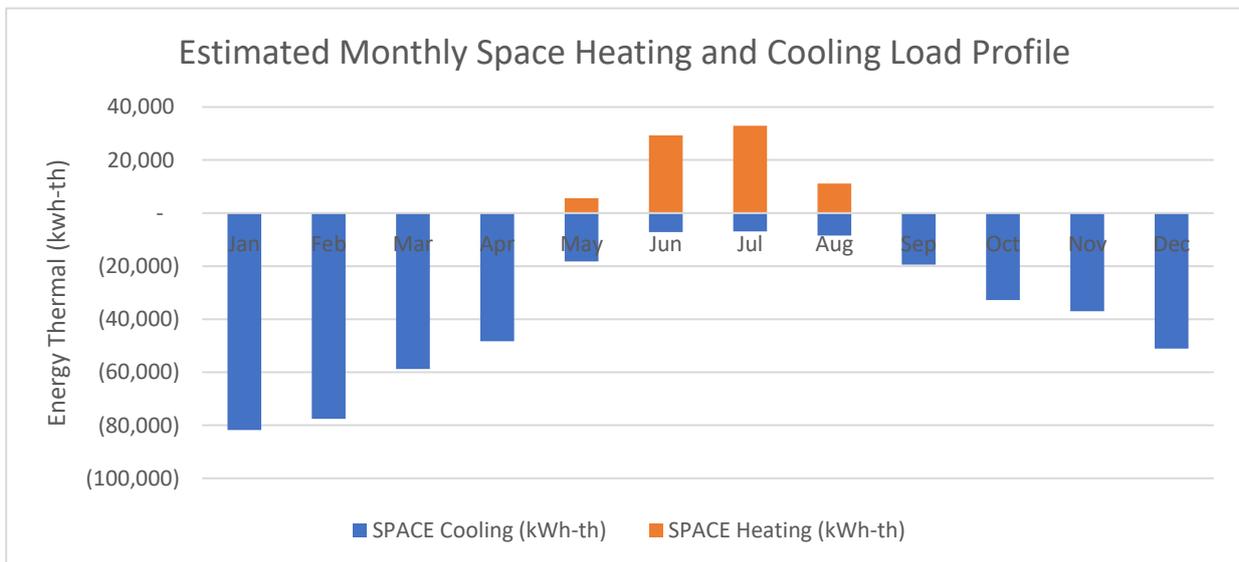


Figure 5: Estimated Monthly Space Heating and Cooling Load Profile

The average annual hourly space heating and cooling load profile gives an idea of the spread of heating and cooling throughout a typical day. Heating is often required in the morning and

evenings during winter, whereas when cooling is required the cooling load remains high throughout the day.

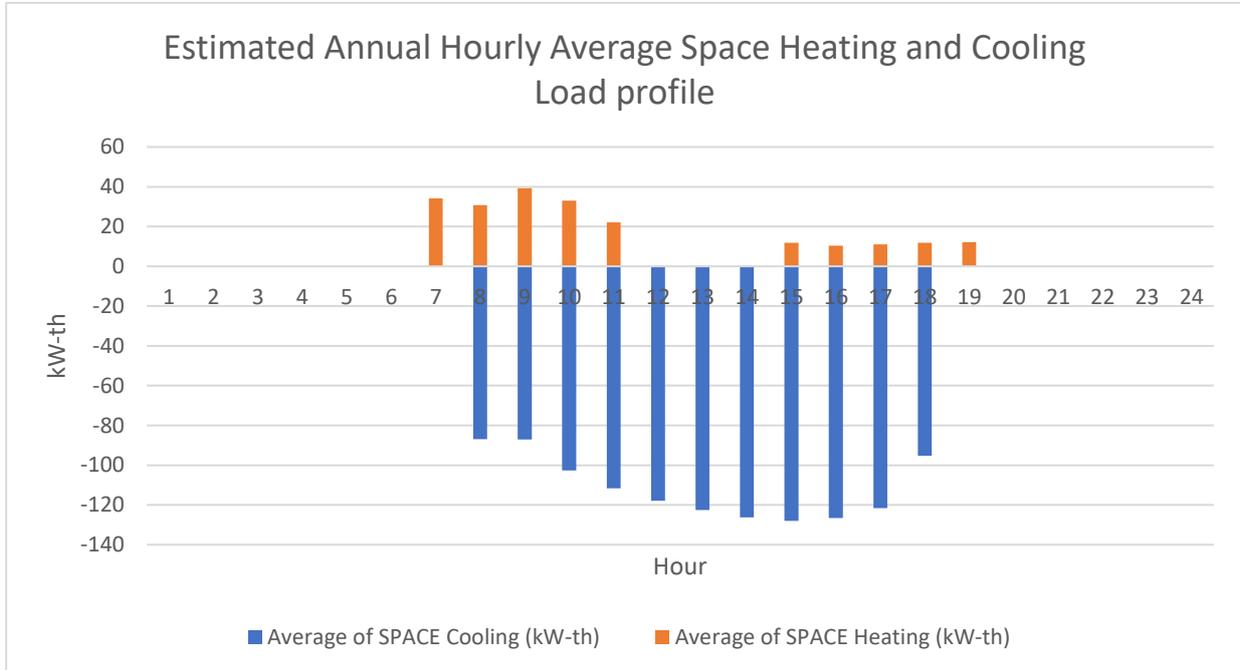


Figure 6: Estimated Annual Hourly Space Heating Load Profile

The peak heating and cooling requirements are as follows:

- Peak Heating Capacity: 270 kW
- Peak Cooling Capacity: 600 kW
- Peak Pool + Pool Hall Capacity: 1350 kW
- Peak DHW Capacity: 95 kW

#### 4 BUSINESS AS USUAL SYSTEM (BAU)

A business as usual system describes the conventional way of meeting the heating and cooling requirements of such a facility. A business as usual system would generally include the following.

*Pools Heating:* Gas boiler

*Tennis/Basketball Court Cooling:* Direct Evaporative or Indirect Evaporative cooling units

*Gyms/Offices Heating and Cooling:* Variable Refrigerant Flow (VRF) air source units.

Gas boilers: Low cost to install and provide very high heating capacities. They require a mains gas connection and are susceptible to gas price fluctuations. The carbon emissions of gas is currently lower than mains grid electrical which still has a strong reliance on coal power production, but higher than most renewable energy sources.

##### Direct Evaporative and Indirect Evaporative

Evaporative units can perform cooling only, they operate by spraying water into the air stream which drop the air temperature by increasing its humidity. Evaporative coolers are very efficient in hot dry climates, but do not work well in humid conditions.

##### Variable Refrigerant Flow

VRF air coolers can perform both heating and cooling. They use the outside air as a heat source or heat sink in order to heat and cool. The average expected efficiency from these units in between 250%-400%. This system is commonly referred to as a reverse cycle air conditioner.

## 5 TECHNOLOGY OVERVIEW

This is a review that considers the energy saving opportunities by considering other technologies compared with the Business as Usual (BAU) configuration. It is a high-level technology overview and feasibility assessment. The aim is to find the right mix of integrated renewable energy technologies to meet the thermal and electrical requirements of the facility.

The economic equation to determine the most cost-effective solution and the most suitable for this site is complex. The assessment considers the full life cycle costs and environmental impacts, not just the initial purchase costs.

High level investigation will include analysis of the following energy generation technologies;

- Geothermal heat pump system (open loop, lake and closed loop configurations)
- Standard air source heat pump system
- Direct geothermal heating system
- Natural gas boiler
- Solar Thermal
- Solar Photovoltaic (PV)
- Energy Storage solutions

### 5.1 Geothermal Heat Pump System

The geothermal heat pump systems are all systems that use the stability of the ground or related water sources as the heat source, not the atmosphere. The heat source is the ground; a lake; or a water bore. These sources of heat are stable. The efficiency is not dependent on the season of the year being relatively steady in both mild weather and very cold weather. The efficiencies of geothermal heat pumps are higher than that of equivalent air source heat pumps in the same conditions as heat transfer through water is more efficient than through air.

Geothermal heat pump systems are highly versatile; they can be set to perform heating, cooling or heating and cooling. A major advantage of this is heat recycling capabilities.

Geothermal heat pumps produce heat and cool at the same time, when the building needs cooling the heat pump will effectively extract heat from the building, instead of dumping this heat in the ground or lake, this heat can instead be redirected to heating the pools, or returned to the ground. Heat recycling vastly increases the efficiency of the overall system.

### 5.1.1 Open Loop Configuration

This uses a shallow water bore to provide the ground-related heat sources to the heat pump, the water can then be used for other purposes (eg: reticulation) or returned to the ground via a return bore.

The South Perth site, has access to a local aquifer that can likely provide a very good solution for an open loop ground source heat pump system for this project, when coupled with a central lake based system and/or closed loop vertical bore systems. More investigation will be required from a hydrogeologist in order to confirm this assumption, but early data review suggests that an achievable open loop geothermal system may be as follows:

Bore Depth	200m
Estimated produced water temperature	25.5 °C
Estimated maximum injected water temperature differential to aquifer	6 °C
Estimated maximum production bore flow rate	16 L/(s.bore)
Estimated maximum injection bore flow rate	13 L/(s.bore)
Construction material	Stainless steel

It is expected that approximately 330kW of heating capacity will be achievable from one injection bore. Multiple production and injection bores can be installed throughout the site in order to meet higher capacities. Furthermore, larger boreholes can be utilised in order to generate for heating and cooling capacity from the same set of boreholes. This should be investigated further at a later stage of the project. This water may also be used for irrigation purposes for landscaping throughout the site, however this requires further investigation as it will be dependent on the department of water licence criteria as well as the aquifer used for this purpose.

The figure below illustrates an aquifer open loop system.

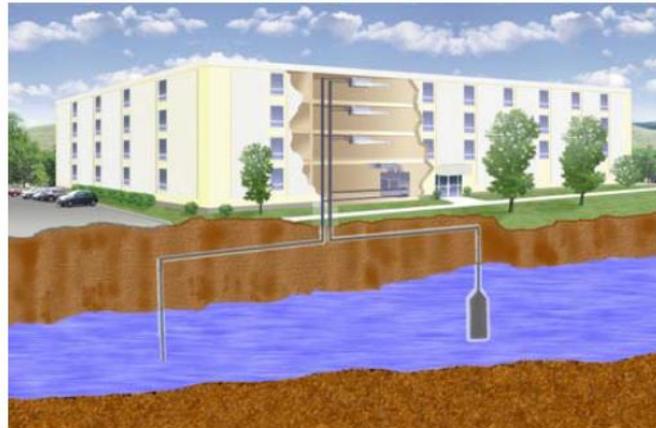


Figure 7: Open loop system graphic

### 5.1.2 Lake Based Configurations

This uses a water source such as ponds or a lake to provide the stable heat source to the heat pump. The water is then returned to the lake or pond at a point distant from the intake point. Lake based systems work best with balanced loads. The South Perth site is home to two (2) lakes, the capacity of these lakes is estimated between 150-400 kW depending on the heating and cooling pattern. A lake system is worth considering however will need further investigation to ensure the heating and cooling requirements will be available all year round, especially during the summer period as the lake begins to dry up.



Figure 8: Lake based system graphic

### 5.1.3 Closed Loop Geothermal

Closed loop geothermal involves drilling a series of small diameter boreholes and inserting during the drilling process a highly durable flow and return pipe into each of these boreholes.

The heat exchanger acts as a thermal battery in the ground, these heat exchange systems are often used in conjunction with heat pumps and work best with balanced loads.

This is a fully sealed system with a clean closed circuit between the geothermal heat pump and ground heat. This is more expensive than an open loop system as multiple bores have to be drilled. Once established the system avoids the ongoing need for filtration of the water stream, and the possible need for water treatment.

There are cost-effective drilling systems technologies available. DEA often recommend the “GRD” (geothermal radial drilling) developed in Germany. This is more economical and provides a generally higher quality installation, with minimal construction programme impact.

The GRD system is typically based on bores from 30 to 100 metres, via installation of closed-circuit piping system utilising welded u-bends at the bottom of each bore. The key characteristic is that the drilling of up to 20 bores can be undertaken in one location, with geothermal bore holes drilled radially, 360 degrees, from this 1 m<sup>2</sup> location.

On an active building site, the drilling stays in one location on that site while the (up to) 20 bores are drilled. A normal (non-GRD) bore would shift 20 times. This completely avoids disruption to the various types of construction proceeding around the drilling. This saves cost to the builder and to the Client, but also reduces the cost to the GRD process.

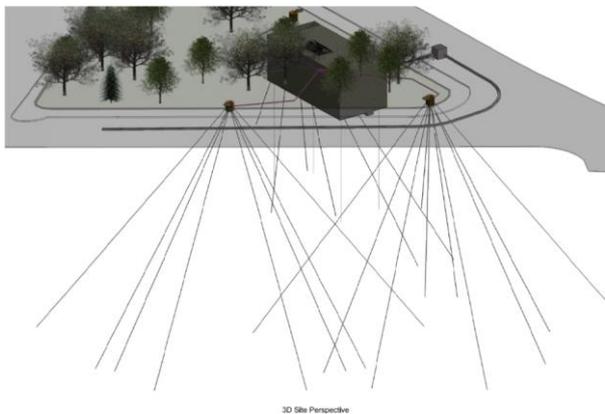


Figure 9: Radial Drilling Graphic



Figure 10: Closed loop vertical system graphic

## 5.2 Standard Air Source Heat Pump System

A standard air source heat pump is a heating system that absorbs heat from the outside air, to provide an efficient source of heat. This is configured similar to a standard air conditioner where the heat adsorption is by an air-cooled condensing unit and the “free” heat is obtained from the atmosphere.

These systems are efficient compared to a gas boiler and highly efficient at mild ambient air temperatures. In cold weather the efficiency drops off, and at very cold weather, when the defrost cycle is initiated, the efficiency falls further.

## 5.3 Direct Geothermal Heating

This direct use system consists of deep boreholes to extract ground water with a temperature that may vary from 40°C to 50°C. The heat from the aquifer is then transferred using a heat exchanger. The aquifer water from this system is then required to be reinjected back into the aquifer. No heat pump is required. In Perth, these systems commonly have boreholes varying from 700m up to 1,200m deep, and are very energy efficient, as electricity is only used to circulate the ground water.

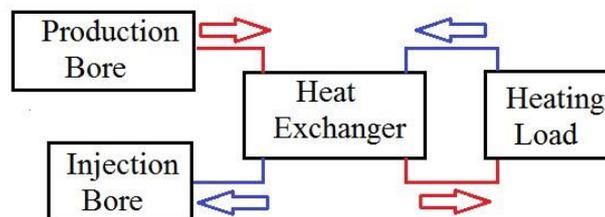


Figure 11: Conceptual Direct geothermal system

The following table provides an indicative design for a Direct geothermal system at the South Perth site:

Bore Depth	850m
Estimated produced water temperature	45 °C
Estimated maximum injected water temperature differential to aquifer	12.5 °C
Estimated maximum production bore flow rate	50 L/s (per.bore)
Estimated maximum injection bore flow rate	30 L/s (per bore)
Construction material	TBC

It is expected that approximately 1500 kW of heating capacity will be achievable from one injection bore.

Direct geothermal system can produce considerably high efficiencies as they do not require a heat pump, the only input energy required is for circulation, and bore pumps. The expected direct geothermal system COP can vary between 15 to 30 based on water temperatures bore depth, site location, aquifer pressure, and overall system size. Efficiency, and install costs both typically increase with bore depth.

The primary downside is that they only perform heating and cannot perform cooling. Maintenance costs are highly dependent on the aquifer and how well the bore has been designed and installed, there are some examples of poorly designed bores in Perth that have experienced large unexpected maintenance requirements, there are also many other successful installs with minimal maintenance requirements.

#### 5.4 Natural gas boiler

This is the commonly used technology for water heating in large leisure centres. A gas boiler is used to heat a circulating fluid that passes through heat exchangers. When selecting a gas boiler, it is important to understand if the claimed efficiencies are based on gross calorific value or net calorific value. Look for the terms HHV (higher heating value) or LHV (lower heating value), an efficiency calculation based on LHV is about 11% more than a calculation based on HHV. In general, claimed efficiencies are typically around 95%, however the true efficiencies are closer to 85%.

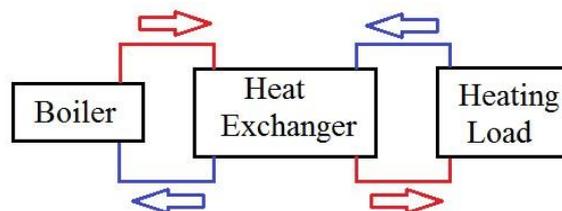


Figure 12: Conceptual Boiler system

#### 5.5 Solar Thermal & Solar Photovoltaic

Both these solar technologies require large areas of roof surface, and can compete with each other. The exact balance between Thermal and PV has to be determined by an economic assessment. Alternatively, hybrid modules deliver both.

### 5.5.1 Hybrid PV modules

Hybrid PV modules have both the solar electric and thermal in one panel. They can be referred to as PVT (Photovoltaic Thermal) panels. They allow for the entire roof surface area available to be used most effectively.

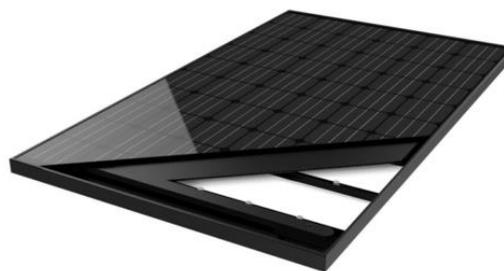
Hybrid solar panel produces hot water and electricity at the same time and reduces rooftop space by installing one panel instead of two.

In general, based on historical analysis, the hybrid panels are circa 30% less efficient for solar thermal than a regular solar thermal system, although this can be offset by the added benefit of electrical generation via the PV component.

Advantages of Hybrid Panels:

- High efficiency monocrystalline cells cooled by water circulation on backside of panels. This increases the effectiveness of photovoltaic component of the panel by up to 12%.
- Heat exchanger completely integrated into the panel. Excellent heat transfer between photovoltaic front and water circulation on rear that enhances the thermal power output.
- No aesthetic impact of using two different types of solar collector. The PVT collectors look similar or the same as a standard Solar Photovoltaic collector, discussed further below.

A picture showing one type of PVT is provided below. Some other systems, can be installed under any other type solar PV panels.



### 5.5.2 Solar Thermal

Typically, large areas of roof are covered with a flexible solar collector strips or panels to directly heat the pool water. These can be durable long-life systems.

Solar thermal pool heating is usually an addition to the heating process from another device (heat pump, or boiler). It is very efficient in mild weather. In very cold weather this cannot provide enough heat and as supplemented by other heating systems. The proportion of solar thermal depends on this combination and the available roof area.

There are different types of solar thermal collectors available on the market. The collector mostly used for aquatic centres is an unglazed solar collector. They come as flexible or rigid panels. A picture of a rigid panel is provided below. These are the most cost effective and lasting unglazed solar collectors. The system presented below, is also Australian Made.



### 5.5.3 Solar Photovoltaic (PV)

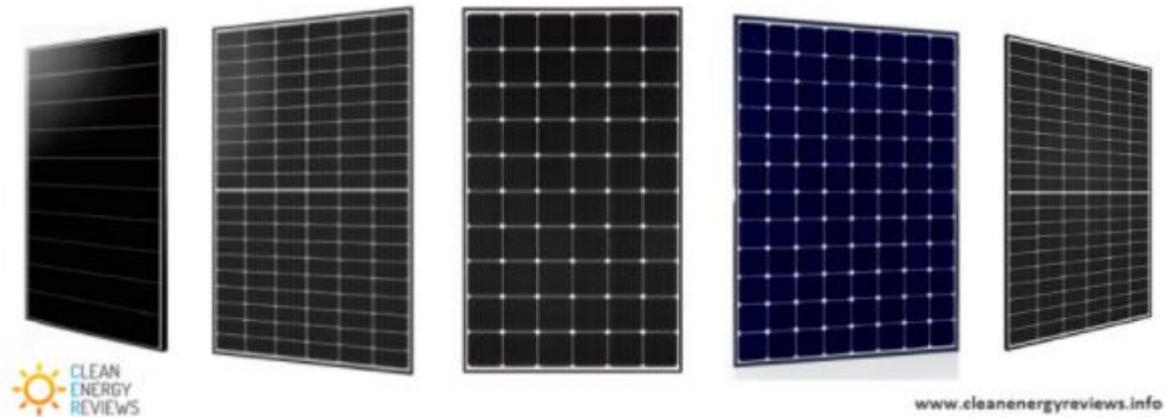
Solar electricity from PV (photovoltaic) modules is another excellent way for the city to demonstrate its commitment to sustainability while reducing its reliance on the electricity grid, save on operational costs

This is part of a move towards net zero energy, as targeted by many government departments, both state and federal. DEA proposes solar PV systems for this facility to reduced reliance on fossil-fuel energy sources.

We are expecting that a maximum of 250 kW of solar PV will be required. Appendix A gives an indication of the maximum solar PV capacities of each of the roofs. The true capacity of each

roof can only be determined once the final roof structure is known, including location of skylights, ventilation, air conditioning units and other rooftop equipment.

A picture showing different type of Solar PV collectors is presented below from the Clean Energy Reviews.



## 5.6 Energy Storage

### 5.6.1 Electrical Energy Storage

The most predominate battery storage solutions for residential and commercial spaces are lead acid batteries, lithium ion batteries and flow batteries. Lead acid batteries have been used in off-grid energy systems for decades. They are reliable and relatively inexpensive however have a relatively short life and lower depth of discharge than other battery types. Lithium ion batteries are lighter and more compact than lead acid batteries. They have a higher depth of discharge and longer lifespan when compared to lead acid batteries but come at a higher price. Flow batteries are a relatively new entrant to the market and have Australian manufacturers, however, are more expensive than lithium ion batteries, the manufacturers however claim longer lifespans compared to lithium ion.

The price of lithium batteries over the last 10 years is presented in the figure below.

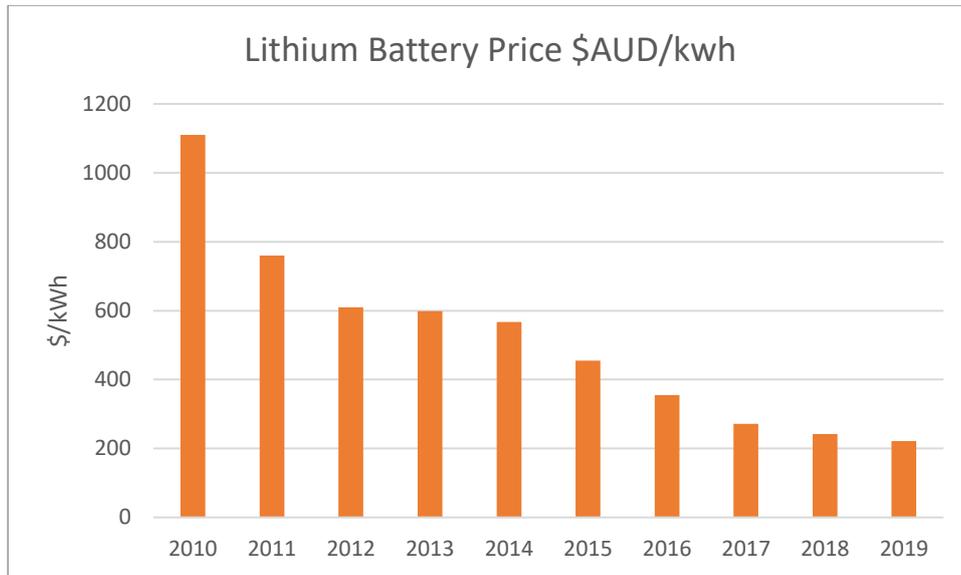


Figure 13: Lithium battery prices

From a financial perspective battery viability in aquatic centres is considered quite low, despite significant drops in battery costs in recent years. Battery payback periods range between 8 and 20 years depending on the following factors: amount of exported solar energy available, size of battery system, number of cycles per day, feed in tariff and energy consumption prices. As competition and technological advances emerge, it is expected that storage systems will become more financially relevant and common place.

Where battery installations can become much more viable is when also providing peak grid demand reduction. It is common for commercial energy bills to feature high demand charges due to high peak load energy usage, and so battery installations which reduce peak grid demand often exhibit favourable payback periods. Additionally, commercial buildings often do not receive feed in tariffs from exported solar, making battery capture of excess solar PV energy more desirable.

## 6 Integrated Energy System Analysis

The high-level investigation undertaken below was based on available information, similar previous projects as well as educated estimates where necessary. The investigation was kept as simple as possible and the costs provided are conservative.

It is anticipated that a more in-depth investigation be undertaken when more information is available in order to select the most appropriate heating and cooling system for this centre.

The analysis below only includes the direct benefit of the modelled technology or mix of technologies. Indirect benefits of the different systems, such as heat recycling and recovery and the use of smart control systems were not considered, keeping the values provided within a conservative range suitable for early stage assessment.

A sensible sample of the 160 different energy system configurations investigated for this project has been presented below. The electrical and gas energy used by the centre as well as the expected carbon emissions for the different solutions investigated are presented in the table and associated graph below.

The different system modelled were named as follows:

**SOLARTHERM:** Solar Thermal system (Refer to Section 5.5 and 5.5.1)

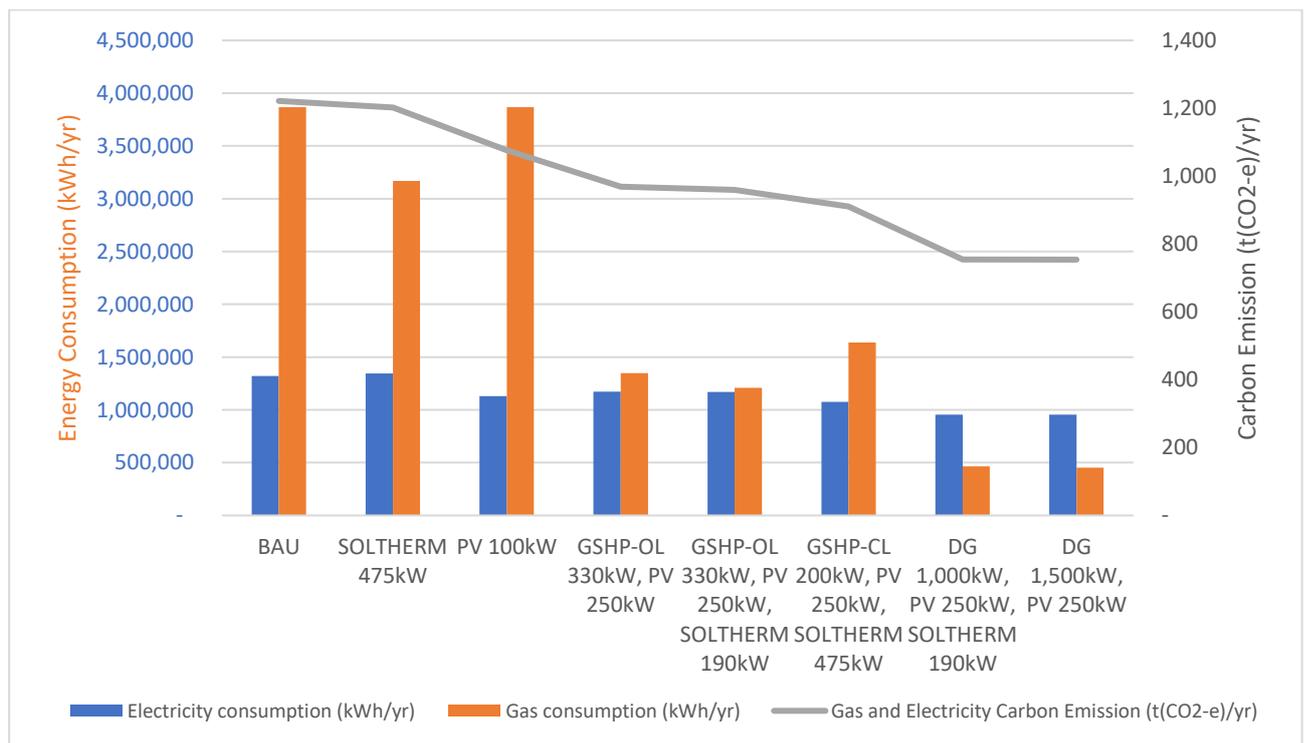
**PV:** Solar Photovoltaic system (Refer to Section 5.5 and 5.5.3)

**GSHP-OL:** Ground Source Heat Pump Open Loop system (Shallow aquifer) (Refer to Section 5.1 and 5.1.1)

**GSHP-CL:** Ground Source Heat Pump Close Loop system (Deep aquifer) (Refer to Section 5.1 and 5.1.3)

**DG:** Direct Geothermal system (Refer to Section 5.3)

	BAU	Alternatives			Solution 01	Alternatives		Solution 02
		SOLTHERM 475kW	PV 100kW	GSHP-OL 330kW, PV 250kW	GSHP-OL 330kW, PV 250kW, SOLTHERM 190kW	GSHP-CL 200kW, PV 250kW, SOLTHERM 475kW	DG 1,000kW, PV 250kW, SOLTHERM 190kW	DG 1,500kW, PV 250kW
Electricity consumption (kWh/yr)	1,321,883	1,346,387	1,130,833	1,172,771	1,169,821	1,074,744	955,146	955,203
Gas consumption (kWh/yr)	3,866,048	3,169,934	3,866,048	1,349,658	1,208,778	1,638,437	465,685	453,485
Gas and Electricity Carbon Emission (t(CO <sub>2</sub> -e)/yr)	1,221	1,202	1,076	969	959	910	755	754



The graph above displays the system with the highest CO<sub>2</sub> emission on the left, through to the lowest CO<sub>2</sub> emissions on the right. As it can be observed, the systems generating the highest energy and CO<sub>2</sub> reduction are systems comprising a mix of solutions. While each system individually leads to energy savings to some extent, the application of different technologies working together helps to generate optimal performance outcomes.

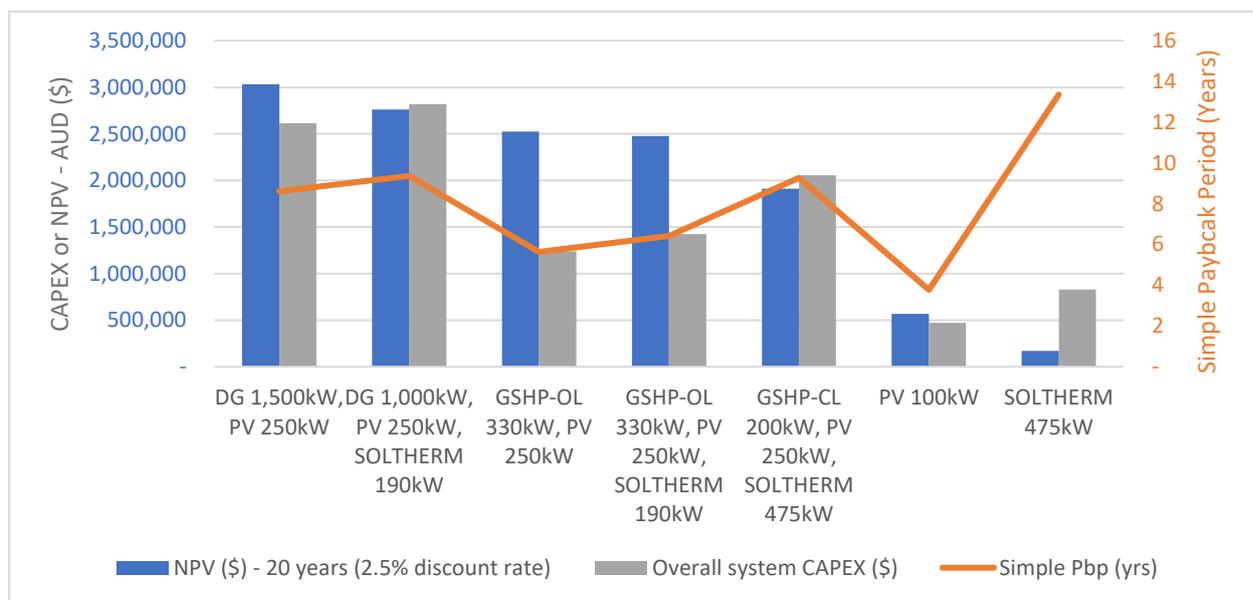
While a fairly large Solar Thermal and PV system generate considerable reduction in gas and electrical consumption on their own, the solutions leading to a substantive and more attractive reduction in gas includes the use of geothermal heat pumps and/or direct geothermal systems. The Solar Thermal system investigated in this analysis is for a Hybrid Solar Thermal and PV system only., It is installed in the same foot print as the Solar PV system illustrated in Appendix A. This type of systems is discussed further in Section 5.5.1 of this report.

Combining a 1,500kW Direct Geothermal system with a 250kW solar PV generates the best overall outcome for the energy aspect of this project. This system leads to a gas reduction of over 85%, and electricity usage of around 27%. However, this system comes with the highest risks due to the high drilling risks and cost associated with the system. This system requires drilling to above 700m, leading to significant financial risks if any issues occurs.

Therefore, we recommend that a second system be considered. The 330kW Ground Source Heat Pump open loop system, with 250kW solar PV and 190kW solar thermal system is shown to provide the best mix of technologies for the lowest risks. This solution leads to a gas reduction of 69%, and electricity usage of approximately 11%. Further savings in electrical and gas energy will be possible if used for space heating and cooling, as well as domestic hot water. This was not included in this analysis in order to align with the high-level nature of this investigation and keep analysis costs contained.

While the energy savings were found quite considerable, the carbon emissions offset were not as proportionally significant. This is mostly due to the high carbon content of the electricity in Western Australia. It is expected that this number will drop during the next few years with the connection to the grid of many Solar and Wind Farms currently being planned and constructed in the area supplying readily accessible 'renewable' energy to the grid. It is assumed that current trends towards low carbon emitting energy sources will continue to 2050 and that displacement of natural gas as a power source will be considerably advanced by 2040 and beyond.

	BAU	Solution 02	Alternatives		Solution 01	Alternatives		
		DG 1,500kW, PV 250kW	DG 1,000kW, PV 250kW, SOLTHERM 190kW	GSHP-OL 330kW, PV 250kW	GSHP-OL 330kW, PV 250kW, SOLTHERM 190kW	GSHP-CL 200kW, PV 250kW, SOLTHERM 475kW	PV 100kW	SOLTHERM 475kW
NPV (\$) - 20 years (2.5% discount rate)	CONTROL	3,033,288	2,761,868	2,524,779	2,477,201	1,910,771	568,249	171,124
Simple Pbp (yrs)	CONTROL	8.61	9.36	5.64	6.42	9.28	3.77	13.36
Overall system CAPEX (\$)	CONTROL	2,614,083	2,821,402	1,239,300	1,423,600	2,054,903	470,626	827,126



The graph above displays the system with the highest Net Present Value (NPV) on the left to the lowest NPV on the right. It has been derived by selecting both the optimal mix of technologies and displaying examples of singular technology applications. Essentially, it displays that a mix of technology provides the most attractive solutions available.

All of the systems generating the highest NPV for this project comprise a combination of Direct Geothermal or Ground Source Heat Pumps (GSHP), as well as Solar PV systems.

The system with the lowest simple payback period is the 100kW Solar PV with approximately 3.8 years. This highlight both the simplicity and effectiveness of Solar PV, which is well known.

The system configuration generating the highest NPV over 20 years comprise a 1,500kW Direct Geothermal and 250kW Solar PV system noted previously. This system configuration generates a simple payback period of around 8.6 years, albeit with higher risk profile due to the deep geothermal system.

Solution 01, is recommended as the most suitable solution. It provides the least risk for the highest amount of energy offset, and lowest simple payback period. The simple payback period for such a system is expected to be around 6.4 years.

Further discussion is offered in the conclusion (Section 8) in relation to the risk associated with different approaches to geothermal drilling.

## **7 Other Energy Saving Opportunities**

### **7.1 Variable Speed Drives (VSD)**

Pumps that require variable flow rates benefit greatly from the installation of Variable Speed Drives (VSD's). It is common for single speed pumps to be oversized and then require flow throttling to reach the required water flow rate. VSD's give a pump the ability to be ramped down and use less power when required. The VSD will more accurately be able to match the flow of these pumps to the heating requirements of the pools. The alternative is using valves to partially block the flow of water. Energy cost savings from VSD's come in the form of reduced energy consumption savings (kWh).

In general, a pump that requires a 20% reduction in flow will result in a 25%-30% power reduction from using VSD's. The associated payback periods are usually in the range of 3-8 years.

Additionally, VSD's will allow for the pumps start up current to be a lot smaller and provide a more stable local network.

### **7.2 Window Glazing and Skylights**

Double glazing can help the building in enhancing the U-value of glass which can improve heat leakage and potential condensation problems from the pool halls. Double glazing is often found to be very beneficial however detailed modelling will have to be completed in order to find out which windows should be used for with double glazing. The high cost of double glazing means

that it is often not recommended to be installed on many windows which will not see much benefit. Sealing air gaps around door frames will also help prevent heat leakage.

### 7.3 Pool Covers

Pool covers are strongly recommended for all heated pools in the aquatic centres. Pool covers will increase the effectiveness of water heating system and to reduce the losses from the hot water.

Design of pools to suit pool covers that are easy to put on and off by operations teams can be applied in the architectural design stage of the project. This can make a marked difference in cost of operation and effectiveness of the 'heat seal' that the pool blanket provides. Two pictures of different types of Pool Cover systems are provided below.



### 7.4 Backwash Heat Recovery

The backwashing process dumps large amounts of heated water in order to clean the filters cleaning each pool. It is possible to add one or several heat exchanger(s) to return a portion of this heat to the pool by transferring it into the fresh water supply. The cost feasibility is determined by comparing the cost of implementing the heat exchanger system against the cost of generating the lost heat. DEA have found payback periods of 20-30 years in the past for retrofit projects and deemed it not cost effective. It may have the potential to be viable for a new aquatic centre, depending on the frequency and volume of water to be backwashed.

---

## 7.5 Power Factor Optimisation

The mechanical plantroom will host many large motors, fans and pumps which produce large inductive loads. These loads affect the power quality of the grid, reduce the site's power factor and often attract premiums from the utility provider.

To help restore the power factor, it is possible to install 3 phase tuning reactors, which are big capacitors that act as power factor correction. It is strongly recommended that this is considered in the preliminary design phase.

## 7.6 LED Lighting

It is strongly recommended that the use of LED lighting be deployed, which is now becoming standard for all large buildings. LED lights have lower start-up current, warm up time and energy consumption when compared to fluorescent and halogen lighting. Upfront costs are typically higher; however, they are 3 to 4 times more energy efficient. Payback periods of less than 1 year are possible for highly used lights in replacement situations, making them highly viable for green field projects such as this one.

## 8 SUMMARY DISCUSSION & CONCLUSION

The project offers a variety of energy efficiency opportunities, outlined above. A number of these solutions generate better return on investment than others. It is important to distinguish between the solutions outlined at this stage of the project to enable decisions to be made for more advanced modelling to be undertaken as the built form takes shape.

Based on the available information, two main heating and cooling systems solutions have been found to generate considerable energy savings and attractive financial returns. They are presented above in Section 06 as Solution 01 and Solution 02. These two solutions are summarised and discussed below to offer a conclusion to the recommendations proffered in this report:

- Solution 01 included the use of:
  - o 330kW Open Loop Ground Source Heat Pump (GSHP) system
  - o 250kW Solar Photovoltaic (PV) power system
  - o 190kW Solar Thermal heating system

This system provides a mix of heating and cooling technologies. It is the preferred solution due to the lower risk inherent in both up front capital costs and operational cost risk ongoing. This system would require the use of the Leederville aquifer, which is a high-water quality aquifer, requiring drilling up to 200 metres in depth, which presents negligible drilling risk to experienced contractors.

To determine the final system profile, in the latter stage of design, shallower aquifers will also be investigated, which can result in lower drilling costs. The drilling risk associated with these bores is very low. However, it may be difficult to obtain a license to use this water for watering purposes. Hence, the value in assessing the potential of using shallower bores.

Notably, the recommended solution can also be used for Domestic Hot Water (DHW) heating, as well as space heating and cooling. The actual applications are possible to determine from a more detailed study of building requirements when architectural design development is undertaken. If this system is used for cooling purposes, it can result in additional energy savings that are likely to outweigh the increase in capital cost. It is highly recommended that this is investigated further during the next stage of this project.

The capital costs as well as efficiency to be expected from these systems have been proven throughout the greater Perth region and the necessary skill base is accessible via fixed price lump sum contracts. Thus, the financial risks of the suggested approach are limited.

- Solution 02 included the use of:
  - o 1,500kW Direct Geothermal (DG) heating system
  - o 250kW Solar Photovoltaic (PV) power system

This solution generates the best return on investment as well as potential energy savings. However, this system can only be used for Pool water heating, and domestic hot water pre-heating. It cannot be used for space heating and domestic hot water heating. To undertake this investigation, efficiency, maintenance costs, and capital cost average across several projects

were used. This system would need the use of the Yarragadee aquifer, requiring drilling from 600 to 1,100 metres in depth.

The financial risks associated with this system is high, thus lending to the aforementioned Solution 01 as preferable. Although these systems have been found very good on several projects around in Perth (and elsewhere), several of them have not generated the financial return expected. These projects have endured either substantive cost blow-outs during the installation and operation stage of the project or ongoing maintenance costs that increase operating costs ongoing, or both scenarios combined. High capital costs, typically well in excess of \$2million, make deep well systems risky. Drilling risk increase, the greater the depth drilled. If all goes well, as has occurred in a few cases, these systems can generate paybacks as low as 7 to 8 years. However, if capital or operating cost blow-out occurs, both of which are unknown prior to installation, the payback could increase to 15 years or more. The efficiency of these systems has also been found to vary significantly. However, this depends on several factors, which can be considered during the detailed analysis stage of the project. The efficiency will vary depending on the depth of the bore (aligned with temperature), as well as pumping power requirements. While some local hydrologists have a good understanding of the expected temperatures and water quality of the Yarragadee aquifer, there is always a risk factor associated with expected temperatures at different depths.

While these systems are recommended to be investigated for pool heating projects in Perth, the risk factor associated with them should be considered carefully prior to make any final decisions.

Other aforementioned, easily accessible and common energy saving opportunities are also highly recommended to be considered as components of an overall solution set for heating and cooling. These have been described previously, and are listed below:

- Integrated smart control system to manage the mixed heating and cooling supply side elements
- Variable Speed Drives: to be used on appropriate pumps
- Pool Covers
- Window Glazing and Skylights to be aligned with passive design and coordinated effectively with the mechanical system requirements
- Power Factor Optimisation
- LED Lighting

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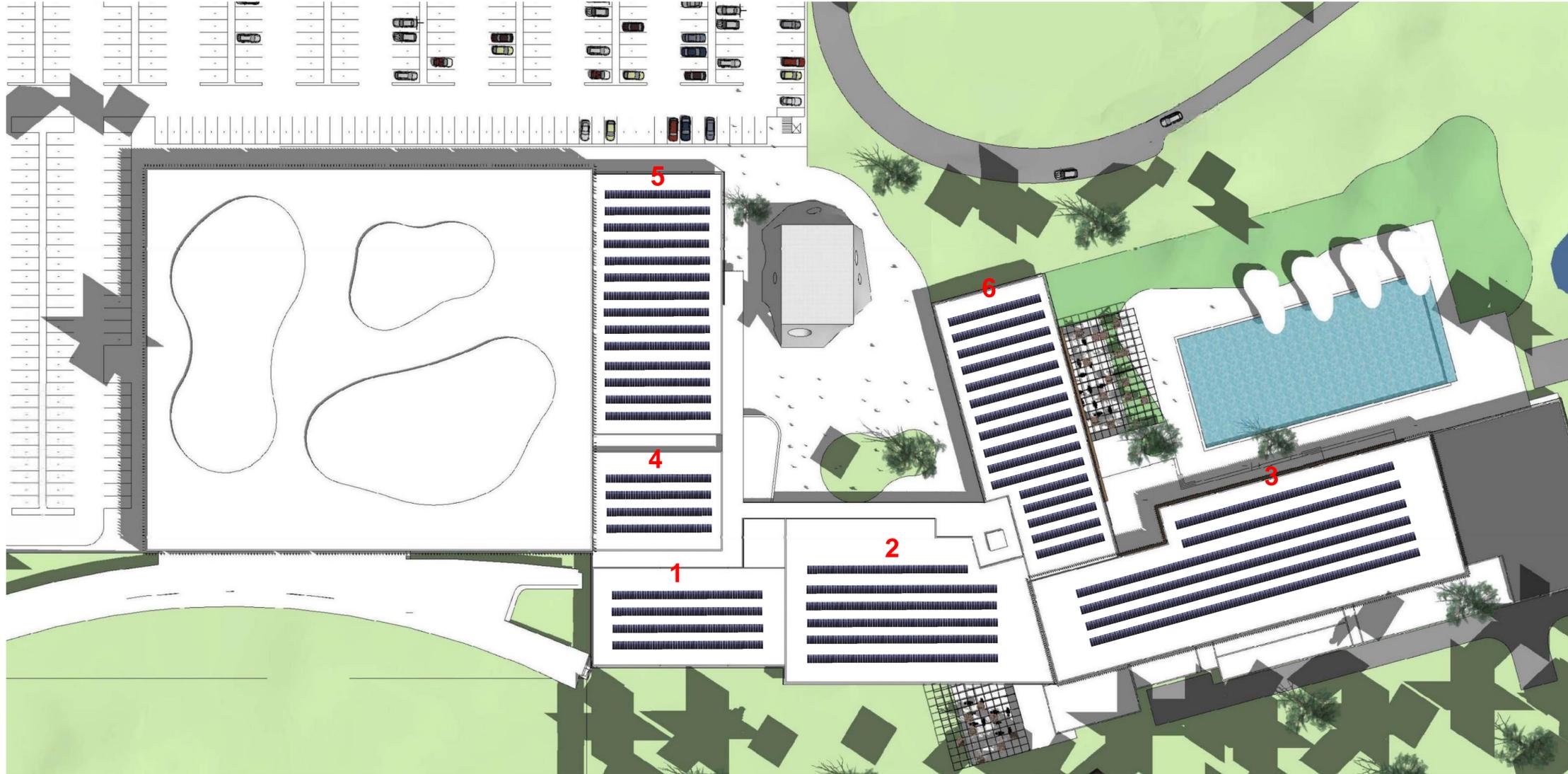
Worth consideration are the social and educational aspects of the project. It is recommended that highly visible screens be installed at the main entrance of the Centre. The monthly as well as daily energy and cost savings can then be displayed. This will promote the sustainable approach of the CoSP as well as the technologies used at the Centre. It will educate and induce visitors to feel more confident in taking similar approaches for their homes as well as businesses via witnessing live savings. It can also create community engagement in terms of visitors/residents understanding and visualising how their rates are invested and offering benefits to them over the long term.

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## 9 APPENDICES

List of Appendices:

APPENDIX A: High Level Solar PV Schematic



Solar Description

Roof	Description	
1	40 kW	
2	70 kW	
3	120 kW	
4	27 kW	
5	97 kW	
6	92 kW	
<b>TOTAL</b>	<b>446 kW</b>	

NOTES



Direct Energy Australia

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PROJECT: SOU001

TITLE: Solar PV Roof Layout

<b>Project No:</b>	SOU001	<b>Drawing Number:</b>	SPRL001
<b>Design:</b>	■	<b>Scale:</b>	NTS
<b>Draw:</b>	■	<b>Date:</b>	26/08/2020


REVISION: 0 SHEET NUMBER: 1/1

## APPENDIX K – SUSTAINABLE DESIGN REVIEW



# Design Note

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Project:	South Perth Recreation
Service:	Sustainable Design
Subject:	Rating Feasibility
Revision:	A
Date:	6 <sup>th</sup> September 2020
Author:	[Redacted]

## Overview:

FCDS have been commissioned to undertake a sustainable design review and certification feasibility study for the proposed South Perth Aquatic and Recreation facility.

This document provides FCDS summary of:

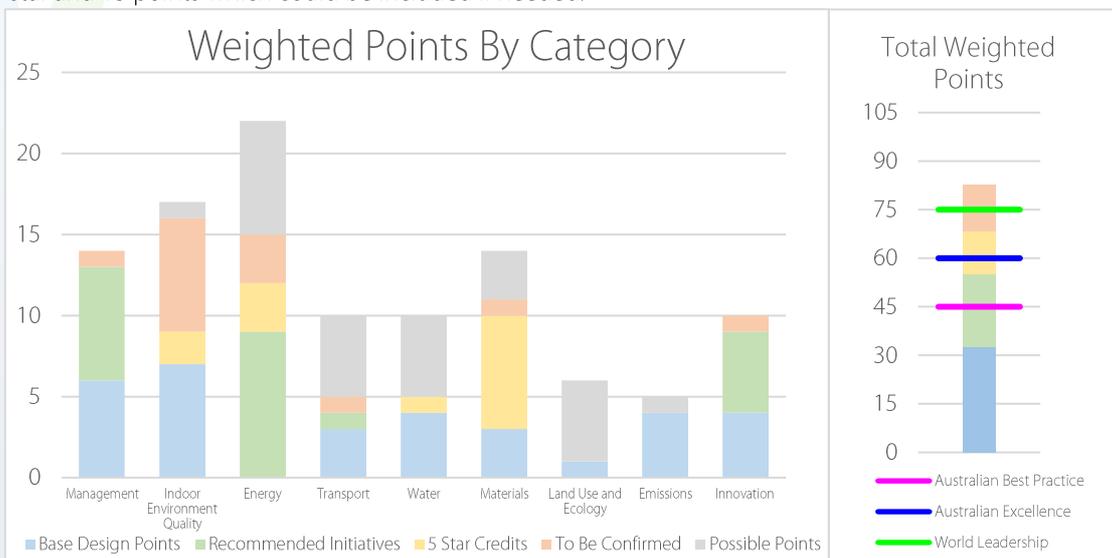
- Baseline performance of the facility under Green Star and Fitwel.
- Recommended design features for inclusion within the project
- Expected order of magnitude of cost for certification under Green Star for 4 star and 5 star levels.
- Expected order of magnitude of cost for certification under Fitwel.

FCDS have provided background information on both Green Star and Fitwel rating tools as an appendix to this document. Please also refer to the attached 'consultant scope' document which outlines the various design features by discipline.

## Green Star

FCDS have completed an initial design review of the proposed development, based on our experience with similar projects and expectations of the briefing from the City of South Perth. We believe the project would be likely to score around 33% with no specific ESD intervention. A further 22% would be scored if recommended design features were included – sufficient to achieve 4-star 'Best Practice' performance level.

FCDS have identified 14 points which require design development to confirm – sufficient to achieve 5-star and 13 points which could be included if needed:



### Recommended Features

The table below shows the design features FCDS believe should be included within the design:

Credit	Cost	Cumulative Points	Cumulative Cost
3.1 - Implementation of a Climate Adaptation Plan	\$10,000	34.69	\$30,000
17.3 - Low emission vehicle infrastructure	\$5,000	35.71	\$35,000
Emi-i - Increased Reduction Targets	\$5,000	36.73	\$40,000
Inn-30E.5 - Green Cleaning	\$15,000	37.76	\$55,000
Inn-30E.6 - Procurement and Purchasing	\$15,000	38.78	\$70,000
Inn-30E.7 - Groundskeeping Practices	\$15,000	39.80	\$85,000
2.2 - Building Commissioning	\$20,000	40.82	\$105,000
2.1 - Services and Maintainability Review	\$25,000	41.84	\$130,000
2.3 - Building Systems Tuning	\$25,000	42.86	\$155,000
2.4 - Independent Commissioning Agent	\$25,000	43.88	\$180,000
Inn-30D.9 - Occupant Engagement	\$25,000	44.90	\$205,000
6.1 - Advanced Monitoring Strategy	\$30,000	45.92	\$235,000
15.1b - Overall Performance	\$100,000	48.98	\$335,000
16.1B - Peak Energy Reference Building	\$300,000	51.02	\$635,000
15.1h - GHG reduction - Initiative 1	\$300,000	53.06	\$935,000
15.1a - Façade Improvement	\$640,000	55.10	\$1,575,000

Of the features above ~\$1.2M is included within a large (nominally 300kW) solar array and the upgrade of the building envelope to exceed BCA minimum requirements. In practicality, the City of South Perth could reduce the solar array to \$0 initial capital cost in a lease back or power purchase arrangement. Similarly, the façade upgrade cost could be much reduced if glazed area is limited.

The recommended features above would exceed the minimum requirements for 4-star certification by around 5 credits.

### 4 Star Green Star Certification:

FCDS expect that 4-star certification could be achieved for around \$350,000, inclusive of all registration and consultancy fees if the solar array was not included in the initial capital cost. If the solar array was included overall cost would be around \$1,000,000.

Key features recommended as part of a 4-star solution are:

- Climate change risk review and design adaptation
- Provision of low-emission vehicle infrastructure – some electric car bays and priority for fuel efficient / car pool vehicles.
- Sustainable cleaning, groundskeeping and procurement policies in operation
- Building Envelope Pressure Testing
- Appointment of an Independent Commissioning Agent
- Completion of a building occupant survey, pre and post practical completion
- Inclusion of a meter reading and monitoring system, including public display.
- Mechanical and electrical services to exceed BCA minimum requirements by >10%
- Solar array – nominally 100kW.

### 5-Star Green Star Certification

FCDS have identified sufficient features to achieve a five star certification. Overall cost is heavily dependent on the ~14 credits which may be achieved and are currently to be confirmed. FCDS expect that the following design features would be included – in addition to the 4-star features above:

- Increase solar array to nominally 300kW
- Appoint an LCA practitioner to complete building modelling and provide design advice from concept stage
- Provide CO2 control to occupied spaces and increase minimum outside air provision for air conditioned areas.
- Avoid the use of gas on site – use heat pumps for pool heating and DHW

Credit	Cost	Cumulative Points	Cumulative Cost
3.1 - Implementation of a Climate Adaptation Plan	\$ 10,000	34.69	\$ 30,000
17.3 - Low emission vehicle infrastructure	\$ 5,000	35.71	\$ 35,000
Emi-i - Increased Reduction Targets	\$ 5,000	36.73	\$ 40,000
Inn-30E.5 - Green Cleaning	\$ 15,000	37.76	\$ 55,000
Inn-30E.6 - Procurement and Purchasing	\$ 15,000	38.78	\$ 70,000
Inn-30E.7 - Groundskeeping Practices	\$ 15,000	39.80	\$ 85,000
2.2 - Building Commissioning	\$ 20,000	40.82	\$ 105,000
2.1 - Services and Maintainability Review	\$ 25,000	41.84	\$ 130,000
2.3 - Building Systems Tuning	\$ 25,000	42.86	\$ 155,000
2.4 - Independent Commissioning Agent	\$ 25,000	43.88	\$ 180,000
Inn-30D.9 - Occupant Engagement	\$ 25,000	44.90	\$ 205,000
6.1 - Advanced Monitoring Strategy	\$ 30,000	45.92	\$ 235,000
15.1b - Overall Performance	\$ 100,000	48.98	\$ 335,000
16.1B - Peak Energy Reference Building	\$ 300,000	51.02	\$ 635,000
15.1h - GHG reduction - Initiative 1	\$ 300,000	53.06	\$ 935,000
15.1a - Façade Improvement	\$ 640,000	55.10	\$ 1,575,000
19A.1a - LCA - Energy Efficiency	\$ 21,000	58.16	\$ 1,596,000
19A.2a - LCA - Additional Category Reporting	\$ 7,000	59.18	\$ 1,603,000
19A.2b - LCA - Material Selection Improvement	\$ 7,000	60.20	\$ 1,610,000
19A.2c - LCA - Construction process Improvement	\$ 7,000	61.22	\$ 1,617,000
19A.2d - LCA - Design Review	\$ 7,000	62.24	\$ 1,624,000
9.2 - Provision of Outside Air	\$ 50,000	64.29	\$ 1,674,000
18.2 - Rainwater Reuse	\$ 80,000	65.31	\$ 1,754,000
15.1f - Fuel Switching	\$ 300,000	67.35	\$ 2,054,000
15.1e - Transition Plan	\$ 150,000	68.37	\$ 2,204,000

Excluding the solar array, FCDS expect the cost of a five star certified outcome would be in the order of \$1,000, 000.

## Fitwel Certification

Many of the features which support a Green Star outcome also support Fitwel certification. FCDS believe that the base design for the project would not achieve the threshold for certification, however, a 1-star rating could be achieved for around \$300,000. Most of the difficulty with achieving this credit relies on formation of an onsite sustainability committee who organise on site health programming and community services.

Key elements for certification would include:

Credit Reference	Expected Cost	Comments
Commuter Survey	\$5,000 p.a	The facilities managers would need to undertake a commuter survey annually and publish the results publicly. The surveys would aim to reduce car use and prioritise alternate transport
Satisfaction Survey	\$5,000 p.a	The facilities management would undertake annual satisfaction surveys with occupants and building users, aiming to improve performance over time.
Car Park Costs	-	The City would charge a nominal amount to park in the centre car park, staff would also have to pay.
Car Park Allocation	-	The City would allocate priority parking to car share / car pool programs.
Sustainability Policy	-	Facilities management would establish and maintain sustainability policies including: <ul style="list-style-type: none"> <li>• Air Quality</li> <li>• Sustainable Procurement</li> <li>• Green Cleaning</li> <li>• Green Pest Management</li> </ul>
Healthy Food and Beverage	-	Place restrictions and limits on food which is sold in the café or vending machines on site, aiming to encourage healthy choices by display, pricing, product availability and the provision of free water.
Walk Off Mats	-	Provide 3m long walk off mats at all major entrances to reduce contamination of internal spaces.
Active Work Stations.	\$32,000	Provide 40% active workstations for administration staff within the facility.

## Appendix A – Green Star

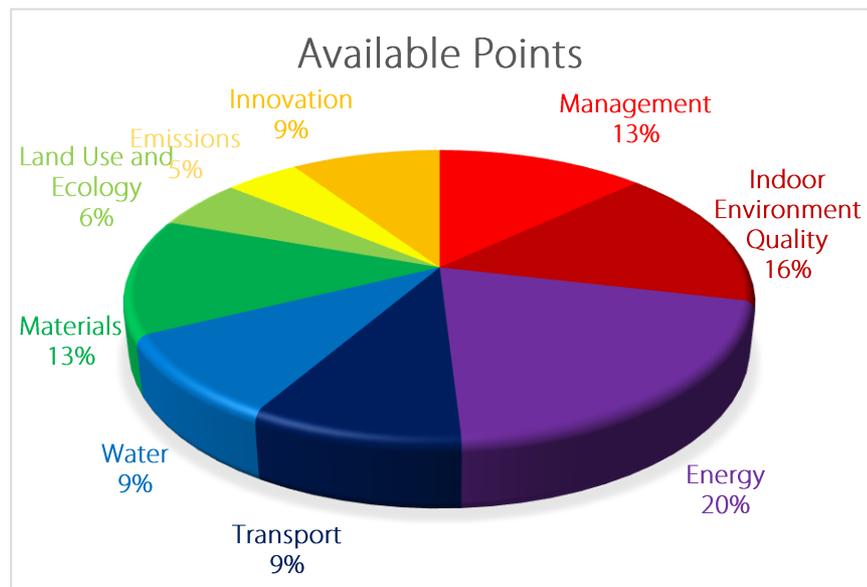
Green Star is the project assessment tool developed and administered by the GBCA (Green Building Council of Australia). It is a voluntary tool which seeks to reward projects for including design features which reduce the impact of developments and even to act as a restorative force. Initially, the system was only used to rate offices, however, in the past 8 years, it has been expanded and now covers the vast majority of buildings, other than single residential dwellings.

In recent times the Green Star system has changed from a collection of tool for specific building types, to one tool for construction or refurbishment projects – Green Star Design and As Built.

Green Star is easily the most popular sustainable rating system for new buildings or major refurbishments and is commonly used by local councils and government agencies to simplify the briefing and assessment process for developments and design reviews.

There are 110 points (100 standard and 10 bonus, innovation points) available, with 45 representing 4 stars (market best practice), 60 representing 5 stars (Australian Excellence) and 75 representing 6 Stars (World Leadership). Green Star rewards market leading projects, with certifications for best practice and above only.

The Green Star system recognises projects for the inclusion of design initiatives and actions, with limited emphasis on performance of the building once the initiatives have been included. Essentially, the system aims to improve market thinking and raise minimum standards, by providing a positive force to reward projects which go above and beyond simple project delivery.



### Green Star – Performance

Green Star Performance is similar to the Design and As Built tool, in terms of categories assessed and means of assessment.

The performance rating tool assesses a range of environmental criteria and is intended to be fairly simple to apply for – not requiring dedicated professionals to complete most documentation. In addition, certification periods run for three years, with teams able to add credits over the period and improve ratings over a period of time.

The tool offers an excellent means of tracking performance long term, however requires ongoing commitment and leadership from facilities managers and is largely outside of the remit of the project design team.

Performance rating tools are generally seen to be more valuable than design based tools as they are based on and deliver real outcomes.

## Appendix B – FitWel

Fitwel is a tool which has similar aims and basis as the WELL Building Challenge. The tool assesses elements of the design and operation of buildings, with an emphasis on promoting health outcomes. It is much easier to assess the WELL and much cheaper to implement. The tool costs \$500 (US) to register and another \$6,000 to certify.

The tool has been developed by U.S. Centre for Disease Control and Prevention (CDC) and the General Services Administration (GSA). The Center for Active Design (CfAD) is the operator of Fitwel and responsible for the third-party certification.

The Fitwel tool has a maximum score of 144 points. Design teams are awarded varying points for the inclusion of design features, operational elements or facilities within or adjacent the building. The tool can assess either base buildings, owner occupied buildings or commercial tenancies, with assessment criteria and methodology varying slightly between each rating type.

Scores are allocated across a number of categories – like Green Star and WELL – as follows:

- Location
- Building Access
- Outdoor Spaces
- Entrances + Ground Floor
- Stairwells
- Indoor Environments
- Workspaces
- Shared Spaces
- Water Supply
- Cafeterias + Prepared Food Retail
- Vending Machines + Snack Bars
- Emergency Procedures

With a goal of achieving improvement for occupants across seven impact categories:

- Impacts Community
- Reduces Morbidity + Absenteeism
- Supports Social Equality for Vulnerable Populations
- Increases Physical Activity
- Promotes Occupant Safety
- Provides Healthy Food Options
- Instils Feelings of Well-Being

The benchmark for achieving a rating is quite high, with a score of 90 out of 144 required for a 1 star certification. 2 Stars requires a score of 105 and 3 stars (the best possible rating) requires a score of 125.

## APPENDIX L – POOL FUNCTIONALITY REVIEW

# City of South Perth Recreation Aquatic Facility Pool Functionality Review



POOL FUNCTIONALITY REVIEW



# PURPOSE AND SCOPE



This document is a high level review of pool functionality for the South Perth Recreation Aquatic Facility (RAF). It has been created to provide inputs to the discussion and development of general pool configuration concepts.

The review describes a variety of functions and configurations and a description of pros and cons associated with pool functionality combinations, temperatures and functionality which can be used to inform deliberations, towards developing the final pool configurations most suited to the South Perth RAF.

In particular, this review responds to the questions of:

- **combining** the proposed aquatic functions into a lesser number of water bodies than has been indicated within the architects initial options sketches and the public announcements from the City of proposed aquatic features
- Pros and cons of various water bodies being located **outdoors** rather than within a building

This document has been prepared using Oceanis' experience working with local government and leisure and tourism aquatic projects, which includes our knowledge from working with aquatic centre operators and investors. The output is necessarily general in nature as this review has been conducted without the benefit of input or briefing material from City of South Perth such as overall social and community objectives for the project and analysis material from the City's feasibility study consultants such as demographic analysis, projected attendance, program uptake estimates or financial feasibility calculations. Once such feasibility analyses are available, especially at the micro level of pool-by-pool anticipated program uptake, a more detailed analysis of the benefits of the various pool configurations can be conducted.

This report has been prepared as an adjunct to the Oceanis Aquatic Features Discussion paper of August 4<sup>th</sup>, 2020 and should be read in conjunction with that document.



# BASE CONCEPT CORE FUNCTIONS

## CORE FUNCTIONS

Maximise commercial viability

Meet identified community needs

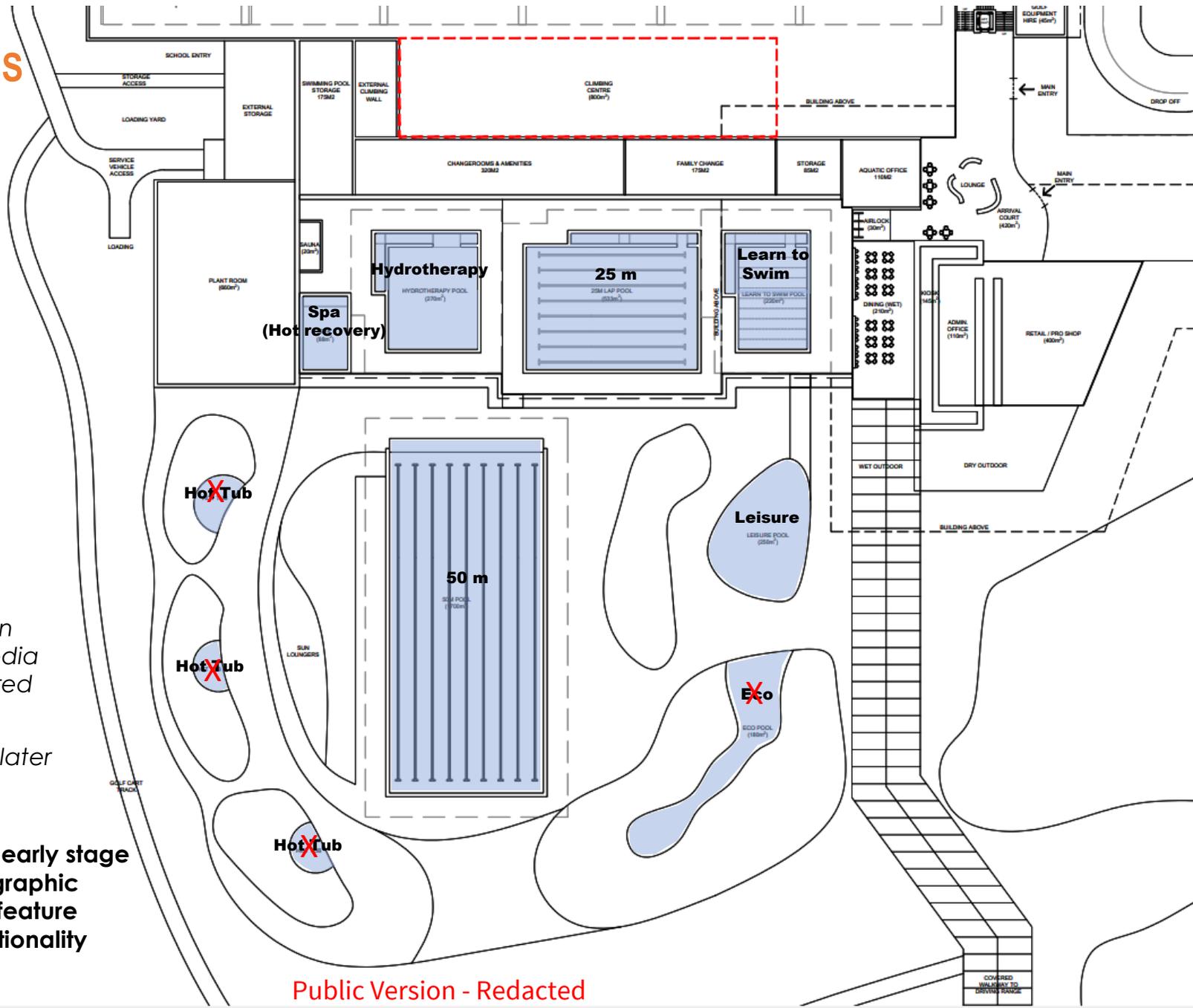
- Lap swimming (50 m and 25 m)
- Hot recovery
- Hydrotherapy
- Leisure
- Program Activities
- Learn to Swim
- Cold Recovery
- Children's Aquatic Play Area and Splash Pad



South Perth Proposed Recreation and Aquatic Facility Brief to Council, September 2019



# CORE FUNCTIONS



Note: Cold Recovery in City of South Perth media information, not pictured

**X** Advised by CDG as later deleted

Christou Design Group early stage option (#3) indicative graphic description of aquatic feature arrangement and functionality



# FUNCTIONALITY REVIEW

## Core Functions Assessment

PARAMETER / FUNCTIONALITY	TEMPERATURE RANGE	Recommended Temperature	DEPTH RANGE	STAIR ENTRY	RAMP ENTRY	ZERO DEPTH BEACH ENTRY	HOIST OR LIFT ENTRY	50M LAP SWIMMING	25 M LAP SWIMMING	SYNCHRONISED SWIMMING	WATER POLO	WATER HOCKEY	DIVING - HIGH & SPRING BOARD	WALKING	AQUA-AEROBICS	RESISTANCE TRAINING	ENDURO FITNESS 18+ (UWA)	TABATA DEEP WATER FITNESS	HYDROTHERAPY - INJURY RECOVERY	HYDROTHERAPY - AGED / MEDICAL	INFLATABLES	NINJA CROSS	AQUATIC CLIMBING WALLS	SCUBA TRAINING	CANOE TRAINING	LTS (1-5)	LTS (5-12)	LTS (13 & UP)	PRIMARY SCHOOL COMPETITIONS	HIGH SCHOOL COMPETITIONS	STATE COMPETITIONS	INTERNATIONAL COMPETITIONS	OLYMPIC COMPETITION	SLIDES	WATER PLAY			
	°C	°C	m																																			
50M POOL	25 - 28	27	1.1 - 3.0	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		
25M POOL	25 - 28	27	1.1 - 1.4	Y	Y	N	Y	N	Y	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	Y	N	
LEARN TO SWIM / PROGRAM	28 - 32	32	0.9 - 1.4	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	
HYDROTHERAPY	32 - 36	36	0.9 - 1.5	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
LEISURE POOL	28 - 32	32	0.0 - 0.9	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	N	N	Y	Y	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	Y	Y	
HOT RECOVERY POOL (SPA)	32 - 36	36	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
COLD RECOVERY POOLS	10 - 15	10	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
SPLASH PAD	20 - 26	25	0.0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	
DESIGN CONSIDERATIONS																																						
POOL	LENGTH		m					50	25	30	34	25	20																									
	WIDTH		m							12	25	15	25																									
DEPTH REQUIRED	MIN		m					1.0											1.1																			
	MAX		m							3									1.3																			
LANES	2.5m WIDE		# OFF																																			
TEMPERATURE								25 - 28		26 - 28		25 - 27							33.5 - 35																			

**Indicative Core Functionality Considerations**  
 Actual design subject to feasibility study conclusions on demand and on overall planning arrangements







# FUNCTIONALITY REVIEW – COMPARISON PAGE

## Base Functionality

PARAMETER / FUNCTIONALITY	TEMPERATURE RANGE	Recommended Temperature	DEPTH RANGE	STAIR ENTRY	RAMP ENTRY	ZERO DEPTH BEACH ENTRY	HOIST OR LIFT ENTRY	50M LAP SWIMMING	25 M LAP SWIMMING	SYNCHRONISED SWIMMING	WATER POLO	WATER HOCKEY	DIVING - HIGH & SPRING BOARD	WALKING	AQUA-AEROBICS	RESISTANCE TRAINING	ENDURO FITNESS 18+ (UWA)	TABATA DEEP WATER FITNESS	HYDROTHERAPY - INJURY RECOVERY	HYDROTHERAPY - AGED / MEDICAL	INFLATABLES	NINJA CROSS	AQUATIC CLIMBING WALLS	SCUBA TRAINING	CANOE TRAINING	LTS (1-5)	LTS (5-12)	LTS (13 & UP)	PRIMARY SCHOOL COMPETITIONS	HIGH SCHOOL COMPETITIONS	STATE COMPETITIONS	INTERNATIONAL COMPETITIONS	OLYMPIC COMPETITION	SLIDES	WATER PLAY		
POOL	°C	°C	m																																		
50M POOL	25 - 28	27	1.1 - 3.0	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
25M POOL	25 - 28	27	1.1 - 1.4	Y	Y	N	Y	N	Y	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	Y	N
LEARN TO SWIM / PROGRAM	28 - 32	32	0.9 - 1.4	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N
HYDROTHERAPY	32 - 36	36	0.9 - 1.5	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LEISURE POOL	28 - 32	32	0.0 - 0.9	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	N	N	Y	Y	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	Y	Y
HOT RECOVERY POOL (SPA)	32 - 36	36	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
COLD RECOVERY POOLS	10 - 15	10	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SPLASH PAD	20 - 26	25	0.0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

## Combined Functionality

50M POOL <sup>1,2</sup>	25 - 28	27	1.1 - 3.0	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
COMMUNITY <sup>3</sup>	28 - 32	32	0.0 - 0.9	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	N	N	Y	Y	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	Y	Y	
WELLNESS <sup>4</sup>	32 - 36	36	0.9 - 1.5	Y	Y	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
COLD RECOVERY POOLS	10 - 15	0.45 - 1.4	Y	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SPLASH PAD <sup>5</sup>	20 - 26	25	0.0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

## COMBINED FUNCTIONALITY COST SAVINGS

	CAPEX Savings	OPEX Savings
Combined Functionality Cost Savings	≈ \$3,000,000	≈ \$250,000 per year



# COMBINED FUNCTIONALITY CONCLUSIONS



There are financial advantages in both capital expenditure savings and operational expenditure savings that can be derived from combining a range of functions within fewer pools.

This review compares the core functions with one alternative option that combines several functions within fewer pools. This particular model of combined functionality reduces the total number of pools to three, that we have named:

- 50 meter Pool
- Community Pool
- Wellness Pool

This model has the temperatures defined for each of the three pools because it is an important criteria for functionality. As such, the temperatures for the Community and Wellness pools are required to be higher than typical local council aquatic centre pools. Our analysis shows only a marginal increase in heating costs from the increased temperature based on an investment in geothermal heating.

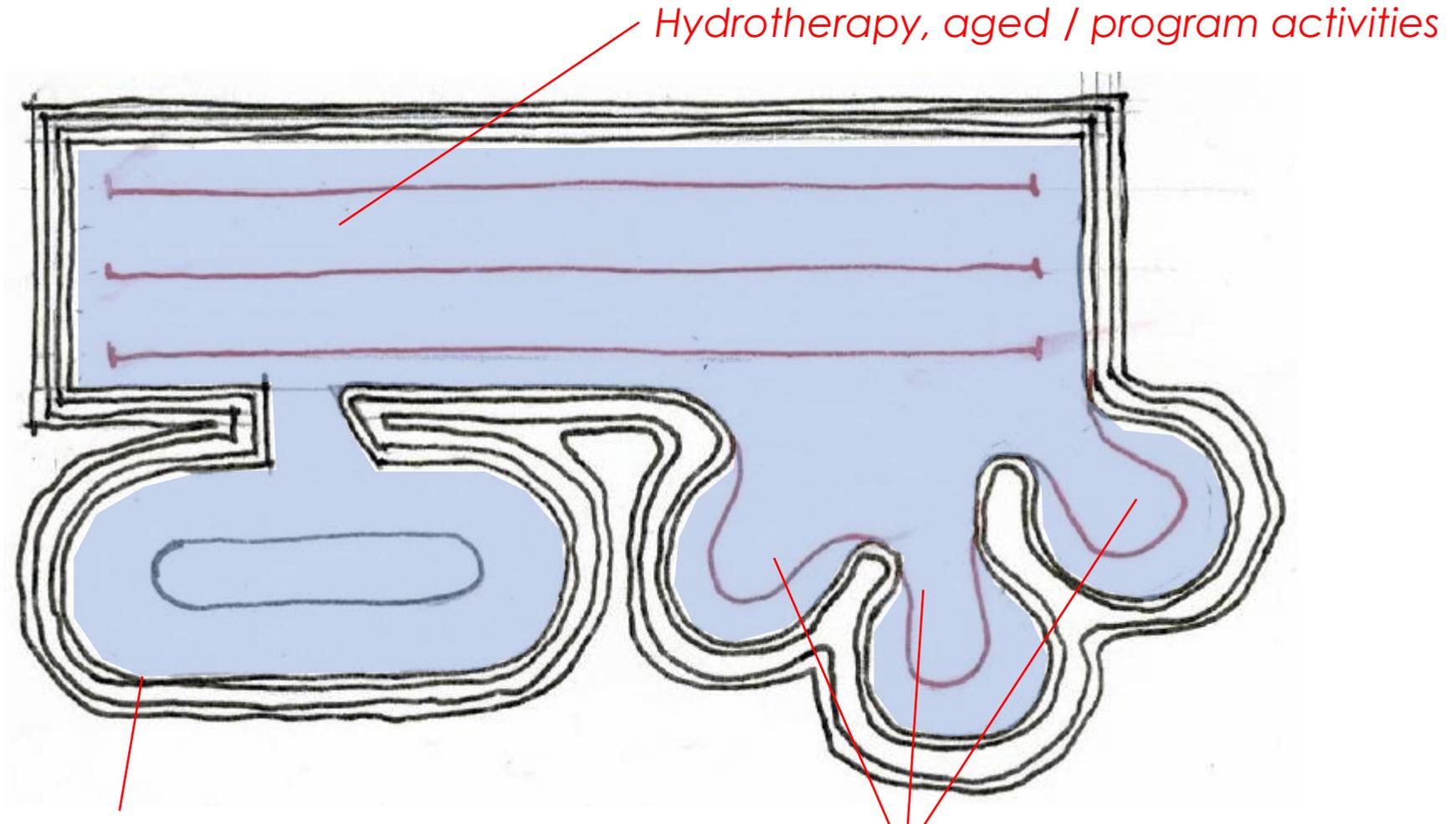
In this particular combined model, the 50 meter pool, at 27°C, retains the same amenity and functionality of the original core functions. The Community pool, at 32°C, combines a range of functions including program, learn to swim and leisure including zero beach entry. The Wellness pool, at 36 °C, also combines a range of functions including medical/hydro therapy, aged activity and hot recovery. It also adds the possibility of 'resort style' leisure, an amenity which is largely unavailable elsewhere in Perth, and when combined with South Perth's golfing facilities, offers a unique proposition for the South Perth community, and is likely to be a strong attractor for increased patronage.

The conclusion is that a wide range of functionality that encompasses all of the original core functions can be achieved with a small number of water bodies - with a consequent opportunities for capital and operating cost management.



# COMBINED FUNCTIONALITY VISUALISATION

Wellness Pool – ≈ 36°C



*Hydrotherapy, aged / program activities*

*Resistance current, hot recovery*

*Jets, nozzles, winter leisure, hot recovery*

Public Version - Redacted

# COMBINED FUNCTIONALITY VISUALISATION

**Community Pool Option –  $\approx 32^{\circ}\text{C}$**

*Learn to Swim / program  
1.2 meter depth*

*Leisure Pool Seating /  
spa jet functionality*

*Zero depth beach entry*

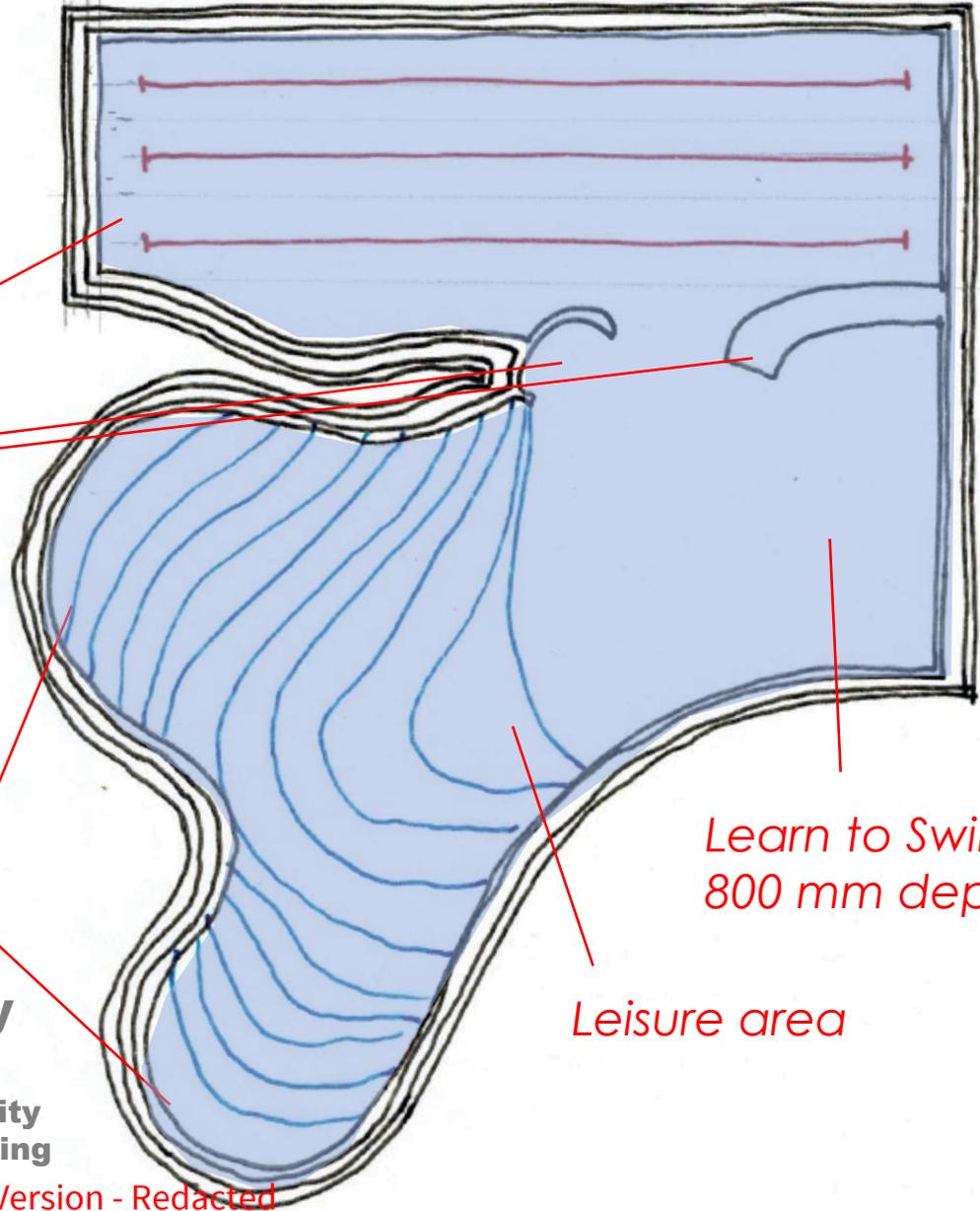
*Learn to Swim  
800 mm depth*

*Leisure area*

## **Indicative Combined Functionality Option**

**Actual area and detailed design subject to feasibility  
study conclusions on demand and on overall planning  
arrangements**

Public Version - Redacted



# COMBINED FUNCTIONALITY VISUALISATION

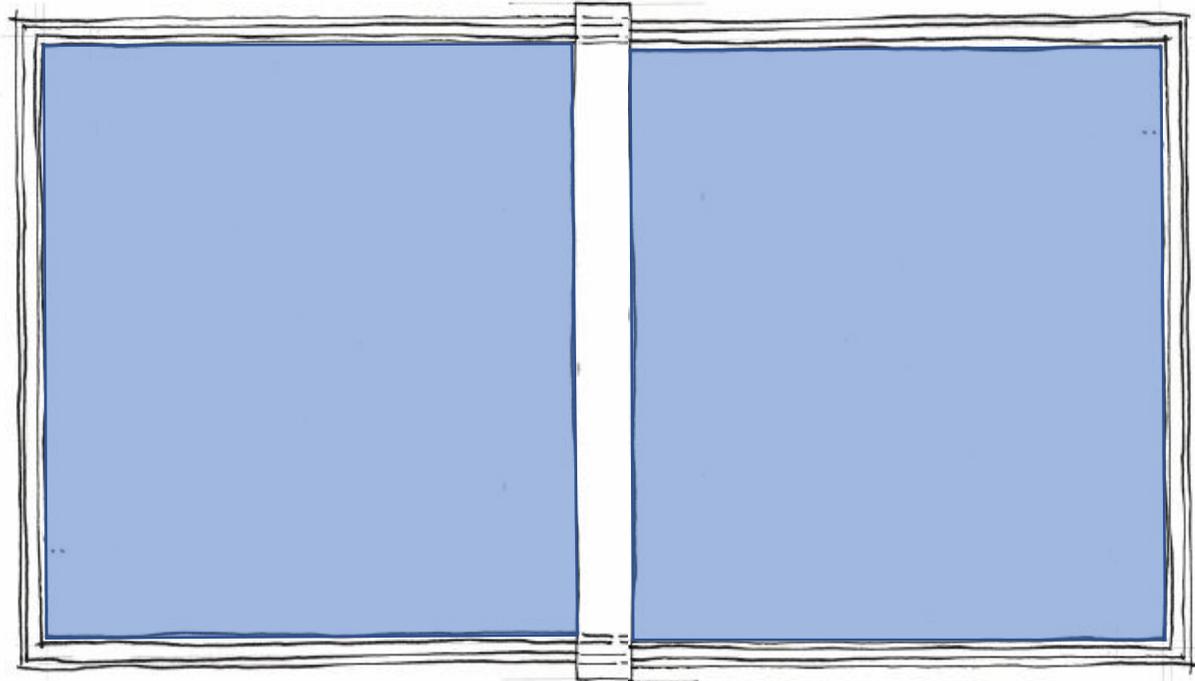
## 50m Pool + Bulkhead / Swimwall - 27°C

*Learn to Swim / Program  
1.2 meter depth*

*Lap swimming*

*Squad swimming /  
athletic training*

*Club Water Polo*



### **Indicative Combined Functionality Option**

**Actual area and detailed design subject to feasibility study  
conclusions on demand and on overall planning arrangements**

# INDOOR VS OUTDOOR COMPARISON

INDOOR POOLS		OUTDOOR POOLS	
PROS	CONS	PROS	CONS
Shading and wind protection provided by building	HVAC systems required to be installed	Additional lighting only required for night time use	Wind protection required
Less chance of contamination of the pools from the environment	Heat recovery on the HVAC systems requires increased capex, increased maintenance and increased space for building service systems	Reduced building volume requiring HVAC, thus reducing capital costs, space required, operating costs and periodic replacement costs over the lifetime of the facilities	Increased heating capacity required for wind conditions
Reduced heating load to pool	Increased heating load via building systems	Reduced electrical costs	Increased in evaporation
Usable all year round regardless of weather conditions	Low level exhaust required to pool hall to remove chloramines	Reduced humidity within the building envelope, hence reduced maintenance	Shading possibly required over some pools
Potential for weather related construction delays reduced	Increased equipment loading as UV units are generally incorporated into water treatment plants serving indoor pools	Quieter environment no hard walls for noise to reverberate off	Greater chance of pool contamination from leaves, birds etc
	Pool halls are by their nature hard places in which noise levels can be very high	No need for UV units to be installed	Not as user friendly during inclement weather
	Increased capital costs	Incorporates better into a family experience, outdoor leisure setting, parkland, barbecues, etc	Can impose a risk on the construction program due to inclement weather especially during tiling operations of large pools
	Increased energy costs	Reduced impact from poor perception of swimming pool chloramine environment	Potential for reduced attendance in winter if not well designed and marketed
	Increased Operations & Maintenance costs	Reduced physiological impact on swimmers and viewers from Disinfection Byproducts	Requires effort and imagination on the part of the design team to design for non-standard facility and avoid designs which copy older facilities, and thus may require time and cost to implement
	increased carbon / greenhouse gas emissions and increased environmental footprint	Reduced carbon / greenhouse gas emissions & reduced environmental impact	
		Reduced Opex	
		Significantly reduced periodic replacement costs	
		Opportunity to differentiate South Perth RAF with a unique outdoor recreation environment	



# DESIGN IMPLICATIONS AND RECOMMENDATION FOR OUTDOOR POOLS

- Sun and rain protection
- Wind protection
- Warmer water than standard aquatic centres
- Warm Floors
- Radiant Heaters
- Retractable walls/roof
- Proximity of changerooms to pools
- Warm showers in close proximity to pools



Public Version - Redacted





## APPENDIX M – COST ESTIMATE

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INDICATIVE ORDER OF COST ESTIMATE

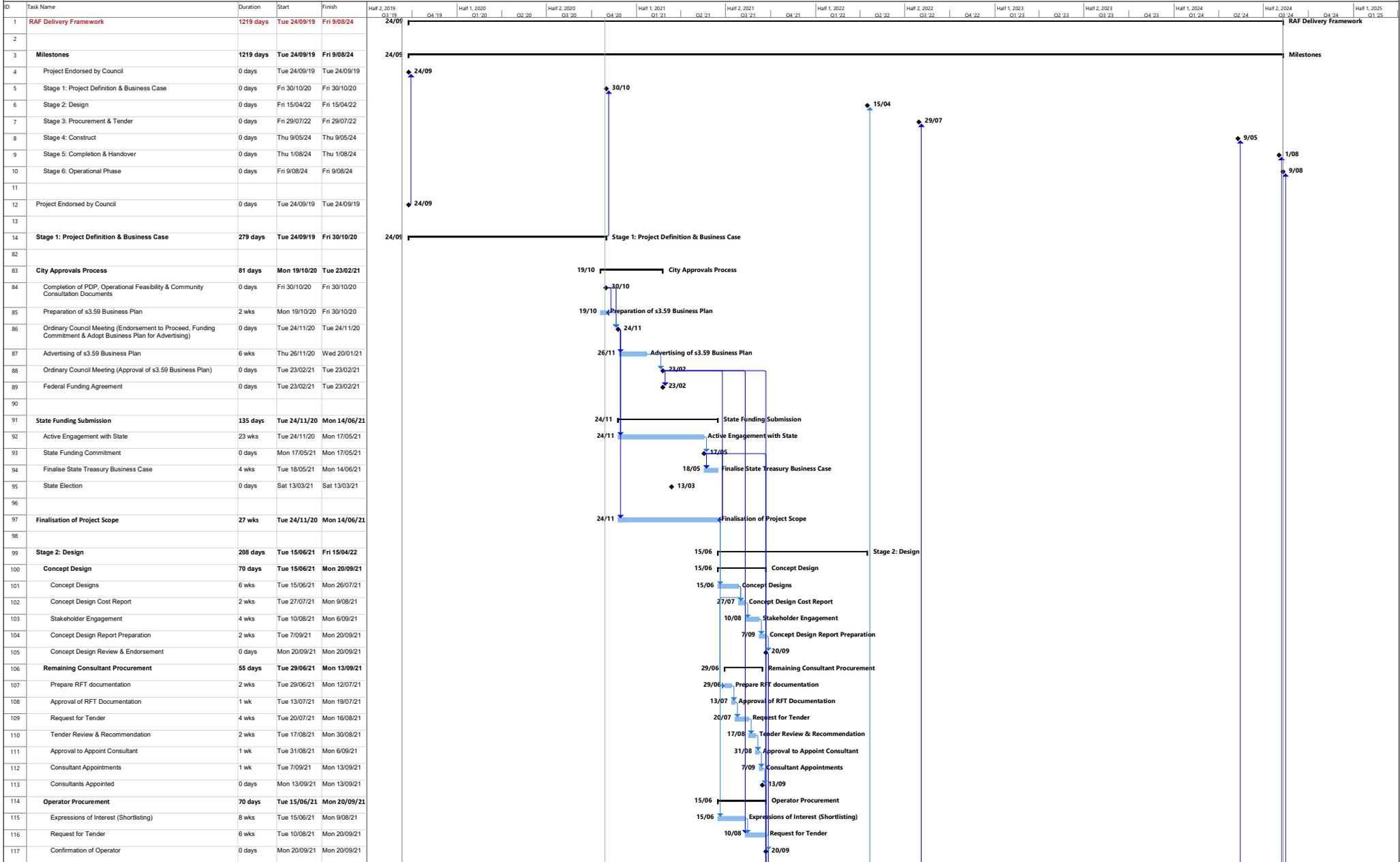
CITY OF SOUTH PERTH RECREATION & AQUATIC FACILITY

**REDACTED - COMMERCIAL IN CONFIDENCE**

## APPENDIX N – PROGRAMME



# City of South Perth RAF Delivery Programme



Public Version - Redacted



# City of South Perth RAF Delivery Programme



Public Version - Redacted

## APPENDIX O – RISK REGISTER

**REDACTED - COMMERCIAL IN CONFIDENCE**

## APPENDIX P – STAKEHOLDER SUPPORT DOCUMENTS

**REDACTED - THIRD PARTY DOCUMENTATION**

## APPENDIX Q – COMMUNITY CONSULTATION REPORT



**RAF** : RECREATION  
& AQUATIC  
FACILITY

# STAKEHOLDER AND COMMUNITY ENGAGEMENT REPORT FOR THE PROPOSED RECREATION AND AQUATIC FACILITY (RAF)

GOING BEYOND: RESULTS OF THE STAKEHOLDER AND  
COMMUNITY ENGAGEMENT

OCTOBER 2020



research|solutions

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## 1.0 EXECUTIVE SUMMARY

The City of South Perth (the City) engaged Research Solutions to conduct an independent stakeholder and community engagement exercise to gauge the need for and acceptability of a proposal to construct a regional Recreation and Aquatic Facility (**RAF**) on the grounds of Collier Park Golf.

The engagement process was divided into two parts:

1. An online survey was hosted on Research Solution's Web Survey Creator platform and distributed through the City's engagement platform and widely into the community.
2. In-depth research comprising a series of five face-to-face engagement activities.

Part One of this report details the findings of the survey; the outcomes of the face-to-face engagement activities are provided in Part Two.

In addition, the City undertook a number of engagement activities independently, including: an online Q&A page, the Online Community Workshop and a workshop with the South Perth Youth Network, included as Part Three of this report.

Key findings overall from the stakeholder engagement identified a high level of support for the concept of the RAF with 87.2% of respondents to the survey indicating that they would use the proposed RAF.

Compelling reasons for developing the RAF were:

- Its location in the City of South Perth, more convenient than many of the current venues used (70.3% of respondents used facilities outside of the City)
- That it met the need for a swimming pool in the City of South Perth (79.4% of respondents had used an aquatic or indoor recreation facilities in the last 12 months)
- That it provides the opportunity to create a unique facility which meets the needs of the community.

This report contains many ideas to consider for developing this unique environment.

### 1.1 The results of the RAF survey

The stakeholder and community engagement was undertaken using a structured survey to obtain an understanding of the needs and expectations of the community in relation to the RAF. A total of 1,641 people participated in the online survey.

Based on those who participated in the survey, the majority (87.2%) say that they would be likely to use/visit the RAF should it be built (probably or definitely would use). Overall, 70.7% people who participated in the survey stated they would definitely use/visit the facility.

The main reasons community members gave for being likely to use the RAF themselves or take their children or grandchildren to the facility include:

- It's closer to home/work than the current facility used
- To use the pool
- Promotes fitness and wellbeing
- Good for kids/would take children or grandchildren there
- All the family would use it, it's family friendly
- Provides a place to socialise with family and friends

Of those who are unlikely to use the facility, their main reasons for not using it include:

- There are similar facilities already available close by
- Don't want facility to be built on the golf course
- Perceive it's a waste of ratepayers' money
- Believe it's the wrong location and should be built elsewhere

Those who would definitely use the proposed RAF tend to fit the following demographic profile:

- Have used a public or private aquatic centre in past 12 months
- Have children at school (pre-school, primary and secondary)
- Under 55 years of age
- Female
- Live in the City of South Perth or directly surrounding local government areas (LGAs)

Those likely to use the facility expect to do so because they or their children currently participate in indoor and pool-based activities and the proposed facility is closer to their home or work compared to the facilities they currently use. Furthermore, the proposed venue has aquatic facilities, which the community believes is needed in the area. They also perceive the facility as being a family friendly environment which is good for children and a good place to socialise.

The main indoor and pool-based sports and activity facilities currently used by the community members are:

- Aqualife, East Victoria Park
- Wesley Sports Club, South Perth
- Beatty Park Leisure Centre, North Perth
- Riverton Leisureplex, Riverton
- LeisureFit, Booragoon
- ARC, Cockburn
- Belmont Oasis Leisure Centre, Belmont

On average, those likely to use the proposed RAF travel for 15 minutes to get to the facilities they currently use and there was a high incidence of travel by private vehicle among this group of people, regardless of the facility they currently use.

Among those likely to use the proposed facility, the 12 most popular indoor and pool-based sports and activities which this group would like to be offered at the RAF include:

- Swimming
- Pilates/yoga
- Gym workout
- Swimming/walking in water
- Group fitness classes
- Swimming lessons
- Hydrotherapy pool
- Circuit training
- Water play area/pool
- Indoor climbing

- Indoor basketball
- Aquatic group classes

The research indicated that the RAF was unique compared to the surrounding facilities used in offering gym/ health club activities as part of the RAF offering. Among those likely to use the facility, the most preferred health and wellbeing services which have been proposed for the RAF include:

- Massage
- Physiotherapy
- Sauna/spa/steam room
- Hydrotherapy

The most popular food and beverage facilities with the highest probable usage among those who are likely to use the facility include:

- Café
- Kiosk/take-away
- General seating and tables

In terms of outdoor facilities to be offered, those likely to use the RAF have greatest preference for the inclusion of:

- Shaded areas
- Picnic area
- Seating
- Children's playground
- Mini golf

Travel by private vehicle will remain by far the most popular mode of transport in getting to the RAF among those likely to use it. However, those living in the City of South Perth and surrounding LGAs may modify their mode of transport if there are safe cycling routes to the proposed facility and there is secure bike parking at the facility.

Expectations about the RAF that those likely to use the facility consider extremely important include it:

- Being a welcoming and safe environment
- Providing opportunities to stay active
- Providing a positive experience
- Improving general health and wellbeing

Generally, there is wide support for the development of the RAF among those who participated in the stakeholder and community engagement survey.

## **1.2 Outcomes of the face-to-face engagement activities**

The following paragraphs summarise the outcomes of seven face-to-face engagement activities (below), with detailed findings provided in Part Two of this report.

Stakeholder Group	Date	# of attendees
Disability and Access Workshop	26 August 2020	24
Community and Action Groups Workshop	2 September 2020	11
Aboriginal Key Stakeholder and Community Workshop	7 September 2020	9
Community Information Day	12 September 2020	≈100
Collier Park Golf User Groups Workshop	17 September 2020	12
<b>Online Community Workshop</b>	16 September 2020	8
<b>South Perth Youth Network (SPYN) Workshop</b>	24 September 2020	5
<b>Total attendees</b>		≈167

Key messages from the face-to-face engagement activities suggest:

- The community sees a need for the RAF in the City of South Perth, although there are some whose support is likely contingent upon the RAF being financially sustainable in the long term
- An aspiration for the RAF to offer ‘something for everyone’, irrespective of age, financial position, cultural background or level of ability
- There are widely held beliefs that creating a welcoming and inclusive space will be contingent upon both good design and great management, and that structural inclusion is key to creating comfortable spaces for Aboriginal people and other groups
- The community is looking for an exceptional public realm that will become part of the daily life of local residents
- Many view the RAF as an opportunity for the City of South Perth to recognise and celebrate Whadjuk history and culture through art, design and naming
- There appears to be some opposition to locating the RAF at Collier Park Golf from golfers, concerned about its impacts on the course and their experience of it.

### *1.2.1 The community is broadly supportive of the concept, perceiving a need for a RAF in the City of South Perth.*

The engagement activities confirm that residents currently leave the City of South Perth for most aquatic pursuits: whether exercise, leisure or swimming lessons. The lack of a swimming pool is a gap in the City’s offering and many perceive the RAF is long overdue.

### *1.2.2 Support may be contingent on the financial viability of the project, and the likely impost on ratepayers.*

In many of the engagement activities, a number of residents voiced their concerns about the financial viability of an aquatic centre, perceiving swimming pools to be ‘money pits’ for local governments and ratepayers. These participants would like to see more in the way of ‘hard numbers’ and the business case before putting their support behind it.

### *1.2.3 Regular users of Collier Park Golf may support the concept of the RAF but be more likely than others to oppose its location at Collier Park Golf*

Golfers want the 27-hole course to remain and perceive there are other sites within the City more suitable to the RAF. The main issue appears to be concern over access to the course: they feel that encouraging more golfers to the game and reducing the number of holes is likely to have a negative impact on their ability to play on the course. The introduction of a new driving range and new technologies is unlikely to offset reduced access to the course.

### *1.2.4 Multi-cultural, multi-functional and multi-generational: consistent values and aspirations emerged across all groups*

Common themes emerged from the majority of face-to-face engagement activities, namely that the RAF should be a place where everyone feels comfortable and that can accommodate the needs of people of all ages, all cultures and all levels of ability. The RAF should be a place for more than just swimming. The RAF should offer opportunities for casual daily use (like walking the dog or taking the children to the playground), for meeting up with friends or family for picnics or breakfast at a café, for individual or group exercise, for physical therapy, community events and cultural experiences.

### *1.2.5 For vulnerable and other groups, structural inclusion is key*

Attendees at both the Disability and Access and the Aboriginal Key Stakeholder and Community Workshops stressed the need for structural inclusion in the RAF to foster a sense of welcome and ownership. They felt that inclusion needs to begin at the concept phase and follow through to design, procurement, construction, management and employment at the RAF. Employing Aboriginal people and people with disabilities in all positions – including public facing ones – will cement community faith in the RAF as a welcoming space.

It is felt that many errors are still being made in designing inclusive built environments – even in flagship public spaces. Minimum standards for disability access are not felt to go far enough and good ideas are felt often to be ruined by a lack of follow-through. An example given was the change rooms for people with disabilities at Yagan Square which are ‘above code’, but the entry doors are too narrow, the stalls are a tight fit and wayfinding is poor. At Optus Stadium, there are too few ACROD bays and those that exist are a long walk from the stadium. Elizabeth Quay has cobblestones, not suitable for people in wheelchairs.

Aboriginal people felt that the traditional Euro-centric design of buildings and amenities (such as purely functional, square designs, a lack of access to nature, cold and unwelcoming reception areas, the lack of family change rooms) can serve to exclude.

Attendees at the Aboriginal Key Stakeholder and Community Workshop articulated the need for the architects to believe in the concept of inclusion and really ‘sell it’ to the Elected Members.

### *1.2.6 In creating a welcoming and inclusive environment, management will be as important as design*

The need for high-quality, friendly and well-trained staff emerged as a consistent theme in most engagement activities, trained in cultural awareness and inclusive practices.

Aboriginal people and people with disabilities felt that they are likely to be disproportionately affected by policies that they felt suit the needs of management rather than the users. For example, one workshop attendee who is vision-impaired reported needing to seek permission from pool staff to swim unaccompanied. At some swimming pools, Aboriginal girls are told they cannot swim in shorts and t-

shirts; as they often have a different sense of modesty to their non-Aboriginal counterparts, this policy effectively excludes them from accessing the pool.

#### *1.2.7 The 'economics of access' warrants consideration*

The cost of access is a further consideration. The need to pay for parking, for entry and food can effectively exclude large sections of the community on lower incomes, frequently excluding people living with a disability, seniors, Aboriginal people, new migrants and people with large families.

Catering to all needs requires that the RAF offers both paid and no-cost activities that the whole family can enjoy. Attendees of the Aboriginal Key Stakeholder and Community Workshop identified a water park like the 'old one at Ascot' would be a very welcome inclusion; a place where families are able to spend the day at no cost. The inclusion of a water playground or fountains 'like at Forrest Place' appealed to all community groups.

#### *1.2.8 Opportunities for cultural experiences*

The Aboriginal Key Stakeholder and Community Workshop had a number of considerations they wish included: places to meet, mia mias (a temporary shelter or hut), access to the water, and indigenous art. It is worth noting that the attendees from both the Disability and Access Workshop and the Community Action Group Workshop also felt the RAF would benefit from embedding Aboriginal art and stories of the Whadjuk people into the design of the RAF, including plant names and their uses and the story of the Noongar Six Seasons. They perceive that opportunities for cultural experiences will be one factor that sets the RAF apart and helps make it a regional destination.

#### *1.2.9 An exceptional public realm*

A strong desire for the RAF to provide an exceptional public realm emerged in all groups. To encourage daily use by local residents, it should offer a safe, secure and comfortable environment that includes protection from winter rain and summer heat. Access to the natural environment, protection of the wetlands, and retention of trees are all important, as is the provision of sufficient open space for the RAF to host festivals and community events. An all-abilities, enclosed adventure playground is a key inclusion, and one for which people say they will travel.

## 2.0 INTRODUCTION

The City of South Perth engaged Research Solutions to independently undertake stakeholder and community engagement in regards to the City's proposal for a RAF to be constructed on the grounds of Collier Park Golf. Collier Park Golf is located with easy access for residents of the City of South Perth and students and staff at Curtin University. It is also easily accessible to those living in the Town of Victoria Park, City of Canning and City of Melville.

An important element of the project is stakeholder and community engagement. The engagement process ensures the project considers and incorporates community priorities, needs and aspirations.

### 2.1 Research purpose and use

The purpose of the RAF stakeholder and community engagement was to engage early on in the planning stages of the project with key stakeholders and the wider community and provide them with the opportunity to learn more about the project, give their feedback and assist in shaping the proposed facility. The main engagement tool was the survey, supported by a series of face-to-face engagement activities intended to take a deeper dive into the needs and requirements of different community cohorts.

The survey objectives included the following:

- Obtaining current indoor and pool-based sports and activities the community participates in
- Identifying where these activities currently take place
- Determining, on average, how far the community currently travels to visit facilities to participate in their chosen indoor and pool-based activities and sports
- Identifying current mode of travel to the facilities they currently use
- Establishing likelihood of use of the proposed RAF and the reasons for this
- Determining the preferred indoor and pool-based sports and activities the community would like at the proposed facility
- Determining what other services and facilities would be used at the proposed RAF
- Determining mode of travel to the proposed facility and motivations to switch from private car to other forms of transport to the facility.

The engagement objectives of the six workshops included:

- Inform about the RAF project, its current status and possible next steps
- Capture advice, needs and requirements to make the RAF a welcoming and accessible facility for all
- Circulate information about the project to attendees' networks and promote participation in the survey to gather broader community feedback.

The engagement objectives of the Community Information Day included:

- Inform about the RAF project, its current status and possible next steps
- Capture needs and requirements to make the RAF a welcoming, inclusive place – a regional asset that is enjoyed by the local community
- To circulate information about the project to attendees' networks and promote participation in the survey to gather broader community feedback.

The results of all of the stakeholder and community engagement, along with other information including the Business Case, will help to inform the City of South Perth's decision whether to proceed to the next stage of the process.

### 3.0 METHOD

The engagement process was widely promoted by a far-reaching marketing campaign using all of the City’s communications channels plus additional innovative methods, including social media, displays, videos, City’s website, City’s online engagement portal Your Say South Perth, targeted emails, eNewsletters, hard copy publications and brand ambassadors. The City also made use of its extensive networks to promote the project and survey by using multiple contact lists and requesting that community groups forward the information to their members and contacts.

The engagement process was divided into two parts:

1. A survey with the detailed findings provided in Part One of this report.

The survey was developed by Research Solutions with the assistance and input from representatives of the City of South Perth. The survey was launched on 26 August 2020, with the data collection period concluding on 23 September 2020.

Research Solutions programmed and tested the approved survey prior to the commencement of the data collection phase. The City of South Perth, through its networks and existing contact lists and databases, was responsible for the distribution of the survey links. Unique URLs were created by Research Solutions for each of the distribution lists. These unique URLs enable the tracking of participation for each distribution list. At the conclusion of the data collection process, and after the data file was checked, cleaned and the duplications removed, a total of 1,641 people participated in the survey. A breakdown of the sample by the various distribution channels is tabled below.

Distribution	Valid count (n=1641)	% of Total
Your Say South Perth	1229	74.9%
City’s eNewsletter	170	10.4%
Vision 2027 – those who contributed to the City of South Perth’s Strategic Community Plan engagement	82	5.0%
Community list gathered from a variety of databases	55	3.4%
RAF updates - those who have registered to receive updates on the RAF	54	3.3%
Community and action groups	17	1.0%
Manual data entry of hardcopy questionnaires*	13	0.8%
Club Spirit – local sporting clubs database	9	0.5%
Pol – local politicians	6	0.4%
SI - Steve Irons MP	3	0.2%
Buy Local Shop Local database	1	0.1%
SportsWest - the peak industry body for sport in WA	1	0.1%
City’s staff	1	0.1%

*Note \* The hard copies of the survey were available at the City’s libraries and Civic Centre, as communicated during the engagement period.*

The majority (74.9%) of participation was achieved via the City of South Perth’s Your Say South Perth online engagement portal. This was followed by eNewsletter lists (10.4%) and then by the Vision 2027 (5.0%), Community (3.4%) and RAF update (3.3%) lists.

2. In-depth research comprising a series of seven face-to-face engagement activities, as outlined below. The findings of this phase of the research can be found in Part Two of this report.

Stakeholder Group	Date	# of attendees
Disability and Access Workshop	26 August 2020	24
Community and Action Groups Workshop	2 September 2020	11
Aboriginal Key Stakeholder and Community Workshop	7 September 2020	9
Community Information Day	12 September 2020	≈100
Collier Park User Groups Workshop	17 September 2020	12
Online Community Workshop	16 September 2020	8
South Perth Youth Network (SPYN)	24 September 2020	5
<b>Total attendees</b>		≈167

Research Solutions’ role in most of these activities was to provide assistance with the design of the sessions and to assist with moderation, data collection and synthesis. The City conducted the SPYN Workshop independently, and provided the results to Research Solutions for inclusion in this report. The Online Community Workshop was conducted by Elton Consulting cooperatively with the City of South Perth, with the results subsequently inserted into the report by the City.

### 3.1 Limitations

The results of this survey should be read as indicative of the needs and expectations of the stakeholders and community the survey engaged with. The limitations of the approached used included:

- (1) The sample for this survey is skewed towards females (63.8%), but the age coverage is widespread. The skew towards females is not necessarily an issue as females may be more likely to use the aquatic facilities with their children. Any differences between the needs of males and females have been highlighted in the report.
- (2) The sampling process employed in the project is one of convenience rather than a stratified random sample. Stratified random sampling provides wide coverage of a study’s population where every person has an equal chance of being selected and invited to participate. For this project, the engagement process relied on the distribution of invitations through existing lists held by the City and the promotion of the engagement process by the City of South Perth. As a result, whilst the demography of the sample gives reasonable coverage, it is unclear how representative the sample is of all sections of the population.
- (3) While every effort has been made by Research Solutions to identify and remove duplicate completions of the survey, it is not possible to be absolutely sure that all duplicates have been removed. This is a result of the sampling and invitation distribution method employed

for the consultation process where people received multiple invitations through the lists they were on and the link did not prohibit the respondent undertaking the survey multiple times. That said, the consultants carefully identified and removed duplicate and multiple completions based on:

- a. Names provided for competition entry
- b. Names provided for requests to be added to the RAF update list
- c. Email addresses provided
- d. Telephone numbers provided
- e. IP addresses and the cross-checking by participant demographics to ensure unique respondents were not inadvertently removed.

The feedback from the engagement activities should be read as indicative of the needs and expectations of stakeholders and the community. The limitations of the face-to-face engagement activities include:

- (1) The City engaged with selected communities at specific workshops: Disability and Access, Aboriginal Key Stakeholders and Community, Community and Action Groups, the South Perth Youth Network, Collier Park Golf Key User Group Representatives, and offered the opportunity for the general public to have their say through the Community Information Day and survey. The City has made significant effort to engage as widely as possible, however there may be groups who feel their views have not been captured.
- (2) Every effort has been made by Research Solutions to fairly and faithfully present the views of the workshop participants as expressed at the time of the engagement, however the views captured may not fully represent the breadth of opinion expressed.



# RAF

RECREATION  
& AQUATIC  
FACILITY

## PART ONE

## THE SURVEY

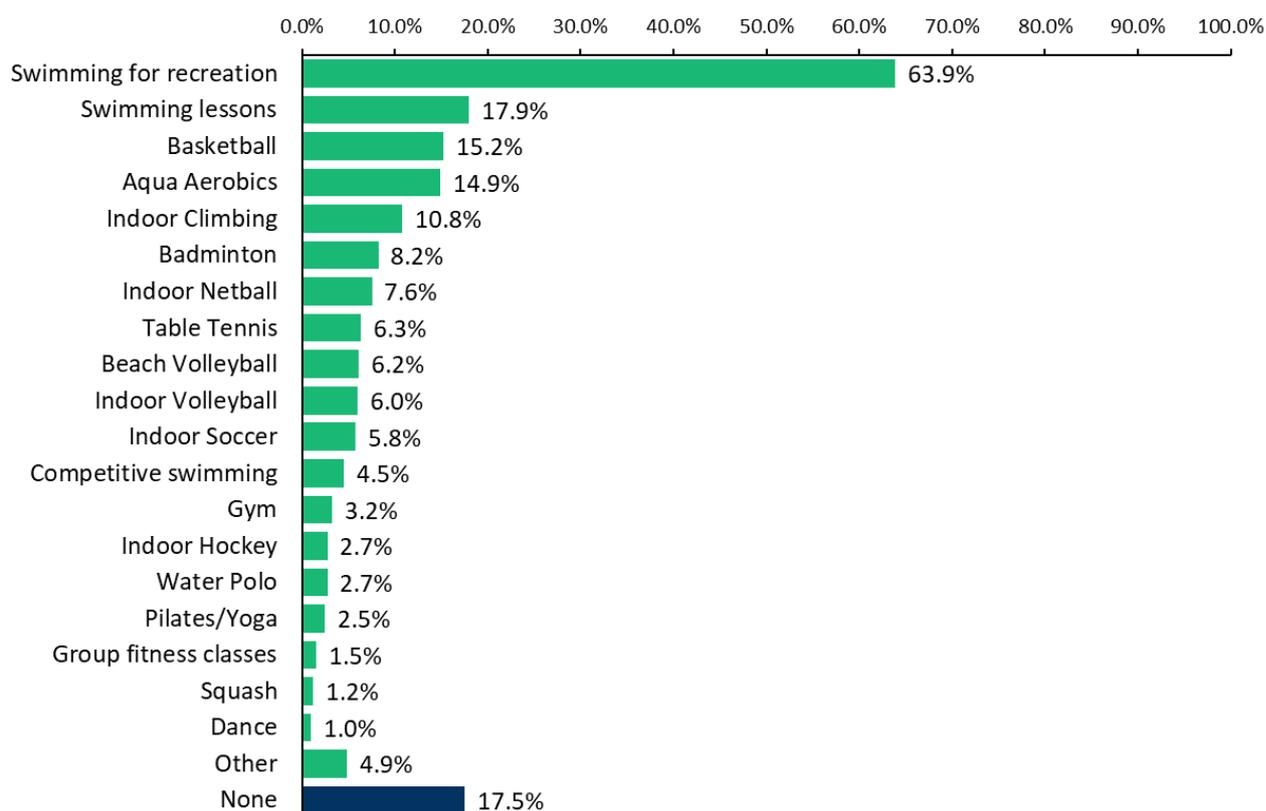
## 4.0 CURRENT INDOOR AND POOL-BASED SPORTS AND ACTIVITIES

### 4.1 Personal participation in indoor and pool-based activities and sports

Survey participants were asked which indoor and pool-based activities and sports they currently participate in. By far the most frequently mentioned activity was swimming for recreation (63.9%). Considerably lower was swimming lessons (17.9%), basketball (15.2%) and aqua aerobics (14.9%).

Around one in six (17.5%) respondents stated they do not currently participate in any indoor or pool-based activities and sports.

**Figure 1: Indoor or pool-based activities and sports.**



Q1. What indoor and pool-based activities and sports do you currently participate in? (n=1641).

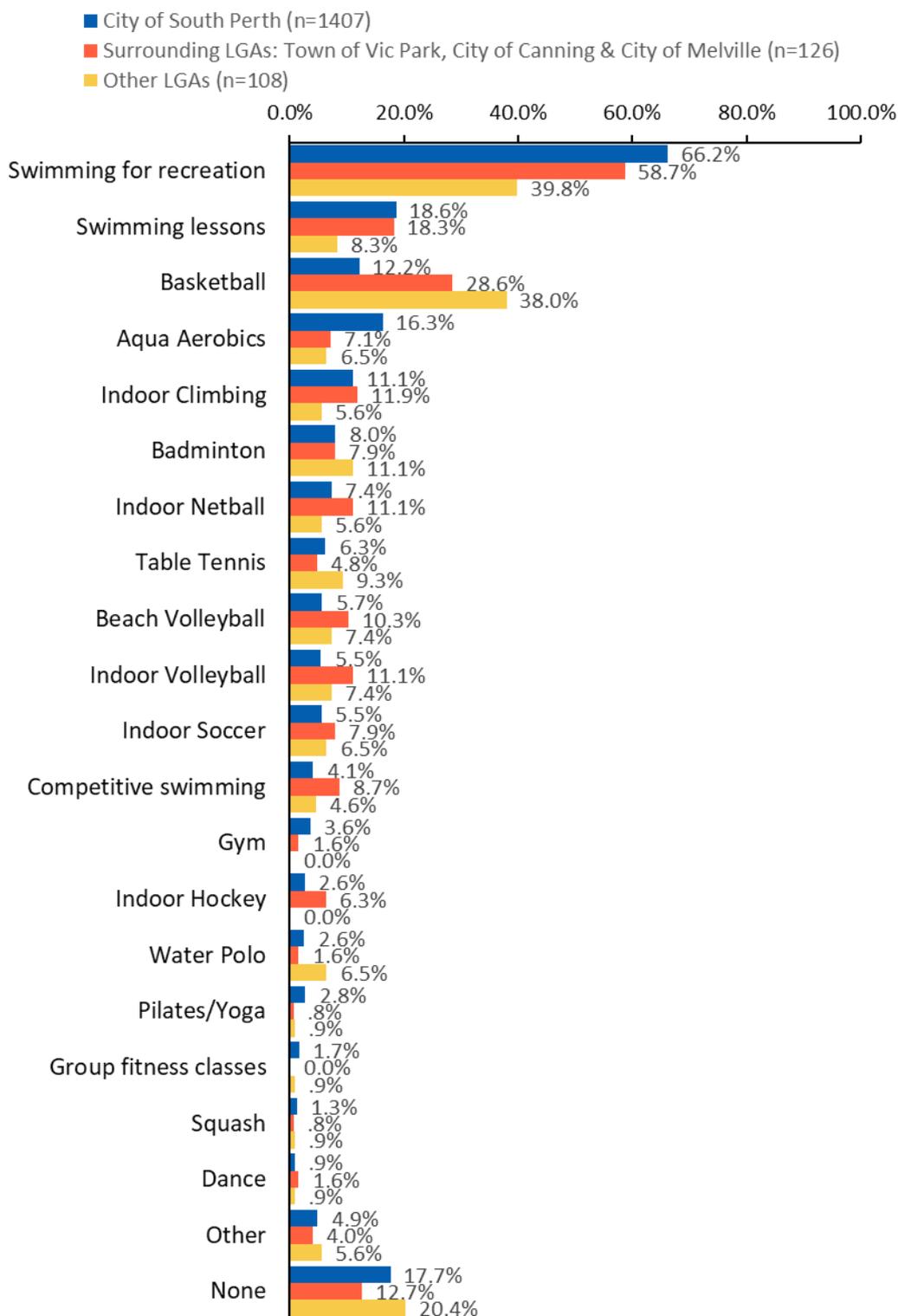
Males and females are equally likely to swim for recreational purposes but males are more likely to play basketball (21.0%), badminton (12.2%) and be involved in indoor climbing (13.1%), whereas females are more likely to participate in aqua aerobics (21.0%) and play netball (8.9%).

Those 65 years and over are the least likely to currently participate in any indoor or pool-based activities and sports (26.9%).

Members of the community with secondary aged children are more likely to play basketball (32.5%), whereas those with primary and pre-school aged children are more likely to say swimming lessons (35.0%) or swim recreationally (69.6%).

The main activity undertaken by residents of the City of South Perth (66.2%) and the surrounding local government areas of the Town of Victoria Park, City of Canning and City of Melville (58.7%) is swimming for recreational purposes.

**Figure 2: Adult indoor or pool-based activities and sports by area.**

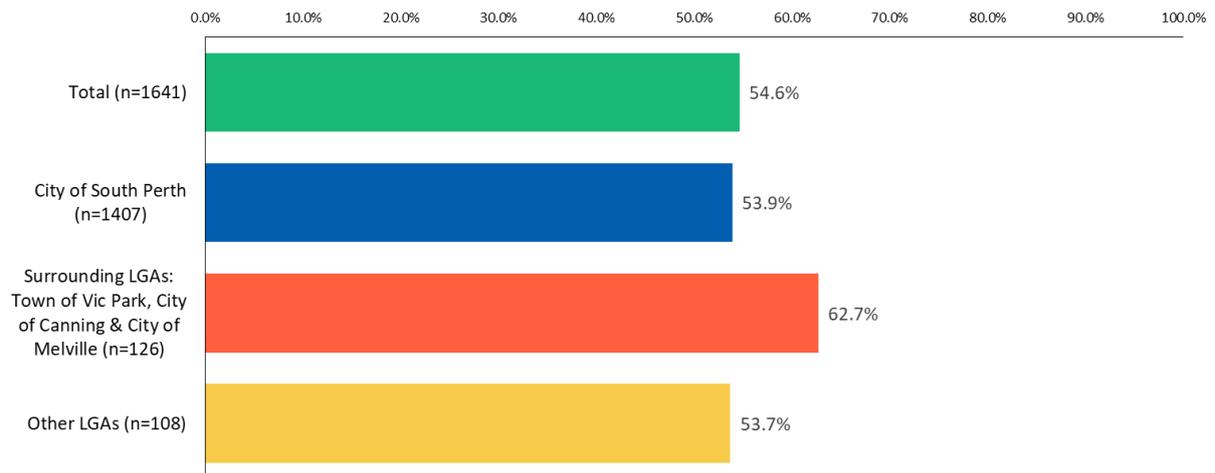


Q1. What indoor and pool-based activities and sports do you currently participate in? by Q23 Do you live in the local government area of... (n=1641).

## 4.2 Children and dependents' participation indoor or pool-based activities and sports

Overall, 54.6% of the community participating in the survey have children or dependents who participate in indoor or pool-based activities and sports. Those living in local government areas directly surrounding the City of South Perth (the Cities of Canning, Melville and the Town of Victoria Park) are more likely to have children or dependents who participate in indoor or pool-based activities and sports (62.7%) compared to participants living in the City of South Perth (53.9%) or other local government areas (53.7%).

**Figure 3: The incidence of children participating in indoor or pool-based activities and sports by area.**

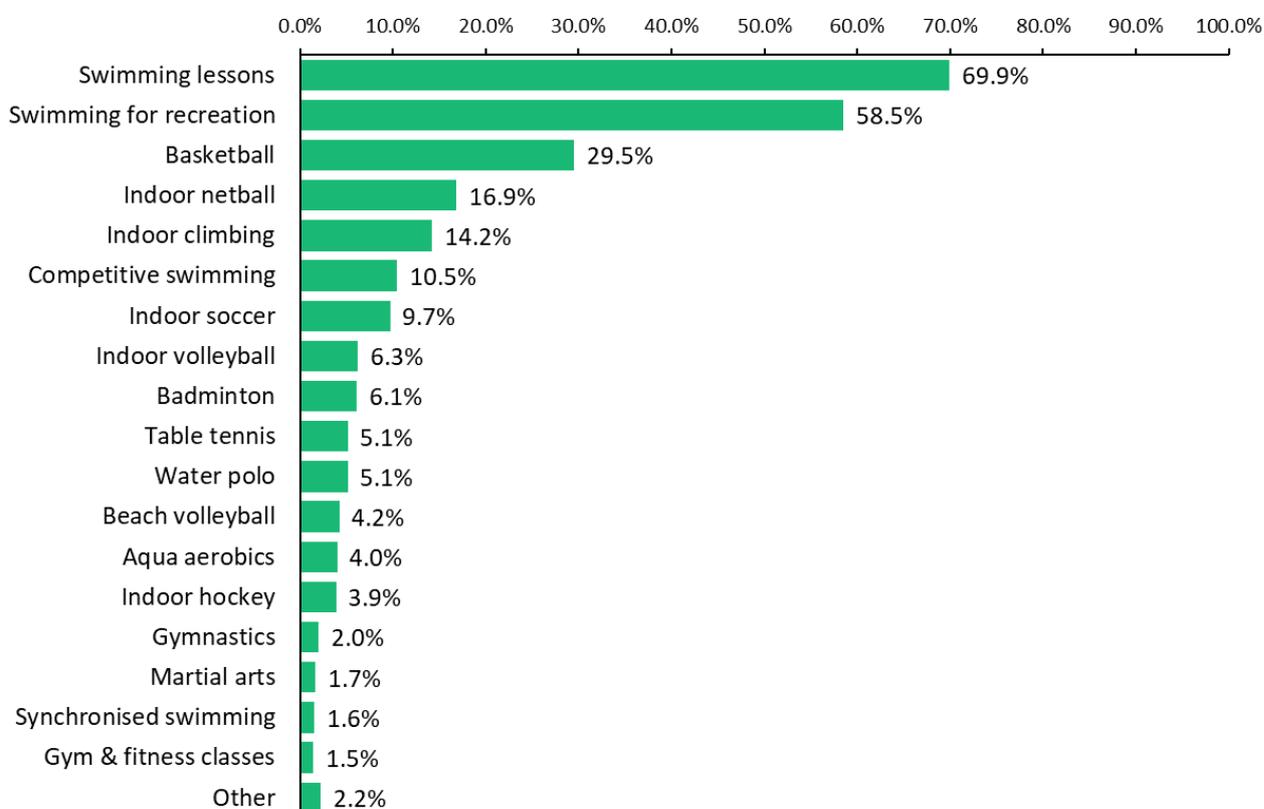


Q2. Do you have children or dependents who participate in indoor or pool-based activities and sports? By Q23. Do you live in the local government area of... (n=1641).

Those aged between 35 and 54 years of age (76.8%) are most likely to have children or dependents who participated in indoor or pool-based activities and sports compared to their younger (36.3%) or older (28.9%) counterparts.

Of all those with children or dependents who participate in indoor or pool-based activities and sports by far the most frequently mentioned activity was swimming: swimming lessons (69.9%) and swimming for recreation (58.5%). Basketball was the third most popular activity (29.5%), followed by indoor netball (16.9%) and indoor climbing (14.2%).

**Figure 4: The indoor or pool-based activities and sports undertaken by children or dependents.**



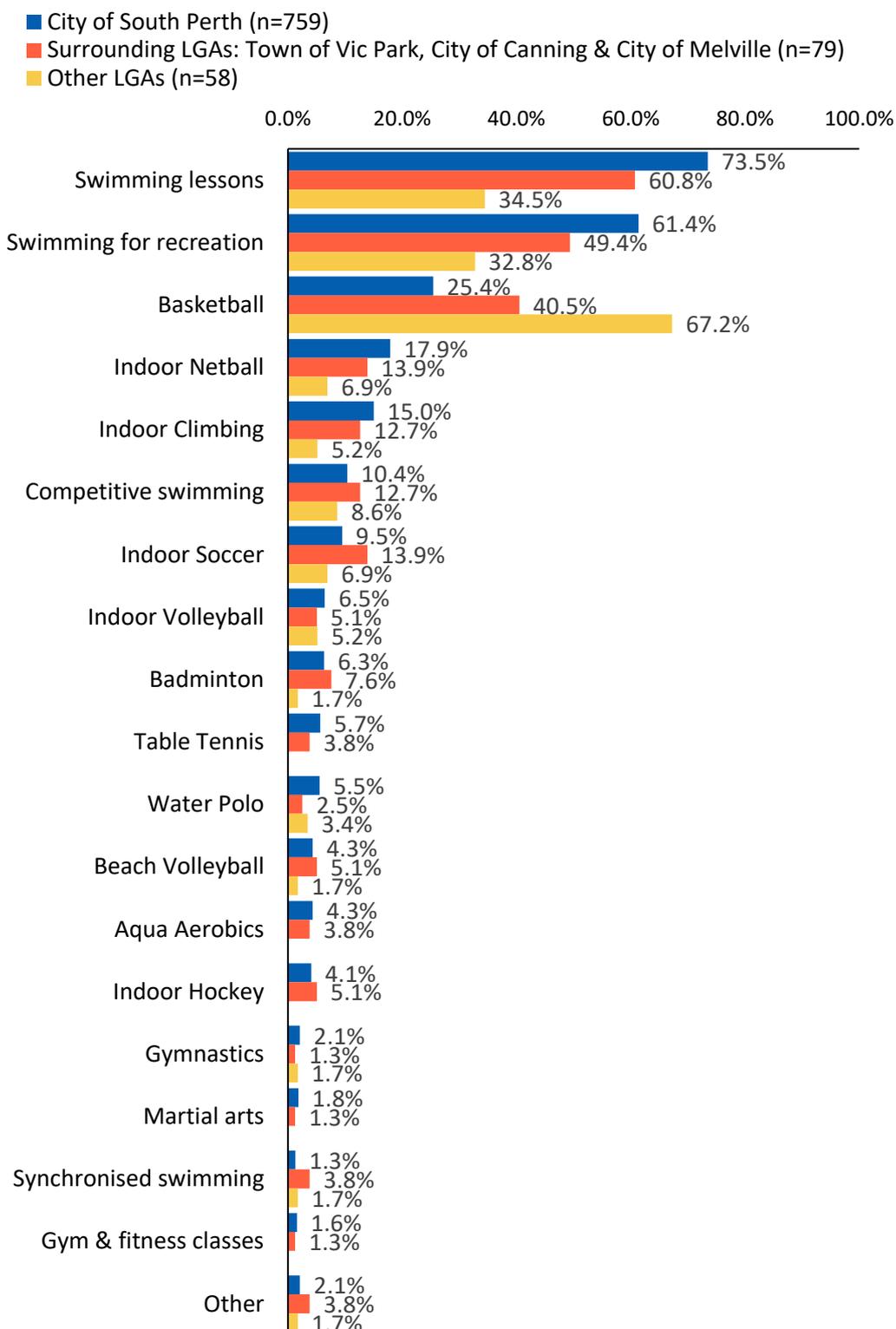
*Q3. Which of these indoor and pool-based activities and sports do they participate in? (n=896; based on those who have children or dependents who participate in indoor or pool-based activities and sports)*

Those with primary or pre-school aged children including those respondents under 44 years are more likely to say their children undertake swimming lessons (86.8%) and those with children at home who have left school say their children swim for recreation (64.0%).

Basketball (34.1%) was a popular sport amongst children or dependents of male respondents and those respondents aged between 35 and 54 years (33.8%) and secondary school aged children (45.7%).

The children and dependents of those in the City of South Perth are more likely to undertake swimming lessons (73.5%) and swimming for recreation (61.4%) and hence need to drive out of the area, than those in directly surrounding local government areas or other local government areas.

**Figure 5: The indoor or pool-based activities and sports undertaken by children or dependents by area.**

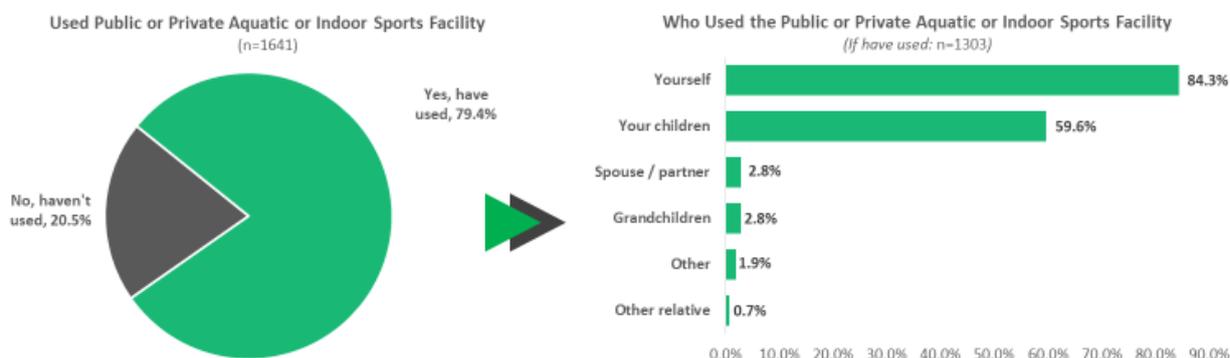


Q3. Which of these indoor and pool-based activities and sports do they participate in? by Q23 Do you live in the local government area of... (n=896)

### 4.3 Recent use of public (community) and privately-operated aquatic and indoor sports facilities

The majority of participants or their children (79.4%) had used either a public or privately-operated aquatic centre or indoor sports facility in the past 12 months.

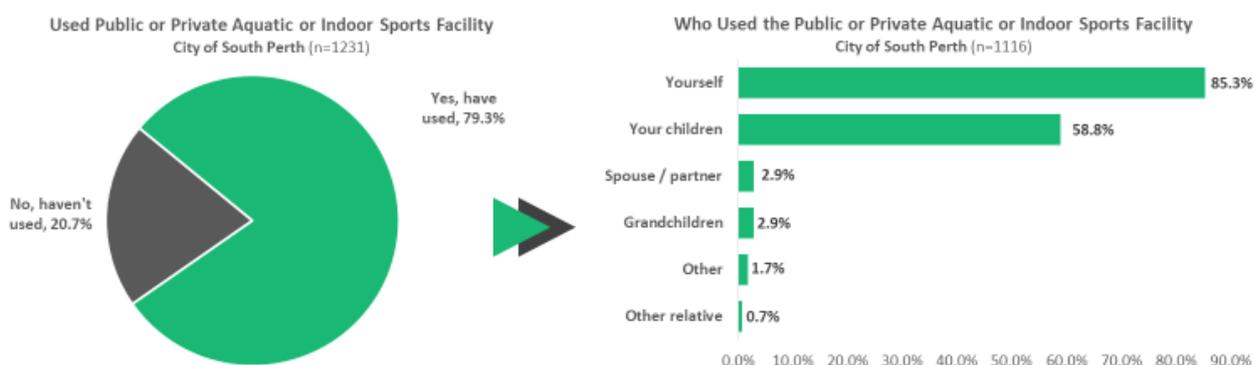
**Figure 6: Use of public and privately-operated aquatic and indoor recreation facilities in the last year.**



Q4. Have you used a public (community) or privately-operated aquatic centre or an indoor sports facility in the past 12 months? Either for yourself or taken your children to one (n=1641) and Q5. If 'yes' at Q4: Was this for... (n=1303)

Of those who have used a public or privately-operated aquatic centre or indoor sports facility in the past 12 months, the majority did so themselves (84.3%). Three-fifths (59.6%) have taken their children to a privately-operated aquatic centre or indoor sports facility in the past 12 months.

**Figure 7: City of South Perth residents' usage of Aquatic or Indoor Sports Facilities**



Q4. Have you used a public (community) or privately-operated aquatic centre or an indoor sports facility in the past 12 months? Either for yourself or taken your children to one, if appropriate. (n=1641). Do you live in the local government area of South Perth? Was this for... (n=1303)

Of residents of the City of South Perth who had used a public or privately-operated aquatic centre or indoor sports facility in the past 12 months, 90.7% had used a public or privately-operated aquatic centre or indoor sports facility in the past 12 months and 64.9% had used a facility for their children or dependents.

Those aged between 35 and 54 years are more likely than other age groups to have used and have to take their children to either a public or privately-operated aquatic centre or indoor sports facility in the past

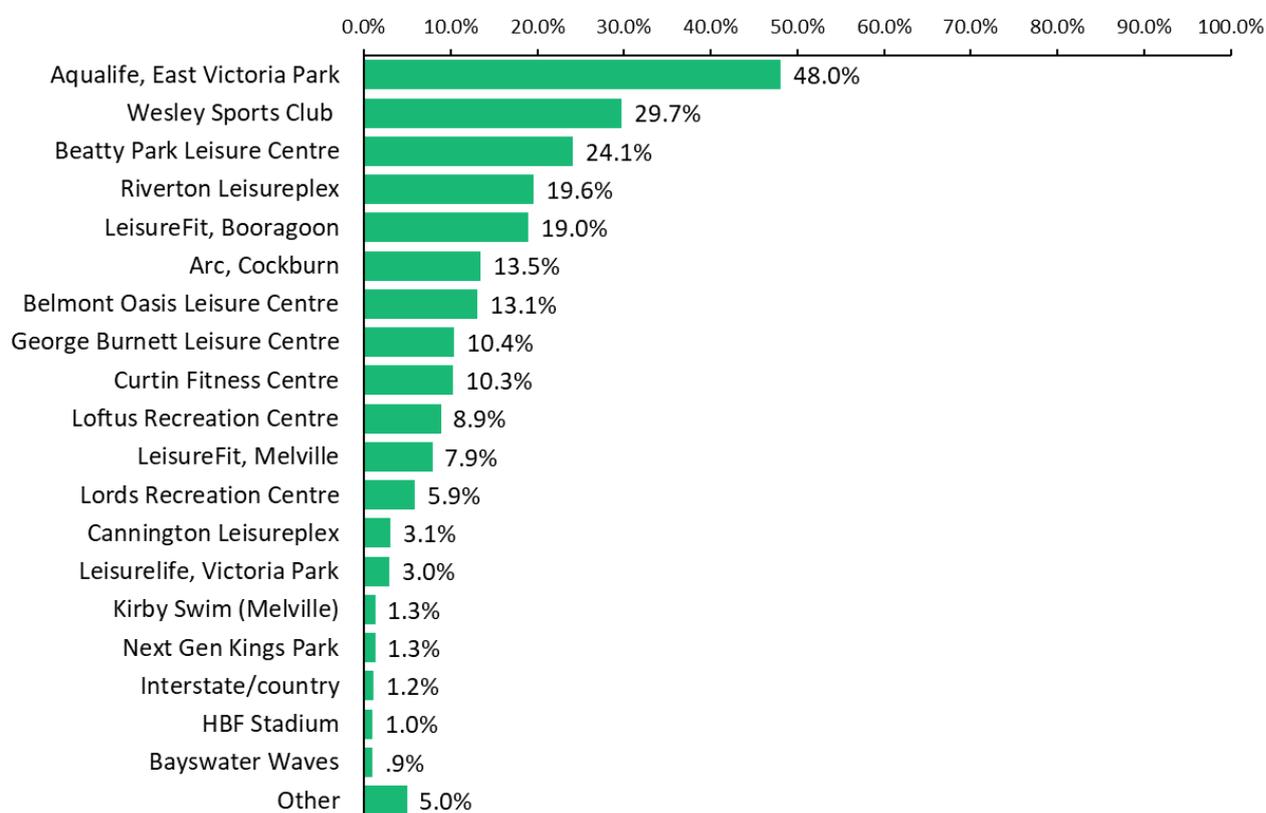
12 months (87.3%). Whereas those aged 55 years and over (67.9%) show a reasonable level of usage but are less likely to have visited an aquatic centre or indoor sports facility.

Respondents with pre-school and primary school aged children (95.0%) and secondary school children (90.3%) are more likely to say they had used a public or privately-operated aquatic centre or indoor sports facility in the past 12 months. Conversely, those without children living at home are less likely to have used a facility in the past 12 months (65.4%).

#### 4.4 Aquatic and indoor sports facilities used

Of those who have used a public or privately-operated aquatic centre or indoor sports facility in the past 12 months, the largest proportion of respondents had used Aqualife (48.0%), which is operated by the Town of Victoria Park. This is followed by Wesley Sports Club (29.7%), owned privately by Wesley College in South Perth. The third most used facility is Beatty Park Leisure Centre (24.1%), which is operated by the City of Vincent.

**Figure 8: The aquatic centres or indoors sports facilities used.**



Q6. Which facility(s) do you (and your children/dependents if applicable) use? (n=1303)

Aqualife in East Victoria Park is popular with those aged between 35 and 64 years (51.9%) compared to their younger (40.3%) or older (37.8%) counterparts.

Belmont Oasis (24.5%) attracted those with secondary school aged children.

Females (20.5%) are more likely to use LeisureFit in Booragoon compared to males (16.0%).

Generally, those who use public or privately-operated aquatic and indoor sports facilities tend to use those facilities that are within their local government area or are close by. There are some exceptions to this with Belmont Oasis and Beatty Park Leisure Centre having a much greater draw area for patrons.

Currently, residents of the City of South Perth are most likely to visit:

- Aqualife (49.2%)
- Wesley Sports Club (32.1%)
- Beatty Park Leisure Centre (24.6%)

Residents of the Town of Victoria Park are most likely to visit:

- Aqualife (74.2%)
- Belmont Oasis (32.3%)
- Beatty Park Leisure Centre (22.6%)

Residents of the City of Canning are most likely to visit:

- Riverton Leisureplex (53.3%)
- Aqualife (33.3%)
- Curtin Fitness Centre (26.7%)

Residents of the City of Melville are most Likely to visit: ^

- LeisureFit Booragoon (53.3%)
- Riverton Leisureplex (53.3%)
- Cockburn ARC (20.0%)

Residents of the City of Belmont are most Likely to visit: ^

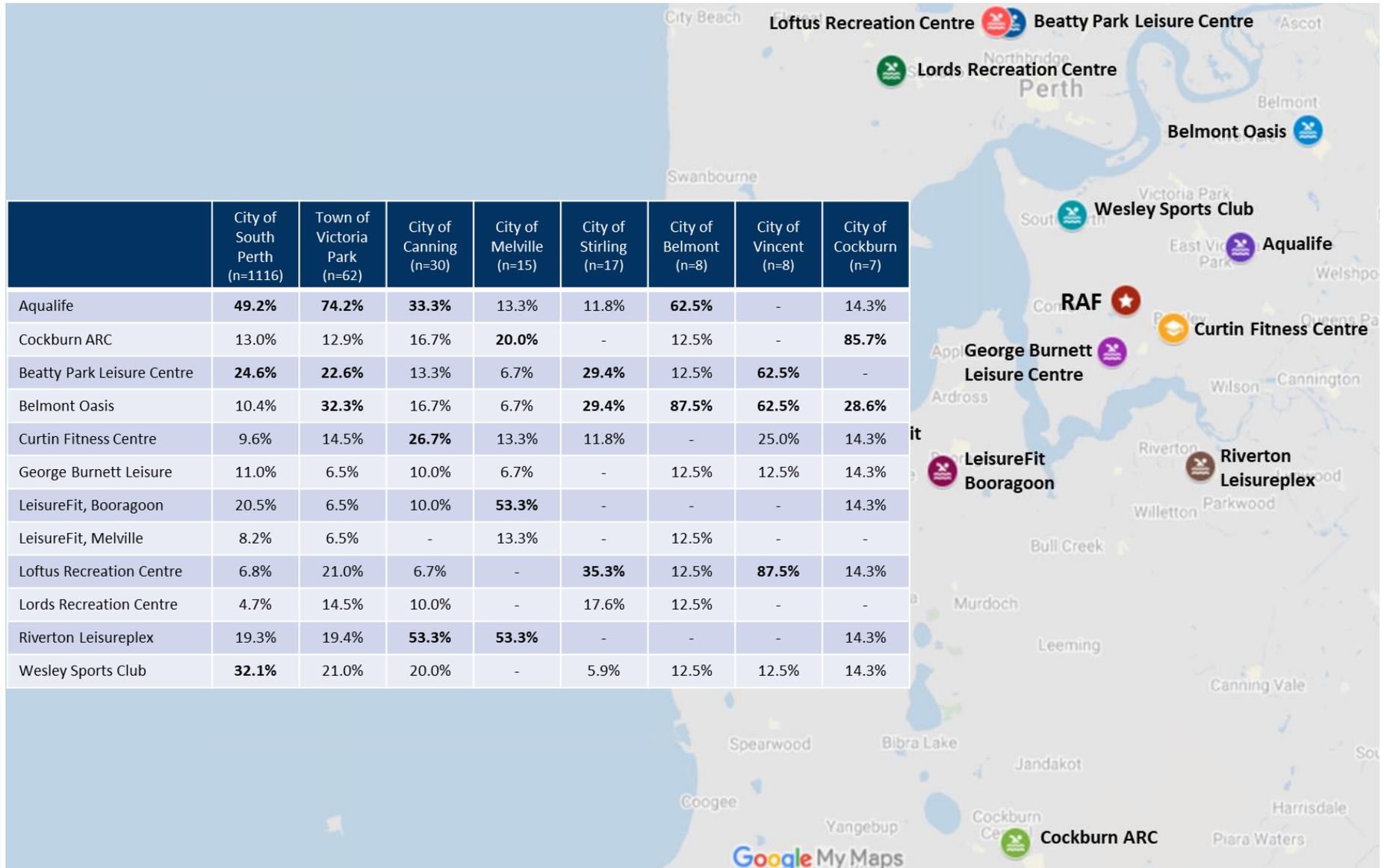
- Belmont Oasis (87.5%)
- Aqualife (62.5%)

Residents of the City of Vincent are most Likely to visit: ^

- Loftus Recreation Centre (87.5%)
- Beatty Park Leisure Centre (62.5%)
- Belmont Oasis (62.5%)

^ = Based on small sample sizes.

**Figure 9: Use of most popular aquatic and indoor recreation facilities by local government area of residence.**



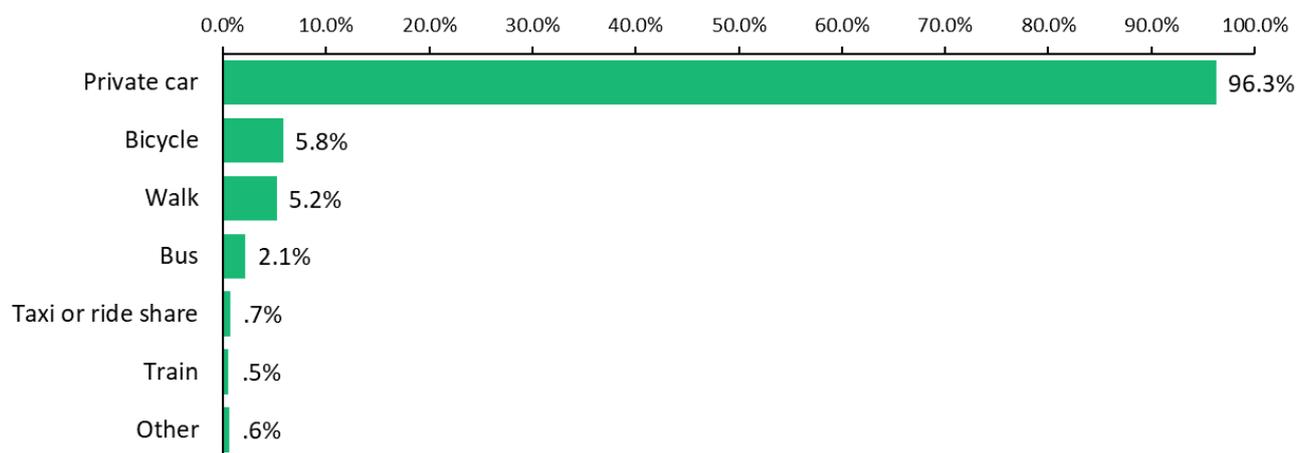
Q6. Which facility(s) do you (and your children/dependents if applicable) use? by Q23 Do you live in the local government area of.... (n=1303) CAUTION: Small sample sizes.

#### 4.5 Mode of transport used in travelling to aquatic and indoor sports facilities

Private car was nearly universally the mode of transport used to travel to public and privately-operated aquatic centre or indoor sports facility in the past 12 months (96.3%).

Although substantially lower, the next most frequently mentioned mode of getting to the facility was by bicycle (5.8%), closely followed by walking (5.2%).

**Figure 10: Mode of transport.**



Q8. By what mode of transport do you travel to the facility? (n=1303)

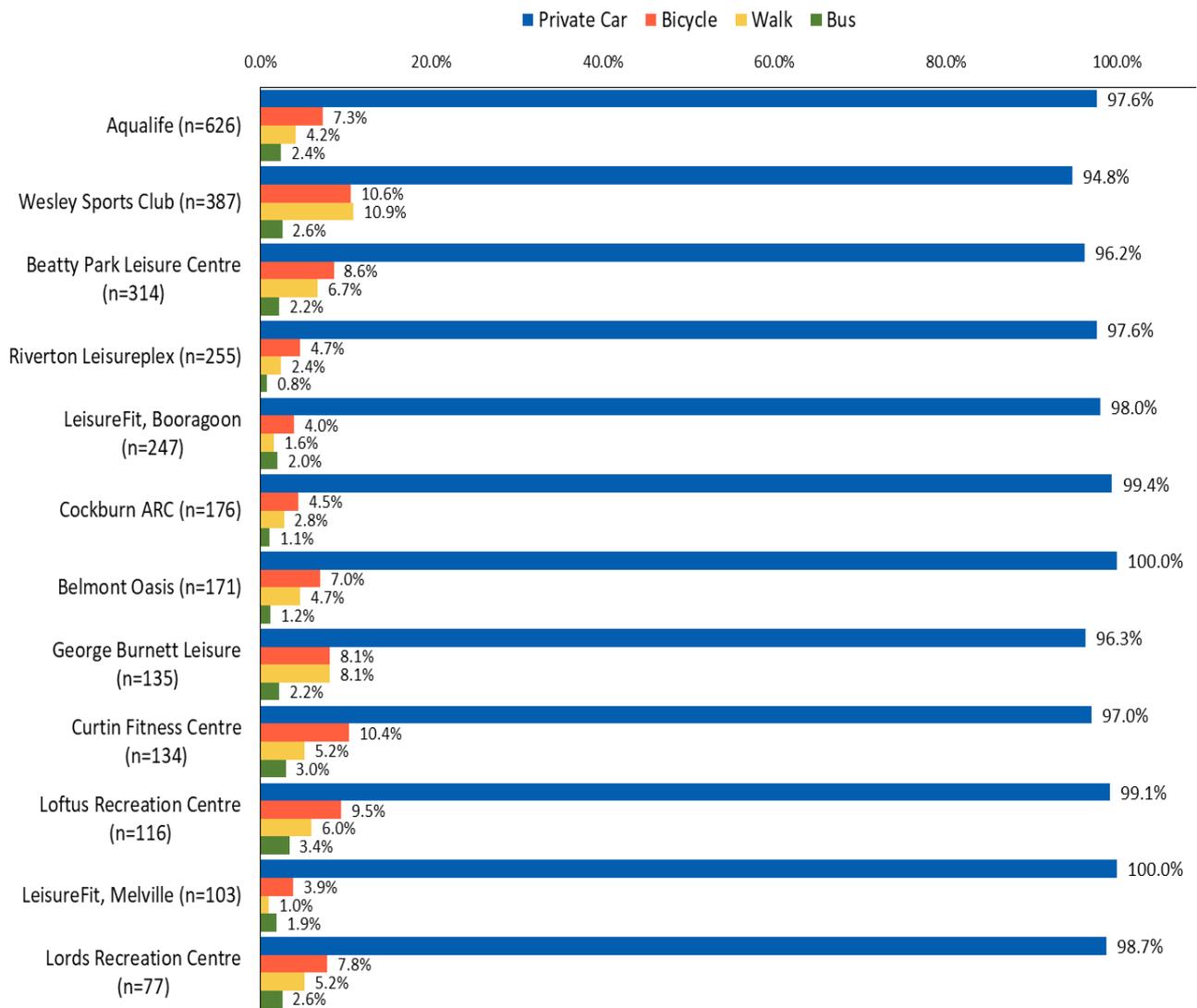
As shown in Figure 11 below, regardless of facility used, private car was by far the most frequently mentioned mode of travel to get to the facility.

Patrons of the Wesley Sports Club, Curtin Fitness Centre and the Loftus Recreation Centre exhibit a higher propensity to bicycle there in comparison to those who use other aquatic and indoor sports facilities.

Overall, patrons travel 15.4 minutes on average to visit the facility they attend most frequently. Those who walk (average of 8.0 minutes) spend the least amount of time in transit. Those who travel by taxi/ride share (average of 16.7 minutes) and bus (average of 16.5 minutes) take longest to get to their preferred facility. Those who bicycle take on average 12.3 minutes and those who travel by private car take on average 15.5 minutes to get to their preferred aquatic or indoor recreation facility.

Those who live in the surrounding local government areas of the Town of Victoria Park, City of Canning and City of Melville have a shorter average travel time to get to their preferred aquatic or indoor sports facility (average of 12.8 minutes) compared to those who live in the City of South Perth (average of 15.6 minutes).

**Figure 11: Mode of transport to each facility.**



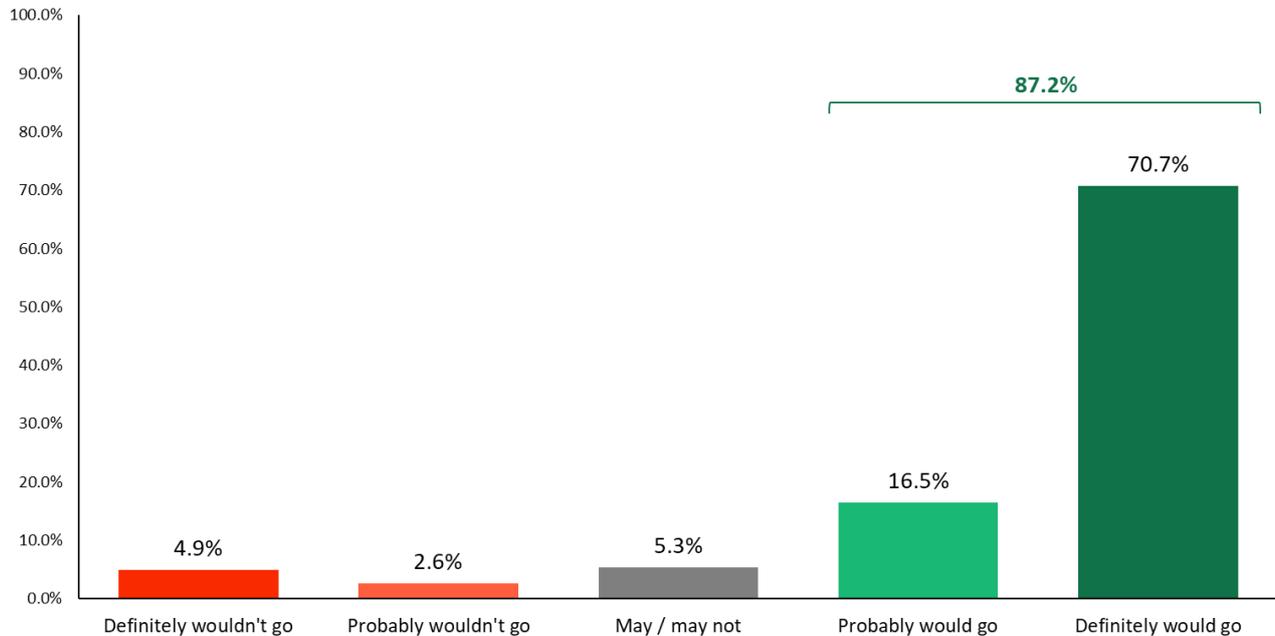
Q6. If 'yes' at Q4: Which facility(s) do you (and your children/dependents if applicable) use? (n=1303) by Q8. If 'yes' at Q4: By what mode of transport do you travel to the facility? (n=1303)

## 5.0 THE PROPOSED RECREATION AND AQUATIC FACILITY

### 5.1 Interest in using the proposed RAF

There is widespread support for the proposed RAF. Overall, 87.2% of all respondents indicated they 'probably would go' or 'definitely would go' to the proposed RAF.

**Figure 12: Interest in using the proposed Recreation and Aquatic Facility.**



Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

The most frequently mentioned reasons for using the proposed RAF are:

#### Definitely would go (70.7%):

- Closer to home/work/closer than the current one I use (33.8%)
- Pool/swimming (27.9%)
- Promotes fitness/to keep fit/exercise (16.7%)
- Good for kids/would take children/grandchildren (16.4%)
- Needed in the area/been waiting a long time (16.0%)
- Family friendly/all the family would use it (13.2%)
- Socialise (with family/friends) (12.5%)
- Already doing these activities elsewhere (9.6%)
- Promotes health and wellbeing (8.8%)
- One-stop-shop/all at one location (8.4%)

### Probably would go (16.5%):

- Closer to home/work/closer than the current one I use (20.4%)
- Pool/swimming (18.1%)
- Good for kids/would take children-grandchildren (12.2%)
- Promotes fitness/to exercise and keep fit (11.5%)
- Socialise (with family/friends) (5.6%)
- Swimming lessons (5.6%)
- Depends on the activities offered (5.6%)

### May/may not go (5.3%):

- Don't have children/children are grown up (23.0%)
- These facilities are already available elsewhere (18.4%)
- Don't want changes to the golf course (14.9%)
- Depends on the activity offered (11.5%)
- Waste of money (6.9%)
- Depends on cost/would need to check pricing (5.7%)
- Wrong location/OK if built elsewhere (4.6%)
- Would be too noisy/crowded/too many children (4.6%)

### Probably wouldn't go (2.6%):

- These facilities are already available elsewhere (35.7%)
- Don't want changes to the golf course (21.4%)
- Don't have children/children are grown up (19.0%)
- Ongoing costs/don't want ratepayers to pay for upkeep (16.7%)
- Waste of ratepayers' money/don't build it (11.9%)
- Wrong location/OK if built elsewhere (9.5%)
- Depends on the activity offered (4.8%)

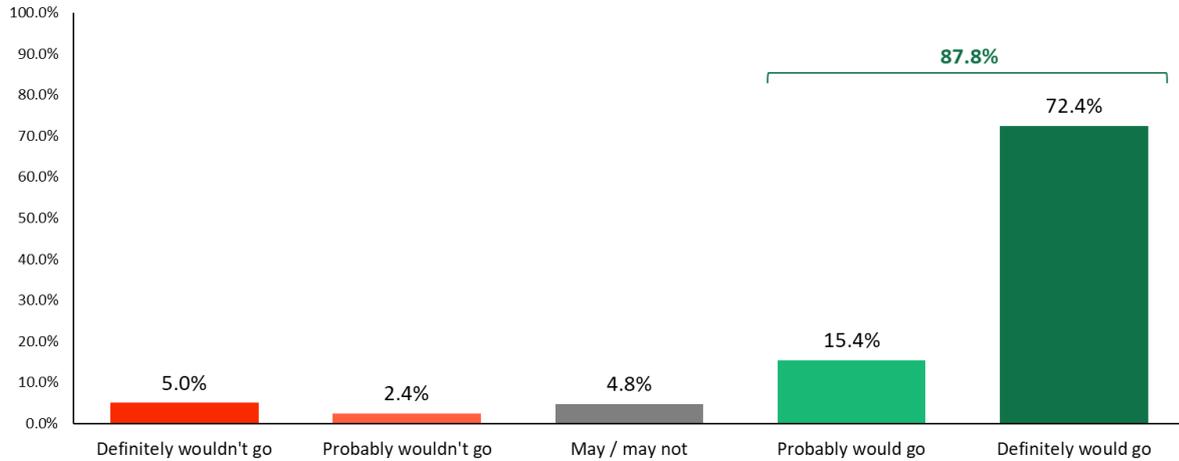
### Definitely wouldn't go (4.3%):

- These facilities are already available/some in the area (21.0%)
- Don't want changes to the golf course (19.8%)
- Waste of ratepayers' money/don't build it (14.8%)
- Wrong location/OK if built elsewhere (12.3%)
- Ongoing costs/don't want ratepayers to pay for upkeep (9.9%)
- Don't have children/children are grown up (9.9%)
- Another facility closer to home/work (6.2%)
- Environmental factors (4.9%)

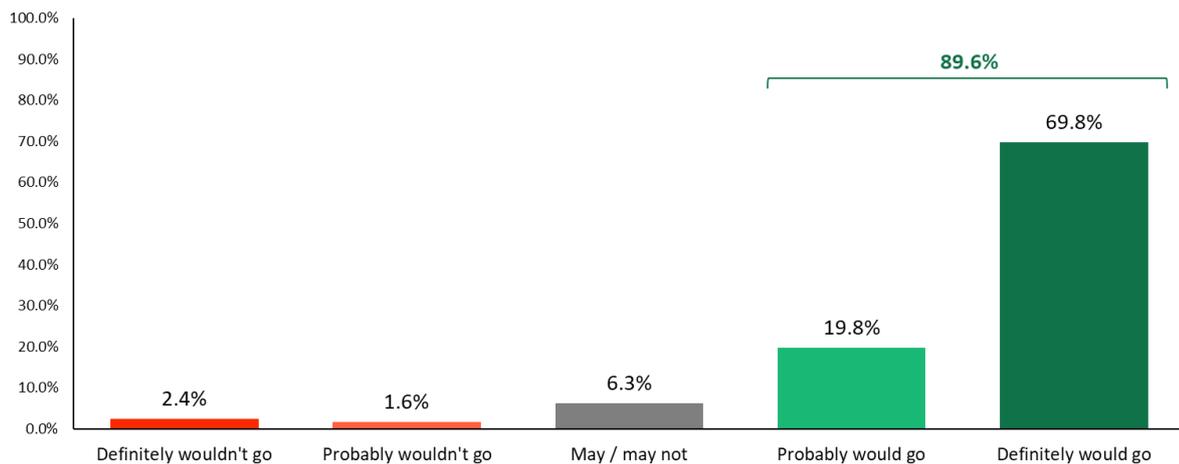
Residents of the City of South Perth are most likely to indicate they 'definitely would go' to the proposed RAF (72.4%). Those living in the surrounding local government areas of the Town of Victoria Park, City of Canning and the City of Melville are only marginally less likely to indicate they 'definitely would go' to the proposed RAF (69.8%). Substantially fewer participants who reside in other local government areas indicated they 'definitely would go' to the proposed RAF (50.9%).

**Figure 13: Interest in using the proposed Recreation and Aquatic Facility in each area.**

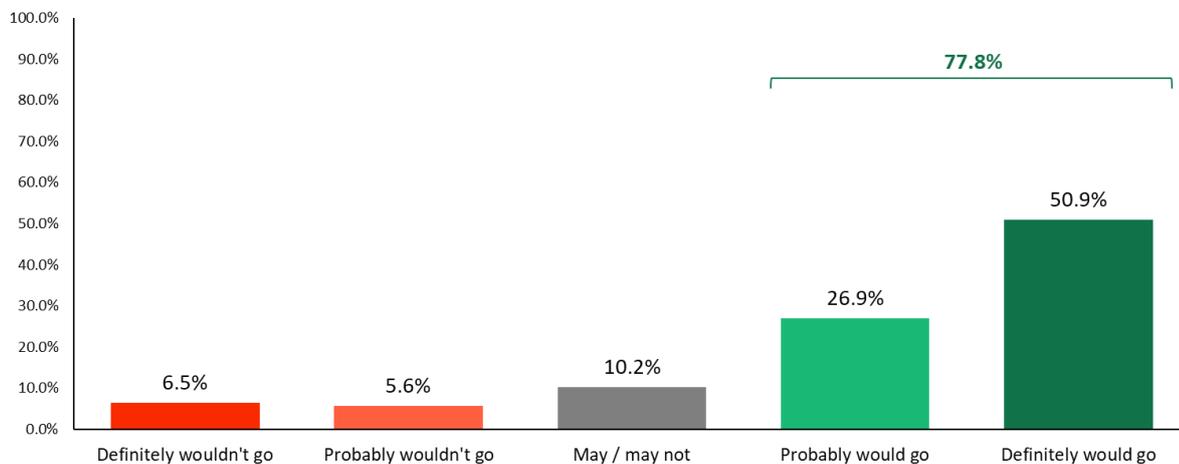
**Figure 13A Likelihood of use – City of South Perth residents (n=1407)**



**Figure 13B Likelihood of use – Residents of surrounding local government areas: Town of Victoria Park, City of Canning and City of Melville (n=126)**



**Figure 13C Likelihood of use – Residents of other local government areas (n=108)**



Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? by Q23 Do you live in the local government area of...

## 5.2 Profile of those most likely to use the RAF

Those who indicated they would definitely use the proposed RAF tend to fit the following profile:

- Have used a public or private aquatic centre in past 12 months (92.8%)
- Have children at school (pre-school, primary and secondary) (82.7%)
- Under 55 years of age (76.9%)
- Female (74.6%)
- Live in the City of South Perth or directly surrounding LGAs (72.1%)

This cohort is most likely to use the facility because they or their children currently participate in indoor and pool-based sports and activities and the proposed facility is closer to their home or work than the facilities they currently use. This group like that it will incorporate aquatic facilities, which they see as needed in the area. They also perceive the facility to be a family friendly environment, which is good for children and good place to socialise.

In terms of current sports or indoor activities, those who would definitely use the proposed facility tend to already participate in:

- Swimming for recreation (71.5%)
- Swimming lessons (22.2%)
- Basketball (17.6%)
- Aqua aerobics (16.6%)
- Indoor climbing (12.1%)

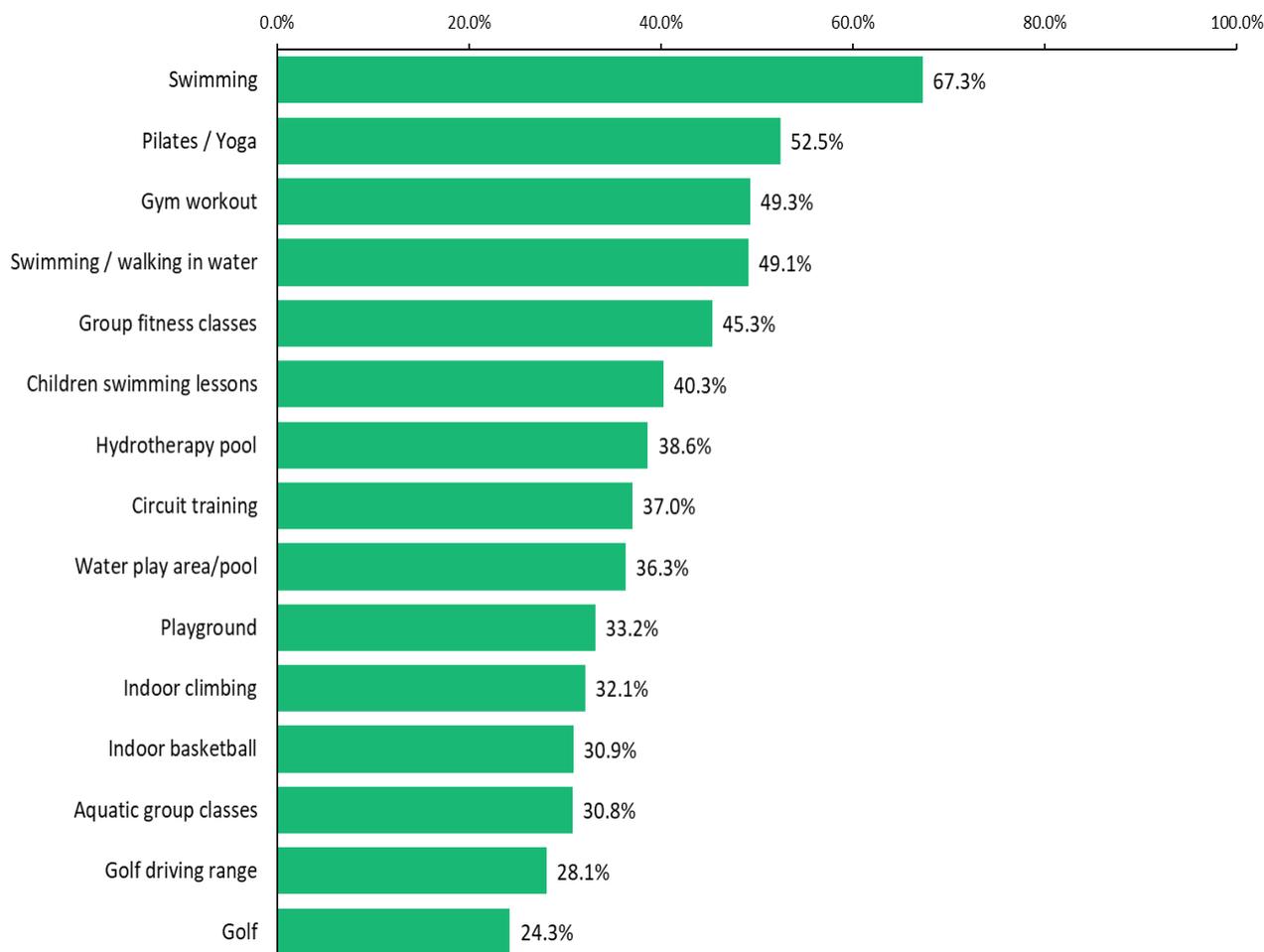
If they have children or dependents and they definitely would use the proposed facility, their children or dependents most frequently participate in:

- Swimming lessons (73.2%)
- Swimming for recreation (61.6%)
- Basketball (30.5%)
- Netball (17.9%)

### 5.3 Top 15 most preferred sports and activities at the RAF

Swimming was by far the most popular sport/activity that people wanted offered as an activity in the proposed facility. Considerably lower is the preference for pilates and yoga (52.5%), gym workout (49.3%), swimming/walking in water (49.1%) and the group fitness classes (45.3%).

**Figure 14: The most preferred activities.**

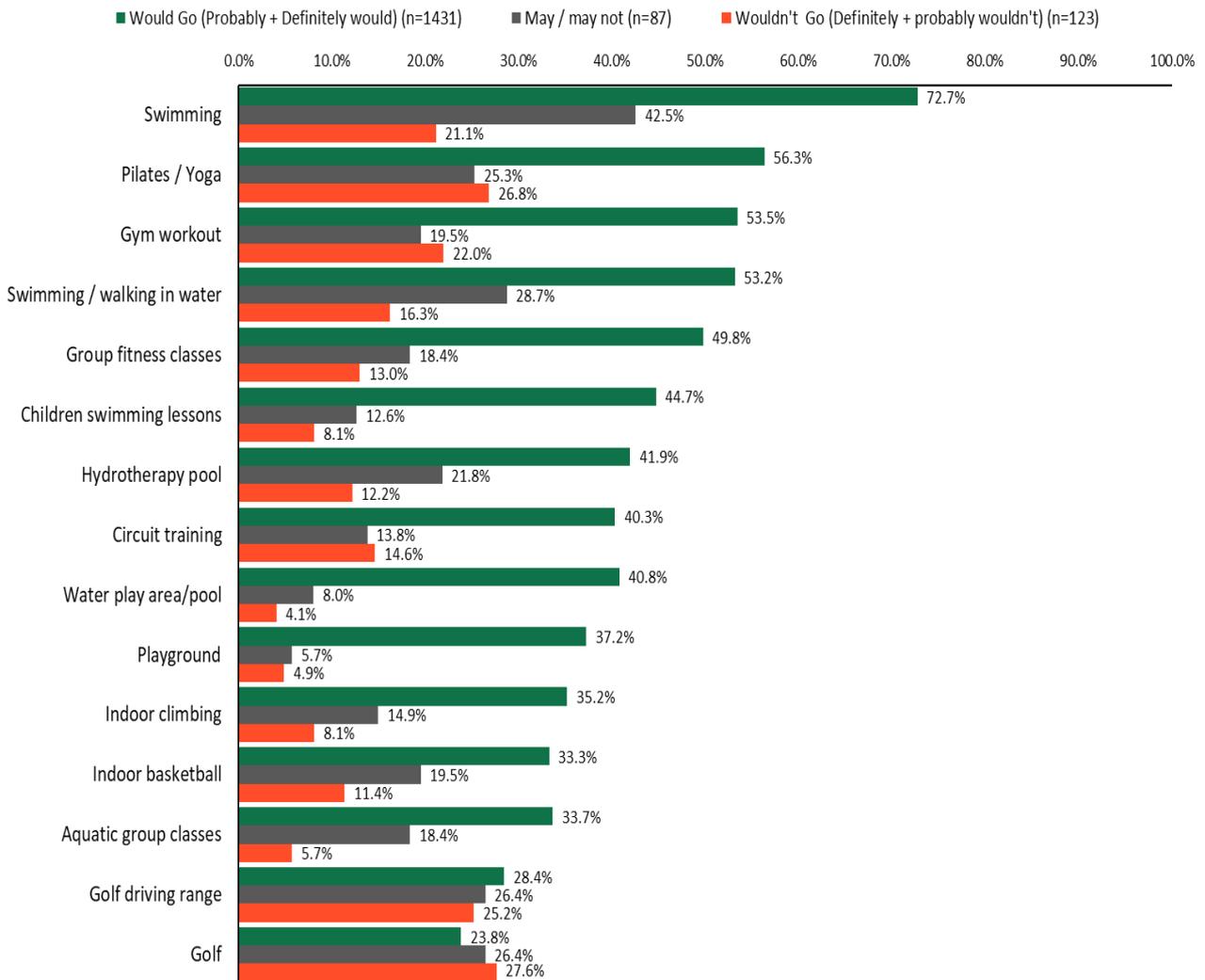


Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? (n=1641)

As depicted overleaf, of those who indicated they would probably or definitely go to the RAF their top sports and activities are:

- Swimming (72.7%)
- Pilates/yoga (56.3%)
- Gym workout (53.5%)
- Swimming/walking in water (53.2%)
- Group fitness classes (49.8%)
- Children swimming lessons (44.7%)
- Hydrotherapy pool (41.9%)
- Circuit training (40.3%)
- Water play area/pool (40.8%)
- Playground (37.2%)

**Figure 15: The most preferred activities amongst those likely to go to the facility.**



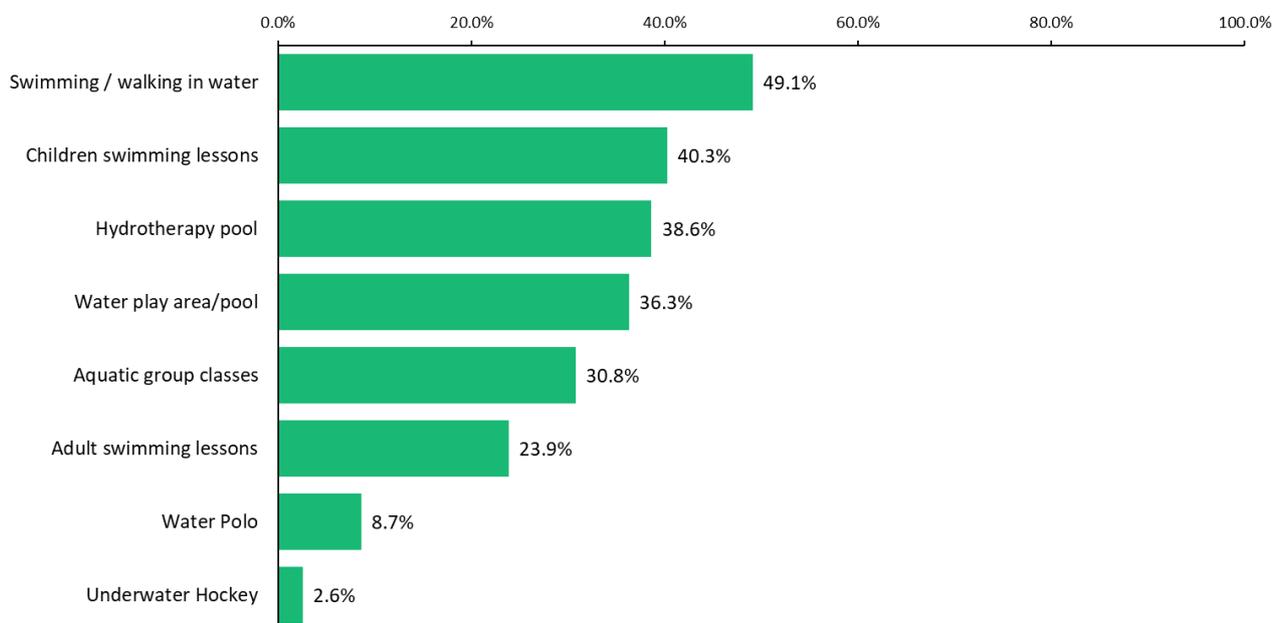
Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

Of those who stated they probably or definitely wouldn't go to the RAF, they are slightly more likely to mention a preference for golf (27.6%). Just over a third (34.1%) of those who probably or definitely wouldn't go to the RAF stated they were not interested in any sports or activities at the proposed facility.

## 5.4 Preferred aquatic sports and activities at the RAF

Of the aquatic sports and activities proposed for the facility, preference is highest for swimming/walking in water (49.1%), children’s swimming lessons (40.3%), hydrotherapy pool (38.6%) and a water play area/pool (36.3%). The least preferred options are water polo (8.7%) and underwater hockey (2.6%), both being niche sporting activities.

**Figure 16: Preference for aquatic sports and activities.**



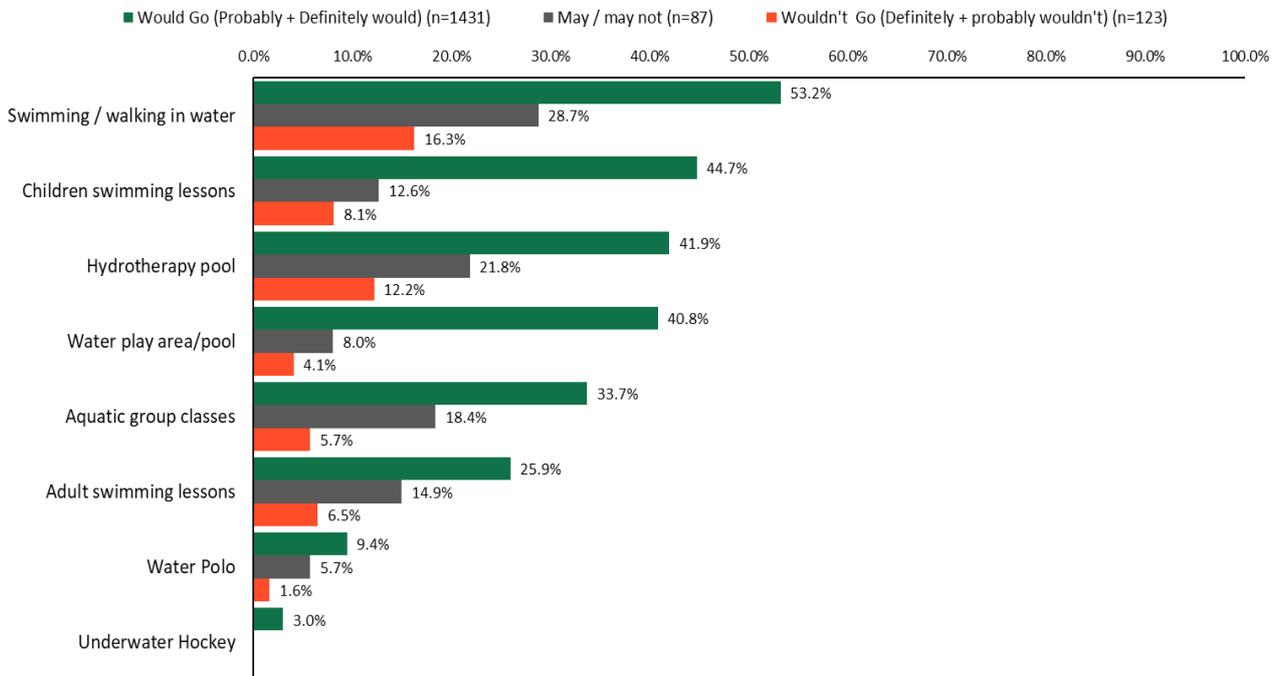
Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? (n=1641)

Females are far more likely to express a preference for children’s swimming lessons (42.8%), water play area/pool (41.3%), hydrotherapy (44.6%), swimming/walking in water (54.4%) and aquatic group classes (40.3%).

Those with pre-school and primary school children are most likely to be interested in children’s swimming lessons (73.9%) and a water play area/pool (56.7%) as were respondents aged between 35 and 44 years. Whereas those aged between 55 and 64 years are most likely to mention aquatic group classes (41.3%).

Those most likely to visit the proposed facility are much more likely to prefer swimming/walking in water, children’s swimming lessons, hydrotherapy pool, water play area/pool, aquatic group classes and adult swimming lessons. For water polo and underwater hockey, there are no discernible differences between the cohorts. Those not likely to visit the facility have the lowest preference results across the various aquatic sports and activities.

**Figure 17: Preference for aquatic sports and activities amongst those interested in the RAF.**

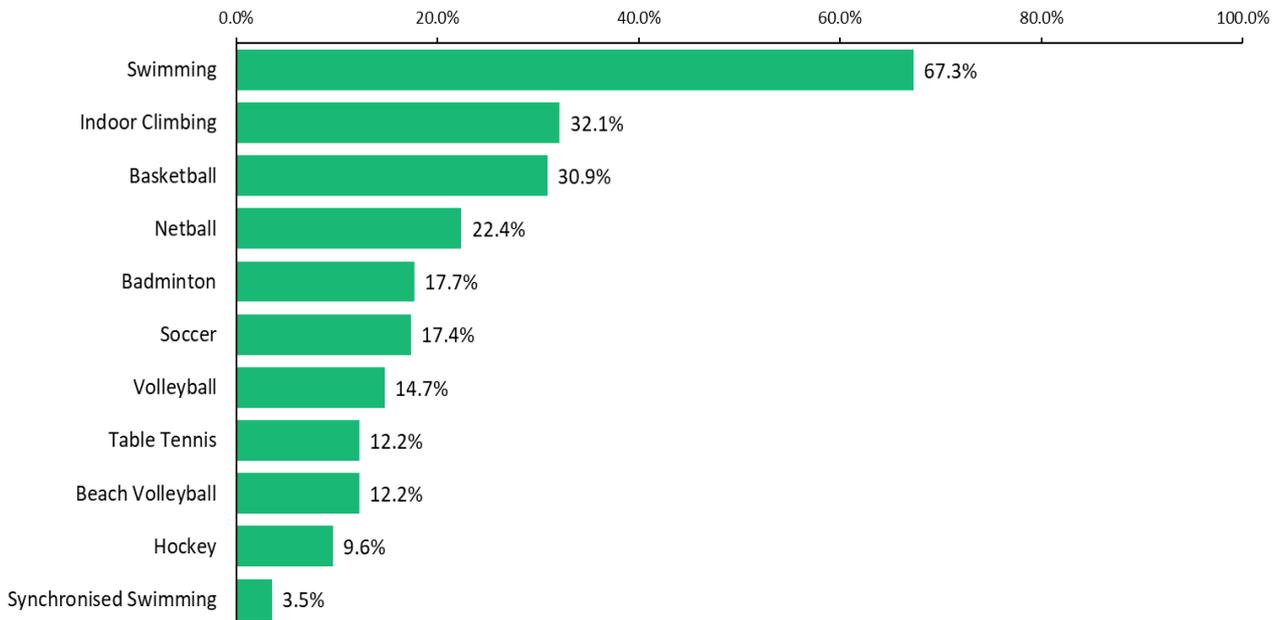


Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

## 5.5 Preferred indoor sports and activities at the RAF

Swimming (67.3%) continues to be by far the most preferred indoor sport/activity to be offered at the proposed facility followed by indoor climbing (32.1%) and basketball (30.9%). Synchronised swimming is the least preferred indoor activity (3.5%).

**Figure 18: Preference for indoor sports and activities.**



Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? (n=1641)

Males are more likely to mention basketball (35.7%) and soccer (22.4%) than females, whereas females are more likely to mention swimming (71.3%) and netball (25.7%).

Those with children in school are more likely to prefer swimming (74.2%), basketball (48.0%), indoor climbing (42.9%), netball (32.9%) and soccer (26.0%).

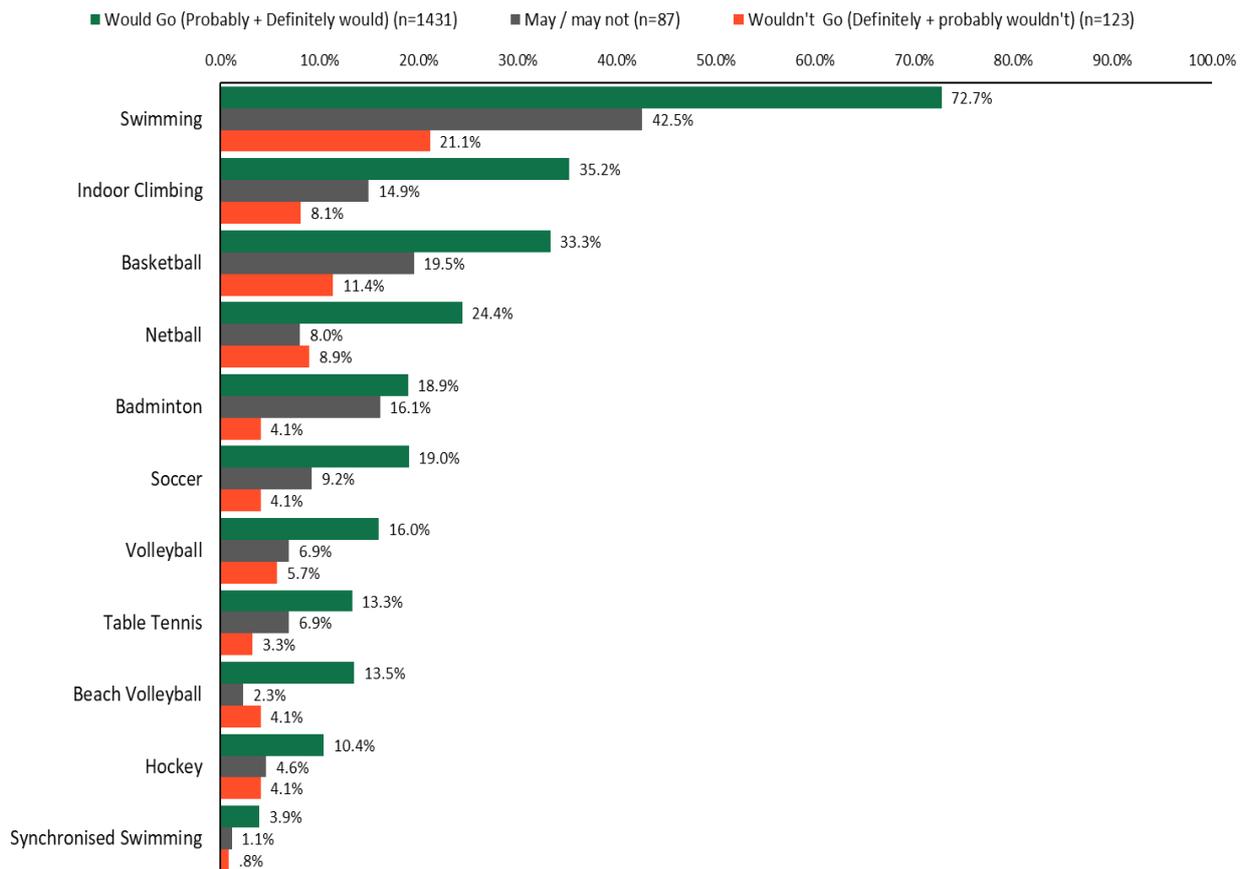
Those aged between 18 and 54 years are more likely to mention indoor climbing (39.8%), indoor hockey (11.8%), netball (27.4%) and soccer (21.9%). Those aged between 35 and 54 years are more likely to mention basketball (41.1%) and those aged between 35 and 44 years are most likely to mention swimming (75.4%).

Those most likely to visit the proposed RAF exhibit considerably greater preference for:

- Swimming (72.7%)
- Indoor climbing (35.2%)
- Basketball (33.3%)
- Netball (24.4%)

Except for netball and beach volleyball, those not likely to visit the facility have the lowest preference results across the various indoor sports and activities.

**Figure 19: Preference for indoor sports and activities amongst users.**

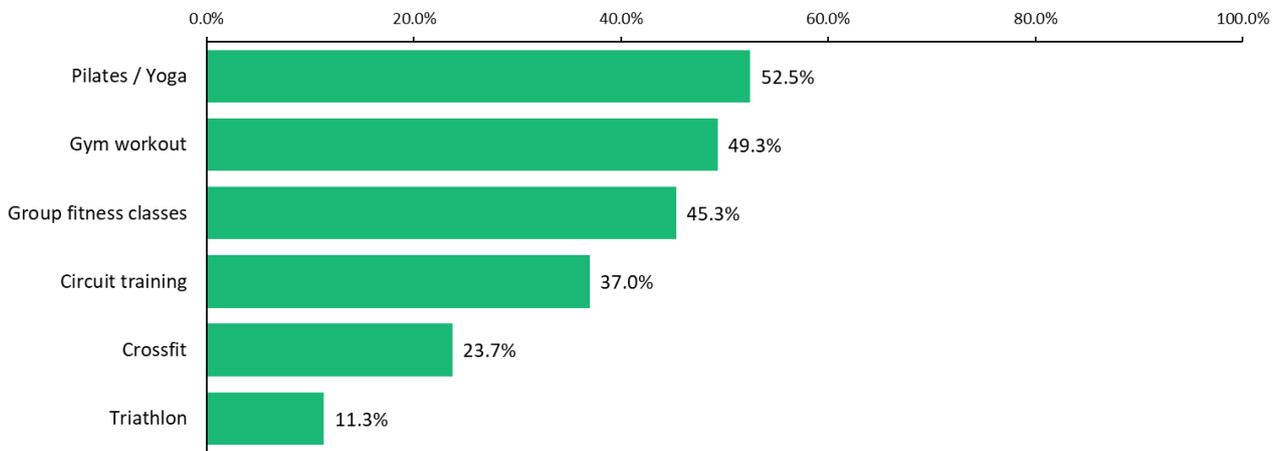


Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

## 5.6 Preferred gym/health club-based activities at the RAF

The most preferred gym/health club-based activities are: pilates/yoga (52.5%), gym workouts (49.3%), group fitness classes (45.3%) and then circuit training (37.0%). At 11.3%, triathlon is the least preferred gym/health club-based activity.

**Figure 20: Preferred health club activities.**



*Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? (n=1641)*

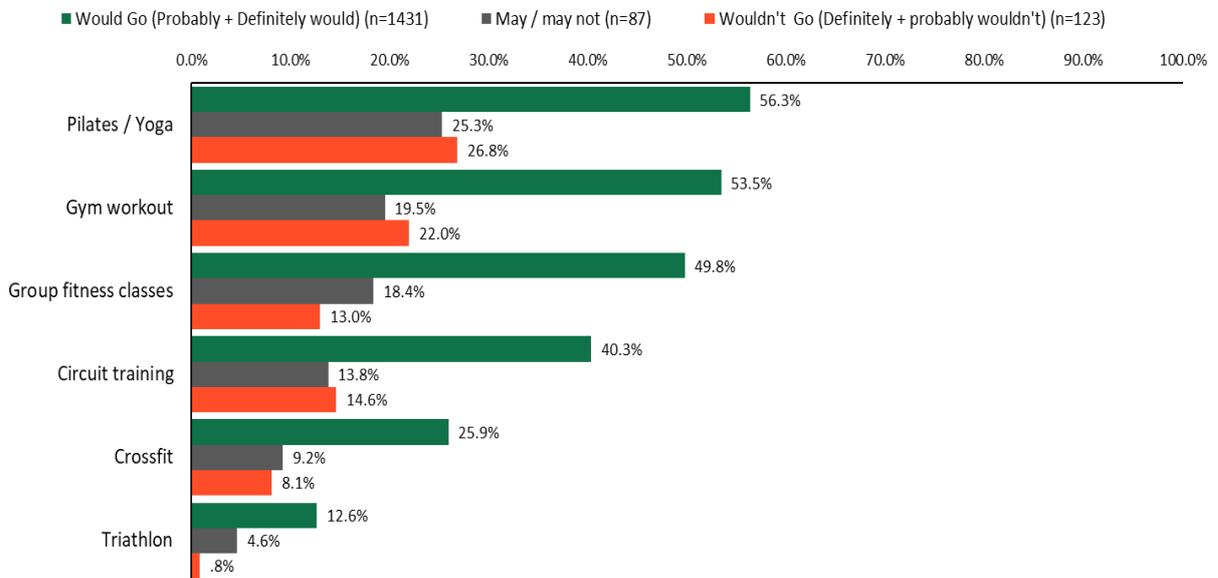
Females are most likely to mention pilates and yoga (64.2%), group fitness classes (54.3%) and circuit training (39.9%).

Respondents under 45 years are much more likely to mention gym workout (56.3%), pilates and yoga (58.0%) and group fitness classes (53.3%). Those aged 65 years and older were the least likely to mention any of the health club activities.

Respondents with school aged children are more likely to be interested in group fitness classes (51.0%).

Those most likely to visit the proposed facility have the considerably greater preference for all health activities measured.

**Figure 21: Preferred gym/ health club based activities by users.**

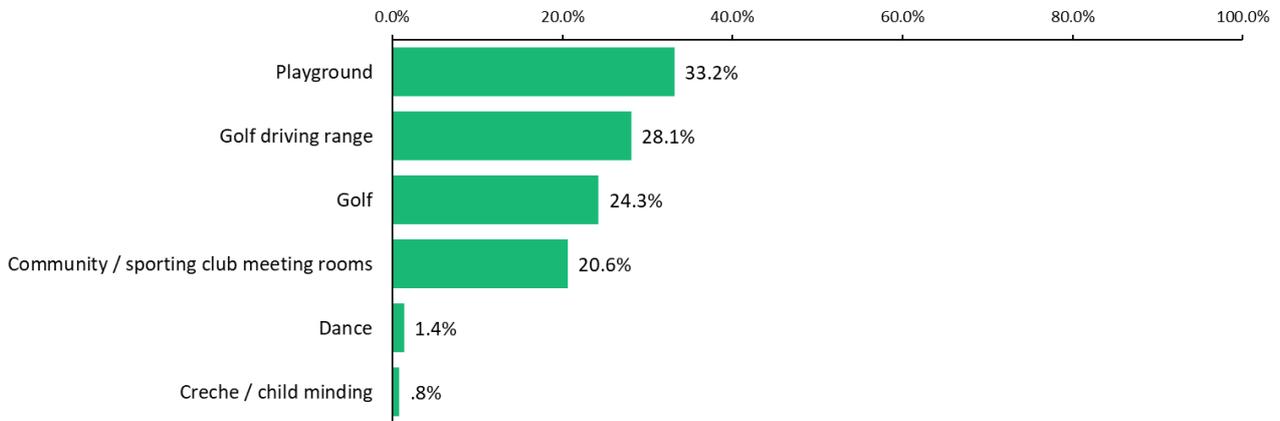


Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

## 6.1 Other activities and facilities at the RAF

A children’s playground (33.2%), golf driving range (28.1%) and golf (24.3%) are the most preferred ‘other’ activities that may be offered to patrons at the proposed facility.

**Figure 22: Other activities and facilities.**

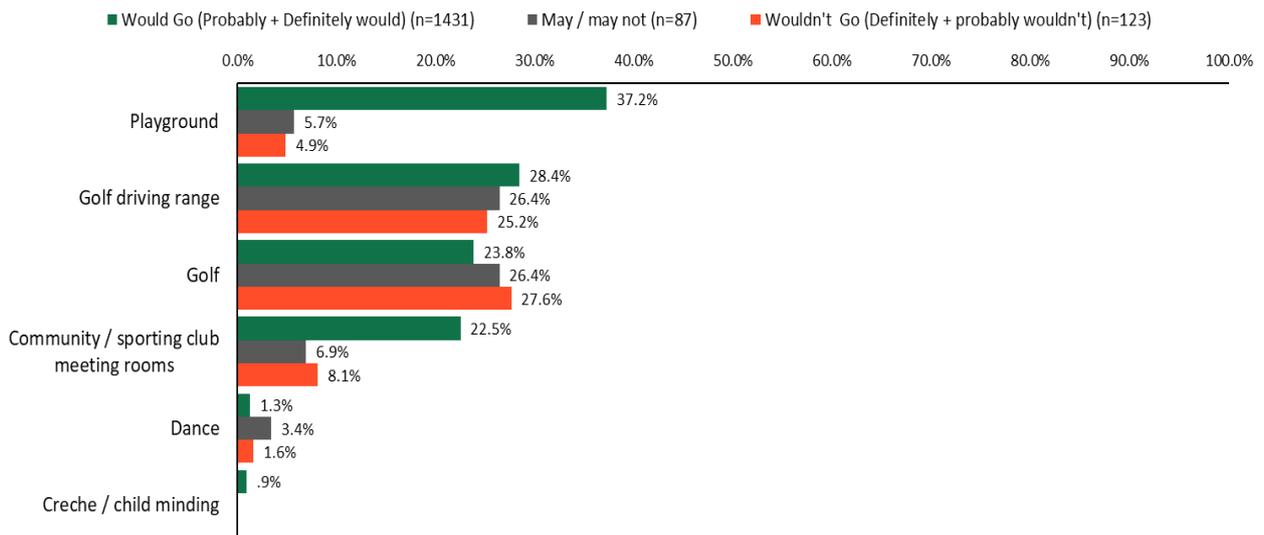


Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? (n=1641)

Males are most likely to mention the golf driving range (40.9%) and golf (35.1%), whereas females are most likely to mention the playground (37.7%). Respondents with pre-school and primary school aged children are most likely to be interested in a playground (60.3%).

Of those most likely to visit the proposed facility, preference for a children’s playground (37.2%) and a community/sporting club with meeting rooms (22.5%) is substantially greater than those less likely to visit. Of the remaining activities and facilities there appears little difference between preferences by likelihood of visiting the facility.

**Figure 23: Other activities and facilities by propensity to use the RAF.**



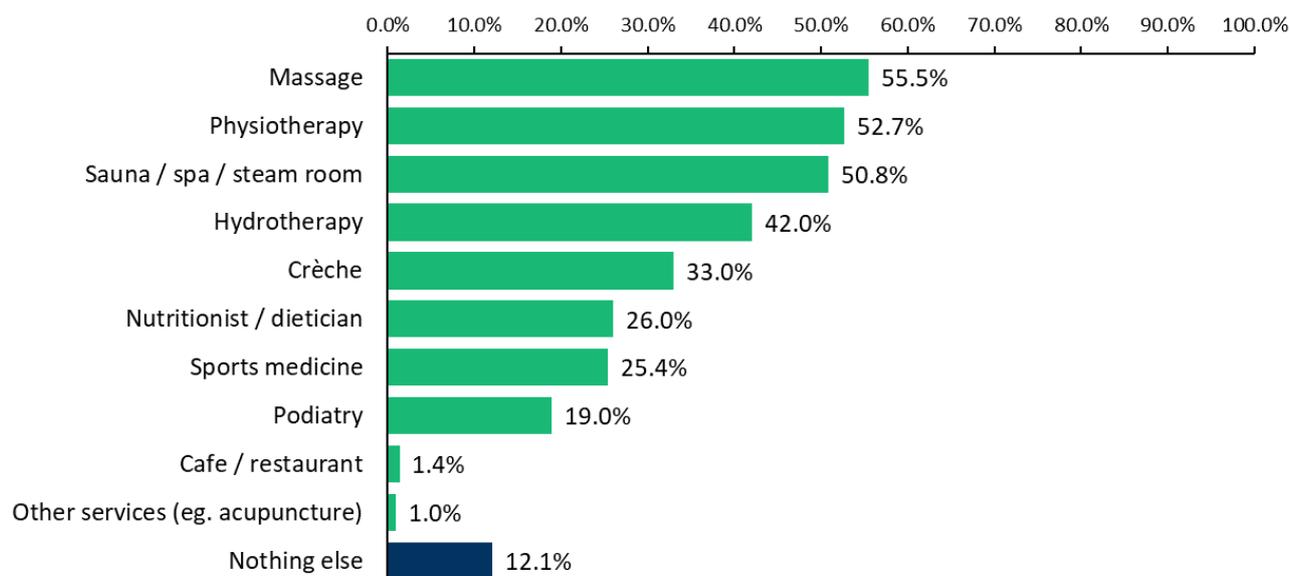
Q8. What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

## 6.2 Preferences for health and wellbeing services

Respondents were shown a list of potential health and wellbeing services that could be offered at the proposed RAF. Three of the health and wellbeing services were preferred by at least half of all respondents, these being:

- Massage (55.5%)
- Physiotherapy (52.7%)
- Sauna/spa/steam room (50.8%)

**Figure 24: Preferences for health and wellbeing services.**



Q9. The RAF will provide a range of services and activities to support community health and wellbeing. Which of the following services would you want included? (n=1641)

Females are more likely to find health and wellbeing services appealing in that they are much more likely to mention the health and wellbeing services than males including: physiotherapy (55.0%), massage (62.4%), nutritionist/dietician (29.2%), hydrotherapy (48.5%), podiatry (21.9%) and the crèche (37.3%).

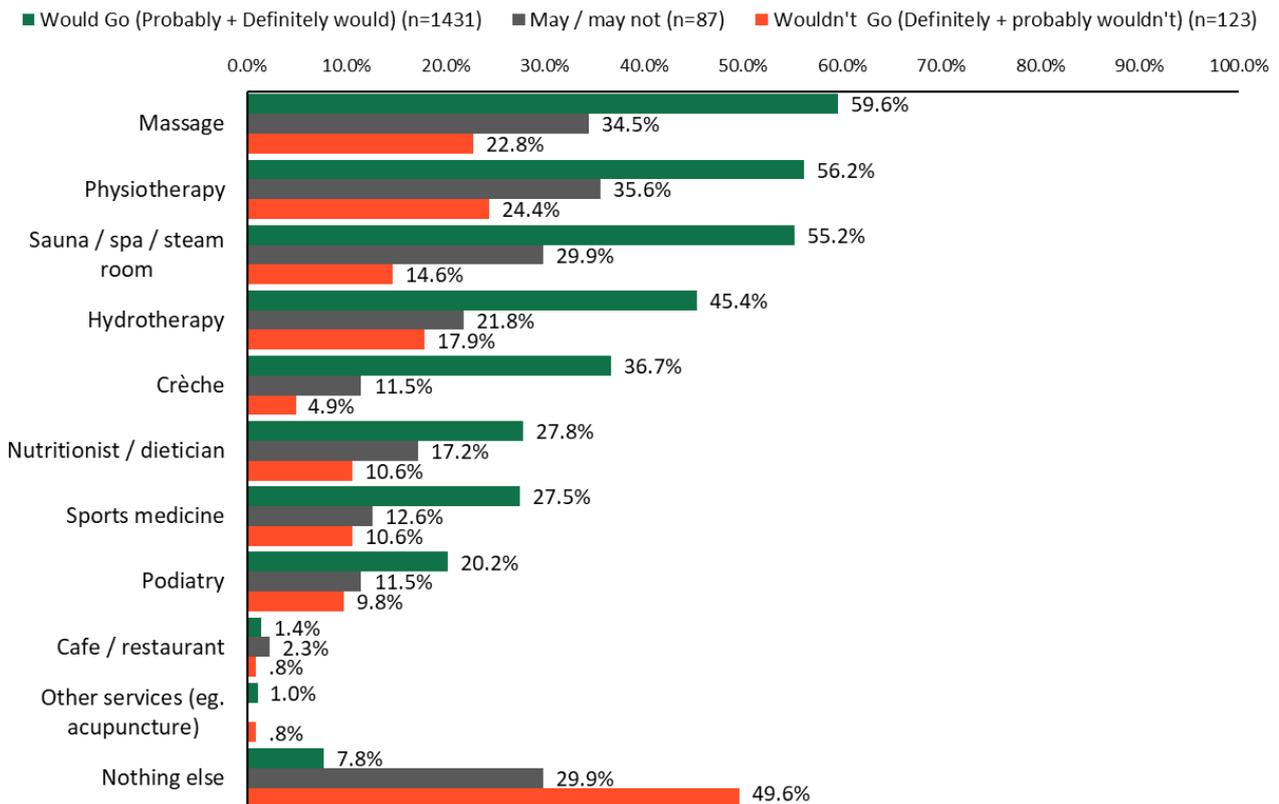
There are some differences in the preferences of each age group for health and wellbeing services: those aged under 65 years (58.2%) are more likely to mention massage than their older counterparts. Those aged between 45 and 64 years are most likely to mention sports medicine (29.5%). Those aged 45 years and over are more likely to mention hydrotherapy (46.7%) and podiatry (22.1%). Whereas those aged under 45 years are more likely to mention the crèche (48.6%). Respondents aged under 35 years are most likely to mention the sauna/spa (67.3%).

As one may expect, those with pre-school and primary school aged children are most likely to mention the crèche (52.4%).

As detailed below, the following health and wellbeing services exhibit considerably higher preference among those who are likely to use the facility compared to those unlikely to use the facility.

- Massage (59.6%)
- Physiotherapy (56.2%)
- Sauna/spa/steam room (55.2%)
- Hydrotherapy (45.4%)
- Crèche (36.7%)

**Figure 25: Preferences for health and wellbeing services amongst users.**



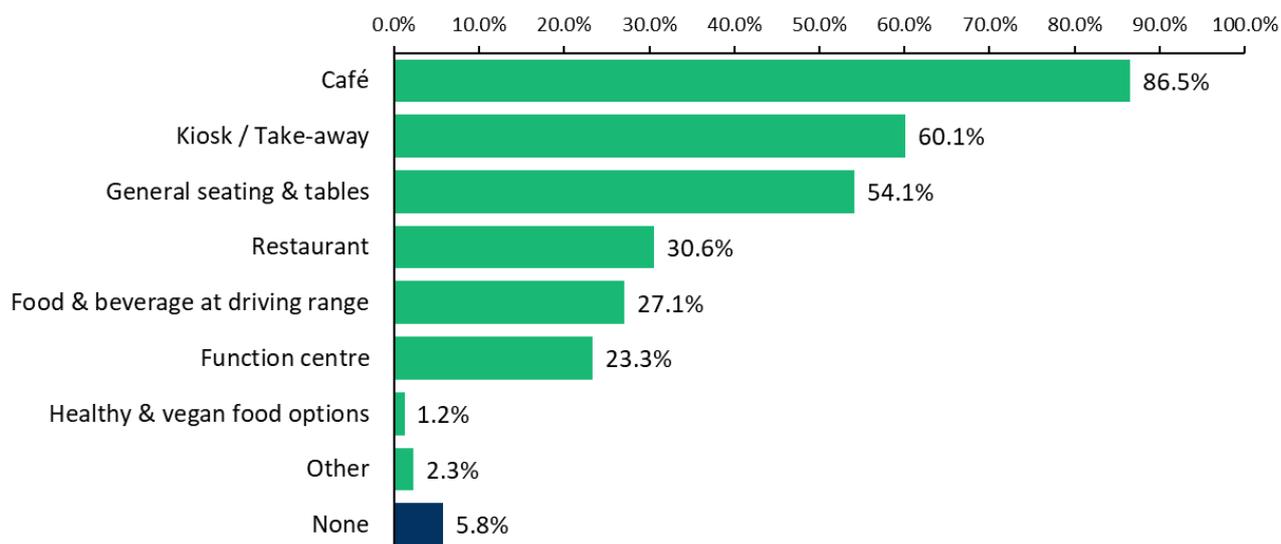
Q9. The RAF will provide a range of services and activities to support community health and wellbeing. Which of the following services would you want included? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

Of those who are not likely to use the facility, half (49.6%) said there was nothing else the facility should offer. Moreover, of those unsure if they would use the facility just under a third (29.9%) said there was nothing else.

### 6.3 Preferences for food and beverage Facilities

The inclusion of a café was strongly supported by respondents (86.5%). This was followed, with markedly lower support, by a kiosk/take-away style facility (60.1%) and then general seating and tables (54.1%).

**Figure 26: Preferences for food and beverage facilities.**



Q10. What type of food and beverage facilities would you use? (n=1641)

Around one in 20 respondents (5.8%) stated they would not use any of the food and beverage options.

Females are more likely to say they would use the café (90.0%) and general seating and tables (58.0%), whereas males are more likely than females to use food and beverage options at the high-tech golf driving range (33.2%).

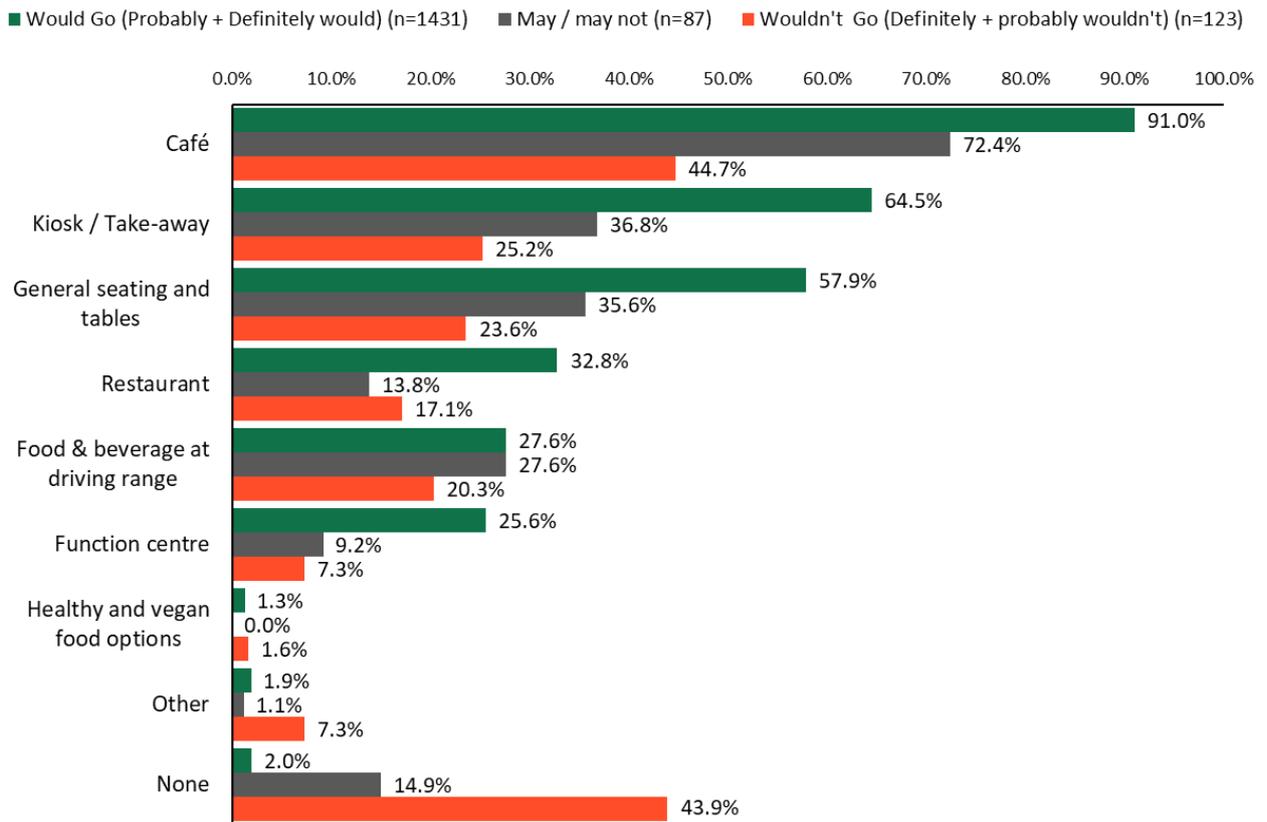
Those aged under 64 years (88.1%) are more likely to use the café than older respondents (77.8%).

Respondents with children at school are more likely than other groups to use a kiosk/take-away facility (65.7%) and use general seating and tables (60.9%).

As detailed overleaf, the following food and beverage facilities exhibit considerably higher preference among those who are likely to use the facility compared to those unlikely to use the facility.

- Café (91.0%)
- Kiosk/take-away (64.5%)
- General seating and tables (57.9%)
- Restaurant (32.8%)
- Function centre (25.6%)

**Figure 27: Preferences for food and beverage facilities by users.**

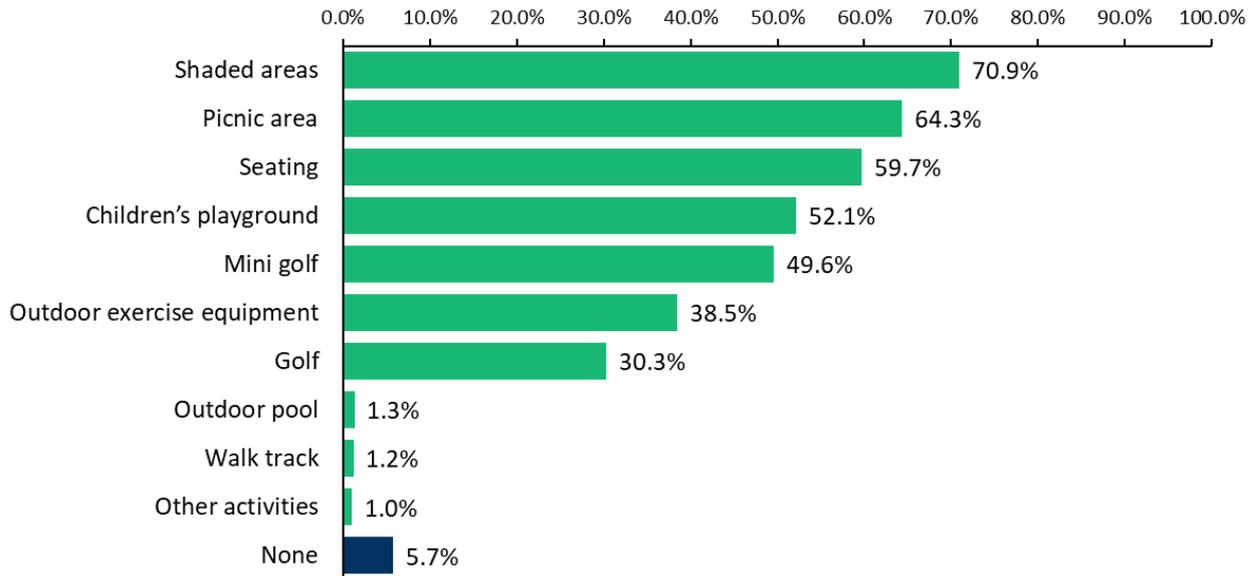


Q10. What type of food and beverage facilities would you use? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

## 6.4 Preferences for outdoor facilities

Respondents were asked what kind of outdoor facilities they would use at the proposed RAF. Around five in seven (70.9%) respondents said they would use shaded areas of the facility. This was followed by picnic areas and outdoor seating (59.7%), then a children’s playground (52.1%) and mini golf (49.6%).

**Figure 28: Preferences for outdoor facilities**



Q11. What kind of outdoor facilities would you use? (n=1641)

Females are much more likely to say they would use a picnic area (70.2%), children’s playground (56.7%), outdoor seating (67.0%), shaded areas (77.7%), outdoor exercise equipment (41.5%) and mini golf (52.1%). Males, on the other hand, are more likely to say they would play golf (43.0%).

Respondents aged under 45 years are more likely to say they would use a picnic area (73.6%) and mini golf (65.4%). Those aged under 55 years are more likely to use shaded areas (74.3%) and outdoor exercise equipment (41.9%). Those aged between 35 and 44 years are most likely to say they would use the children’s playground (77.4%).

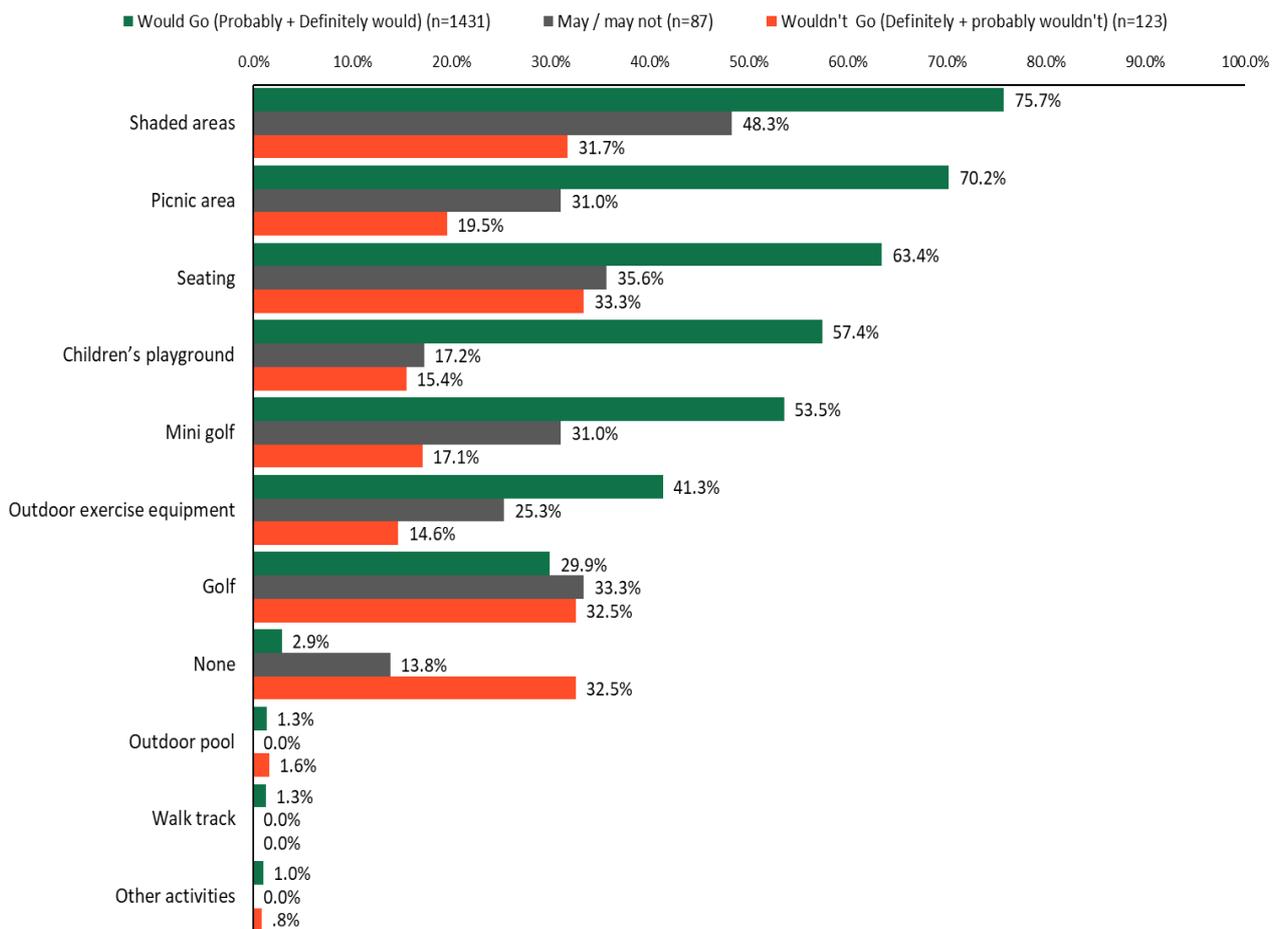
Those with pre-school and primary aged children are most likely to use a picnic area (75.7%) and a children’s playground (83.6%). Those with children at school are more likely to use the shaded area (78.4%) and play mini golf (62.7%).

Around one in 20 respondents (5.7%) stated they would not use any outdoor facilities. Of those who are not likely to use the facility, a third (32.5%) said they would not use any outdoor facilities.

As shown below, the following outdoor facilities demonstrate considerably higher preference among those who are likely to use the facility compared to those unlikely to use the facility.

- Shaded areas (75.7%)
- Picnic area (70.2%)
- Seating (63.4%)
- Children’s playground (57.4%)
- Mini golf (53.5%)
- Outdoor exercise equipment (41.3%)

**Figure 29: Preferences for outdoor facilities amongst users.**



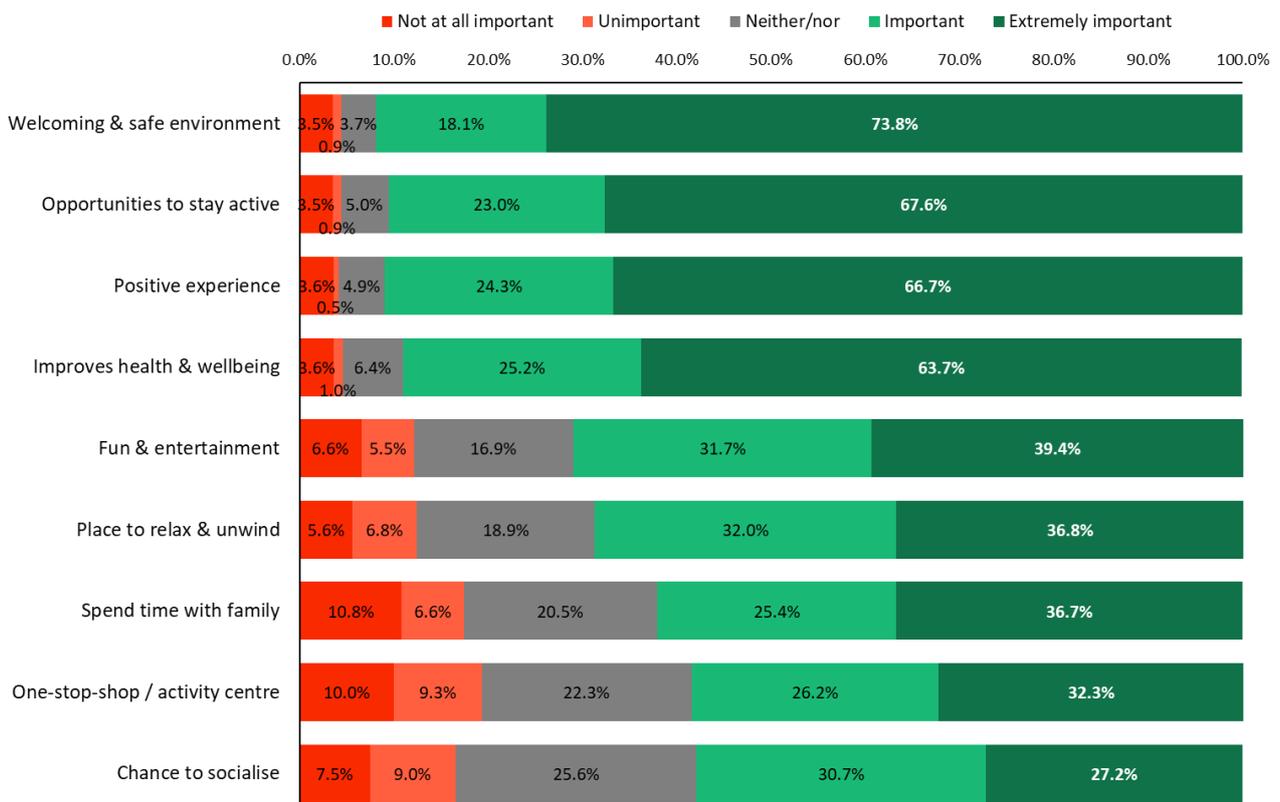
Q11. What kind of outdoor facilities would you use? by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641)

## 7.0 OTHER EXPECTATIONS OF THE RAF

Respondents were provided a list of nine statements relating to the proposed RAF and asked to indicate the extent to which each is important to them. Based on the proportion of respondents rating the statements as ‘extremely important’, the most important attributes the facility should focus on delivering include:

- Is a welcoming and safe environment (73.8%)
- Provides opportunities to stay active (67.6%)
- Provides a positive experience (66.7%)
- Improves general health and wellbeing (63.7%)

**Figure 30: Important factors to be conveyed by the RAF.**



Q12. We've asked you about the sport, exercise and other specific activities you would come to the RAF for. Now we would like to understand some of your other expectations for the RAF. How important is it that the RAF... (n=1641)

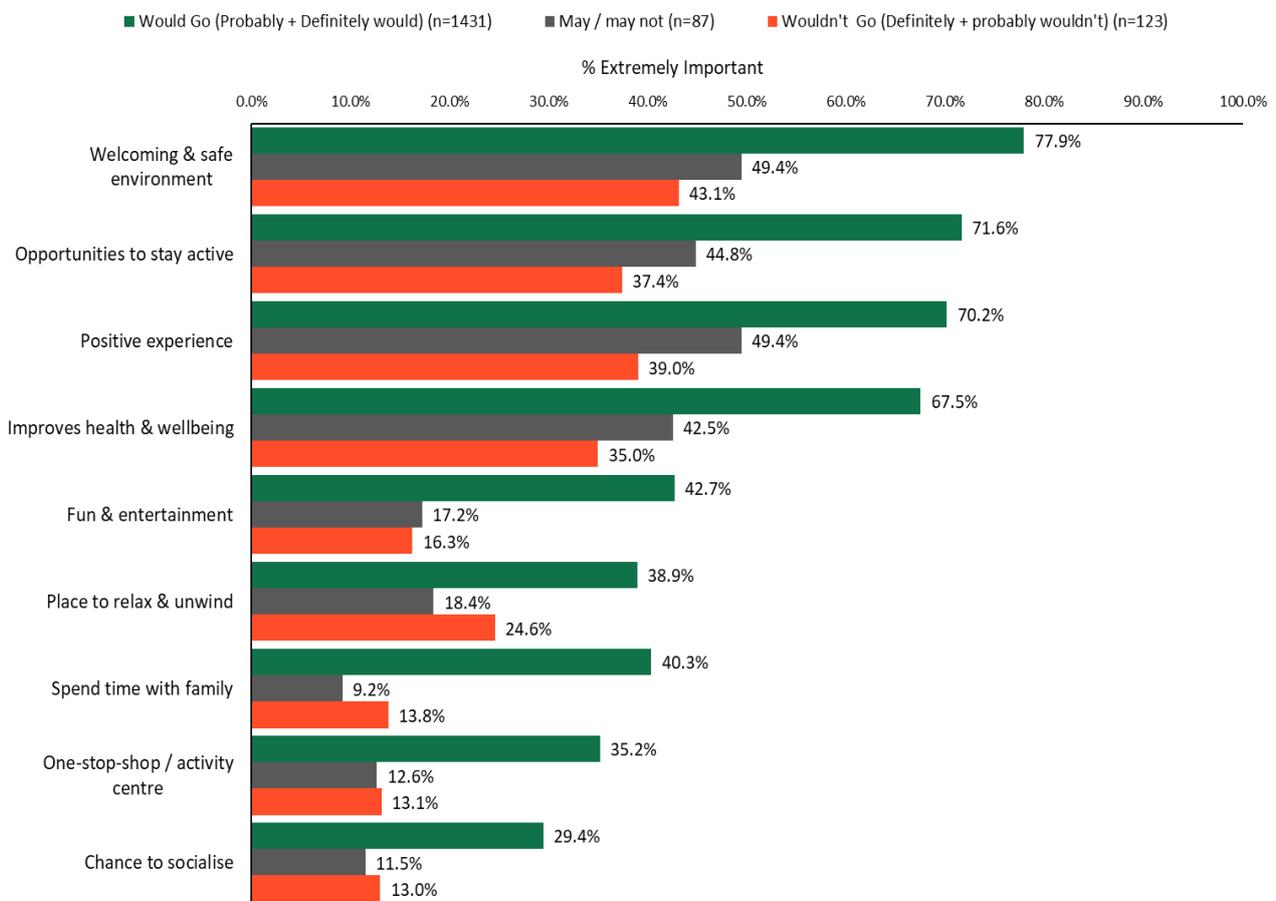
Those under 45 years of age place more importance on fun and entertainment (45.0%) and is a welcoming and safe environment (77.2%). Those aged between 35 and 44 years place more importance on a place to relax and unwind (49.3%).

Compared to other respondents, those with pre-school and primary aged children place greater importance on:

- Provides a positive experience (70.6%)
- Improves general health and wellbeing (63.6%)
- Somewhere to spend time with family (51.5%)
- Provides fun and entertainment (46.8%)

Those who are likely to visit the proposed RAF are much more likely to say each of the nine attributes is 'extremely important'.

**Figure 31: Important factors to be conveyed by the RAF by usage.**



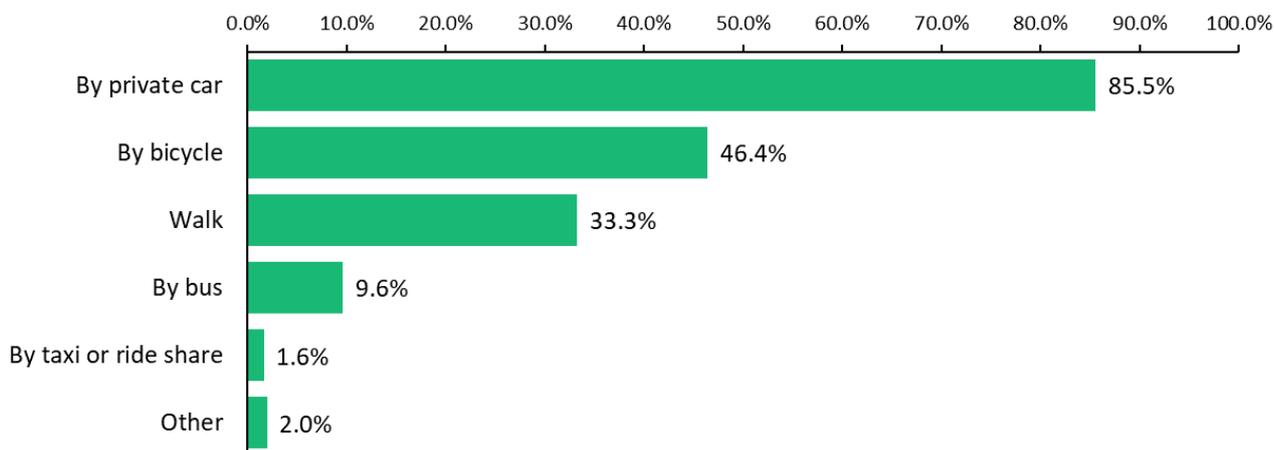
Q12. We've asked you about the sport, exercise and other specific activities you would come to the RAF for. Now we would like to understand some of your other expectations for the RAF. How important is it that the RAF... by Q13. How likely would you be to go to the RAF, or if you have children/grandchildren, take them there? (n=1641).

## 8.0 MODE OF TRANSPORT TO THE RAF

### 8.1 Mode of transport to the RAF

Travel by private car (85.5%) was by far the most frequently mentioned planned mode of transport to the proposed RAF. This was followed, considerably lower, by bicycle (46.4%) and then by walking (33.3%). Only one in 10 (9.6%) respondents said they would travel by bus.

**Figure 32: Mode of transport to the RAF**



Q15. Ask if codes 3 to 5 at Q13: How do you think you would get there? (n=1518)

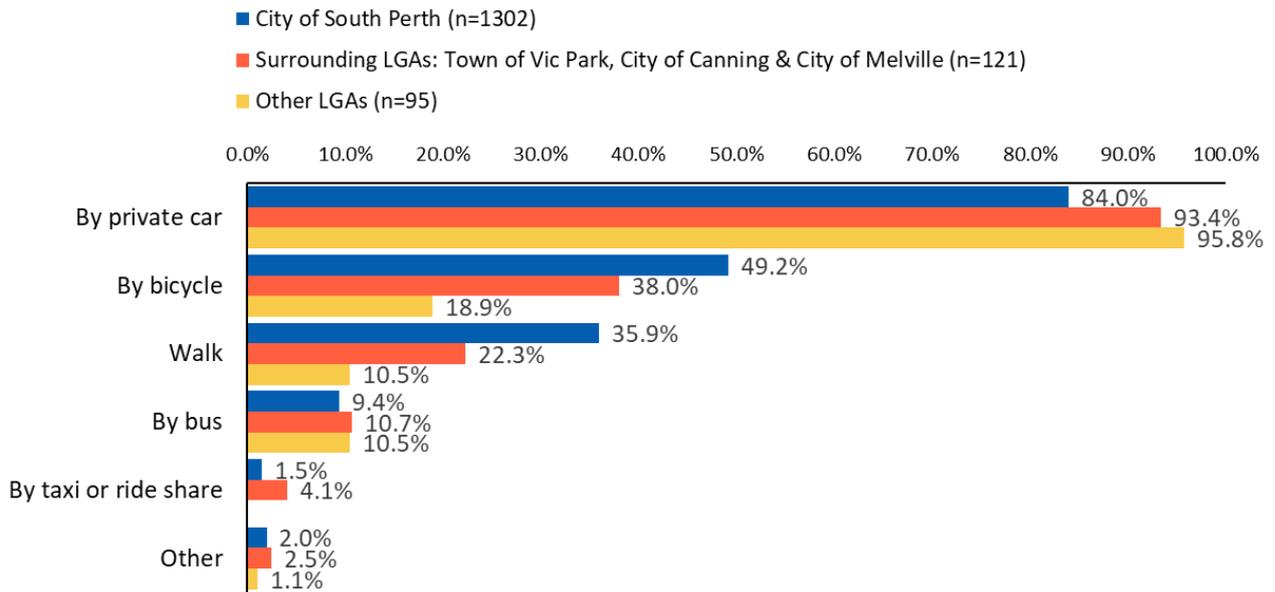
To both existing facilities and the RAF, travel by car was the most widely selected mode of transport; however, in comparison to how people are currently travelling to aquatic and indoor sports facilities, the proportion of respondents indicating they would travel to the proposed facility by bicycle or walking is substantially greater (see figure above).

Males (55.9%) are much more likely to cycle compared to their female counterparts (41.8%).

Those aged 65 years and over are least likely to say they would bicycle (28.6%) or walk (19.3%) to the proposed facility.

Residents of the City of South Perth are much more likely to say they would travel by bicycle (49.2%) or walk (35.9%) compared to those in the surrounding local government areas of the Town of Victoria Park, City of Canning or City of Melville or other local government areas.

**Figure 33: Mode of transport to the RAF by location.**



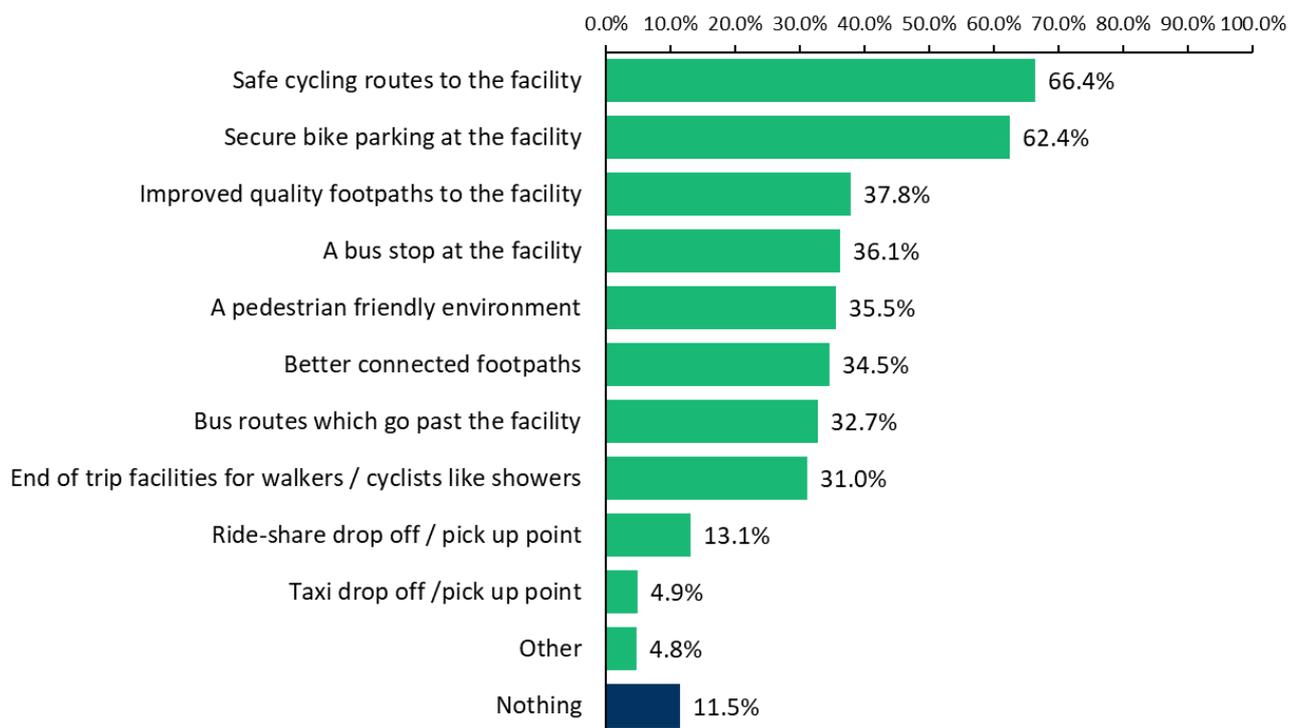
Q15. Ask if codes 3 to 5 at Q13: How do you think you would get there? by Q23 Do you live in the local government area of... (n=1518)

## 8.2 Motivations for changing mode of transport

Those who said they would travel to the RAF by private car were asked what would make them consider travelling to the facility by public transport, cycling or walking. Overall, only a small minority (11.5%) of people who previously stated they would travel by car would not consider changing how they get to the facility, indicating the majority would consider switching the mode of transport.

The two most frequently mentioned motivations for encouraging people to reconsider their method of getting to the facility include the provision of safe cycling routes to the facility (66.4%) and the provision of secure bike parking at the facility (62.4%). Other motivators included: improved quality footpaths (37.8%), a bus stop at the facility (36.1%), providing a pedestrian friendly environment (35.5%) and having better connected footpaths (34.5%).

**Figure 34: Motivators to switch mode of transport away from private car.**



Q16. If travel by car at Q15: Which of these would make you consider traveling by public transport or to cycle or walk to the RAF? (n=1298)

Males are more likely to mention safe cycling routes to the facility (71.2%) and secure bike parking at the facility (66.5%), whereas females are more likely to mention a pedestrian friendly environment (37.5%) as a motivator to switch from driving to the facility.

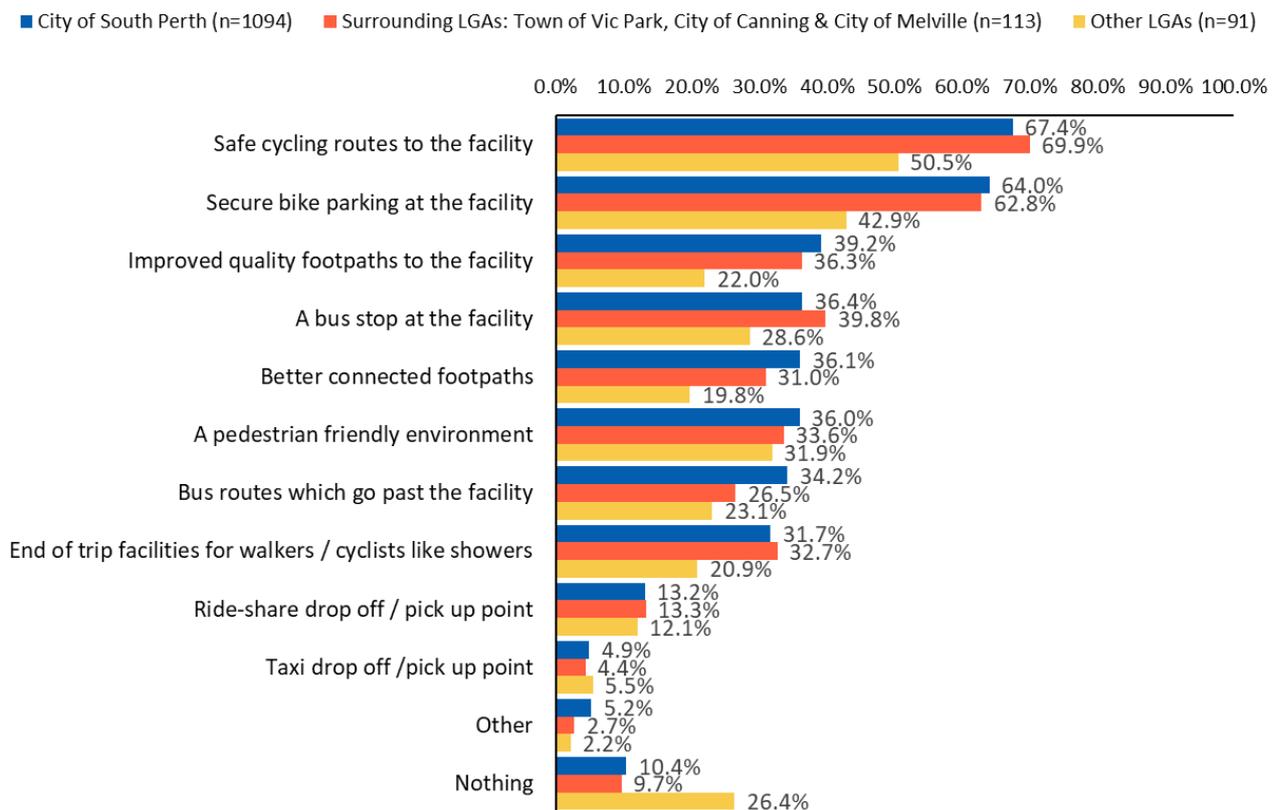
Those aged 65 years and over are most likely to say there is nothing that would make them switch from driving their car to the facility.

Those with children at school are more likely to say they would be motivated to switch from driving if there is a safe cycling route to the facility (72.1%).

As detailed in the figure below, residents of the City of South Perth and its directly surrounding local government areas are more likely than those in other local government areas to suggest the following as motivators to switch from driving to the facility:

- Safe cycling routes to the facility
- Secure bike parking at the facility
- Improved quality of footpaths to the facility
- A bus stop at the facility
- End of trip facilities for walkers/cyclists like showers.

**Figure 35: Motivators to switch mode of transport away from private car by area.**



Q16. If travel by car at Q15: Which of these would make you consider traveling by public transport or to cycle or walk to the RAF?  
by Q23 Do you live in the local government area of.... (n=1298)

## 9.0 OTHER FEEDBACK ABOUT THE RAF

Those who participated in the consultation process were also asked an open-ended question at the end of the survey: 'Is there was anything else you would like to add about the proposed RAF?'

In total, 660 people provided additional feedback in this question. The most frequently received additional feedback grouped by broad themes includes:

### General positive feedback about the facility (30.8%):

- Great idea/Get on with it, can't wait for it to open (26.7%)
- Needed in the area/it's long overdue (7.0%)
- Will add to the area/add value and attract people from other areas (3.5%)
- Will improve health and fitness of residents in the area (3.3%)
- Good for community, improves social connectivity (2.3%)

### Pool specific feedback (10.6%):

- Make sure there are enough pools and heated pools (5.5%)
- Pools for specific use (e.g. diving, laps, water polo, squad training) (2.9%)
- It will be good to have a pool close-by (2.4%)

### Other activities would like at facility (15.0%):

- Inclusion of other activities such as dance, fencing, gym, mini golf, etc. (7.6%)
- Redbacks Basketball (ensure enough courts) (6.5%)
- Water slides/water park, waves, whirlpool, etc. (2.6%)
- Indoor hockey and hockey turf (1.7%)
- Playground and play areas for children (1.5%)

### Other services and facilities to include at the facility (10.8%):

- Inclusion of café and other eating places (kiosk, food trucks, etc.) (3.3%)
- Include secure lockers for personal belongings and bike lockups (3.0%)
- Plenty of safe secure change rooms which are child safe (2.6%)
- Health related services such as physiotherapists, hydro, etc. (2.3%)
- Needs to be well run/managed - good standards, staff and clean (2.1%)
- Hire facilities, such as room and spaces for parties and events (1.4%)
- Crèche (1.1%)

### Feedback relating to facility access (15.6%):

- Designed for easy pedestrian access with traffic management/calming (4.4%)
- Design and provide for facility for everyone (age, skills, etc.) (3.5%)
- Sufficient free vehicle parking (3.2%)
- Provide access for people of all abilities/disabilities (2.9%)
- Open all year round from early to late - current pools are restricted (1.7%)

### Design considerations for the facility (13.3%):

- Environmentally friendly impact/sustainable design (4.1%)
- A facility that is safe and secure (3.3%)
- Has sufficient shade and undercover areas (2.7%)
- Good functional quality design that is well built and attractive (2.3%)
- Make it exceptional, make it world class (1.7%)
- Outdoor areas to sit and eat plus provide BBQs, etc. (1.1%)

**Cost and fees of entry (7.3%):**

- Offer discounts for seniors, students and bulk ticket purchases (4.8%)
- Make it affordable/reasonable for families and residents (4.1%)

**General concerns/negative feedback about the facility (22.3%)**

However, some of those who provided additional feedback questioned the need for the facility. The most frequently reported concerns relating to the facility are:

- Need to retain the golf course, don't build on it (5.9%)
- Prefer other location/in the wrong location (5.6%)
- Facilities already available elsewhere/it's not needed (4.1%)
- Waste of money/prefer to spend money elsewhere (3.5%)
- Ratepayers having to pay for this – excessive and ongoing costs (2.9%)
- More consultation needed/looks like decision has been made (2.0%)
- Need to accurately assess the need/it needs a business plan (1.8%)
- Concerns with other existing facilities, a duplication of services (1.1%)
- Concerned with the environmental impact (0.8%)

## 10.0 SAMPLE PROFILE

The final sample profile is depicted in the table below. Whilst this is a convenience sample, the sample is fairly robust with the distribution by suburb in the City of South Perth representative when compared to the Australian Bureau of Statistics below; as is the distribution of [Aboriginal/Torres Strait Islander](#) people in the survey population. The sample is a more heavily weighted towards females with children and specifically the 35-54 age group; these are the groups most likely to use the RAF. However, young people under age of 35 years are under-represented. The impact of the under representation has been taken into account in the cross analysis, identifying the needs and expectations of these groups.

Demographic	% Total Sample (n=1641)	% City of South Perth (n=1407)	ABS data City of South Perth
<b>Gender:</b>			
Male	34.9%	33.7%	50%
Female	63.8%	65.2%	50%
Other	0.2%	0.3%	-
Prefer not to disclose	1.1%	0.9%	-
<b>Age:</b>			
Under 24 years	2.9%	2.9%	13.8%
25-34 years	14.4%	14.1%	20.7%
35-44 years	27.5%	27.4%	15.8%
45-54 years	23.2%	22.0%	15.3%
55-64 years	17.1%	17.7%	15.0%
65-74 years	11.8%	12.6%	10.7%
75 plus years	2.4%	2.8%	8.6%
Prefer not to disclose	0.6%	0.4%	-
<b>Children at home: (multiple response)</b>			
Pre-school aged	17.5%	18.1%	)
Primary school aged	28.0%	27.3%	) 31.1%
Secondary school aged	18.8%	17.2%	)
Post-secondary and studying	8.7%	8.2%	}
Left school and working/unemployed	8.0%	8.4%	}
No children at home	40.7%	41.6%	}
<b>Curtin student:</b>			
Yes	2.8%	2.8%	-
No	97.2%	97.2%	-
<b>Aboriginal/Torres Strait Islander:</b>			
Aboriginal	0.9%	} 0.9%	} 1.3%
Torres Strait Islander	0.0%	}	
Neither	99.1%	99.1%	} 98.7%
<b>Local Government Area:</b>			
City of South Perth	85.7%	↓	
Como		35.0%	34.2%
Karawara		5.0%	4.8%
Kensington		11.1%	10.3%
Manning		12.3%	9.4%
Salter Point		7.2%	6.8%
South Perth		24.8%	29.2%
Waterford		4.6%	5.4%
Town of Victoria Park	4.6%	-	-
City of Canning	2.0%	-	-
Other LGA	6.9%	-	-
Don't know	0.7%	-	-

Sample profile continued...

Demographic	% Total Sample (n=1641)	% City of South Perth (n=1407)	ABS data City of South Perth
<b>Work in the City of South Perth:</b>			
Yes	15.2%	14.5%	20.8%
No	84.8%	85.5%	79.2%
<b>Work for City of South Perth:</b>			
Yes	1.0%	-	-
No	99.0%	-	-



# RAF

RECREATION  
& AQUATIC  
FACILITY

## PART TWO

### FACE-TO-FACE ENGAGEMENT ACTIVITIES

## 11.0 FACE-TO-FACE ENGAGEMENT ACTIVITIES

### 11.1 Introduction

Between Wednesday 26 August and 24 September 2020, the City of South Perth hosted a series of seven engagement activities (below) to inform the community about the project's background and seek feedback on their level of support for it, as well as their needs and expectations of it should the project go ahead.

#### FACE-TO-FACE ENGAGEMENT ACTIVITIES

##### 1. **Workshop One: Disability and Access Workshop**

Workshop One was held on Wednesday 26 August, from 12.00 to 2.30pm and was attended by members of the Inclusive Community Advisory Group (ICAG), a range of service providers, people living with disabilities and the carers of people living with disabilities. The purpose of the session was to inform them about the project and its background and encourage them to circulate that information to their contacts, and to capture their advice, needs and requirements to make the RAF a welcoming and inclusive place to visit.

##### 2. **Workshop Two: Community and Action Groups Workshop**

The Community and Action Groups Workshop was held on Wednesday 2 September 2020, from 6.00 to 8.30pm. The workshop was attended by representatives of the South Perth Historical Society, Karawara Action Group, Manning Community Association, Salter Point Community Group and the City of South Perth Residents Association. The purpose of the session was to inform them about the project background with a focus on financial sustainability, to capture their needs and requirements for the RAF and to encourage them to circulate information to their contacts.

##### 3. **Workshop Three: Aboriginal Key Stakeholder and Community Workshop**

Held on Monday 7 September between 9.30am and 2.30pm, Workshop Three was attended by members of the City's Aboriginal Reference Group, the community, Traditional Owners, the Curtin University community and South West Aboriginal Land and Sea Council (SWALSC) family representatives. The purpose of the session was to inform attendees about the project, and to capture their advice, needs and requirements to make the RAF a welcoming, accessible place for Aboriginal people. Attendees were also encouraged to circulate information about the project to their contacts.

#### 4. **Community Information Day**

A Community Information Day was held at the South Perth Community Hall between 10.00am and 2.00pm on Saturday 12 September. The community was invited with the intention of informing them about the project, providing them with an opportunity to ask questions of the City and the architects, gauging their level of interest in and support for the RAF and capturing their needs and requirements.

#### 5. **Online Community Workshop**

Held on Wednesday 16 September 2020 from 6.30 to 8.00pm, the Online Community Workshop was intended to inform the community about the project as well as to provide another opportunity capture their advice, needs and requirements for the RAF.

#### 6. **Collier Park Golf Key User Groups**

Representatives from Collier Park Golf key user groups were invited to a workshop held between 6.30 and 9.00pm on Thursday 17 September 2020. The purpose of the workshop was to inform them about the project, hear their concerns and answer any questions they had.

#### 7. **South Perth Youth Network (SPYN) Workshop**

Held on Thursday 24 September 2020 between 4.30 and 6.30pm, the purpose of the SPYN Workshop was to inform and capture their advice, needs and requirements to make the RAF a welcoming and accessible place for young people.

## 11.2 Feedback

The majority of people participating in the face-to-face engagement activities expressed support for the RAF, with many perceiving a long-standing need. Consistent values and aspirations emerged from most engagement activities, including that the RAF should be multi-cultural, multi-generational and multi-functional: a destination for people from all walks of life, of all ages and abilities. It should offer varied opportunities for:

- Casual daily use – everything from walking the dog to having breakfast at a café
- Community use – a place for book clubs, interest groups and outdoor movies
- Health and wellbeing – allied health care, sport and recreation
- Study and work – shared office and conference facilities and places for students

- Celebration and adventure – cultural festivals, climbing walls and ziplines
- Reconciliation and cultural awareness – places for Aboriginal people to meet and be and opportunities for other members of the community to experience and learn.

Many also stressed that the RAF needs to:

- Be financially sustainable; an asset for the City, rather than a drain on City funds, and they would like the opportunity to 'see the numbers' and review the business case
- Offer free and no-cost activities and be affordable enough to encourage regular use, particularly for those on fixed incomes, for students and people with large families.

Participants in several of the face-to-face engagement activities also stressed the need to consider the needs of golfers at Collier Park Golf and ensure they continue to enjoy high-quality experiences.

## 12.0 DISABILITY AND ACCESS WORKSHOP

### 12.1 Introduction

On Wednesday 26 August 2020, the City of South Perth hosted a workshop focussed on the needs of people living with a disability in relation to what the RAF would need to offer to ensure it provided excellent experiences and a welcoming and inclusive environment. A total of 24 participants attended the workshop, including members of the City's Inclusive Community Advisory Group (ICAG), people with a disability, parents/carers of people with a disability, representatives from disability service providers, seniors' groups and Curtin University.

The group was presented with the project background, with presentations made by Christou Architects and the City of South Perth. The session was facilitated by Elton Consulting, with assistance from the City of South Perth staff and Research Solutions as table moderators.

Engagement activities included:

- An interactive session on arrival, where participants were asked to provide feedback on a number of public spaces in the Perth metropolitan area, including Elizabeth Quay, Yagan Square, Optus Stadium and Cockburn ARC. From an access and inclusion perspective, what works well at these venues and what are their shortcomings?
- Table discussions to identify what the RAF needs to offer to make it welcoming, inclusive and successful. Participants were asked to identify the non-negotiable aspects of design, as well as features and inclusions that would make the RAF an exceptional public space.

The group was encouraged to think 'beyond' what is usually provided in order to make sure the RAF is welcoming and inclusive for all members of the community, regardless of age or ability.

### 12.2 Feedback

Participants expressed satisfaction at being included in the earliest stages of the project, and felt optimistic about the City's intention to develop a first-class, inclusive facility. The initial activity examining the positives and negatives of various public spaces and facilities in the Perth metropolitan area highlighted that the minimum standards for inclusion rarely meet needs.

The overarching theme of the workshop was that the RAF should be not only designed, but also managed in a way that respects dignity and independence.

Key messages emerging from this workshop included the need to get the basics right, from the thoughtful design of car parking bays (large, correctly oriented, protected from the weather and located close to the entrance), to the provision of plenty of appropriately located and equipped adult change rooms. Participants also stressed the need for diverse sensory experiences, the ability to move seamlessly between spaces and a strong wish for the RAF to provide young people with disabilities opportunities for adventure.

### 12.3 Sense of place

Workshop participants stressed that the RAF should be a place that is welcoming, inclusive, family-friendly, relaxing, worry-free, fun and one that appeals to the inner child.

They suggest the following will contribute to a creating a sense of place at the RAF:

- Incorporating the story of the Whadjuk people and Aboriginal art into the RAF
- Incorporating the history of the City of South Perth post-colonisation
- Choosing a name for the RAF with local meaning
- Community groups based at the RAF
- Lots of access to nature
- Lots of things to do/always something for everyone.

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*'A place where there is something happening other than just food.'*

*'A one-stop shop, where you can spend three hours and everyone is happy, the kids, the parents and the grandparents.'*

---

### 12.3.1 Staff and facility management

A welcoming and inclusive environment will rely in part on how the facility is managed and the calibre of its staff. Participants were looking for the following:

- Great customer service
- Policies designed to include (not exclude) – e.g. people with vision impairments do not need to seek permission to swim alone
- Employment opportunities for older people, people with disabilities
- A strong volunteer program, as at Perth Zoo
- Training for staff - accessibility awareness training/sensitive to the needs of people living with disabilities
- Training for staff – proper use of equipment.

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*'That needs to be an ongoing commitment to training, too. All new staff should have to have that training.'*

---

### 12.3.2 Cost

The cost of using the facility will impact on accessibility and inclusivity.

- Affordability – must be affordable enough to use regularly
- Discount for City of South Perth residents
- Companion cards – free access for carers, etc. accompanying people with a disability
- Cost-free activities and ways to use the RAF.

### 12.3.3 Public realm

Participants stressed the need for the public realm to be as inclusive and accessible as all buildings at the RAF, and offer an equally high standard of experience:

- Access to nature, including proximity to water

- Carparks – no crossfall
- Ramps – appropriate length
- Elevation – how is this dealt with?
- Well-connected to the rest of the RAF
- Lighting at night
- Sculpture/artwork
- Lots of shade and seating
- Sensory consideration (design and consideration) for neuro diversity
- Views
- Paths: separate pedestrians and wheelchairs from cyclists.

#### *Outdoor amenities and activities*

- Accessible toilets
- Enclosed, accessible/all abilities playground
- Wheelchair swing (no key required)
- Wheelchair accessible zip line
- Barbecue and picnic facilities
- Bocce court
- Interactive nature spaces
- Performance space, bandstand for live gigs, Saturday and Sunday lunches
- Wheelchair accessible community gardens
- Sensory gardens
- Undercover walkways
- Bleachers for swimming carnivals
- Accessible rooftop garden
- Bike and scooter hire
- Golf carts to move longer distances.

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*‘You’d come to the RAF for equipment you couldn’t find anywhere else – like the zip-line for wheelchairs this gentleman was talking about.’*

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## **12.4 Inclusions**

- Microenterprise opportunities for people with disabilities
- 24-hour gym
- Adventure for everyone (including people living with a disability) e.g. Climbing wall designed for people who can't climb
- Breakout spaces/quiet places
- Community rooms
- Dedicated gymnastics area
- Quiet rooms
- Secure lockers
- Indoor water-based play area.

## Services

- Options for therapy
- Crèche with gym
- Crèche with pool.

## Food and beverage

- Coffee - good
- Food - allergies and special needs
- Café/ kiosk (diverse options, lots of choice)
- Affordable food
- Option to bring your own food.

---

*'Good coffee is really important. You're less likely to stay at the RAF if you can't get a good cup of coffee.'*

---

## 12.5 Travel

Participants suggest people are likely to use a variety of means to travel to and from the RAF, including travelling by foot, by bicycle, by private vehicle or public transport. Providing sufficient high-quality parking bays for seniors and people with disabilities is critical to encourage frequent use.

### 12.5.1 Parking

- More than the required number of ACROD bays
- Long bays for wheelchair vehicles so that the hoist is not on the road
- Wide bays
- Rear access bays
- Shaded, for people who cannot regulate temperatures
- ACROD and seniors' bays close to the facility entrance
- Valet parking – shaded drop off zone/seating area at the entrance
- Free or minimal cost.

### 12.5.2 Public transport

- Direct access to the facility
- Good public transport connections
- Covered waiting areas/set-down places
- Courtesy bus.

### 12.5.3 Bicycles, scooters, skateboards

- Secure bike parking
- Secure storage for scooters/skateboards
- Bike paths.

#### 12.5.4 Pedestrian access

- Paths wide enough to walk next to a wheelchair
- Separate bicycle and pedestrian paths
- Well-lit paths
- Shaded paths
- Seating.

#### 12.5.5 Electric vehicles (all types, including wheelchairs)

- Charging points.

### 12.6 Design

- 'Normal' physical spaces
- Reception at an appropriate height
- Doors - wide and self-opening
- Flat flooring, appropriate materials
- Technology - audio and written instructions on how to use technology
- Good lines of sight from one area to another
- No strobe lighting/reflections
- Minimise noise as much as possible (both a safety hazard and intolerable for some people)
- Audio loops
- Space at tables for wheelchairs

---

*'You want things that tell you how to use the technology, as well. It's not always obvious how to turn on the tap in the bathroom for example and if you're vision impaired, it's got to be impossible.'*

---

#### 12.6.1 Moving around the RAF

- Travelator - moving footpath
- No obstacles/wide paths/clear delineation
- More than two lifts
- Ramp access to second level
- Ramps for emergency exit from second level
- Wayfinding
  - Braille – next to (not on) lift buttons
  - Audio map
  - Easy-to-follow, coloured pathways
  - Great visual aids – Braille and Auslan
  - Sensory map.

---

*‘A sensory map that tells you where the places with high noise and high smells are, the quiet places, where the breakout rooms are – that sort of thing would be fantastic. And audio maps as well. I don’t think they have those here.’*

*‘When it comes to wayfinding, you can’t just rely on signage – it has to be intuitive and appropriate.’*

---

### 12.6.2 Change rooms and toilets

People with a disability are chronically underserved in terms of the provision of adequate toilet and change room facilities in public spaces. Participants considered the provision of enough (more than the minimum required) high-quality change-room facilities a ‘must’:

- All gender, parents and carer change rooms
- Multiple hoists and hoist jackets
- Adult change tables
- Lots of change rooms
- Family change rooms
- Located close to the pool.

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*‘Disabled change rooms are not family rooms and the general public need to know this.’*

---

### 12.6.3 Pools and pool equipment

- Designated hydrotherapy pool, big enough to hold 30 – 40 people
- Hydrotherapy pool deep enough to walk in
- Pool temperature at 31 degrees – heated pools are a must
- Two ramps and two hoists for pool access
- Walk-in access to pools and spa
- Ramp, steps and rail, lip and hoist
- Lots of seating in and around the pool
- Clear access, not through kids’ play area
- Plenty of water wheelchairs with belts for safety

## 13.0 COMMUNITY AND ACTION GROUPS WORKSHOP

### 13.1 Introduction

On Wednesday 2 September 2020, the City of South Perth hosted a workshop from 6-8.30pm for representatives of the City's community and action groups. The workshop attracted 11 attendees, representing the City of South Perth Residents Association, the Salter Point Community Group, Manning Community Association, Karawara Action Group and the South Perth Historical Society.

The group was presented with the project background, with presentations made by Christou Architects and the City of South Perth. The session was facilitated by Elton Consulting, with assistance from the City of South Perth staff and Research Solutions as table moderators.

Engagement activities included:

- A Mentimeter (interactive online engagement tool) session to identify the activities they currently leave the City for
- A second Mentimeter session to identify their top three priorities for the RAF
- An interactive session where in small groups attendees were encouraged to think about the wants and needs of the communities they represent, with specific examples being a family group, a senior couple, middle aged man and students. What did the RAF need to offer to make it welcoming, inclusive and successful?
- Attendees were encouraged to think beyond the norm, and provided with a summary of what was important to previous workshop groups (Disability and Access, Aboriginal Key Stakeholders and Community).

### 13.2 Feedback

The group was broadly supportive of the concept however members of this group were concerned about the potential financial impact of the RAF on ratepayers. If the plans go ahead, this group will want to know more about the business case and financial implications of the RAF, including a cost per ratepayer. At the same time, the group stressed the need for the RAF to be affordable enough to encourage regular use and suggested that residents of the City of South Perth should be able to use the RAF at a discounted rate.

There is some concern about the potential impact on the golfing community (including the safety of pedestrians, disruptions to golfers, the potential of an increase to green fees), although they consider the likely benefits to this group will be the food and beverage offerings, improved facilities (more like Wembley Golf Course) and the driving range.

### 13.3 Sense of place

Workshop participants stressed that the RAF should be a place that is welcoming, inclusive, family-friendly and offer quality experiences. They stressed the need for the RAF to offer something special – and something for everyone – if it is to be a regional destination.

They suggest the following will contribute to a creating a sense of place at the RAF:

- Incorporating the story of the Aboriginal people and the history of the suburb into the facility
- Including lots of Aboriginal art
- Giving it a name with local meaning – potentially an Aboriginal name.

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*'You want it to be a place you could come to every day for a different reason.'*

---

### 13.3.1 Staff and facility management

- Concierge service
- RAF management committee, comprising community and consumers
- Well-trained and courteous staff.

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*'Who is going to operate the RAF? They should think about a management committee, giving the community a say in how it runs.'*

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### 13.3.2 Cost to use the facility

- The cost of using the facility has to be reasonable to encourage regular use
- There should be a variety of membership options and types
- Family packages – activities and a meal
- The RAF should offer no-cost entertainment options/free access to the public realm
- Discount for City of South Perth residents

### 13.3.3 Public realm

Participants stressed the need for the public realm to be as inclusive and accessible as all buildings at the RAF, and offer an equally high standard of experience:

- Access to nature
- Retain/protect the trees
- Lots of trees and shade
- Lots of seating
- Well-lit
- Paths: separate pedestrians and wheelchairs from cyclists
- Lots of different types of seating
- Accessible parking
- Wi-Fi throughout the RAF
- Aboriginal sculpture and artwork
- Lots of rubbish bins
- Places to meet/read/play chess/people watch/sit and watch the world go by.

#### *Outdoor amenities and activities*

- Toilets and change rooms for families
- Toilets and change rooms for people with disabilities
- Drinking fountains
- Barbecue and picnic areas
- Alfresco dining

- Enclosed, accessible/all abilities playground
- Nature/adventure playgrounds
- Facilities for dogs
- Outdoor film
- Outdoor concerts
- Aboriginal education opportunities – bush tucker, local history
- Cultural festivals
- Arts festivals like AWESOME Arts at CBR Arboretum
- Running track
- Outdoor basketball courts
- Archery range
- Driving range with targets
- Grandparents facilities for children
- Performance space
- Water playground for families
- Water fountains like Forrest Place.

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*'I could see this as a tourist destination – a place to come for cultural experiences, to learn about Aboriginal culture and history.'*

---

### 13.4 Inclusions

- Large storage lockers for golfers located between course and car
- Extended hours driving range
- Community spaces/function rooms for hire
- Office space for hire/videoconferencing facilities
- Dedicated space for Curtin students to study or conduct research
- Indoor ball courts
- 24 hour gym
- Community classes: cooking, wine tasting, dancing, hip hop, literacy, etc.
- Fitness classes: zumba, pilates, yoga, tai chi, balance, etc.

#### *Services*

- Crèche
- Health and wellness services, e.g. physiotherapy, hydrotherapy
  - Linked with Curtin
- Personal training
- Swimming lessons.

#### *Food and beverage*

- Lots of options
- Fast food for teenagers

- Healthy options
- Different price points
- Tavern/bar facilities
- Evening meals
- Good coffee
- Options to bring your own.

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*'A middle-aged man is going to want a beer, maybe a meal with mates after a round of golf, or to be able to get breakfast after a morning workout.'*

---

## 13.5 Travel

Participants say people will likely use different methods to travel to the RAF, depending on who they are, who they are with and where they are coming from. Public transport and bicycle and pedestrian access will be important. Others will travel by private car, Uber or taxi.

### 13.5.1 Parking

- Lots of ACROD and seniors' bays located close to the facility
- Secure parking – lots of lighting in carparks, plus CCTV.

### 13.5.2 Public transport

- Lots of connections
- Covered, comfortable, safe and secure station
- Potentially – direct bus from the airport to encourage tourism.

### 13.5.3 Bicycles, scooters, skateboards

- Secure bike storage
- Large lockers for scooters or skateboard storage
- Undercover/shaded parking
- Bike paths – safe and well-lit, around and to the RAF.

### 13.5.4 Pedestrian access

- Well-lit paths
- Good connections to the RAF
- Keep pedestrian paths safe from golfers
- Screening so golfers are not bothered by pedestrians
- Makes sure the wetlands are not impacted
- Paths wide enough to accommodate a group walking together, strollers or wheelchairs
- Separate bicycles from pedestrian
- Seating and shade
- CCTV.

### 13.5.5 Electric vehicles (all types, including wheelchairs)

- Charging points.

### 13.6 Design

- Sound attenuation in inside areas
- Longevity of materials
- Lots of light
- Access to nature
- Design to be inclusive/easy to move around for people of all abilities
- Respect/consideration for the environment, especially the wetlands
- Ensure the RAF is designed to accommodate the needs of multiple user groups without negatively impacting anyone else.

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*‘Noise in those places can be crippling.’*

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### 13.7 Pools and pool equipment

- Heated hydrotherapy pool
- Lots of swim lanes
- Ideally – 50m pool indoors
- Outdoor pool heated for winter use and covered for summer use.

### 13.8 Toilets and change rooms

- Male and female change rooms at the Golf Club
- Large family change rooms near pool
- Multiple disability change rooms.

## 14.0 ABORIGINAL KEY STAKEHOLDERS AND COMMUNITY WORKSHOP

### 14.1 Introduction

On Monday 7 September 2020 the City of South Perth hosted a workshop for Aboriginal key stakeholders and community members. Nine participants attended from different stakeholder groups, including the City's Aboriginal Reference Group, the local community and Elders. The session was facilitated by Elton Consulting, with assistance from City staff and Research Solutions. Cr Samantha Bradder and Cr Ken Manolas attended the session as observers.

The group was presented with the project background with presentations made by Christou Architects and representatives of the City of South Perth. The session was facilitated by Elton Consulting, with assistance from the City of South Perth staff; Research Solutions attended to take notes.

Engagement activities included:

- An open discussion, where participants were invited to make comment and ask questions directly of the City of South Perth and the architects.
- An interactive session where in small groups attendees were encouraged to think about the wants and needs of the community, with specific examples being a large family group, a senior couple, middle aged man and female student. What did the RAF need to offer to make it welcoming, inclusive and successful?
- Attendees were encouraged to think beyond the norm, and provided with a summary of what was important to people who participated in the Disability and Access Workshop.

### 14.2 Feedback

Key themes emerging from this session include the need for the RAF to be welcoming and accessible for all members of the community, and the need for Aboriginal people to feel that 'this is our place'. The group stressed that building a sense of ownership and belonging depends on structural inclusion – from the design of the RAF through to its operation and management practises. The group sees the RAF as an opportunity:

- For local government to 'get it right'; for ground-breaking reconciliation
  - Truth-telling about what has happened on this land
- To recognise and celebrate traditional ownership, language and culture
- To include Aboriginal people in every aspect of the RAF's design, construction and operation
- To provide a place for Aboriginal people to meet and conduct business
- To provide welcoming spaces for Aboriginal families to play
- For building cultural awareness
- To build wealth/generate revenue through cultural tourism
- To contribute to positive health outcomes by addressing physical needs (such as the provision of a hydrotherapy pool and allied health services).

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*'I've seen a lot of places with great aesthetics but they don't necessarily translate to high use.'*

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### 14.3 Sense of place

Embedding Aboriginal narratives into the RAF can only have positive outcomes: a 'first' for local government, employment and training options for Aboriginal people, tourism opportunities for the City and greater social cohesion through building cultural awareness. The RAF provides an opportunity to tell the story of the Whadjuk people in the City of South Perth and foster a sense of ownership and belonging through:

- Structural inclusion (see below)
- Art, culture, justice healing and belonging needs to be built into fabric of the RAF
- Naming is key – but consult to make sure you get it right.

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*'We need the architects to be really excited about this, to really sell it into council.'*

---

#### 14.3.1 Connection to the environment

The City of South Perth currently lacks a meeting place – 'a place for us to do our business.' The RAF should offer:

- Places just to 'be'
- Mia mias (a temporary shelter or hut)
- Looking out over the water/water is life
- Lots of shade, flora at different heights
- Scaling up the natural environment
- The chance to feel bare feet on grass.

---

*'There is no distinction between us and our land.'*

---

#### 14.3.2 Staff and facility management

Anti-discrimination training and cultural awareness training for new staff was seen as essential. A commitment to inclusive practise will benefit not just Aboriginal people, but all Australians who are visibly different. The RAF operators need to be committed to ongoing training for all new and existing staff.

- Friendly staff/not biased/culturally aware/culturally appropriate
- Aboriginal staff in visible positions
- Inclusive policies and practises
- Low cost; pay as you go; student discounts
- Information point/buddy system

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*‘The first thing to do if you want Aboriginal people to feel welcome is smile when we walk in the door.’*

*‘There are pools where they won’t let our girls swim in their shorts and t-shirts. Our girls don’t like to show their middles, so what’s the problem with them swimming in board shorts?’*

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#### 14.3.3 Access and structural inclusion

- Structural inclusion: local people involved from the first steps all the way through design, procurement, building, employment/management
- Traineeships, work experience, volunteering and employment opportunities beyond sport and recreation opportunities
- Discounted pricing for students, seniors, large families; low and no-cost opportunities to visit the RAF.

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*‘There is a whole discussion to be had about the access of economics.’*

---

#### 14.3.4 Public realm

The public realm should be comfortable in all seasons, and offer ‘something for everyone’, including:

- Lots of different types of seating
- Basketball rings
- Space to play soccer or football
- Paths to skate or ride a scooter
- Playgrounds – all abilities
- Nature playgrounds
- Barbecues and picnic areas
- Outdoor exercise equipment
- Walk trails
- Accessible toilets and family change rooms
- Facilities for community events
- Healing gardens
- Edible gardens
- Education trails – Aboriginal names and uses for plants
- Safe and secure
- Well lit
- Lots of public art (local artists)
- A water playground (like Ascot and Forrest Place)

The water playground: the one that used to be at Ascot is very fondly remembered, a no-cost option for entertainment, where people felt comfortable being and that whole families enjoyed.

## 14.4 Inclusions

The RAF should offer spaces for programming and services that foster connections and wellbeing, including:

- Social Emotional Well-being (SEW)
- Women's network/women's mentoring/country support
- Good fitness programming
- Indigenous dance
- Self-defence classes for women
- Female facilitators/classes for women, run by women
- Breakout spaces/quiet places
- Community rooms
- Secure lockers
- Indoor water-based play area.

### 14.4.1 Services

- Options for therapy
- Hydrotherapy pool
- Curtin physiotherapy students
- Mental health services
- Crèche facilities.

### 14.4.2 Food and beverage

- Lots of options for food
- Affordable food
- Healthy snacks
- Opportunities to bring/cook your own (picnics and barbecues).

### 14.4.3 Other

- High-quality and enough large family change rooms in the pool area
- Senior-specific change-rooms located in very close proximity to the pool
- Large, secure lockers.

## 14.5 Travel

People are likely to travel to the facility on foot, potentially by bicycle, private car and public transport. Public transport connections will be particularly important, as will adequate free parking.

### 14.5.1 Parking

- Enough seniors' bays and disability bays, located close to the facility
- Shaded parking, particularly for seniors and people with physical disabilities
- No charge for parking.

### 14.5.2 Active transport

- High-quality pedestrian environment throughout the RAF

- High-quality pedestrian/bike connections to the RAF
- Good lighting
- Shaded seating on pedestrian routes
- Secure, shaded parking for bicycles/storage for scooters.

#### 14.5.3 Public transport

- Public transport hub located at the facility
- Frequent buses
- Lots of connections
- Safe, comfortable, well-lit environment.

#### 14.6 Design

The design of the built environment should include consideration of culture:

- In shape and form, e.g. more rounded, natural shapes for pools
- Placement of the entrance to the facility (a single entrance at the front may be more of a barrier than a warm welcome)
- Public art and language
- Recognition of the six seasons
- Respect for the land.

## 15.0 COMMUNITY INFORMATION DAY

### 15.1 Introduction

The City of South Perth hosted a Community Information Day between 10am and 2pm on Saturday 12 September 2020. The intention of this session was to encourage community members to find out more about the RAF, ask any questions they may have and articulate their needs and aspirations for the RAF.

The session was attended by approximately 100 people. Feedback was sought at several information stations, staffed by Christou Architects, representatives of the City of South Perth and the consultants, Research Solutions. Each station offered one of the following:

- Pre-concept designs and overview of the project
- Children's play space and mural
- Mentimeter station to record participants' top three priorities for the RAF
- An engagement activity that encouraged participants to consider what the RAF should offer to ensure it is a welcoming and inclusive space for everyone. Specifically, participants were asked to consider what the needs of seniors, young adults, a young family and a middle-aged man or woman might be.
  - The consultants also captured the verbatim comments of attendees (appended) and a series of nine video 'vox pops' in which attendees expressed their level of support for the RAF and what they felt were key inclusions.

### 15.2 Feedback

The overall sentiment expressed was positive, with many participants explicitly stating their purpose in attending the Community Information Day was to learn more and expressing a belief that the City of South Perth has a long-standing need for a facility like the RAF, with many saying they leave City of South Perth to swim for exercise, leisure and swimming lessons.

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*'I used to go to Bentley and then to Vic Park – I throw all my money at them. This facility is 30 years overdue.'*

*'Just want it to go ahead – talked about this five years ago. It will work for everyone.'*

---

Some concern was expressed about the extent of the financial impact on ratepayers; several expressed a need for 'hard numbers'.

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*'Doesn't address the issue of ongoing costs. We need more hard numbers.'*

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A small number did not support the RAF being built at Collier Park Golf, preferring to leave the golf course as it is.

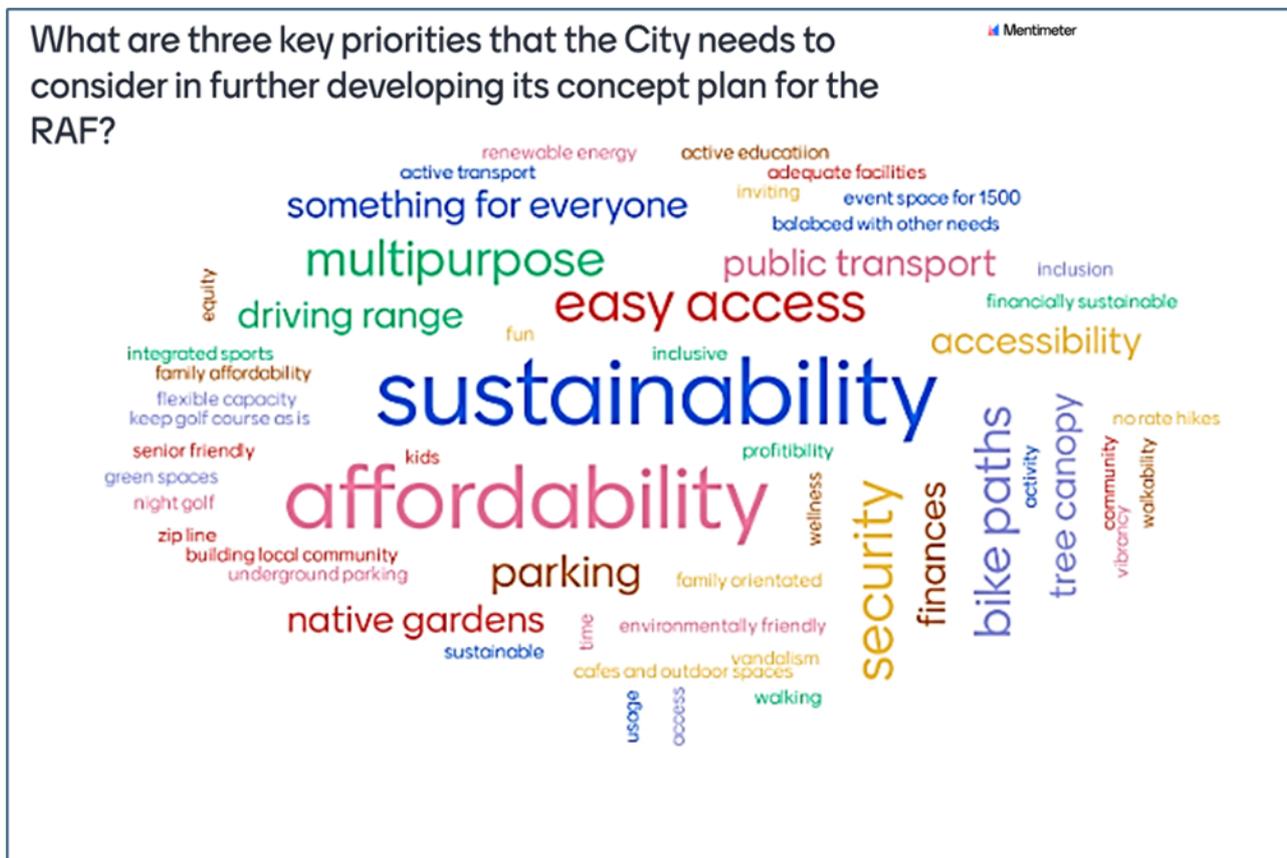
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*'I don't want it built at Collier Park. James Mitchell is much more suitable.'*

---

The results of the Mentimeter exercise (31 respondents) highlighted the importance of:

- The ongoing sustainability/financial implications of the RAF
- Accessibility and affordability for the community,
- It being a multipurpose facility, offering ‘something for everyone’.



Participants described their aspiration for the RAF being a place that is **affordable, accessible, vibrant, inclusive, multi-generational, multipurpose** and **multicultural**. The inclusions listed below are suggestions drawn from comments made to facilitators (appended) and the other engagement activities described above.

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*‘Represent the culture of the area. Cultural festivals, adventure playground.  
Men’s lodge.’*

---

### 15.3 Design

- Noise attenuation/acoustics
- Environmentally-friendly
- Spaces for community groups/classes (technology or literacy classes)
- Rooms for dance and fitness classes for all ages, e.g. tai chi, zumba, pilates, yoga

- Multipurpose sports hall (pickleball to basketball).

#### 15.4 Activities and inclusions

- Secure lockers/storage with free phone swipe card
- Library
- Tavern/bar facilities – evening meals like Wembley Golf Course
- 24-hour gym
- Group fitness classes
- Book club
- Senior’s circuit
- Climbing wall
- Mini golf
- 6-hole short course
- Driving range open from 6am – 9pm
- Pro-shop
- Space to hire with video conferencing facilities
- Spaces/activities for men
- Spaces/activities for women.

#### 15.5 Management

- Lots of membership/access options
- Volunteer opportunities.

#### 15.6 Travel

- Lots of parking
- Discounted parking for students
- Separate parking for swimming and sports
- Direct access by public transport
- Good bike/pedestrian connections
- Secure bike parking.

#### 15.7 Pools

- Separate kids’ swim lessons from adult exercise area
- Space for water aerobics
- Heated hydrotherapy pool
- Lots of lap lanes (50m)
- Pool - covered indoor pool
- Spa

- Outdoor pool sun and shade protection
- Dedicated walking lanes
- Moveable barriers
- Plenty of change rooms nearby.

## 15.8 Public realm

- Lots of shade
- Lots of seating
- Retain the trees
- Access to the water
- Water playground
- Community gardens
- Bike paths
- Adventure playground
- Places to sit and meet
- Picnic and barbecue facilities
- Amphitheatre
- Bleachers for swim carnivals
- Community events
- Cultural festivals
- Outdoor films.

## 16.0 ONLINE COMMUNITY WORKSHOP

Feedback from this session was compiled by the City of South Perth and Elton Consulting.

On Wednesday 16 September 2020, the City of South Perth and Elton Consulting conducted an online consultation session via Zoom to enable a wide range of people to participate from their home, office or wherever they have Wi-Fi. Registration was required for this session and included a presentation and interactive sessions in 'breakout rooms'.

Although 29 people registered for this online event, only 8 attended. However, it was a very positive and successful event as it engaged a number of people who may not normally be involved including a high percentage of males and two university students and a father who was multi-tasking as was participating in the Online Workshop and putting his children to bed at the same time!

Participants made many interesting comments and contributions including ideas for the management of the facility (talk about affordability, discount for students and access tokens), need for heating in the pool, and pool importance for swimming lessons, especially school VacSwim.

## 17.0 COLLIER PARK GOLF KEY USER GROUPS WORKSHOP

### 17.1 Introduction

The City of South Perth hosted a workshop session specifically for key user groups of Collier Park Golf on Thursday 17 September 2020 between 6pm and 7.30pm. The purpose of this session was to provide information on the changing face of Collier Park Golf through the Collier Park Masterplan project and the impact of the RAF, to answer any questions raised and to hear their needs and concerns.

The session was attended by twelve people representing groups that included the Collier Pine Ladies Golf Group, Collier Park Golf Club, Jeff T. Group, Old Wesley Golf Club, Friday Early Birds Group, Tuesday Veterans Golf Club (TVGC), Friday Bob Mitchell, Wanabes Social Golfers, Russell Golf and the Players Golf Club. One attendee left the meeting part-way through the session.

The format included a presentation by the City in which it reaffirmed its commitment to 18-hole golf as its core offering, showed the pre-concept design and explained how the City's offer will evolve to meet the emerging needs of golfers. An open question-and-answer session formed the core component of the session.

The session was facilitated by Elton Consulting, with staff from the City of South Perth and Research Solutions providing assistance in setting up, collecting and collating information.

### 17.2 Feedback

The session was attended by golfers who are keen to ensure their experience is undiminished, and while the majority feel positive about the RAF concept, they are concerned about the impact on the golf course and their access to it. While they accept needing to attract more people to the game in the long term, their main focus is the potential impact on their experiences, both during construction and afterwards.

Key messages from this group echoed sentiment expressed in other face-to-face engagement activities and included a perception that there are other more appropriate locations for the RAF in the City of South Perth than Collier Park and a strong concern that their access to the course and ability to get a game will be reduced. The group perceives limited need for a short course. If the project goes ahead, the group would like to see the business case. They would also like some involvement in the design of the course to maximise benefit from the space available and explore options for retaining 36 holes.

### 17.3 Concerns about not being able to get a game

A major concern expressed by attendees is that after the RAF is built, they will be less likely to be able to get a game when they want to play. They perceive that it is difficult enough to get onto the course at the moment due to the closure of other courses, and particularly since social distancing restrictions were introduced and increased the number of people interested in playing. They do not wish to lose the 27 traditional holes and feel that an 18 traditional hole course with a short course will not meet their needs, and will exacerbate existing pressures on the course.

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*‘What I’m hearing around the room is concern about not being able to get a game – for traditional players, it is very hard to get a game now and if you chop off another nine, it will be ridiculous. You will be forced to go to Wembley or somewhere else. I agree with what you are trying to do but do you have to do it on this bit of land?’*

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#### **17.4 Questions about the course**

Attendees asked questions about the configuration of the Lakes 9. They expressed concern about ‘losing’ holes and had limited interest in the short course concept.

Suggestions for configuring the course included:

- 6 holes rather than 9
- If the City is proposing to knock out three holes - two holes of the Lake - there is a spare one on the island. The course could be redesigned to squeeze in another two holes, thereby retaining 27 holes.

#### **17.5 Questions about the site**

There is a strong feeling that another site – almost any other site in the City of South Perth – would be a more appropriate location. They questioned:

- Is it true that by locating the site at Collier Park the City has more chance of attracting funding from other bodies?

#### **17.6 The approvals process and business plan**

There is some question whether it is reasonable for the Council to consider and approve the business plan within a two-week period; some want the business plan to be available for public review, even in redacted form.

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*‘Where is the opportunity for we, the public and the ratepayers, to see the business case? Is there an opportunity for us to see it? I would love to see even a redacted copy, with the commercial-in-confidence information removed... if the decision is too rushed, the process is flawed.’*

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One attendee, very strongly opposed to the concept, questioned the validity of a business model that includes a swimming pool, a known ‘money pit’ for local governments.

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*‘They want to make money and they’re putting in a swimming pool – you’ve got to be kidding me, right? ... The only reason you’re putting the pool here is because it is going to cost shit load of money and you want golf to pay for it.’*

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## 17.7 Opposition

There is some opposition to the proposal to locate the RAF at Collier Park which was evident at this session, in feedback gathered in the verbatim comments received through the City's online Q&A page, at the Community Information Day and in the late survey submissions (see appendices).

Opposition relates to the following concerns:

- Once you remove a golf course, it is 'gone forever'
- There is no need for a short course: players can choose to play five or six holes of an existing course.
- The driving range – while welcome – is unlikely to generate income for the City (there is a perception that it does not do so at Wembley Golf Course)
- There is already pressure on the golf course.

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*'Once you lose a golf course, it will be gone forever: you'll never replace it. And you talk about getting more people to play golf – well, that's a great idea. I tell you what though, where are they going to do it? You've taken away the potential of playing an 18 and a 9, which virtually gives you three rounds of golf...our club wants to try and retain what's here. Why are we trying to squeeze things here when we have all this room around Curtin?'*

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## 17.8 Other questions

- How will parking be managed during and after construction?
- How will the course be disrupted during construction – and for how long?
- What facilities will be available to golfers?
- What are the benefits of Curtin University being involved?
- How much opportunity will the community have to review plans and business cases?
- How will noise from pedestrian access be mitigated/stopped?
- How will pedestrian and golfer safety be assured?
- If Collier Park is at 85% capacity now and the expectation is that the new facilities will increase the number of players, how will players' ability to access the course be affected?

## 18.0 SOUTH PERTH YOUTH NETWORK (SPYN) WORKSHOP

This session was conducted independently by the City of South Perth.

### 18.1 Introduction

On 24 September 2020, City staff conducted a workshop with members of SPYN to gain their feedback on what they consider to be high priorities for the RAF project. The session was held at 4.30pm at the George Burnett Leisure Centre, and was attended by five SPYN members, aged between 16 and 19 years. The session was originally scheduled to be held within the main engagement period, but was re-scheduled to include more attendees.

### 18.2 Feedback

When asked what they would like to see at the RAF and how to make it a welcoming and inclusive place, the following feedback was recorded by the facilitator during the session:

- Age restrictions at some gyms
  - Special 12-18 sessions
- Café/kiosk
- Dance studio (sprung floor)/pilates/multipurpose
- Pool needs free swim lanes/area, not just for organized laps, and more access
- Volleyball – (beach) outdoor courts
- Nice gardens – some secluded spaces like Kings Park. Gazebo and seats. Good for study.
- Wi-Fi and charging ports
- Picnic space on grass – open grass area
- Event space/amphitheatre/outdoor films/buskers
- Local market?
- More family change rooms/unisex change rooms
- No key access to hydro pool
- Indoor soccer/squash/netball/badminton
- Seating outside/public art/colour/bring environment inside
- Good community ambience
- Community garden
- Multiple ways to access lockers
  - Key
  - Phone
- Speaker system and projector (whiteboard) – in hireable spaces
- Local art on show
- Good meeting spaces for youth
- Mural – community, 3D?
- Cold water fountain
- Water play outdoor area
- Nature playground
- Outside shade
- Lift/elevator

- Crèche – Curtin students (early years)
- Climbing wall is a good idea – if done right (it's used)
- Young, relatable employees – more accessible to youth

### 18.3 Travel

- Good bike paths/racks/end of trip facilities
- Public transport
- Parking (car park could be used for market)
- Proper size parking bays
- ACROD parking – need enough
- Motorbike/scooter parking
- Paid parking – free for 2 hours
- Curtin parking is dumb (overselling permits; app; \$\$\$)



# RAF

RECREATION  
& AQUATIC  
FACILITY

## PART THREE

### YOUR SAY SOUTH PERTH

## 19.0 ONLINE Q&A

### 19.1 Introduction

The City of South Perth offered residents the opportunity to submit questions about the RAF in an online forum, open for the duration of the engagement period. The forum attracted a total of 12 questions.

### 19.2 Feedback

Questions covered the following topics:

- The location of the RAF
  - Two asked for more detail about the proposed location
  - Two were against the proposed location, feeling it would negatively impact golf in the City of South Perth and alternative locations were available
  - One queried whether it would affect the recycling facility
  - One questioned what measures were being taken to eliminate potential harm, given the location proposed was a landfill site at one time
- The financial impact on ratepayers
- Whether a hockey field would be included
- Traffic management
- The design of swim lanes.

The full list of questions and answers follow.

<b>Q.</b>	There are concerns that the existing driving range may be moved and replaced by a 100m range with nets. The existing range is the size of most ranges in Perth and aids in distance management with the variety of clubs. Furthermore, the new goal posts are excellent for training i.e. accuracy. There is also concern that the club professionals have not been asked for their input. Could you please consider the opinion of the Collier Park club professionals like in any project that is managed well and also consider their and other golfers opinions on the type of driving range needed?
<b>A.</b>	<i>Hi there. Thanks for your question. The RAF will become home to community sport and recreation, blending with the existing 18 hole golf course facilities and catering for emerging golf trends of shorter and alternative format golf, with the addition of mini golf, short form golf and a new technology based driving range. During the stakeholder and community engagement period a wide range of stakeholders and community members were consulted, including key Collier Park Golf user groups</i>
<b>Q.</b>	What financial impact would RAF have on ratepayers? Would City be borrowing funds? What about interest on borrowed funds? What is financial impact on ratepayers of running costs?
<b>A.</b>	<i>Hello. Thank you for your questions. The financial aspects of the RAF have been investigated and will form part of the business case being presented to Council in October. If the project goes ahead, further financial modelling will be conducted.</i>
<b>Q.</b>	As many people would be aware Collier Park Golf Course is built on a former landfill site, and as such the risk of potential environmental contaminants including lead and asbestos exists. Given that the RAF construction activities will require ground disturbance, what specific measures will the City undertake to ELIMINATE (not reduce) the potential health risk to surrounding residents and businesses?

<b>A.</b>	Hi there, thanks for your question. The City has undertaken preliminary environmental investigations to inform the likely nature and extent of the landfill and will undertake detailed investigations as part of the next stage of the project. This will enable the appropriate measures to be determined and put in place during construction, in line with any relevant environmental guidelines and / or approvals that may be required.
<b>Q.</b>	Would you please consider marking lanes in the proposed swimming pool in black on the pool floor ( like Goodlife Cannington Gym pool)? Easier to swim freestyle. Melville public pool has no such lanes but lanes marked by ropes- keep on swimming into the ropes.
<b>A.</b>	<i>Hi there. Thanks for your question. Although we are only at concept stage, we will ensure that this passed onto the design team to consider.</i>
<b>Q.</b>	What traffic management plans do you propose or are you expecting more traffic to meander through the avenues. Will you actually provide access to the RAF via Henley and Jackson and open up Murray street it continue to create more traffic chaos in the suburbs.
<b>A.</b>	<i>We are obtaining traffic and transport engineering advice as part of the current phase of the project to identify any opportunities and constraints and inform the project design and business case, to include any improvement works required to accommodate forecast traffic. The main access to the proposed development is assumed from the existing Collier Park Entrance. As we move into the next stage of design (subject to endorsement) we will continue to look in greater detail at various avenues to supplement this route, both on foot, car and other transport to support the flow of facility users and to provide increased connectivity to the surrounding community</i>
<b>Q.</b>	What side of the Golf Course will be used for the RAF? Thelma St (North) or Jackson St (South)?
<b>A.</b>	<i>Hello. Thank you for your questions. The proposed location of the RAF is towards Thelma Street (North) as shown in this image in the photo gallery.</i>
<b>Q.</b>	Is there a plan or map showing the proposed location of the RAF with respect to the golf course & Collier Reserve?
<b>A.</b>	<i>Hi there. Thanks for your question. We've just uploaded a photo showing the proposed location of the RAF in the photo gallery here.</i>
<b>Q.</b>	Does the scope include or impact the WASP's proposal for a synthetic hockey turf at Collier Reserve?
<b>A.</b>	<i>Hi there. Thanks for your question. The City is currently working with the WASP Hockey Club about future turf options, which include the possibility of relocating to Collier Reserve. Whilst this is not part of the RAF project, the two projects complement each other.</i>

Q.	Is there going to be an indoor heated swimming pool?
A.	<i>Hello. Thanks for your question. Although still at a pre-concept stage, the proposed RAF will include a variety of aquatic facilities including indoor and outdoor heated swimming options.</i>
Q.	Will the new facility affect the recycling facility?
A.	<i>Hello. Thanks for your question. The City's Recycling Centre will not be affected by the proposed RAF.</i>
Q.	Why is George Burnett not being looked at for the site. With Burswood and GlenIris Golf Closed in recent years Collier Park remains the only public golf course within 5km radius. George Burnett is on Manning road which now has freeway access. Furthermore, the City of South Perth has an abundance of parkland for sporting and recreation activities which could accommodate the relocation of seasonal sports played there whilst it has only one Public Golf Course.
A.	<p><i>Hi there. Thank you for your question. Due to the strong additional funding opportunities it offers, in September 2019 Council approved a site to the north of the existing clubhouse on Collier Park Golf Course as the preferred site for the RAF. This decision is based on opportunities for establishing integrated facilities, enhancing commercial and operational viability, future proofing the golf course and attracting partner funding opportunities.</i></p> <p>The central and highly accessible location has links to a large population base, including Curtin University, essential for the viability of such a facility. Additionally, using an existing City asset will reduce both the economic and environmental costs of facility duplication.</p>
Q.	<i>Why destroy a perfectly good and much used golf course when George Burnett is a much better site, more easily accessible by more people and not destroying an existing valuable community asset?</i>
A.	<p>Hi there, thanks for your question. Changes to the Collier Park Golf have been identified as being required over recent years. It is necessary to diversify the offerings at the golf course for it to remain relevant and financially sustainable.</p> <p>Whilst the George Burnett Leisure Centre (GBLC) was one of the six shortlisted sites during the initial feasibility study, the north side of Collier Park Golf Course was confirmed as the most appropriate site to ensure a financially sustainable aquatic and recreational facility. At the September 2019 Council meeting, the decision was made to proceed to the next stage of a business case with Collier Park Golf as the preferred location.</p> <p>Traditional golf will always be part of the offering at the proposed RAF, however, there will be a move towards more short form based golf and 'Top Golf' driving range options. This will ensure that the golf course remains a financially sustainable community asset for many years to come.</p>



# RAF

RECREATION  
& AQUATIC  
FACILITY

## APPENDICES

- Appendix 1:      Technical Appendix**
- Appendix 2:      Online Consultation Questionnaire**
- Appendix 3:      Community Action Group Workshop Mentimeter Results**
- Appendix 4:      Verbatim comments from Community Information Day**
- Appendix 5:      Community Information Day Mentimeter Results**
- Appendix 6:      Emailed Feedback**
- Appendix 7:      Open-ended comments from late surveys**

## Appendix 1 - Technical Appendix - Sampling and Data Collection Specifics

Component	Details
<b>Project Management Team</b>	
Research Solutions Contact	[REDACTED]
Client Contact	[REDACTED]
Other Contractors	None
<b>Research Methodology</b>	
Data collection method	Online and workshops
<b>Sampling Methodology</b>	
Target population for survey	Residents of the City of South Perth and surrounding LGAs
Description of sampling frame	As above
Source of sampling frame	City of South Perth contact lists and community consultation Your Say South Perth page
Sampling Technique	Convenience sample responding to City contact lists and consultation page. See section 2.2 of this report.
Sample Size e.g. if sample size achieved was different from planned sample, note this and reason why	1641 responses after de-duplication, a profile of the sample is provided in section 8.0
Was sample quota'd? (note below or NA):	No
<b>Fieldwork</b>	
Briefing Method	Programmer was briefed in person, with written briefing notes provided
Pilot study date(s)	26 <sup>th</sup> August 2020
Changes made as result of pilot	None
Survey dates	26 <sup>th</sup> August to 23 <sup>rd</sup> September 2020
Questionnaire length	10 minutes

Component	Details
Incentives provided for respondents e.g. No/yes & description of incentive	The City provided a competition; the terms and conditions are published on its consultation website. And it will be drawn by the City on 7 <sup>th</sup> October 2020
<b>Survey Procedure for Online surveys</b>	
<ul style="list-style-type: none"> <li>Administration process</li> </ul>	Common links were provided to the City one for each list so that responses could be tracked.
<ul style="list-style-type: none"> <li>Number of reminders to non-respondents</li> </ul>	The City undertook the administration of the lists.
<b>Data Collection Outcomes</b>	
Response Rate or Participation rate (non-probability samples)	Unknown since the majority of the response was an opt in consultation on the City's Your Say South Perth website.
Research participant contact outcomes (note below):	
<ul style="list-style-type: none"> <li>Interviews</li> </ul>	1641 responses obtained
Overall sampling error – this was a non-probability sample so this is not a true representation but estimated to be	± 2.3%
Validation procedures	Not required as survey was self-completion
<b>Data Coding, Analysis and Data File Treatment</b>	
Validity and Reliability Issues	The sample was reasonably representative and limitations are detailed in section 2.3
Data coding	<p>Procedure involves:</p> <ul style="list-style-type: none"> <li>Review of first 50 questionnaires (or similar) to develop coding sheets based on common responses</li> <li>Additional codes created when more than 2% of the sample record common response</li> <li>Approval of coding sheet by Research Solutions Project Manager</li> </ul>

Component	Details
Consistency checks	<ul style="list-style-type: none"> <li>• Preliminary data file checked by Project Manager using SPSS: <ul style="list-style-type: none"> <li>○ Frequency counts</li> <li>○ Relevant cross tabulations</li> </ul> </li> <li>• Data outside the range/duplicates or abnormalities investigated with Field Company prior to coding and analysis</li> </ul>
Treatment of missing data	<ul style="list-style-type: none"> <li>• Excluded from analysis and/or noted where relevant</li> <li>• Individual cases with excessive missing data excluded from sample</li> </ul>
Was sample weighted?	No
Any estimating or imputation procedures used	No
Statistical tests used	<i>See Survey Research Appendix: Statistical Tests</i>
Data file provided to client	At the end of the project
De-identified data files retained	For five years

This project has been undertaken in compliance with ISO 20252.

<b>Test:</b>	<b>Chi Square (Pearson's chi-square)</b>
Use:	To determine if two variables are related by more than chance alone.
Data Assumptions:	<ul style="list-style-type: none"> <li>• Data is from a random sample.</li> <li>• Data must be nominal, ordinal or interval.</li> <li>• Sufficiently large sample (absolute minimum n=30) &amp; adequate cell sizes (n=10+)</li> <li>• Observations must be independent.</li> <li>• Observations must have the same underlying distribution.</li> <li>• Data is unweighted</li> </ul>
Test Measure / Cut-off Criterion:	$p \leq 0.5$

## Appendix 2: Online Consultation Questionnaire



### Community and Stakeholder Survey Recreation and Aquatic Facility (RAF)

#### PAGE 1

**HEADER 1:** Community and Stakeholder Survey, Recreation and Aquatic Facility (RAF)

**HEADER 2:** Current indoor and pool-based sports you participate in.

This section is about the **indoor** and **pool-based** sports you currently participate in. We'd like to find out what sports you already do, where you do them and how you get there.

Q1 What indoor and pool-based activities and sports do you currently participate in?

*Please select as many as appropriate.*

- |                         |                          |    |                                |                          |                     |
|-------------------------|--------------------------|----|--------------------------------|--------------------------|---------------------|
| Badminton               | <input type="checkbox"/> | 1  | Aqua Aerobics                  | <input type="checkbox"/> | 11                  |
| Basketball              | <input type="checkbox"/> | 2  | Table Tennis                   | <input type="checkbox"/> | 12                  |
| Indoor Climbing         | <input type="checkbox"/> | 3  | Indoor Volleyball              | <input type="checkbox"/> | 13                  |
| Indoor Hockey           | <input type="checkbox"/> | 4  | Water Polo                     | <input type="checkbox"/> | 14                  |
| Indoor Netball          | <input type="checkbox"/> | 5  | Underwater Hockey              | <input type="checkbox"/> | 15                  |
| Indoor Soccer           | <input type="checkbox"/> | 6  | Beach Volleyball               | <input type="checkbox"/> | 16                  |
| Swimming for recreation | <input type="checkbox"/> | 7  | Other - <i>please specify:</i> | <input type="checkbox"/> | 98                  |
| Swimming lessons        | <input type="checkbox"/> | 8  | None                           | <input type="radio"/>    | 99 <b>EXCLUSIVE</b> |
| Synchronised swimming   | <input type="checkbox"/> | 9  |                                |                          |                     |
| Competitive swimming    | <input type="checkbox"/> | 10 |                                |                          |                     |

Q2 Do you have children or dependents who participate in indoor or pool-based activities and sports?

Yes  1

No  2

Q3 **SHOW IF Q2=YES (1):** Which of these indoor and pool-based activities and sports do they participate in?  
*Please select as many as appropriate.*

- |                         |                          |    |                                |                          |                     |
|-------------------------|--------------------------|----|--------------------------------|--------------------------|---------------------|
| Badminton               | <input type="checkbox"/> | 1  | Aqua Aerobics                  | <input type="checkbox"/> | 11                  |
| Basketball              | <input type="checkbox"/> | 2  | Table Tennis                   | <input type="checkbox"/> | 12                  |
| Indoor Climbing         | <input type="checkbox"/> | 3  | Indoor Volleyball              | <input type="checkbox"/> | 13                  |
| Indoor Hockey           | <input type="checkbox"/> | 4  | Water Polo                     | <input type="checkbox"/> | 14                  |
| Indoor Netball          | <input type="checkbox"/> | 5  | Underwater Hockey              | <input type="checkbox"/> | 15                  |
| Indoor Soccer           | <input type="checkbox"/> | 6  | Beach Volleyball               | <input type="checkbox"/> | 16                  |
| Swimming for recreation | <input type="checkbox"/> | 7  | Other - <i>please specify:</i> | <input type="checkbox"/> | 98                  |
| Swimming lessons        | <input type="checkbox"/> | 8  | _____                          | <input type="radio"/>    | 99 <b>EXCLUSIVE</b> |
| Synchronised swimming   | <input type="checkbox"/> | 9  | None                           |                          |                     |
| Competitive swimming    | <input type="checkbox"/> | 10 |                                |                          |                     |

**PAGE 2**

**PROGRAMMER ASK IF Q1 (1-16, 98) and/or Q3 Q1 (1-16, 98) OTHERWISE GO TO Q8**

Q4 Have you used a public (community) or privately-operated aquatic centre or an indoor sports facility in the past 12 months? Either for yourself or taken your children to one, if appropriate:

- Yes  1 **GO TO Q5**
- No  2 **GO TO Q8**

Q5 **SHOW IF YES TO Q4:** Was this for:  
*Please select as many as appropriate.*

- Yourself  1
- Your children  2
- For someone else –  3  
*please specify who*  
 .....

Q6 **SHOW IF YES TO Q4:** Which facility(s) do you (and your children / dependents if applicable) use?

- Aqualife, East Victoria Park \_1
- Arc, Cockburn \_2
- Beatty Park Leisure Centre, North Perth \_3
- Belmont Oasis Leisure Centre, Belmont \_4
- Curtin Fitness Centre and Sports, Bentley \_5
- George Burnett Leisure Centre, Karawara \_6
- LeisureFit, Booragoon (formerly Melville Aquatic Centre) \_7
- LeisureFit, Melville (formerly Melville Recreation Centre) \_8
- Loftus Recreation Centre, Leederville \_9
- Lords Recreation Centre, Subiaco \_10
- Riverton Leisureplex, Riverton \_11
- Wesley Sports Club (including Wesley Pool), South Perth \_12
- Other - *please specify*: \_\_\_\_\_ \_99

Q7 **SHOW IF YES TO Q4:** Thinking about the facility you go to most frequently, how long does it take you to travel there? (i.e. from home, work, school etc.)  
|\_\_\_\_\_| minutes

Q7a **SHOW IF YES TO Q4:** By what mode of transport do you travel to the facility?

- Private car \_1
- Taxi or ride share \_2
- Bus \_3
- Train \_4
- Walk \_5
- Bicycle \_6
- Other - *please specify*: \_\_\_\_\_ \_99

**HEADER 2:** What sports and activities would you like to see at the proposed new Recreational and Aquatic Facility (RAF)?

**PARA:** The RAF will be an integrated, multi-purpose and multi-function facility that will provide for a wide range of people and activities.

This section is about the kinds of sports and activities you would like to see included in the RAF.

**Q8** What indoor sports, pool-based and other activities would you (or your children if applicable) like to do at the RAF?

*Please select as many as appropriate.*

<b>Indoor:</b>					
Badminton	<input type="checkbox"/>	1	Soccer	<input type="checkbox"/>	6
Basketball	<input type="checkbox"/>	2	Swimming	<input type="checkbox"/>	7
Indoor Climbing	<input type="checkbox"/>	3	Synchronised Swimming	<input type="checkbox"/>	8
Hockey	<input type="checkbox"/>	4	Table Tennis	<input type="checkbox"/>	9
Netball	<input type="checkbox"/>	5	Volleyball	<input type="checkbox"/>	10
			Beach Volleyball	<input type="checkbox"/>	11
<b>Aquatic:</b>					
Adult swimming lessons	<input type="checkbox"/>	12	Hydrotherapy pool	<input type="checkbox"/>	16
Children swimming lessons	<input type="checkbox"/>	13	Swimming / walking in water	<input type="checkbox"/>	17
Water play area/pool	<input type="checkbox"/>	14	Aquatic group classes	<input type="checkbox"/>	18
Water Polo	<input type="checkbox"/>	15	Underwater Hockey	<input type="checkbox"/>	19
<b>Gym / Health club-based activities:</b>					
Circuit training	<input type="checkbox"/>	20	CrossFit	<input type="checkbox"/>	23
Gym workout	<input type="checkbox"/>	21	Triathlon	<input type="checkbox"/>	24
Pilates / Yoga	<input type="checkbox"/>	22	Group fitness classes	<input type="checkbox"/>	25
<b>Other Facilities:</b>					
Golf driving range	<input type="checkbox"/>	26	Community / sporting club meeting rooms	<input type="checkbox"/>	28
Golf	<input type="checkbox"/>	27	Playground	<input type="checkbox"/>	29
Other:				<input type="checkbox"/>	98
<i>Please specify:</i>					
<hr/>					
Not interested / Not applicable				<input type="checkbox"/>	99

## HEADER 2: What else would you like to see at the RAF?

**PARA:** Our vision for the RAF is that it is a place for everyone - individuals, families, groups - to come and be active, healthy, social and connect with others. You could come for an hour or you might like to stay for the day, use the crèche, have a picnic, catch up with friends, or go for a walk.

This section is about the other services and facilities you would want included at the RAF.

Q9 The RAF will provide a range of services and activities to support community health and wellbeing. Which of the following services would you want included?

*Please select as many as appropriate.*

- |                                       |                          |   |                          |                          |    |
|---------------------------------------|--------------------------|---|--------------------------|--------------------------|----|
| Physiotherapy                         | <input type="checkbox"/> | 1 | Hydrotherapy             | <input type="checkbox"/> | 5  |
| Massage                               | <input type="checkbox"/> | 2 | Podiatry                 | <input type="checkbox"/> | 6  |
| Sports medicine                       | <input type="checkbox"/> | 3 | Sauna / spa / steam room | <input type="checkbox"/> | 7  |
| Nutritionist / dietician              | <input type="checkbox"/> | 4 | Crèche                   | <input type="checkbox"/> | 8  |
| Anything else? <i>Please specify:</i> |                          |   |                          | <input type="checkbox"/> | 9  |
| <hr/>                                 |                          |   |                          |                          |    |
| Nothing else                          |                          |   |                          | <input type="checkbox"/> | 99 |

The RAF will include a variety of food, beverage, and catering options including a high-tech golf driving range with food and beverage facilities, plus places to meet and connect with others.

Q10a What type of food and beverage facilities would you use?

*Please select as many as you would use.*

- |                               |                          |   |   |                          |   |
|-------------------------------|--------------------------|---|---|--------------------------|---|
| Function centre               | <input type="checkbox"/> | 1 | Restaurant  | <input type="checkbox"/> | 4 |
| Café                          | <input type="checkbox"/> | 2 | General seating and tables                                    | <input type="checkbox"/> | 5 |
| Kiosk / Take-away             | <input type="checkbox"/> | 3 | Food and beverage options at the high-tech golf driving range |                          |   |
| Other? <i>Please specify:</i> |                          |   |   | <input type="checkbox"/> | 7 |
| <hr/>                         |                          |   |   |                          |   |
| None                          |                          |   |   | <input type="checkbox"/> | 9 |

The RAF will be situated in the landscape of Collier Park Golf Course – a wonderful green space with tall trees, lakes, flora and fauna. We'd like the RAF to provide plenty of opportunities outside the main building for passive and active recreation and relaxation.

Q11 What kind of outdoor facilities would you use?  
Please select as many as you would use.

- |                                |                          |   |                            |                          |                          |
|--------------------------------|--------------------------|---|----------------------------|--------------------------|--------------------------|
| Picnic area                    | <input type="checkbox"/> | 1 | Outdoor exercise equipment | <input type="checkbox"/> | 5                        |
| Children's playground          | <input type="checkbox"/> | 2 | Golf                       | <input type="checkbox"/> | 6                        |
| Seating                        | <input type="checkbox"/> | 3 | Mini golf                  | <input type="checkbox"/> | 7                        |
| Shaded areas                   | <input type="checkbox"/> | 4 |                            |                          |                          |
| Anything else? Please specify: |                          |   |                            |                          | <input type="checkbox"/> |
| <hr/>                          |                          |   |                            |                          |                          |
| None                           |                          |   |                            |                          | 9                        |

Q12 We've asked you about the sport, exercise and other specific activities you would come to the RAF for. Now we would like to understand some of your other expectations for the RAF.  
How important is it that the RAF...:  
**(PROGRAMMER RANDOMISE)**

	Not at all Important			Extremely Important	
	1	2	3	4	5
Provides fun and entertainment	<input type="radio"/>				
Provides a chance to socialise	<input type="radio"/>				
Improves general health and wellbeing	<input type="radio"/>				
Provides a place to relax and unwind	<input type="radio"/>				
Is somewhere to spend time with family	<input type="radio"/>				
Provides opportunities to stay active	<input type="radio"/>				
Is a welcoming and safe environment	<input type="radio"/>				
Is a one-stop shop/activity centre	<input type="radio"/>				
Provides a positive experience	<input type="radio"/>				

Q13 How likely would you be to go to the RAF, or if you have children / grandchildren, take them there?

Definitely wouldn't go	Probably wouldn't	May / May not	Probably would go	Definitely would go
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5

Q14 Please tell us why?  
*Please describe in as much detail as you can.*

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**PROGRAMMER – ASK IF Q13 = 3-5 WOULD USE THE FACILITY OTHERWISE GO TO Q17**

The RAF will be a centrally located regional facility. Conveniently located at Collier Park Golf Course, it is close to South Perth, Victoria Park, Canning, Bentley and Curtin University, with easy access by car, bus and active transport options including cycling and walking.

Q15 How do you think you would get there?

- |            |                          |                       |                          |
|------------|--------------------------|-----------------------|--------------------------|
| By bicycle | <input type="checkbox"/> | By private car        | <input type="checkbox"/> |
| Walk       | <input type="checkbox"/> | By taxi or ride share | <input type="checkbox"/> |
| By bus     | <input type="checkbox"/> |                       |                          |
| Other?     |                          |                       | <input type="checkbox"/> |
- Please specify:* \_\_\_\_\_

Q16 **SHOW IF Q15 BY CAR (4):** Which of these would make you consider traveling by public transport or to cycle or walk to the RAF?  
*Please select as many as appropriate.*

- |  |                          |
|--|--------------------------|
| Safe cycling routes to the facility                        | <input type="checkbox"/> |
| Secure bike parking at the facility                        | <input type="checkbox"/> |
| End of trip facilities for walkers / cyclists like showers | <input type="checkbox"/> |
| Improved quality footpaths to the facility                 | <input type="checkbox"/> |
| Better connected footpaths                                 | <input type="checkbox"/> |
| Bus routes which go past the facility                      | <input type="checkbox"/> |
| A bus stop at the facility                                 | <input type="checkbox"/> |
| Ride-share drop off / pick up point                        | <input type="checkbox"/> |
| Taxi drop off /pick up point                               | <input type="checkbox"/> |
| A pedestrian friendly environment                          | <input type="checkbox"/> |
| Other - <i>Please specify:</i> _____                       | <input type="checkbox"/> |
| Nothing  | <input type="checkbox"/> |

Q17 Is there anything else you would like to add about the RAF?  
*Please describe in as much detail as you can.*

**OPTIONAL**

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Q18 What age group are you in?

- Under 18  O<sub>1</sub>
- 18 – 24  O<sub>2</sub>
- 25 – 34  O<sub>3</sub>
- 35 – 44  O<sub>4</sub>
- 45 – 54  O<sub>5</sub>
- 55 – 64  O<sub>6</sub>
- 65 – 74  O<sub>7</sub>
- 75 plus  O<sub>8</sub>
- Prefer not to say  O<sub>9</sub>

Q19 Are you ...

- Male  O<sub>1</sub>
- Female  O<sub>2</sub>
- Other  O<sub>3</sub>
- Do not wish to specify  O<sub>4</sub>

Q20 Do you have children at home who are...

- Pre-school aged  □<sub>1</sub>
- Primary school aged  □<sub>2</sub>
- Secondary school aged  □<sub>3</sub>
- Post-secondary and studying  □<sub>4</sub>
- Left school and working / unemployed  □<sub>5</sub>
- No  O<sub>6</sub>

Q21 Are you a student at Curtin University?

- Yes  O<sub>1</sub>
- No  O<sub>2</sub>

Q22 Are you...

Aboriginal <sub>1</sub>

Torres Strait Islander <sub>2</sub>

No <sub>3</sub>

Q23 Do you live in the local government area of...

City of South Perth <sub>1</sub>

Town of Victoria Park <sub>2</sub>

City of Canning <sub>3</sub>

Other - *Please specify:* \_\_\_\_\_ <sub>4</sub>

Don't know <sub>9</sub>

Q25 What suburb do you live in?

Como <sub>1</sub>

Salter Point <sub>5</sub>

Karawara <sub>2</sub>

South Perth <sub>6</sub>

Kensington <sub>3</sub>

Waterford <sub>7</sub>

Manning <sub>4</sub>

Other- *Please specify:*  
\_\_\_\_\_

Q26 Do you work in the City of South Perth?

Yes <sub>1</sub>

No <sub>2</sub> **GO TO Q28**

Q27 **SHOW IF Q26=(YES):** Are you...

An employee of the City of South Perth <sub>1</sub>

No <sub>2</sub>

PAGE 6

ASK ALL

HEADER 2: **Staying up to date:**

Q28 Would you like to be kept up to date on the project?

Yes please  O<sub>1</sub>

No thanks  O<sub>2</sub>

SHOW IF Q28=(YES):

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Q30 Do you wish to go into the prize draw for the chance to win one of five \$100 Coles/Myer vouchers?  
Click here: <https://yoursay.southperth.wa.gov.au/42409/widgets/307057/documents/180402> to view the prize draw terms and conditions (it will open in a new browser window).

Yes please  O<sub>1</sub>

No thanks  O<sub>2</sub>

SHOW IF Q30=(YES):

Name: \_\_\_\_\_

Daytime phone number: \_\_\_\_\_

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ASK ALL

Please press the submit button to send in your answers.

Thank you for completing the survey, we appreciate your time and interest in this exciting new facility:

**Privacy Statement:** Please refer to the City's privacy statement at <https://southperth.wa.gov.au/privacy>

REDIRECT ON SUBMIT TO: <https://southperth.wa.gov.au/>

## Appendix 3 - Community Action Group Workshop Mentimeter Results

Question 1	
<b>Date</b>	2020-09-02
<b>Session</b>	1
<b>Type</b>	choices
<b>Question: What sport and leisure activities do you currently participate in, that requires you to leave the City of South Perth?</b>	
<b>Respondents</b>	11
Choices	Votes
Aquatic activities	4
Indoor court sports	0
Cafe/restaurant/function centre	2
Gym/health club	1
Pilates/yoga	0
Chiro/physio/massage	1
Passive recreation/exercise	1
Climbing walls	1
Other	1

Question 2	
<b>Date</b>	2020-09-02
<b>Session</b>	1
<b>Type</b>	open
<b>Question: What are three key priorities that the City needs to consider in further developing its concept plan for the RAF?</b>	
<b>Respondents</b>	11
Responses	
Finance	
Security, safety, aged users	
Traffic management, security/safety, cost	
Easy access, attraction to users, cost	
Affordability	
Travel to and from	
Curtin role	
The early development of a clear Business Plan so we can understand if project is feasible before we Invest our time	
Ongoing cost to ratepayers (not just Residents) initial costs, impact on other amenities	
Access for residents of South Perth	
Long term financial sustainability (beyond initial lease terms)	
Make it a nice/safe place for non-RAF users to visit	
Parking	
Availability for early facilities	
Package deals	

Finance  
 Getting the size right (Ie don't undersize!)  
 Attraction for entertainment eating/drinking  
 Tourism Public transport interconnectivity-Zoo -Mend street

Question 3	
<b>Date</b>	2020-09-02
<b>Session</b>	1
<b>Type</b>	open
<b>Question: What 'special' features will support the RAF become a regional asset enjoyed by locals?</b>	
<b>Respondents</b>	11

**Responses**

---

Good coffee  
 Make it feel like a country club where you can do anything and everything!  
 exercise, fun/entertainment and then food and drink to finish the day off!  
 Presentation, service, staff  
 Affordability, personable service, variety of activities  
 Scenery  
 Animals on display as in meerkats enclosure in the natural habitat  
 Pleasant staff  
 Aesthetics and green environment wildflowers  
 Environmental atmosphere, enjoyable experience with access to family amenities  
 at a reasonable cost  
 Hygiene cleanliness  
 A peaceful place to visit (e.g. Kings Park)  
 Open areas not dominated by sports related features (though obviously still  
 there)  
 Don't lock out the lake views to just a limited group of users  
 Affordable activities, natural surroundings, extended opening hours... friendly  
 service, ease of getting to/from the venue...  
 James stated 'Welcoming' feeling welcome, staff to focus on how to make people  
 feel it is 'home' away from home. Perhaps a concierge type person(s) to greet  
 'reception desk, funds needed for FTE's to do this.  
 If State funding comes has to attract

## Appendix 4 - Verbatim comments from Community Information Day

- A couple of rooms of low impact aerobics and Pilates for middle aged and above women
- Decent parking for students
- It depends on what its used. Have a grandchild, he'd use it in the future. How restricted it will be. Accessibility reasons.
- I'd like to see plenty of space. All ages freedom of movements. Culturally sensitive.
- I came with no idea. All I knew there was a great push to have a swimming pool. Don't know where to put it and how to fund it. Here to learn.
- Affordable, swimming pool, parent and kids play.
- Just want it to go ahead. Talked about this 5 years ago. Work for everyone. Meet get fit physically and mentally.
- Amphitheatre is great idea
- A multi-functional space. Breakfast cafes. Tavern. Allows for attending, draws people in. Go driving range before/after.
- We want something that suits multi-generational need.
- I'm here for health promotion, playroom for young kids. Picnic areas. Outdoor films.
- Doesn't address issue of ongoing costs. More hard numbers.
- Want it to go ahead in the first place.
- A trustworthy estimate of expenses and income.
- Used to go to Bentley then Vic park. Throw all my money at them. 30 years overdue. Sick of seeing white people. Represent the culture of the area. Cultural festivals, adventure playgrounds. Men's lodge.
- I like the way it incorporates the lake. Gyms are great.
- I like the facilities that engage for a long time.
- The most important part. Pool swimming without excessive crowding, standards set for dress.
- I hope it really goes well. Used to go to Beatty park as a kid, useable by schools. Grandstands for schools to fill up. Time-take up a lot of the day. Comprehensive facilities.
- Live up the hill. Good for the kids. Just that it happens good facility for everyone.
- I don't like the name of it
- A multipurpose aquatic centre with access to all. Driving range.
- Blokes need a place to discuss real issues rather than just make material things
- We need to accommodate video facilities.
- I know they're doing a garden. Community garden. Used in kitchens. Raise community garden for golf. Florists by trade. Flowers grown, use them in foyer, feature them.
- Community help. Something for everybody. Accessible through public transport, walkable.
- I would love to see it. I think it's great for the kids, with activities.
- I don't want it at Collier Park. James Mitchell more suitable.
- Accessible without any barriers, safety, access.
- We are coming down from an area where sports building is multipurpose. Big enough that everyone can fit.
- I'm a golfer. Don't want to see the 27 holes destroyed. Parking is going to be a big issue if you can't get a park. We don't know how easy it will be to book. George Bennet great for a swimming pool.
- I'm just here to learn more

## Appendix 5 - Community Information Day Mentimeter Results

### Question 1

**Date**

**Session: 1**

**Type: Wordcloud**

**Question: What are 3 key priorities the City needs to consider in further developing its concept plan for the RAF**

**Respondents: 31**

#### Responses

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Security Access Affordability

Finances Accessibility Time

Affordability Sustainability Usage

Accessibility Affordability Sustainability

affordability Keep\_golf\_course\_as\_is finances

No\_rate\_hikes Sustainability Equity

Affordability Community Wellness

Profitability Family orientated Family affordability

Affordability Easy access Environmentally friendly

Affordability Multipurpose Sustainability

Activity Vibrancy Sustainability

Financially sustainable building\_local\_community balanced\_with\_other\_needs

Sustainability Easy access Something\_for\_everyone

Driving range Walkability Cafes\_and\_outdoor\_spaces

Event\_space\_for\_1500 parking driving range

Security Vandalism

Affordability Sustainability Integrated sports

Affordability Sustainability Senior friendly

Affordability Sustainability Parking

Zipline bike paths tree canopy

underground parking

easy access bike paths walking

Sustainability tree canopy easy access

Kids Fun Inclusive

Inviting Adequate facilities Inclusion

Sustainability Multipurpose Greenspaces

Native gardens Public transport Flexible capacity

Active transport Something\_for\_everyone Native gardens

Antieducation Night golf Sustainable

Public Transport Renewable energy Bike paths

Parking Multipurpose Security

## Appendix 6 - Emailed Feedback

### 1 Ideas for inclusion in an aquatic centre that would enhance the experience for blind and vision impaired people.

Apart from the general standards for accessible premises, the following information has been given me by people who are using, or would love to use, their local aquatic centre.

Blindness is complete vision loss and for moving about, people use their sense of hearing, smell and feel, often under foot.

Vision impairment can vary from legally blind or to seriously vision impaired. Movement is mostly by contrast colouring and railings.

Following the meeting with the City of South Perth Council on Wednesday 26 August 2020, we learned that an "Extraordinary Experience" is envisaged for all the community. This is both unique and exciting if it comes about.

^ Transport safely to and from the centre is paramount

^ Acoustics is vital for safety and for enjoyment

^ Navigation about the centre is also vital for safety

Trained staff are important as too often equipment is available with no one able to work it or demonstrate; or who make one feel very uncomfortable and undignified if spoken too or moved about incorrectly

^ Changing areas need to be adequately identifiable and managed correctly by staff. Too often inconsiderate people use the wrong facilities causing frustration and loss of dignity

^ Parking for support workers or family and friends is necessary. ACROD bays are essential, particularly for accredited guide dogs

^ Signage is vital to inform everyone that only accredited dogs are allowed into buildings; which carpark bays are for family vehicles; vehicles needing a hoist to access and ACROD bays. Fines ought to be included for punishment for those doing the wrong thing and need to be strictly adhered too. So often no one is around to punish the wrong doers

^ The café would be fantastic if located centrally so that people can look out in all directions to keep an eye on family members, or just enjoy the different types of aquatic experiences. This would enable an excellent sensory experience for the blind as well

^ Locating the loudest pool for children right near the main entrance is very distressing for those who need good acoustics to find their way or venture inside. Apparently this is the problem with the relatively new aquatic centre at Cockburn

Would you recognise a Companion Card so that my support worker can assist without payment, so they can swim or not swim?

What can we do with our dogs to keep safe from people interfering with them whilst we are swimming?

Several people commented that they have permission to leave the dog at reception, would this be possible? But what happens if the Receptionist is allergic or afraid of dogs?

Why do we pay extra for a lane to be made available for people with special needs?

Lockers have touch screen or other inaccessible devices to operate, so an accessible key system is required

We need some tactile indicators to show us the way from the entrance to the change rooms, lockers and pool side

Some people will arrive by taxi or public transport, and with some Orientation & Mobility training (provided by the blindness agencies) will manage independently

Staff need to know that not everyone with poor or no vision even look differently to anyone else

Staff need to identify themselves and ask if assistance is needed if person looks a bit disorientated

It's really great if a staff member can just do an orientation with us the first time showing us where and what is available so we know

People want to water walk or swim alone without a support worker or staff member, but some pools do not allow this

It is very demeaning to expect everyone to have a support person or friend, as many people can manage perfectly okay on their own

The word "Carer" is not applicable today, the person is referred to as a support person

Contrast signage and tactile indicators at the pool ends needs to be available as this is really hard to locate without hurting myself, or making me less confident in swimming at my speed to the pool edge

Water walking is a good option for most blind people, so will such facilities be made available?

I swim quite quickly, so my needs are for a medium speed lane, not a slow lane for people with special needs. Is it possible to book a lane to work at my speed without having to pay extra? I live on a pension

Would the hydrotherapy pool be made available outside of specialized therapy use, for blind and vision impaired people?

There are many different levels around aquatic centres and access needs to be made for all, therefore ramps as well as steps and rails wherever possible

Blind people move about with tactile under foot; feeling such things as rails; smells such as from a café or scented plants; and vision impaired people work with contrast colouring, so darker tiling around a wall and a trail of darker tiles directing to entrances, etc

Will the website be accessible for those of us using assistive equipment? (this can be easily tested by IT people beforehand, using all forms of equipment blind and vip people use)

Signage needs to be available in audio formats, perhaps with an audio accessible button, so as not to interrupt other people's enjoyment of the venue, however if there are changes to signs, this ought to be made known to anyone who cannot see well

If there are lifts about, please ensure they have audio switched on and a directional marker to show where the lift door is

\*\* The City of Fremantle; Cockburn and Victoria Park's aquatic centres DO NOT provide enough access for people with low vision or blindness

In some States, they have a Blind Sports group and swimming, water walking and aerobics are included. If we had such a group in Perth, would they be able to teach swimming to blind people if booking a lane, and conducting aerobic classes again if booking? I'd love to learn to swim, but need specialised teaching from someone who knows the terminology to use and how to work with people like me.

2.

Subject: Telephone feedback from ( ):

Hi

Today I spoke to ( ) over the phone as she has a number of 'questions' in relation to the RAF. I was not able to get her surname.

( ) is very excited about the RAF and wanted us to know that she really, really wants it to go ahead and is getting 'everyone she knows' to respond and try to get the RAF approved. I have noted all her comments below they will be recorded as part of the feedback.

She had questions in regards to the process and when the final 'decision would be made to proceed' and talked about being 65 years old, the importance of this facility as it is highly beneficial to the community - especially the elderly. She said that Wesley Pool is not good as is often cold and would like indoor heated pool facilities. She likes to exercise 3 times a week and considers the RAF a great way to prevent disease and increase community wellbeing.

Her phone call really was to say how excited she is about the RAF and she really thinks it should go ahead. She is half way through a survey and will try and finish it, however she thought that it was better to speak to a person.

Manager - Stakeholder and Customer Relations

3. If approved, I understand the RAF is expected to be built between November 2021 and July 2023 and be operational from January 2024.

For consideration I offer comments as follows:-

#### 1. Overview

I generally like the proposal where the current 18 hole Collier Park Golf Course will remain, to be supplemented by Short Format 6 to 9 hole Golf Course, Mini Golf, a proposed high tech Golf Driving Range, Aquatic Centre with outdoor 50 meter heated swimming pool, indoor 25 meter heated swimming pool, a climbing wall/center, indoor sports courts, a gym and treatment rooms, as well as meeting and function rooms. Welcome features include proposed restaurant and café, along with other food and beverage options, with picnics available around the lake.

## 2. Wide Ranging

I liked hearing the proposed RAF will cater to a wide range of people and ages, and that there will be crèches where young children can be cared for whilst parents are undertaking activities. I liked hearing that the RAF will cater for senior citizens and those who are disabled, including at the gym and hydrotherapy pool.

## 3. Parking

Adequate Parking needs to be provided which I heard is estimated to be around 500 to 600 parking spaces. Will there be multi-level parking? Will there be a cost for parking?

## 4. Cycle Paths

Good access by cycle paths is important. Protection from errant golf balls may be needed.

## 5. Landscaping, Art, Fountain

I would like to see great landscaping, with some remarkable art works, including if possible a suitable outstanding fountain. Local Aboriginal themes to be included.

## 6. Pro Shop

Given Golf is one of the main activities, whilst I understand the current golf building will be replaced, on the maps provided on the Community information day, I could not see where the “Pro Shop” is to be relocated. I suggest this place, important for golfers, needs to be featured on the next presentation of plans.

## 7. Solar Power

To significantly reduce costs, especially for heating the pools, I hope solar power can be utilised.

## 8. Picnics

For picnics around the lake, in addition to grassed areas, I hope that there will be tables and seating, many which need to be small roof covered for protection from the sun and possible rain - similar to what has been achieved along the South Perth Foreshore, not far from the Scented Garden in Sir James Mitchell Park, and at the Foreshore ends of Coode Street and Hurlingham Road.

## 9. Affordability/Viability

I agree with Affordability and Viability included as the main criteria.

The September 2020 Peninsula edition, whilst mentioning that \$20 million Federal Government Funding has already been secured, did not mention the total price tag, which I understand, from being told on the Community information day, is around \$80 million. I heard there could be \$20 million State Government Funding plus some possible other relatively minor funding from sporting bodies and commercial sector.

Critical to any assessment by City of South Perth will be Total Funding? What is the payback period or number of years for paying back any debt? What is the likely ongoing Net Annual Income to the City of South Perth? What is the Impact on City of South Perth Rates? – Financial self-sustainability needs to be demonstrated. Answers to all these questions are required.

## 10. Decision by Council

I understand in October, the City of South Perth Council expects to receive presentation of the proposed RAF business case. Any decision to assess viability should be conditional on securing State and any other funding, as opposed to relying on possible promises of funding.

Thank you for your consideration of listening to community feedback.

## Appendix 7 – Open-ended comments from late surveys

1.

**Q. 17 Is there anything else you would like to add about the RAF**

Happy with facilities at Leisurelife which are generally underutilised. Plenty of cafes in the area but I might go occasionally if a café is appealing.

Questions: What will be the cost of the proposed project and ongoing maintenance

Analysis of extra services at existing facilities e.g. George Burnett

Has there been extensive consultation with community re information re needs and costs to ratepayers.

Who is likely to manage proposed project, their details re conflict of interest and fees

Who will manage and fees involved when project complete, environmental considerations and traffic management studies etc

2.

**Q.17 Is there anything else you would like to add about the RAF?**

Be connected to the playing fields on the corner of Thelma and Murray by a dual pathway (pedestrian and cycle). This will open the wider Como area to access the facility.

3.

**Q.17 Is there anything else you would like to add about the RAF?**

How has Collier Park been selected – community consultation? Examination of other options? E.g. George Burnett Park.

What care has been made for the various initiatives for the RAF? E.g. I use Aqualife at Victoria Park which is close to Collier and I have found it to be under-utilised.

Why do they all need to be clustered at one centre? There are disadvantages (parking, ease of access...)

The massive Federal Government money to establish the RAF is most likely a one-off (election promise). What is likely to be ongoing costs to be met by ratepayers? (Albany's Art Centre has placed severe strain on Council resources for maintenance etc). Capacity of South Perth Council to meet costs?

27 holes at Collier is well-utilised in my experience. Burswood golf course, Glen Iris and Rosehill courses have closed there are limited options. Wembley has maintained 36 holes for golfers.