Released in full as per Council Resolution GC231212R11.1

CITY OF MARION

Outcome of Capella Investigations and Direction for Southern Soccer

Originating Officer	Project Manager Strategic Projects - Carla Zub
Corporate Manager	Manager City Activation - Greg Salmon
General Manager	General Manager City Development - Ilia Houridis
Report Reference	SGC191125F01

Confidential

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Confidential Motion

That pursuant to Section 90(2) 3 (i) and (ii) of the Local Government Act 1999, the Council orders that all persons present, with the exception of the following persons: Adrian Skull, Ilia Houridis, Tony Lines, Sorana Dinmore, Kate McKenzie, Greg Salmon, Carla Zub, Craig Clarke and Victoria Moritz, be excluded from the meeting as the Council receives and considers information relating to the report Outcome of Capella Investigations and Direction for Southern Soccer, upon the basis that the Council is satisfied that the requirement for the meeting to be conducted in a place open to the public has been outweighed by the need to keep consideration of the matter confidential relating to matters pertaining to commercial operations of a confidential nature, the disclosure of which could reasonably be expected to prejudice the commercial position of the person who supplied the information and could reasonably be expected to confer a commercial advantage on a person with whom the council is conducting, or proposing to conduct, business, or prejudice the commercial position of the council.

REPORT OBJECTIVE

This purpose of this report is to provide a detailed update on the Southern Soccer project. It incorporates the outcome of the site investigations into relocation of AFL and Cricket to Capella Drive Reserve and considers the option for Southern Soccer at the Majors Road site including the potential delivery and financial models.

The report seeks direction from Council on the preferred delivery and operating model for Southern Soccer, noting that the funding shortfall needs to be addressed.

EXECUTIVE SUMMARY

Following the General Council meeting of 23 April 2019, Administration has progressed investigations around the relocation of AFL and Cricket to Capella Drive Reserve and the potential delivery model for Southern Soccer.

Administration engaged Flightpath Architects to lead the feasibility for the relocation of AFL and Cricket to Capella Drive Reserve with the study investigating the preferred location for the clubroom, potential oval size, traffic management study, geo-technical analysis and cost estimate for the project delivery. A series of workshops was also held to engage with both the Cove Cobras, Cove Cricket Club, and peak sporting bodies about their expectations for a new facility.

The investigations concluded that the cost to deliver the new facility would be $6.99 million excluding professional fees. Value management options were considered and could reduce the overall project costs to $5.3 million excluding professional fees. The investigations highlighted a number of issues with the Capella site being the physical constraints, lack of room for expansion, non-optimal clubroom location, reluctance of clubs and sporting associations to move, and challenges in obtaining a liquor licence.

Administration has continued to work with the Football Federation of South Australia (FFSA) to explore the option of natural turf pitches at Majors Road after receiving engineering advice that turf pitches would be less problematic on the poor soil. Recent advice from the FFSA is that the cost for three natural pitches would be $6.8 to $7 million, a funding shortfall of $1.8 to $2 million. Discussions have commenced with the State Government to assist in meeting this shortfall with initial feedback being that it is unlikely that additional funding will be provided to this project.

Based on the investigations it is recommended that the Capella option is not progressed further and Council commit to funding of $1 million (additional to existing $2.5 million commitment) towards the Majors Road soccer option. This report considers the options to deliver two pitches or three pitches at a total cost of $6 million or $7 million respectively. The development of three pitches would require negotiation with the State and/or Federal Government for further funding.

Due to the complexity of the project and potential financial constraints on the Club by the FFSA, this report explores the opportunities for Administration to deliver the project utilising its in-house expertise. This would also enable Council to have management of the time frames and budget for delivery and provide the Club with the leasing arrangement in line with Council's leasing and licensing policy.

RECOMMENDATION

That Council:

1. **Endorse that no further investigations are required on this matter, as a result of the investigations for the relocation of AFL and Cricket to Capella Drive Reserve.**

2. **Endorse Administration to take the lead in the project delivery of the Southern Soccer facility at Majors Road and negotiate this transfer of lead with the Football Federation South Australia and the State Government.**

3. **Endorse Administration to proceed with the delivery of Southern Soccer facility at Majors Road with:**

a. two natural turf soccer pitches at a cost of $6,000,000 GST exclusive;

b. construction of a third pitch, subject to additional construction costs being met by external sources such as the State of Federal Governments.

c. development of the site to allow capacity for future development of two additional natural turf soccer pitches;

4. **Commit additional funding of $1,000,000 from Council's reserve towards the Southern Soccer Project increasing Council's funding contribution from $2,500,000 to $3,500,000 subject to the transfer of the Football Federation of South Australia's funding of $2,500,000 to the City of Marion.**

5. **Endorse Council and the State Government entering into a funding Deed for the delivery of the project at Majors Road.**

6. **Note that the forecast operating expenditure for two pitches is $315,555 per annum ($75,555 operating and maintenance; $240,000 depreciation) and for three pitches is $382,171 per annum ($102,171 operating and maintenance; $280,000 depreciation).**

7. **Note that Council must consider a Section 48 prudential report under the Local Government Act 1999 prior to committing to undertake this project and this report will be prepared for Council's consideration once all required funding is committed.**

8. **In accordance with Section 91(7) and (9) of the Local Government Act 1999 the Council orders that this report and attachments, having been considered in confidence under Section 90(2) and (3)(b and d) of the Act, except when required to effect or comply with Council's resolution(s) regarding this matter, be kept confidential and not available for public inspection for a period of 12 months from the date of this meeting. This confidentiality order will be reviewed at the General Council Meeting in December 2019.**

GENERAL ANALYSIS

BACKGROUND

Over the last two years, Council has continued to work with the Football Federation South Australia (FFSA) for the delivery of a new football facility within Southern Adelaide with the facility to become the home of Cove Football (Soccer) Club (the Club).

At the General Council meeting on 23 April 2019, Council considered the progress of Southern Soccer and the potential funding pressures on the project budget and future operating model should the Football Federation deliver two artificial pitches at the proposed Majors Road site. From this meeting, Council resolved:

1. *Note that the proposed financial model presented by the Football Federation of South Australia is not financially sustainable for the Cove Football Club to operate and sustain at the Majors Road site.*
2. *Note that the delivery of the Southern Sports Facility at the Majors Road site is unlikely to be achieved within the existing $5 million budget.*
3. *Authorise staff to commence investigations for the delivery of additional soccer pitches and improved soccer facilities at Cove Sports & Community facility in consultation with the Football Federation of South Australia as part of the overall redevelopment.*
4. *Authorises staff to assess the feasibility of relocating the Cove Football Club (Australian Rules) and the Cove Cricket Club to Capella Reserve with a basic clubhouse of their own and car parking around a football oval, and to commence consultation with relevant parties regarding this concept.*

Since this time, Administration has undertake investigations into the potential delivery of AFL and Cricket at Capella Drive Reserve whilst working the FFSA to resolve a delivery model for the Southern Soccer.

DISCUSSION

Capella Drive Reserve Investigations

Following Council's resolution on 23 April 2019, Administration engaged Flightpath Architects to undertake an investigation into the feasibility of relocating AFL and Cricket from Cove Sports and Community Club to Capella Drive Reserve.

The feasibility study is now complete and considers the option for Capella Drive Reserve to be redeveloped to include an AFL and SACA compliant facility for the clubs and community to use. The investigations detail that a new clubroom facility and associated car parking can be developed on the site with an AFL compliant oval at an estimated cost of $6.99 million exclusive of GST and professional fees (refer to Appendix One).

Value management options have been considered including the retention of the skate park; smaller clubroom (two change rooms) and a smaller oval (compliant with a local size AFL oval) that would reduce the delivery cost to approximately $5.312 million GST exclusive and excluding professional fees.

During the investigation phase, the peak sporting bodies, Cove Cobra Football Club and Cove Cricket Club members were involved in three stakeholder meetings. The feedback from the parties about the new facility was that:

- it does not allow for future expansion in the sport;
- preference for the clubrooms to be on the western side of the oval; and
- should the Cove Cobra Football Club or Cove Cricket Club not be willing to relocate, it would not be supported by the peak sporting bodies.

Furthermore, Administration had preliminary discussions with Consumer and Business Services (CBS) about obtaining a liquor licence for a clubroom at Capella Drive Reserve. CBS advised that community consultation is required and should the community not support licensing the clubrooms that it is unlikely that the Commissioner for Liquor and Gambling will grant approval. This would have a significant impact on the revenue stream for the Club.

Administration recommends that based on the cost of relocating AFL and Cricket to Capella Reserve and the issues identified during the investigations detailed above that this option is not progressed any further.

Southern Soccer

Since the General Council meeting on 23 April 2019, the FFSA has been exploring value management options for the delivery of soccer on Majors Road. This has included delivery of natural grass turf pitches based on engineering advice that natural grass pitches would be less problematic on the poor soil conditions at Majors Road.

Administration received formal advice from Michael Carter, CEO FFSA, on 11 October 2019 that due to the size of the Cove Football (soccer) Club, a three pitch (natural grass turf) facility would be required to assist in catering for the participation base (capacity of natural grass pitches is far less than synthetic surfaces). This could potentially require some of the Club's training to continue at Capella Drive Reserve or Club Marion. The Cove Football (Soccer) Club has advised that its preference for playing fields is natural turf rather than synthetic as previously considered.

Mr Carter advised that the estimated cost for delivery of a three grass turf pitch facility, basic clubroom and unsealed car park is approximately $6.8 million to $7 million. Under this option there would be a funding shortfall of $1.8 million to $2 million, against the $5 million of available funding ($2.5 million FFSA via State Government and $2.5 million City of Marion).

Both the FFSA and Council has approached the State Government to discuss potential funding opportunities to assist in addressing some of the funding shortfall for that proposal. Initial feedback from Minister Wingard and Minister Speirs, is that even if Council increased its funding contribution to enable the development, it is unlikely the State Government will provide additional funding given the level of funding that soccer has received over recent years.

On this basis, Council could increase its capital contribution from $2.5 million to $3.5 million (Finance has confirmed that there is capacity within the Council's Reserves to meet this shortfall) with two options for the delivery of soccer at Majors Road:

1. Deliver two natural turf pitches, clubroom, car parking and associated infrastructure for $6 million ($3.5m City of Marion and $2.5m State Government funding); or
2. Deliver three natural turf pitches, clubroom, car parking and associated infrastructure for $7 million ($3.5m City of Marion and $3.5m State Government funding) subject to further discussions with the State Government or an alternative funding source to meet the $1 million shortfall.

Summarised below is the opportunities and risks for each project budget:

Delivery of Two Pitches - $6 million	
Opportunities Project can be progressed to design and delivered with additional funding from Council. Site will enable expansion of additional pitches should the funding become available.	**Risks/ Constraint** Club will be need to continue to use the pitch at Cove Sports and Community Club to meet the demand of its players.
Delivery of Three Pitches - $7 million	
Opportunities Club will be consolidated at one site and allow for growth in the sport. Redevelopment opportunity can be recognised at Cove Sports and Community facility on the site of BMX and Soccer (pending funding).	**Risks/ Constraints** Time frame for additional funding from the State Government is unknown and could be subject to lengthy negotiations - continuing to delay the project.

Delivery Model

From the commencement of the project, the intent has been for the FFSA to deliver and own the Southern Football Facility with the City of Marion to be a funding partner and act as a conduit between the Club and the FFSA. Due to the complexity of the site and the proposed FFSA operating model, it has come to light that the FFSA under this model will seek to transfer all risks of the project to the City of Marion (no accountability for budget overruns) and future operating costs from the Club. This presents a high risk to Council as there is no certainty about the financial model and could potentially require Council to meet any over expenditure by the FFSA.

To enable the project to progress and be successfully delivered, it is recommended that Council considers utilising its internal expertise to deliver the soccer facility on Majors Road. Under this model, Administration would oversee the design, documentation and construction contract with the FFSA to be an active member on the Project Control Group to ensure the facility meets the requirements of the peak body. This would provide greater certainty around the budget vs costs of construction as well as the project schedule for delivery, whilst removing any competing priorities that the FFSA might have in delivering its facilities with other Councils. The FFSA has advised that it is supportive of this model.

The City of Marion would seek consent from the State Government for the transfer of its $2.5 million funding from the FFSA to the City of Marion. A new Deed would be executed between the State Government and the City of Marion, removing the FFSA from this arrangement.

Financial Operating Model

Under the original operating model, the FFSA proposed to own the facility with a lease arrangement in place between the FFSA and the Cove. As detailed within the 23 April 2019 General Council report Progress of Southern Soccer, the financial burden of the FFSA seeking an annual rental of $90,000 per annum would not be sustainable for the Club in the long term. This has resulted in Administration exploring alternative delivery and management models including the facility being a Council asset in line with other redevelopments such as Edwardstown and Mitchell Park.

Should the Council deliver the project, it will resume ownership of the new asset with the following outcomes:

- City of Marion and the Department for Environment and Water to enter into a long term lease over the land;
- Facility will be leased from the City of Marion to the Club under its Leasing and Licensing Policy providing the Club with a level of security about its long term tenure;
- Ability for the City of Marion to activate the facility for the community; and
- City of Marion will be responsible for the depreciation and capital expenditure for the facility.

Operating Costs

In line with the City of Marion's Leasing and Licensing policy, it is envisaged that Council will maintain the structural components of the asset at completion with Clubs to pay operating costs such as utilities, cleaning and maintain the specialised infrastructure.

Operating costs for the City of Marion have been estimated to be in the order of $91,000 per annum for three pitches and $70,555 for two pitches. This includes increased maintenance costs of the turf pitches as detailed within Attachment 2 (the Club is only required to pay 10% of the water consumption).

Depreciation, and thus a reasonable allowance for capital renewal, is calculated in accordance with Australian Accounting Standards, with the estimate depreciation/ renewal forecast to in the order of either $240,000 per annum or $280,000 per annum depending on the capital investment.

Summarised below is the forecast annual costs for the site:

	2 Pitches	**3 Pitches**
Estimated Cost of Project	**$6,000,000**	**$7,000,000**
Operating p.a	$36,000	$54,000
Maintenance p.a.	$39,555	$48,171
Depreciation/ renewal pa	$240,000	$280,000
Annualised cost	**$315,555 pa**	**$382,171 pa**

While there is an expectation that the clubs will contribute towards the operating costs along with any specialised maintenance costs. Council is likely required to assist in the Club subsiding the cost of operating the facility, similar to Council's other regional facilities (Attachment 3 details the forecast income and expenditure for the Cove Football Club under each operating model).

Next Steps

Upon Council endorsement of the recommendations in this report the next steps in the project will be:

- December – February 2020 - undertake a review and assessment of the concept designs prepared by the FFSA and work with the Cove Football Club on the operating model
- February 2020 - Call an Expression of Interest to identify preferred delivery model
- March 2020 – Prudential Report for Council's consideration and endorsement

- April 2020 – Progress the preferred delivery model including detailed design incorporating stakeholder feedback
- Mid 2020 – Council receives a further report which provides the delivery model, detailed design; further detailed costing including whole of life costs and risk assessment.

Resources (Capacity) Impact
The project will be delivered by the City Activation Department to final delivery, following Council's procurement, capital works and contractor engagement procedures.
As the project will likely be staged, the City Activation Department will work closely with the City Property Department who will liaise with the club to ensure communication, schedule and any impact to club operations are clearly communicated with associated contingencies in place.

Attachment

#	Attachment	Type
1	3587 Capella Reserve - Feasibility Report (Combined) 12.09.2019	PDF File
2	Potential Turf Maintenance costs for Majors Road including 2 Pitch Option	PDF File
3	Comparison of Soccer Financial Models (1)	PDF File

3587

CAPELLA RESERVE

FEASIBILITY STUDY REPORT

CITY OF MARION

Indicative conceptual 3D Visualisation

flightpath

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01. PROJECT BRIEF

01.1 FEASIBILITY STUDY SCOPE OF WORK

The City of Marion Council is investigating the feasibility of constructing purpose-built facilities for AFL and Cricket at Capella Reserve due to increasing demand for sporting facilities in the South. The facilities will be required to meet the standards identified in the AFL Preferred facility guidelines and Cricket Australia Community Cricket Facility Guidelines and its integration into the broader design and layout of Capella Dive Reserve and connection to the surrounding residential area.

The concept design and feasibility study will:

- Establish a clear vision for the development as the home for AFL and Cricket clubs Plan for the removal of the existing building on the site and develop a detailed costed concept design option for new AFL/ Cricket clubroom facilities at Capella Reserve that comply with AFL Preferred Facility Guidelines for local level facilities, Cricket Australia Community Cricket Facility Guidelines and Building Code of Australia. The AFL Preferred facility guidelines and Cricket Australia Community Cricket Facility Guidelines

- Provide a multipurpose space within the building that can be used as a social space for the clubs as well as support a variety of other potential community needs.

- Develop concept for realignment of the existing oval to meet AFL standard compliance for local facilities. All cut and fill, soil removals and options for retaining must be included and costed in the concepts.

- Provide two change rooms with the ability for an additional two change rooms to be added if required or funding is available. The change rooms need to enable back to back games of different genders to be undertaken through the provision of multi- functional change rooms. The proposed change rooms would meet AFL's current preferred facility guidelines as published in 2019.

- Undertake a traffic management assessment on the proposed car parking arrangements (including feasibility of car parking around the oval playing field) and movements within the study area.

- Understand and respond to Clubs/ community need and demand for services and facilities and provide a plan for development that is realistic and achievable.

- Consider the linkage of the oval and the clubrooms to Capella and Nannigai Reserves

- Assessment of existing services infrastructure to support new sporting facility.

- A services engineer will check all service locations to ensure that the design and costing addresses upgrades and required relocations of existing services. All existing service locations are to be shown on the plans, concepts and designs. Consider options for the relocation of any existing infrastructure that may be impacted by the design and proposed location for the new facilities.

01.2 BACKGROUND

The Cove Sports and Community Club (CSCC) is located on the Southern area of Marion on Lonsdale Road Hallet Cove. The Club is home to over 1,600 members from six affiliated sports clubs:

- The Cove Football Club Inc (AFL)
- The Cove FC (soccer)
- The Cove BMX Club
- Hallett Cove Netball Club
- Cove Cricket Club

The CSCC is the only sports precinct in the southern part of the City of Marion catering for a population of approximately 24,031 (as at 2011) living in Hallett Cove, O'Halloran Hill, Sheidow Park and Trott Park. The precinct also caters for those living in the north western areas of the City of Onkaparinga and from across the southern part of the City of Marion. Whilst demand for

sporting facilities in the region is significant, there is a large under supply of and active recreation facilities in this part of the City of Marion.

Due to the increasing demand for sporting facilities, Council has been working with the Cove BMX Club and The Cove FC (soccer) for the relocation of their Clubs to new facilities on Majors Road. This would alleviate the current pressure on the CSCC facilities. It is envisaged that BMX will relocate in late 2019.

As a new soccer facility is unlikely to be viable at Majors Road as planned (budget shortfall and poor soil conditions), Council has resolved to commence a feasibility study into the optimum locations for all sports currently played at the Cove Sports and Community Club. As part of the study, Council is investigating options to improve soccer and netball facilities at CSCC and the relocation of Cove Football Club (Australian Rules) and the Cove Cricket Club to a new site at Capella Drive Reserve with a basic clubhouse and car parking around a football oval.

The purpose of this feasibility study is to develop a costed concept for the relocation of the Cove Football Club (Australian Rules) and the Cove Cricket Club to Capella Drive Reserve.

01.3 SITE

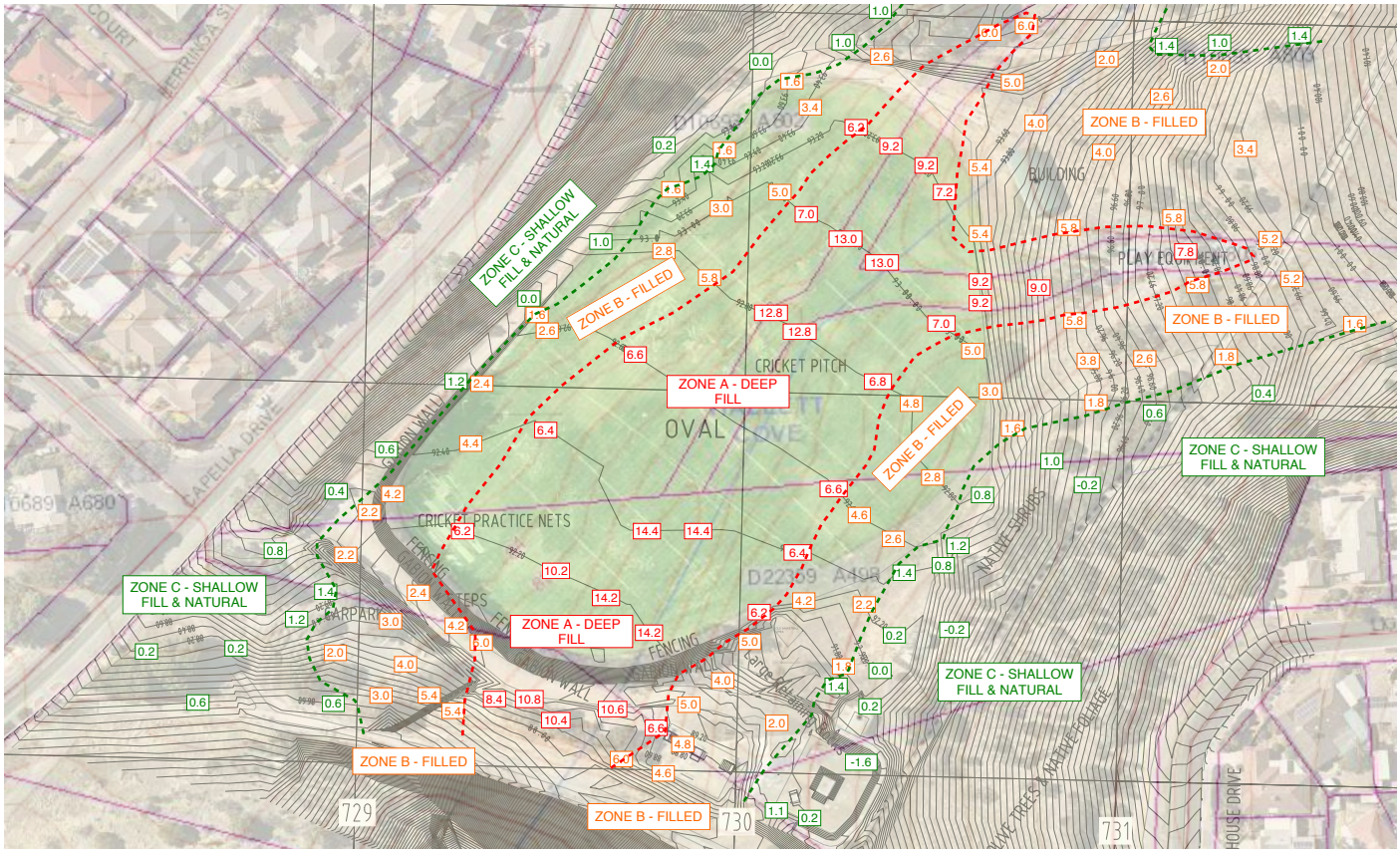
Capella Drive Reserve in Hallett Cove is a large reserve that is approximately 11.2 hectares and features a concrete skate park, earth-mound BMX and playing fields for soccer. The reserve is bounded by the Coast to Vines cycling trail, Barramundi Drive, Coorabie Crescent and other minor side roads.

As part of Council's long-term plan, it has been developing the Capella and Nannigai Precinct Plan for the upgrade of the reserve. The proposed upgrade of the reserve may feature a new skate park, walking trails, improved public facilities and amenities, play space and fitness equipment.

01.4 EXISTING SOIL CONDITIONS

Geotechnical investigations for Capella Reserve have been provided by Wallbridge Gilbert Aztec (WGA). The site is known to contain uncontrolled fill and potentially contaminated soil conditions. The below diagram provides a detailed understanding of the lateral extent and thickness of the existing fill, particularly in the currently proposed development areas. Three defined zones have been indicated across the site to inform the location of the new clubroom facilities. Refer Appendix E for full report.

- Zone A: Deep Fill: Fill depths expected to be greater than 6 m deep;
- Zone B: Fill Area: Fill depths expected to be between about 1.5 m and 6 m;
- Zone C: Shallow Fill or Natural: Fill depths less than around 1.5 m or natural ground.



WGA Geotech Report - Drawing excerpt – Fill Depths and Zoning Plan

02. END USER CONSULTAION

02.1 INTRODUCTION

Three consultation workshops were held with the end user groups over 6 weeks to develop a spatial design brief, present design concepts and receive feedback with the City of Marion, Cove Football Club, Cove Cricket Club, South Australian Cricket Association (SACA) and South Australia National Football League (SANFL). The following tables summarises the feedback received for both cricket and football.

02.2 CRICKET (SACA)

SITE	FACILITIES
General: • New cricket nets – consider surrounding space and risk of cricket balls. Enclosed may be best suited in this location to limited available space to minimise risk. • Storage	**General:** • Existing facility does not meet current standards • Poor existing amenities • New facilities to be in line with SACA guidelines (Local level) • Opportunity for shade – Hot summer weather
Carparking: • Generally minimal required • Sufficient for 200 people for multicultural day	**Changerooms:** • 2x change rooms (Home/Away) • Cricket bag storage below bench
Oval & Football teams: • 3x Senior teams • No current Women's teams (future plans) • 30 spectators • Multicultural day – 200 participants • Oval condition poor following cricket + Football season • Pitch orientation must be in accordance with SACA guidelines • Turf cricket pitch	**Function Area:** • Function space per guidelines would be sufficient • Ability to open out to undercover area to increase function space • Flexibility to allow multiple smaller function spaces. Ability to rent out to community • Link to food & drink
Lighting: • Existing carpark has poor lighting – security & safety issue. • Oval lighting upgrade to meet SACA guidelines – 300 lux	**Food + Beverage:** • Bar + kitchen facilities • Create community/family environment – offer healthy food options for parents and players to stay around after training and match day • Alcohol Licensing required
	Opportunities for club revenue: • Bar + kitchen • Hire out function space + Events

02.3 FOOTBALL – COVE FC (SANFL)

SITE	FACILITIES
General: • Club capacity outgrown existing facilities and available oval space • Pickett fencing around oval • Seating to oval • Coaches boxes • Officials space + can be combined with storage • Opportunity to include playground nearby (line of sight) • Consider security & anti-vandalism • Ambulance access to oval	**General:** • Existing facility does not meet current standards • Poor existing amenities • New facilities to be in line with AFL guidelines (Local level)
Carparking: • Currently have 80x carparks, require more due to crowd numbers at games and AusKick events • Require sufficient carparking for 300-500 people • Carparking around oval is preferred	**Changerooms:** • Currently have 4 changerooms (2x Soccer + 2x Football) • Require 4x change rooms dedicated to football during season to cater for number of teams • Ability to open up two change rooms through operable walls to create total 2x large AFL size change rooms

Oval & Football teams:
• Existing programming & maintenance issues with 1 oval
  o Saturday: 5 teams
  o Sunday: 15 teams (approx.) – anticipate growth to 17 teams (near future)
  o 2-3 Women's teams
  o Overlap with cricket & soccer
• Current oval too small, cannot host finals games. Require min 150m x 110m (130m width if possible)
• Ability for club expansion to second oval to cater for football teams and reduce oval damage
• Orientation of oval can be compromised to enable larger oval size
• Goal Netting
	Function Area:
	• 150m2 Current Function Space – insufficient for presentation day.
	• 200-250m2 minimum - 300 people ideal
	• Ability to open out to undercover area to increase function space
	• Flexibility to allow multiple smaller function spaces. Ability to rent out to community
	• Link to food & drink
	
	Food + Beverage:
	• Bar + kitchen facilities
	• Create community/family environment – offer healthy food options for parents and players to stay around after training and match day
	• Alcohol Licensing required

Lighting: • Existing carpark has poor lighting – security & safety issue. • Oval + carpark lighting upgrade to meet AFL guidelines	**Storage:** • Separate lockable storage (Internal + External) • Consider security for shared facilities • Adequate storage required for training equipment
	Amenities + Supporting rooms: • Amenities to each change room • 2x First aid room/massage (male / female)
	Opportunities for club revenue: • Bar + kitchen • Ticketed carparking • Event ticketing (requires site fencing) • Hire out function space + Events • Ability to host large events and finals

03. DESIGN PROPOSAL

03.1 ARCHITECTURAL

The proposal for the new sporting precinct at Capella Reserve provides a design solution based on the AFL Preferred Facility Guidelines (local) & Community Cricket Facility Guidelines, incorporating specific end user requirements from Cove Football Club, Cove Cricket Club, South Australian Cricket Association (SACA) and South Australia National Football League (SANFL) summarised in section 02.

Two locations for the proposed clubrooms were initially explored within this feasibility - South-East and west of the oval. Given existing soil conditions and site topography, a clubroom facility located to the South-East was preferred - located within 'Zone C', reducing structural footing design requirements and site retaining.

Oval size and available training space is a high priority of the Cove Football Club. Option 01 site layout was developed to achieve a sufficient oval size to allow for multiple teams training, with the ability to host football finals. It is worth noting, Capella Reserve does not allow for an additional playing/training fields. An alternate site layout has been provided as a cost saving item – refer cost plan. It is also worth noting, a reduced oval option is not supported by the Cove Football Club.

Indicative conceptual 3D Visualisation

Refer to Appendix A for full architectural Drawings.

03.2 STRUCTURAL (Prepared by Meinhardt)

The proposed Clubroom is currently located in Zone C which is preferred. The footing slab would be built-up with controlled fill (Level 1) after the uncontrolled fill had been removed or alternatively the footing trenches would be founded through the uncontrolled fill into 200mm minimum of natural ground with use of trenched piers. Our preference would be to re-instate controlled fill to Level 1 supervision. Refer to the preliminary footing layout plan SK02 (provided).

The super structure could be a predominantly steel framed structure with wall and roof bracing designed to resist wind and earthquake forces accordingly. The roof run-off would be captured via downpipes and discharged underground into a common stormwater system at the car park location.

The proposed building would be surrounded by perimeter pavement probably of concrete construction and sloping away from the building's foundations at 1:40 crossfall.

Refer Appendix B – Structural & Civil report and drawings.

03.3 CIVIL (Prepared by Meinhardt)

The geotechnical report by WGA dated 3rd May 2019 indicated significant amounts of uncontrolled fill throughout the site. The report noted that future development on current condition of uncontrolled fill is generally not suitable to support structures or pavements due to the potential for excessive differential settlement to occur in the future.

The existing site would need to be cut to shape the proposed Oval dimensions. It is recommended that the area around the oval be battered where possible to limit requirement of retaining walls.
Due to the contour of the site, retaining walls have been proposed to provide adequate access and serviceability for the car parks and new Clubroom. The proposed retaining walls are of concrete and steel post configuration and the extent and construction detail has been detailed on the preliminary civil drawing C004.

We reference 3x options to the construction of the proposed car park.

- Option 1 would be to construct a bitumen car park on controlled fell (Level 1) however it is our opinion that due to the excessive amounts of existing uncontrolled fill this option would not be economical.

- Option 2 as detailed on our preliminary Civil drawings proposes a bitumen car park founded over existing uncontrolled fill. We would propose to install a Tensar Grid under the compacted sub-grade to provide additional strength over the uncontrolled fill however, we wish to highlight that the proposed pavement design as detailed on drawing C004 would be effectively founded on uncontrolled fill so the expected life span would be reduced. The surface would start showing cracking which would need to be filled to prevent stormwater penetration. Also, probable settlement would follow due to the sub-grade failing.

- Option 3 would propose the car parking pavement to be constructed as a concrete slab on ground approximately 130mm thick with SL92 top mesh overlaying uncontrolled fill. In our opinion this option would provide a longer life span for the pavement compared to bitumen however, we would still expect concrete cracking due to failure of the sub-grade.

It is proposed that the car park stormwater would be channelled to a detention basin to detain ARI = 100-year flood event. The water would have to be cleaned of solids and hydrocarbons by a wastewater filtration system to allow soakage and recycling. Refer to preliminary Civil Drawings C001, C002, C003 and C004.

Refer Appendix B – Structural & Civil report and drawings.

03.4 SERVICES (Prepared by Trinamic)

Refer Appendix C – Services Report & Drawings for full report.

03.5 TRAFFIC (Prepared by Cirqa)

The potential redevelopment of Capella Drive Reserve could include the upgrade of the existing sporting field to accommodate Australian Rules Football and cricket at the site as well an associated clubroom building.

The current site layout identifies a provision of 184 formal spaces and 28 informal/overflow spaces. Based on the parking assessment, it is considered that such provisions will be adequate to accommodate typical demands associated with the future site uses.

A high-level traffic impact assessment indicates that the (conservatively) forecast number of peak hour movements would be within the capacity of the site's access point. Nevertheless, further detailed analysis could be undertaken should the project proceed to consider whether additional traffic control treatments are desirable.

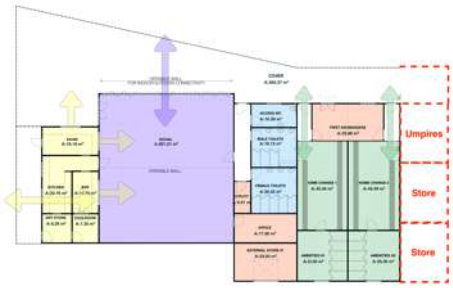
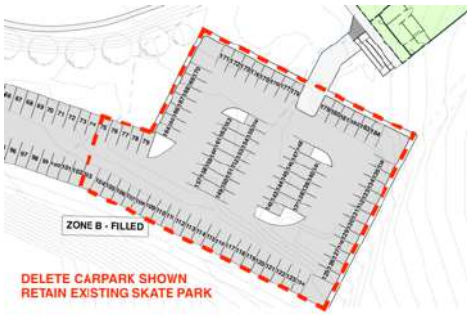
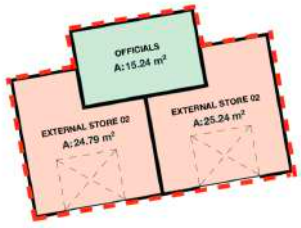
On the basis of the traffic and parking assessments undertaken, it is considered that adequate provisions can be achieved to service and accommodate the potential uses (albeit consideration will be required to be given to cost considerations which is outside the scope of this report).

Refer Appendix D – Traffic Report for full report.

03.6 PROJECT COST (Prepared by Donald Cant Watts Corke)

Total Project Cost: **$6,990,000 excl. GST** (professional fees excluded)
Refer Appendix F – Cost plan for full report.

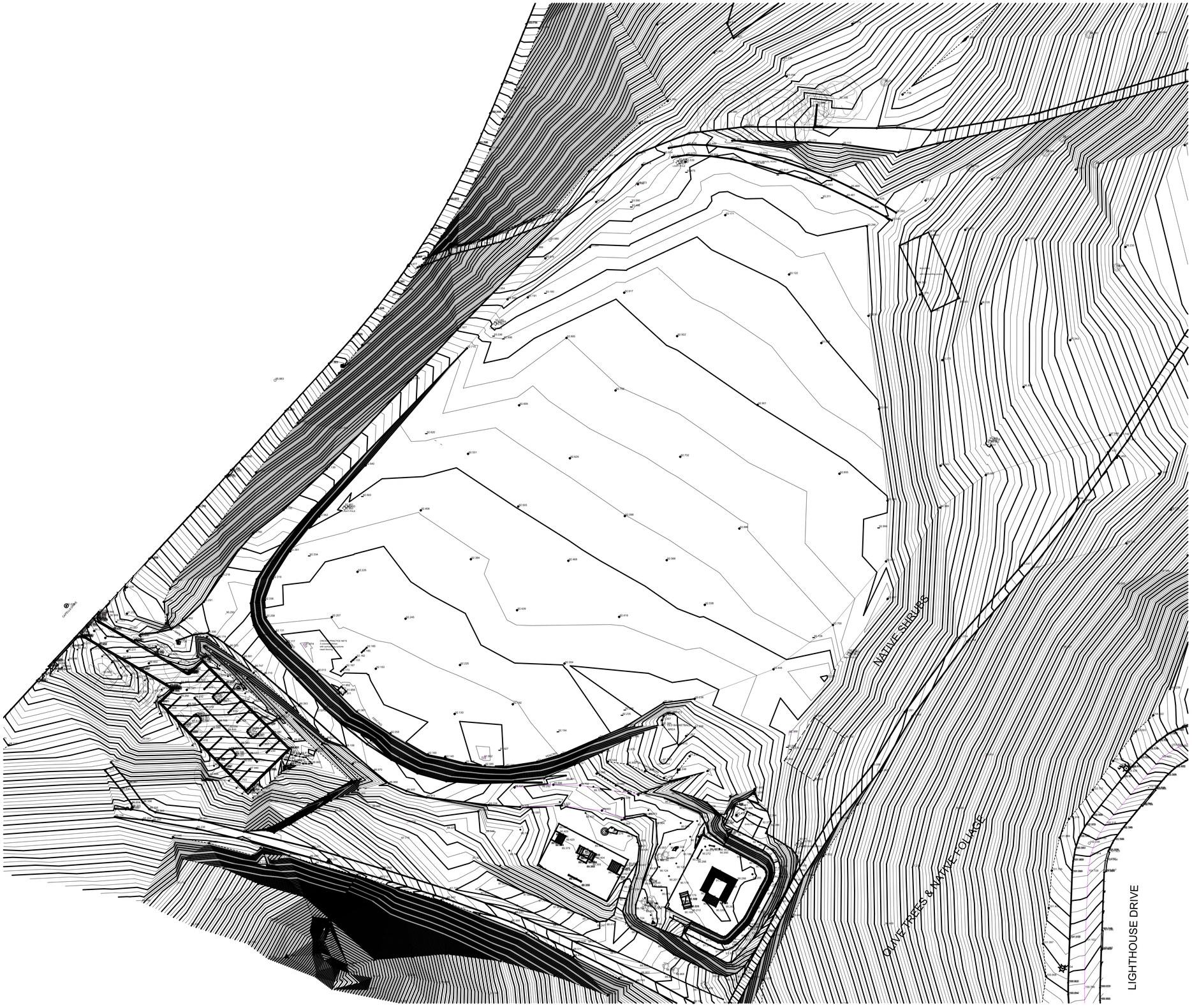
Potential Indicative Cost Saving Considerations:

ITEM	NOTES	INDICATIVE COST SAVING (ex. gst)
Alternative Site Layout - Reduced oval size	Refer SK02 – Alternate Site Plan for scope of works	- $290,000
Remove and reinstate existing lighting columns and upgrade to 100 lux	Further investigations need to be undertaken to determine suitability of existing lighting columns and light fittings for re-use. Refer Appendix C for further details.	- $119,000
Reduced clubrooms – Deletion of 2x Change rooms		- $400,000
Retain skatepark with reduced carparking		- $350,000
Carpark civil works – Option 02	Refer Appendix B - Civil Report Reduced life span.	- $120,000
Officials and associated storage deleted		- $129,000
Picket Fence to oval – deleted		- $43,000
	Sub-total of savings:	$1,451,000
	Revised Total Project Cost (excl. GST): (professional fees excluded)	**$5,311,845.00**

04. APPENDIX A – ARCHITECTURAL DRAWINGS

Prepared by Flightpath Architects – Architect

- SK1 Survey
- SK100 Demolition Plan
- SK101 Site Plan
- SK102 Alternative Site Plan (Reduced Oval Size)
- SK103 Floor Plan
- SK104 3D Visualisation (Indicative)



NOTE

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All boundaries and contours are subject to survey drawing **W-01**. All levels to Australian Height Data. It is the contractors responsibility to confirm all measurements on site and locations of any services prior to work on site.

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Project Team

Refer to consultant documentation when directed
- Civil Engineer - **Meinhardt**
- Services - **Trinamic**
- Structural Engineer - **Meinhardt**
- Traffic - **Cirqa**

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RevID	Issue Name	Ch-ID	Change Name	Date
01	FEASIBILITY/COSTING			28/8/19

Project Status	**FEASIBILITY**
Project NO.	3587
Plot Date:	29/8/19
Client	CITY OF MARION
Site:	Capella Dr, Hallett Cove SA 5158
Drawn | Checked	SR | SXD

DRAWING TITLE :

SKETCH DESIGN
SITE SURVEY

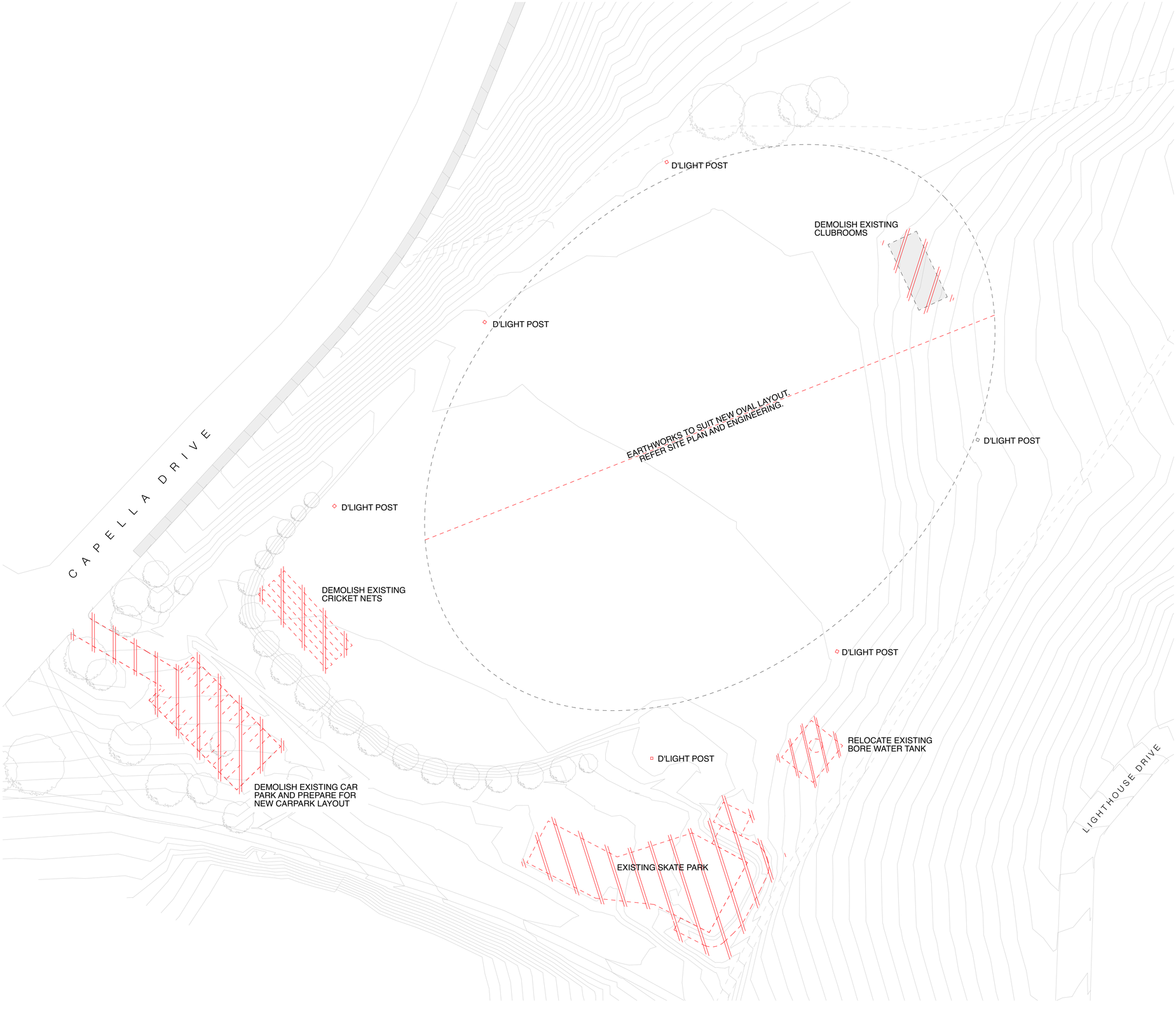
PROJECT NAME :

CAPELLA RESERVE

REVISION NO.
01

DRAWING NO.
SK1

DEMOLITION LEGEND	
	DENOTES EXISTING TO REMAIN
	DENOTES DEMOLITION
D'	DENOTES DEMOLITION



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- Services - **Tmsmic**
- Structural Engineer - **Meinhardt**
- Traffic - **Ciqa**

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RevID	Issue Name	ChID	Change Name	Date
01	FEASIBILITY/COSTING			28/8/19

Project Status	**FEASIBILITY**
Project NO.	3587
Plot Date:	29/8/19
Client	CITY OF MARION
Site:	Capella Dr, Hallett Cove SA 5158
Drawn | Checked	SR | SXD

DRAWING TITLE :
SKETCH PLANS
DEMOLITION PLAN

PROJECT NAME :
CAPELLA RESERVE

REVISION NO.
01
DRAWING NO.
SK100

SITE LEGEND	
	PROPOSED CAR PARKING
	PROPOSED ACCESS PATHWAY
	PROPOSED CLUBROOMS AND FACILITIES
	PROPOSED PICKET FENCE
	SITE FILL ZONE BOUNDARY
	PROPOSED GOAL NETTING
L	PROPOSED LIGHT POST - REFER SERVICES

NEW ENCLOSED CRICKET NETS

PROPOSED SCOREBOARD
EXISTING ACCESS
EXISTING ON-STREET PARKING
CAPELLA DRIVE
ZONE C - SHALLOW FILL & NATURAL
PROPOSED AMBULANCE ACCESS
ZONE B - FILLED
ZONE A - DEEP FILL
ZONE B - FILLED
ZONE B - FILLED
ZONE B - FILLED
45.60°
15.00°
110m (AFL - MIN: 110m RECOMMENDED: 135m)
160m (AFL - MIN: 130m RECOMMENDED: 165m)
110m (CA - MIN: 100m RECOMMENDED: 120m)
110m (CA - MIN: 100m RECOMMENDED: 120m)
NEW ENCLOSED CRICKET NETS
WIDEN ACCESS DRIVEWAY TO MEET REQ.
NEW CAR PARK
EXISTING ACCESS
ADD. 28 x CAR PARK
ZONE C - SHALLOW FILL & NATURAL
COACHES BOX
OFFICIALS
STORE
COACHES BOX
ZONE C - SHALLOW FILL & NATURAL
CLUBROOMS A: 615.21 m²
ZONE C - SHALLOW FILL & NATURAL
LIGHTHOUSE DRIVE
ZONE B - FILLED
ZONE B - FILLED

TOTAL PROPOSED CAR PARKING: 212
(incl. ACCESSIBLE CAR PARKING: 6)

NOTE

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Project Team

Refer to consultant documentation when directed
- Civil Engineer - **Meinhardt**
- Services - **Trinamic**
- Structural Engineer - **Meinhardt**
- Traffic - **Ciqa**

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RevID	Issue Name	Ch-ID	Change Name	Date
01	FEASIBILITY/COSTING			28/8/19

Project Status **FEASIBILITY**
Project NO. 3587
Plot Date: 29/8/19

Client CITY OF MARION
Site: Capella Dr, Hallett Cove SA 5158
Drawn | Checked SR | SXD

DRAWING TITLE :
SKETCH PLANS
SITE PLAN OPTION 1

PROJECT NAME :
CAPELLA RESERVE

REVISION NO.
01

DRAWING NO.
SK101

SITE LEGEND	
	PROPOSED CAR PARKING
	PROPOSED ACCESS PATHWAY
	PROPOSED CLUBROOMS AND FACILITIES
	PROPOSED PICKET FENCE
	SITE FILL ZONE BOUNDARY
	PROPOSED GOAL NETTING
L	PROPOSED LIGHT POST - REFER SERVICES

NEW ENCLOSED CRICKET NETS

PROPOSED SCOREBOARD
EXISTING ACCESS
EXISTING ON-STREET PARKING
CAPELLA DRIVE
ZONE C - SHALLOW FILL & NATURAL
LANDSCAPE TERRACING WITH BLOCK SEATING
ZONE B - FILLED
ZONE B - FILLED
110m (AFL - MIN:110m RECOMMENDED: 135m)
110m (CA - MIN: 100m RECOMMENDED: 120m)
ZONE A - DEEP FILL
110m (CA - MIN: 100m RECOMMENDED: 120m)
135m (AFL - MIN: 130m RECOMMENDED: 160m)
ZONE B - FILLED
COACHES BOX
OFFICIALS
STORE
ZONE C - SHALLOW FILL & NATURAL
COACHES BOX
NEW ENCLOSED CRICKET NETS
35m
WIDEN ACCESS DRIVEWAY TO MEET REQ.
NEW CAR PARK
EXISTING ACCESS
ADD. 30 x CAR PARK
CLUBROOMS A: 815.2 m²
ZONE C - SHALLOW FILL & NATURAL
ZONE B - FILLED
ZONE B - FILLED
LIGHTHOUSE DRIVE

TOTAL PROPOSED CAR PARKING: 214
(incl. ACCESSIBLE CAR PARKING: 6)

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- Services - **Trinamic**
- Structural Engineer - **Meinhardt**
- Traffic - **Cirqa**

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RevID	Issue Name	Ch-ID	Change Name	Date
01	FEASIBILITY/COSTING			28/8/19

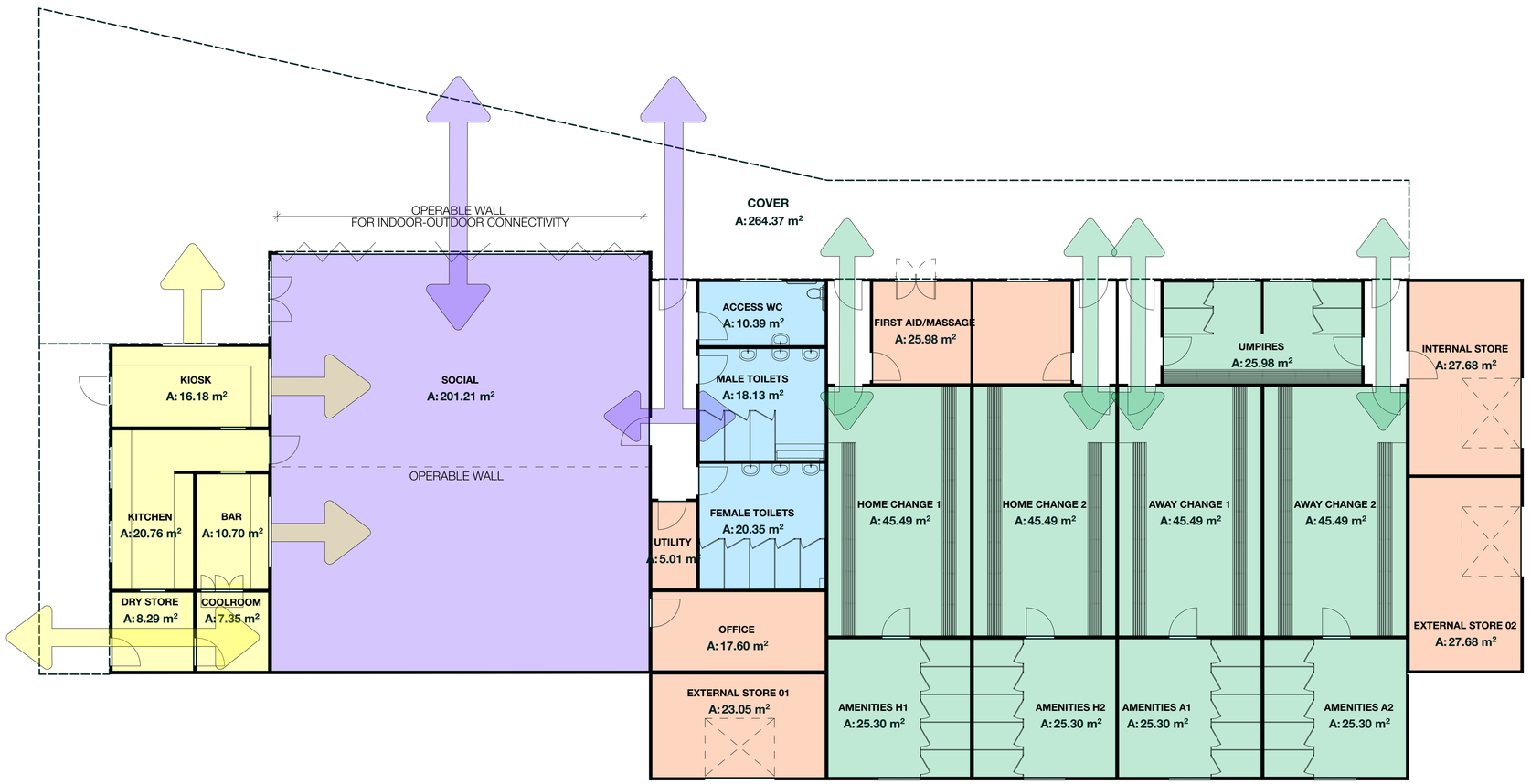
Project Status **FEASIBILITY**
Project NO. 3587
Plot Date: 29/8/19
Client CITY OF MARION
Site: Capella Dr, Hallett Cove SA 5158
Drawn | Checked SR | SXD

N

DRAWING TITLE :
SKETCH PLANS
SITE PLAN OPTION 2

PROJECT NAME :
CAPELLA RESERVE

REVISION NO.
01
DRAWING NO.
SK102



FLOOR PLAN 2
1:100

ROOM LIST			
ROOM NAME	MEASURED AREA	AFL (LOCAL)	CRICKET AUSTRALIA (CLUB)
ACCESS WC	10.39	7.00	5.50
AMENITIES A1	25.30	21.00	15.00 - 20.00
AMENITIES A2	25.30	21.00	15.00 - 20.00
AMENITIES H1	25.30	21.00	15.00 - 20.00
AMENITIES H2	25.30	21.00	15.00 - 20.00
AWAY CHANGE 1	45.49	55.00	20.00 - 30.00
AWAY CHANGE 2	45.49	55.00	20.00 - 30.00
BAR	10.70	N/A	N/A
COOLROOM	7.35	N/A	N/A
COVER	264.37	50.00	N/A
DRY STORE	8.29	N/A	5.00
EXTERNAL STORE 01	23.05	5.00	5.00
EXTERNAL STORE 02	24.79		
EXTERNAL STORE 02	25.24		
EXTERNAL STORE 02	27.68	5.00	5.00
FEMALE TOILETS	20.35	13.00	10.00
FIRST AID/MASSAGE	25.98	15.00	10.00
HOME CHANGE 1	45.49	55.00	20.00 - 30.00
HOME CHANGE 2	45.49	55.00	20.00 - 30.00
INTERNAL STORE	27.68	5.00	5.00
KIOSK	16.18	20.00	15.00
KITCHEN	20.76	" "	15.00 - 25.00
MALE TOILETS	18.13	13.00	10.00
OFFICE	17.60	15.00	15.00
OFFICIALS	15.24		
SOCIAL	201.21	100.00	100.00 - 150.00
UMPIRES	25.98	25.00	15.00
UTILITY	5.01	5.00	5.00
	1,079.14 m²		

NOTE

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Project Team

Refer to consultant documentation when directed
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- Services - **Trinamic**
- Structural Engineer - **Meinhardt**
- Traffic - **Cirqa**

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RevID	Issue Name	Ch-ID	Change Name	Date
01	FEASIBILITY/COSTING			28/8/19

Project Status **FEASIBILITY**
Project NO. 3587
Plot Date: 29/8/19

Client CITY OF MARION
Site: Capella Dr, Hallett Cove SA 5158
Drawn | Checked SR | SXD

DRAWING TITLE :

SKETCH PLANS
GROUND FLOOR PLAN

PROJECT NAME :

CAPELLA RESERVE

REVISION NO.
01

DRAWING NO.
SK103

NOTE
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Project Status	**FEASIBILITY**
Project NO.	3587
Plot Date:	29/8/19
Client	CITY OF MARION
Site:	Capella Dr, Hallett Cove SA 5158
Drawn | Checked	SR | SXD

DRAWING TITLE :
SKETCH PLANS
3D VISUALISATION

PROJECT NAME :
CAPELLA RESERVE

REVISION NO.
01

DRAWING NO.
SK104

05. APPENDIX B - STRUCTURAL / CIVIL REPORT

Prepared by Meinhardt – Structural / Civil Engineers

- C001 Site Works Plan 1 of 3 (Rev P04)
- C002 Site Works Plan 2 of 3 (Rev P04)
- C003 Site Works Plan 3 of 3 (Rev P04)
- C004 Civil Details (Rev P02)
- Feasibility Report - 121130-SC-REP-2019-08-29-HB

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Australia 5000

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www.meinhardtgroup.com

29th August 2019

Flightpath
101 Hindley Street
Adelaide SA 5000

ATTENTION: Simon Xotta-dickson (simon@flightpatharchitects.com.au)

Project reference: 121130

CAPELLA RESERVE - FEASIBILITY REPORT
STRUCTURAL AND CIVIL ENGINEERING SERVICES

Dear Sir,

Meinhardt was engaged by Flightpath to complete a feasibility report on the proposed redevelopment at Capella Reserve. The below report outlines our findings.

Terms of Reference

This report and preliminary drawings are based on review of WGA Geotechnical Investigation, site survey and proposed architectural drawings.

The content contained in this report is relevant as at the date of our report. No detailed design or analysis was completed to generate this report. All scope of works and information is approximate and preliminary only.

Soil Conditions

The geotechnical report by WGA dated 3rd May 2019 indicated significant amounts of uncontrolled fill throughout the site.

The report noted that future development on current condition of uncontrolled fill is generally not suitable to support structures or pavements due to the potential for excessive differential settlement to occur in the future.

Proposed Clubroom

The proposed Clubroom is currently located in Zone C which is preferred. The footing slab would be built-up with controlled fill (Level 1) after the uncontrolled fill had been removed or alternatively the footing trenches would be founded through the uncontrolled fill into 200mm minimum of natural ground with use of trenched piers. Our preference would be to re-instate controlled fill to Level 1 supervision. Refer to the preliminary footing layout plan SK02 (provided).

The super structure could be a predominantly steel framed structure with wall and roof bracing designed to resist wind and earthquake forces accordingly. The roof run-off would be captured via downpipes and discharged underground into a common stormwater system at the car park location.

The proposed building would be surrounded by perimeter pavement probably of concrete construction and sloping away from the building's foundations at 1:40 crossfall.

Civil Works

The existing site would need to be cut to shape the proposed Oval dimensions. It is recommended that the area around the oval be battered where possible to limit requirement of retaining walls.

Due to the contour of the site, retaining walls have been proposed to provide adequate access and serviceability for the car parks and new Clubroom. The proposed retaining walls are of concrete

and steel post configuration and the extent and construction detail has been detailed on the preliminary civil drawing C004.

We reference 3x options to the construction of the proposed car park.

Option 1 would be to construct a bitumen car park on controlled fell (Level 1) however it is our opinion that due to the excessive amounts of existing uncontrolled fill this option would not be economical.

Option 2 as detailed on our preliminary Civil drawings proposes a bitumen car park founded over existing uncontrolled fill. We would propose to install a Tensar Grid under the compacted sub-grade to provide additional strength over the uncontrolled fill however, we wish to highlight that the proposed pavement design as detailed on drawing C004 would be effectively founded on uncontrolled fill so the expected life span would be reduced. The surface would start showing cracking which would need to be filled to prevent stormwater penetration. Also, probable settlement would follow due to the sub-grade failing.

Option 3 would propose the car parking pavement to be constructed as a concrete slab on ground approximately 130mm thick with SL92 top mesh overlaying uncontrolled fill. In our opinion this option would provide a longer life span for the pavement compared to bitumen however, we would still expect concrete cracking due to failure of the sub-grade.

It is proposed that the car park stormwater would be channelled to a detention basin to detain ARI = 100-year flood event. The water would have to be cleaned of solids and hydrocarbons by a waste water filtration system to allow soakage and recycling. Refer to preliminary Civil Drawings C001, C002, C003 and C004.

Cricket Nets

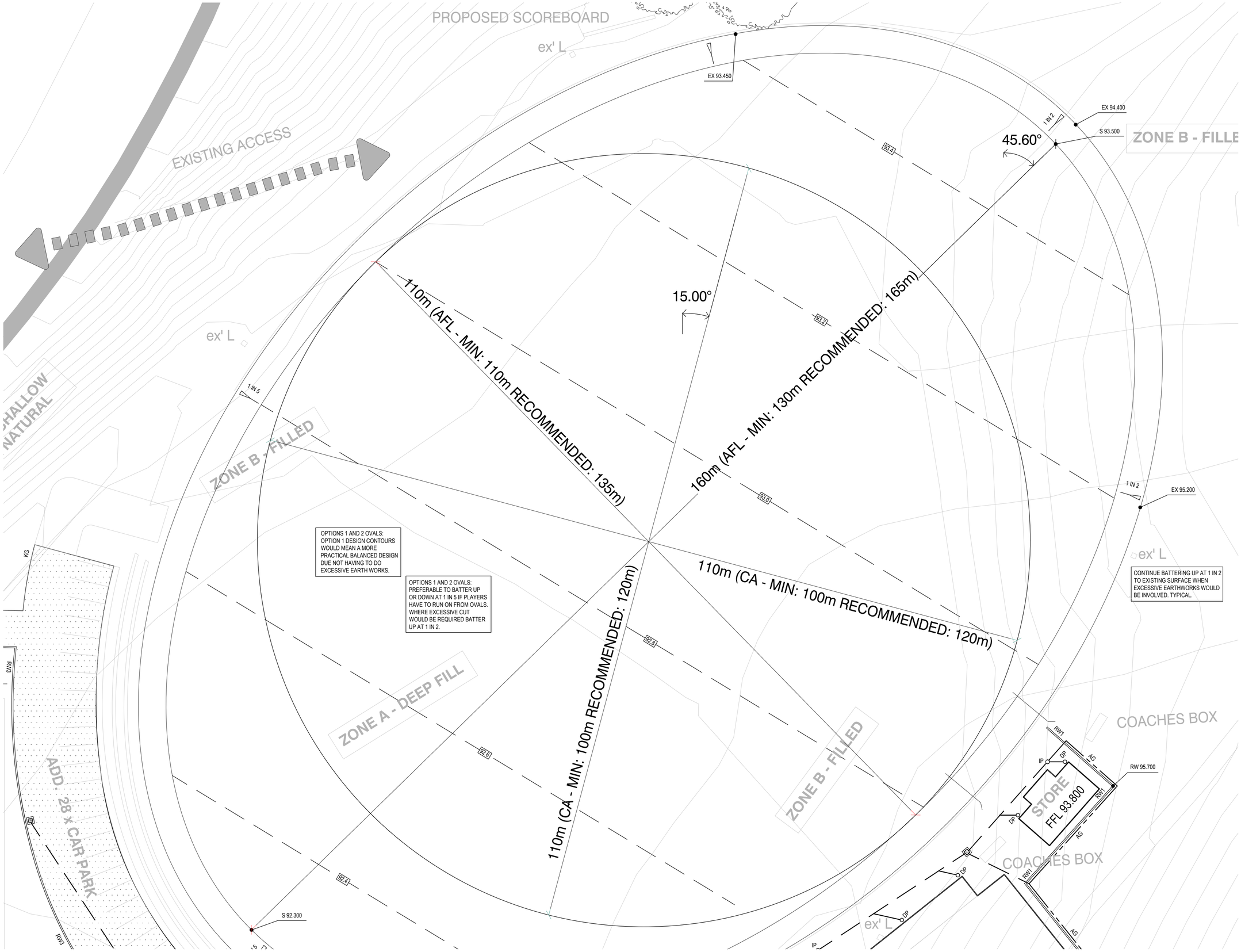
We propose to install a concrete sleeper between the roadway behind the cricket nets to allow for required benching of the cricket net surface. Proposed base would be 130mm thick concrete slab with SL92 top mesh founded on compacted rubble with perimeter cyclone fencing.

The current location of the cricket nets results in the concrete surface founded between Zones A and B overlaying significant amount of uncontrolled fill. An alternative location such as the bottom right hand corner of the main car park would position the nets in Zone C – shallow fill. The alternative location would extend the life span of the concrete surface by founding the concrete slab on ground on reinstated controlled fill (Level 1).

We trust the above is satisfactory for your immediate needs. Please contact our office if further assistance or information is required.

Yours faithfully
MEINHARDT

Hamish Bills
Director - SA
Incl.
SK02
C001, C002, C003 and C004



FOR CONTINUATION REFER DRG. C002

FOR CONTINUATION REFER DRG. C003

SITE WORKS PLAN
SCALE 1:250

REFER DRG. C002 FOR LEGEND

REV	DESCRIPTION	BY	DATE
P01	FEASIBILITY ISSUE	JDH	14.08.19
P02	FEASIBILITY ISSUE AMENDED	JDH	15.08.19
P03	FEASIBILITY ISSUE AMENDED TO OPTION 1	JDH	28.08.19
P04	SITEWORKS AND RW3 ADDED	JDH	29.08.19

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CLIENT
CITY OF MARION

PROJECT
CAPELLA RESERVE
CAPELLA DRIVE
HALLETT COVE SA 5158

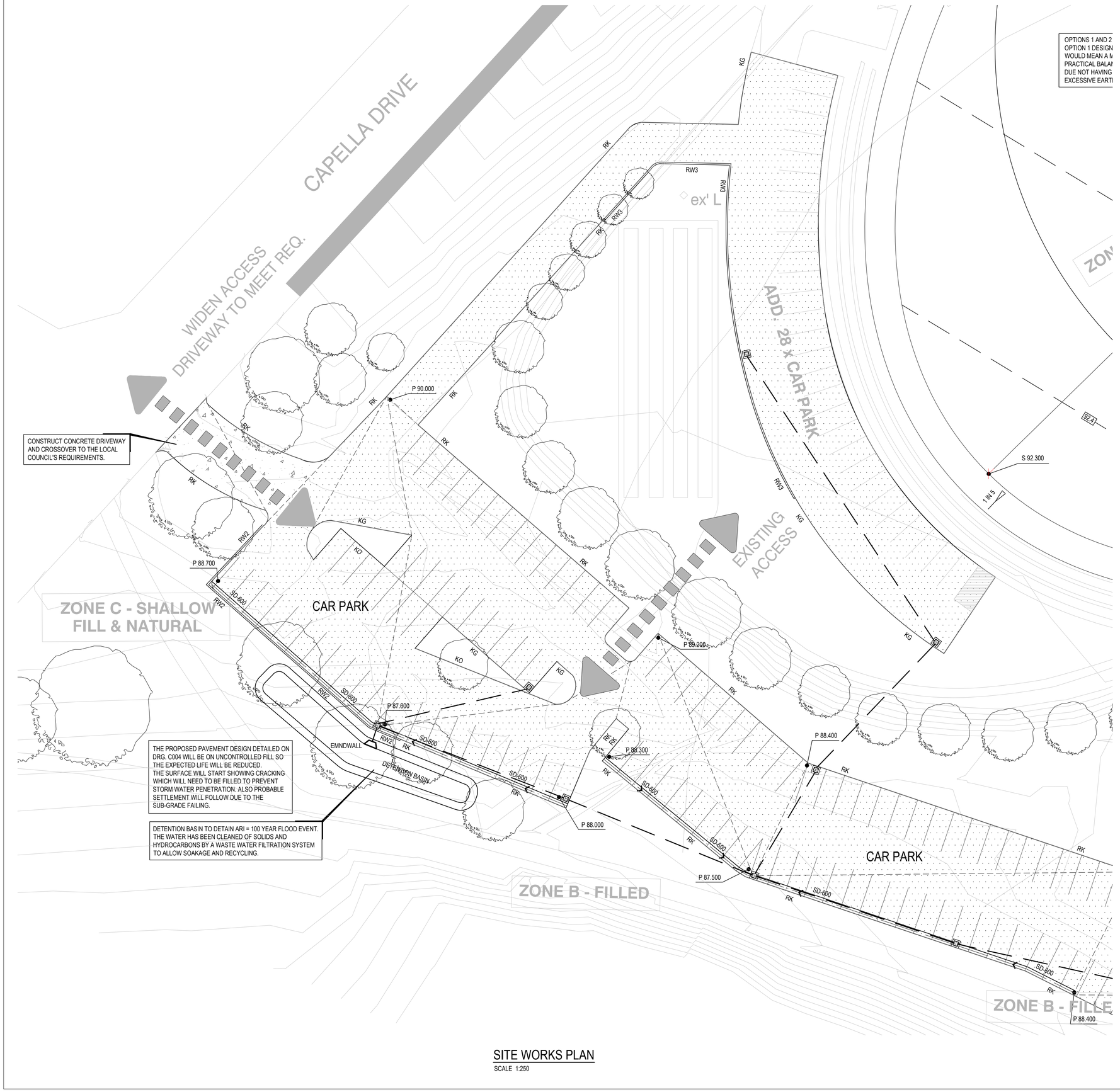
TITLE
SITE WORKS PLAN
SHEET 1 OF 3

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	SHEET
JDH	JDH	--	--	1:250	01 OF 04

PROJECT No	DRAWING No	REV
121130	C001	P04

DWG FILE: X:\121\130 - CAPELLA SPORTS CLUB HALLETT COVE\11. BIM\6_CAD_DWG\1_Current\121130-C001.dwg - MH PLOT TIME: 29 Aug 2019, 11:29am



OPTIONS 1 AND 2
OPTION 1 DESIGN
WOULD MEAN A M
PRACTICAL BALA
DUE NOT HAVING
EXCESSIVE EARTI

LEGEND

PLAN ITEM	DESCRIPTION
92.686	EXISTING SITE SPOT LEVELS
	EXISTING SURFACE CONTOUR
P 93.000	DESIGN LEVELS : P - PAVEMENT LEVEL S - SURFACE RW - TOP OF RETAINING WALL / KERB EX - EXISTING LEVEL APPROX.
MTE	MATCH TO EXISTING
DPO	BUILDING DOWNPIPE CONNECTION - REFER DETAIL SHEET
IP	STORMWATER INSPECTION POINT - REFER DETAIL SHEET
	STORMWATER PIPE - uPVC SIZE AS MARKED ON PLAN
	STORMWATER PIPE - RCP SIZE AS MARKED ON PLAN
AG	AGRICULTURAL PIPE REFER DETAIL SHEET
	GRATED INLET PIT (GIP)
	JUNCTION BOX (JB)
RW1, RW2, RW3	RETAINING WALL - REFER DETAIL SHEET
	GRADES
93.4	DESIGN CONTOURS
RK	RETAINING KERB - REFER DETAIL SHEET
KG	KERB AND GUTTER - REFER DETAIL SHEET
KO	KERB ONLY - REFER DETAIL SHEET
SD	SPOON DRAIN - SIZE AS SHOWN ON PLAN - REFER DETAIL SHEET
WFS	WASTE WATER FILTRATION SYSTEM TO REMOVE SOLIDS AND HYDROCARBONS. ECOSOL RSF 4300 OR APPROVED EQUIVALENT.
	BATTER SYMBOL
	CAR PARK PAVEMENT ASPHALTIC CONCRETE (AC10)
	CONCRETE ENTRANCE PAVEMENT

SITE WORKS PLAN

SCALE 1:250

REV	DESCRIPTION	BY	DATE
P01	FEASABILITY ISSUE	JDH	14.08.19
P02	FEASABILITY ISSUE AMENDED	JDH	15.08.19
P03	FEASABILITY ISSUE AMENDED TO OPTION 1	JDH	28.08.19
P034	EARTHWORKS AND RW3 ADDED	JDH	29.08.19

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CITY OF MARION

PROJECT
CAPELLA RESERVE
CAPELLA DRIVE
HALLETT COVE SA 5158

TITLE
SITE WORKS PLAN
SHEET 2 OF 3

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

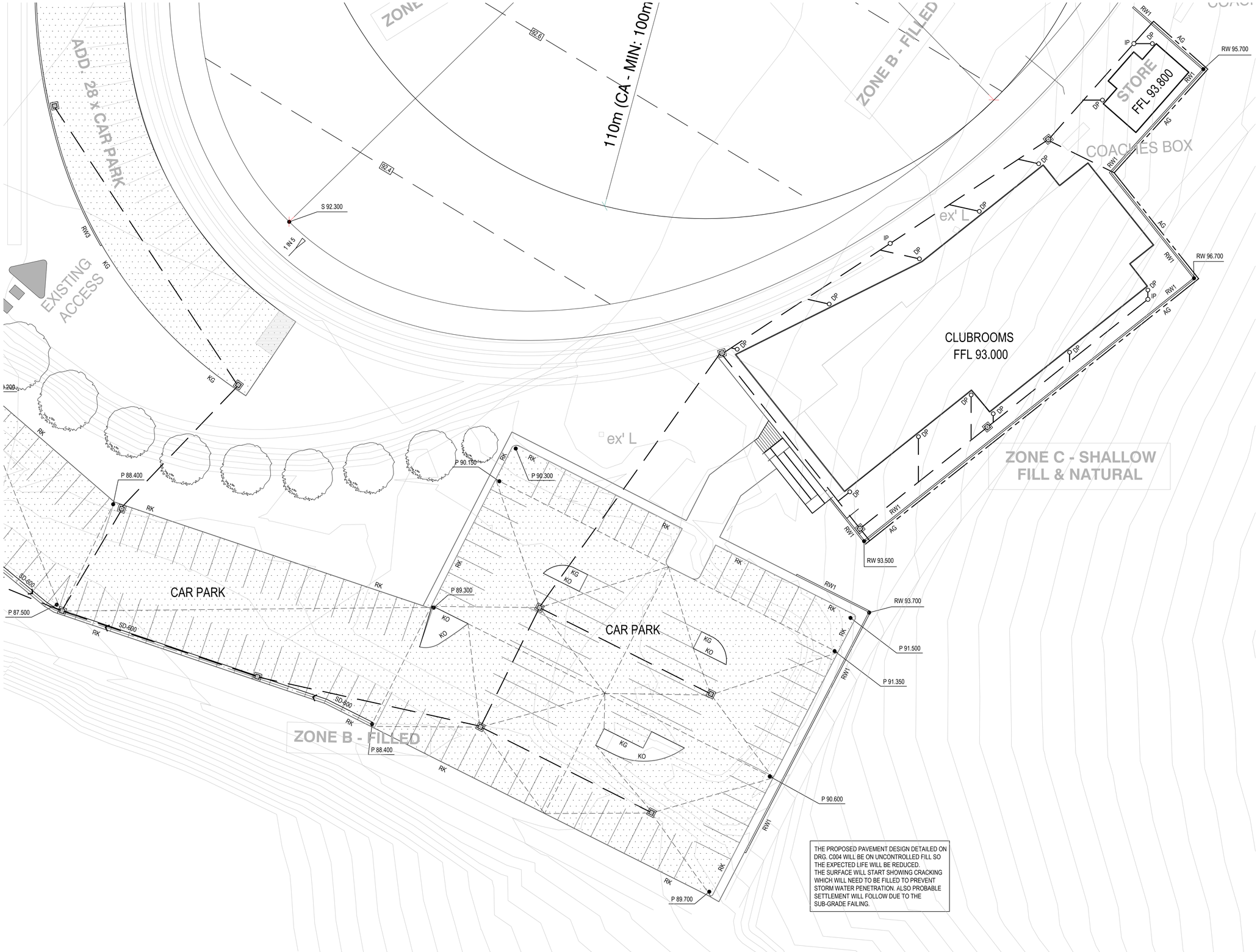
DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	SHEET
JDH	JDH	--	--	1:250	02 OF 04

PROJECT No	DRAWING No	REV
121130	C002	P04

DWG FILE: X:\121130 - CAPELLA SPORTS CLUB HALLET COVE\11_BIM\6_CIS_DWG\1_Current\121130-C002.dwg - MH PLOT TIME: 29 Aug 2019, 11:41am

FOR CONTINUATION REFER DRG. C001

FOR CONTINUATION REFER DRG. C002



THE PROPOSED PAVEMENT DESIGN DETAILED ON DRG. C004 WILL BE ON UNCONTROLLED FILL SO THE EXPECTED LIFE WILL BE REDUCED. THE SURFACE WILL START SHOWING CRACKING WHICH WILL NEED TO BE FILLED TO PREVENT STORM WATER PENETRATION. ALSO PROBABLE SETTLEMENT WILL FOLLOW DUE TO THE SUB-GRADE FAILING.

SITE WORKS PLAN

SCALE 1:250

REFER DRG. C002 FOR LEGEND

REV	DESCRIPTION	BY	DATE
P01	FEASABILITY ISSUE	JDH	14.08.19
P02	FEASABILITY ISSUE AMENDED	JDH	15.08.19
P03	FEASABILITY ISSUE AMENDED TO OPTION 1	JDH	28.08.19
P04	EARTHWORKS AND RW3 ADDED	JDH	29.08.19

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CLIENT
CITY OF MARION

PROJECT
CAPELLA RESERVE
CAPELLA DRIVE
HALLETT COVE SA 5158

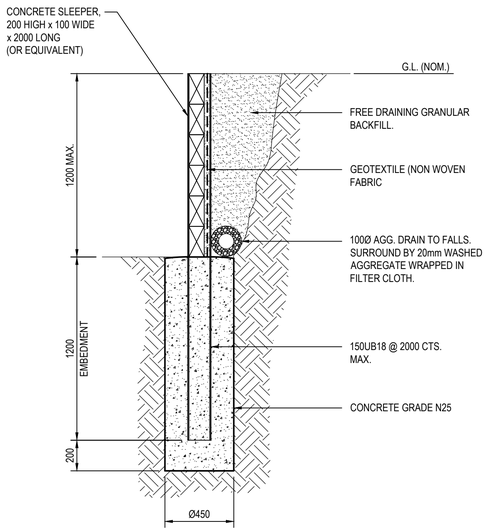
TITLE
SITE WORKS PLAN
SHEET 3 OF 3

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	SHEET
JDH	JDH	--	--	1:250	03 OF 04

PROJECT No	DRAWING No	REV
121130	C003	P04

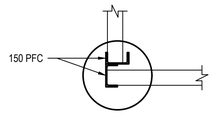
DWG FILE: X:\121130 - CAPELLA SPORTS CLUB HALLETT COVE\11_BIM\6_CI\6_DWG\1_Current\121130-C003.dwg - MH PLOT TIME: 29 Aug 2019, 11:31am



SECTION

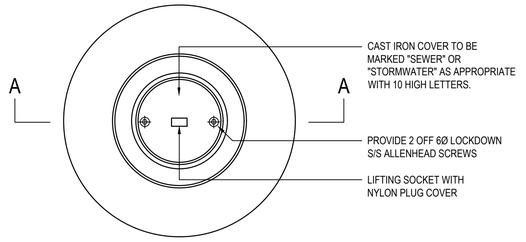
CONCRETE SLEEPER RETAINING WALL DETAIL

SCALE 1:20



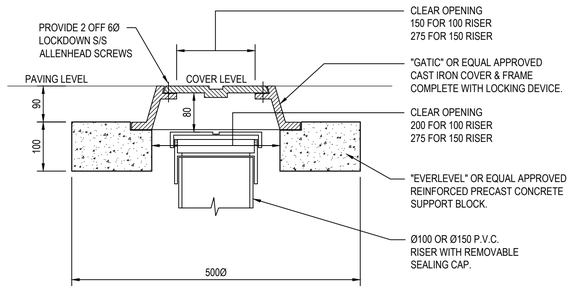
CORNER POST DETAIL - PLAN

SCALE: NTS



PLAN

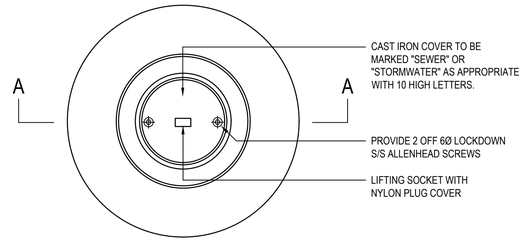
SURROUNDING PAVING OMITTED FOR CLARITY



SECTION A-A

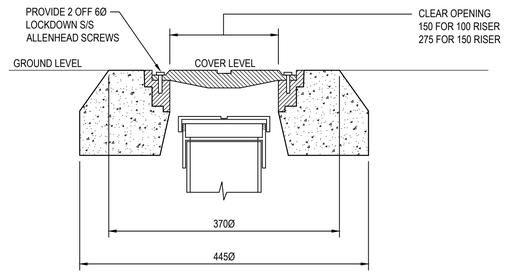
INSPECTION POINT FOR PAVED/CONCRETE AREAS

SCALE N.T.S.



PLAN

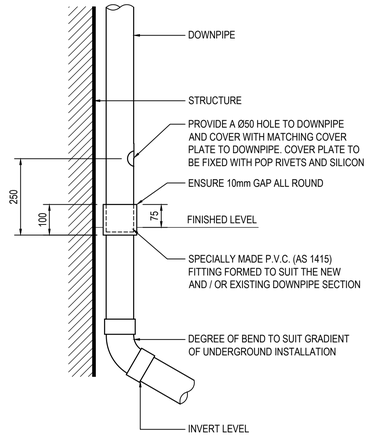
SURROUNDING PAVING OMITTED FOR CLARITY



SECTION A-A

INSPECTION POINT FOR NON-PAVED/CONCRETE AREAS

SCALE N.T.S.



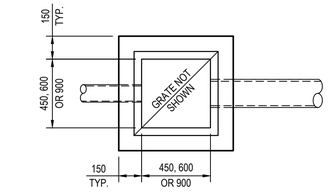
DOWNPIPE CONNECTION WITH CLEANING EYE

SCALE 1:10

NOTES:

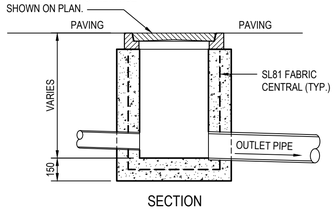
1. MAKE AND / OR MODIFY AND / OR ADJUST THE DOWNPIPE TO SUIT THE CONNECTION TO THE UNDERGROUND INSTALLATION.
2. FILL THE 10mm GAP BETWEEN THE DOWNPIPE AND THE P.V.C. FITTING 50 DEPTH OF 'COMPRIBAND' OR EQUAL APPROVED (COMPRESSION 5:1)
3. PAINT P.V.C. EXPOSED ABOVE FINISHED LEVEL TO MATCH THE DOWNPIPE COLOUR.
4. USE ADAPTORS AND / OR FITTINGS NECESSARY TO SUIT TRANSITION OF VARIOUS TYPES AND . OR SIZES OF PIPES.
5. SEE RELEVANT DRAWINGS FOR ALL OTHER INFORMATION REGARDING DOWNPIPES AND / OR STORMWATER PIPES.

REV	DESCRIPTION	BY	DATE
P01	FEASIBILITY ISSUE	JDH	28.08.19
P02	FEASIBILITY ISSUE - RE-ISSUED	JDH	29.08.19



PLAN

GRATE & FRAME SHALL BE STANDARD MANUFACTURE OF GATIC OR SIMILAR APPROVED. CLASS C UNLESS OTHERWISE SHOWN ON PLAN.

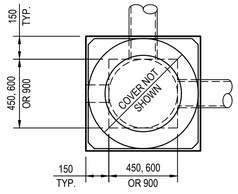


SECTION

GRATED INLET PIT (GIP)

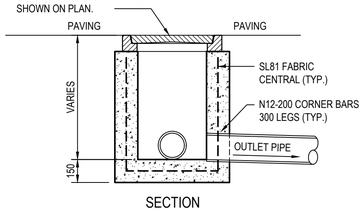
SCALE 1:20

APPROVED ALTERNATIVE PROPRIETARY UNITS MAY BE USED WHICH MEET OR EXCEED DESIGN REQUIREMENTS



PLAN

COVER & FRAME SHALL BE STANDARD MANUFACTURE OF GATIC OR SIMILAR APPROVED. CLASS C UNLESS OTHERWISE SHOWN ON PLAN.



SECTION

JUNCTION BOX (JB)

SCALE 1:20

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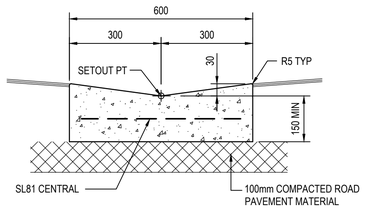
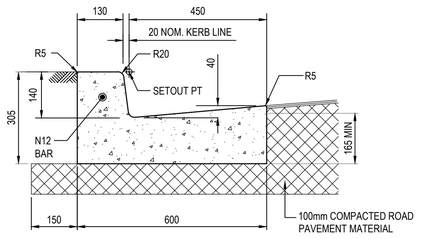


SPOON DRAIN DETAIL (SD)

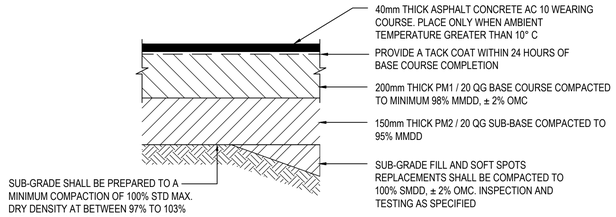
SCALE 1:10

NOTE: PROVIDE TOOLED JOINTS EVERY 3m MAX



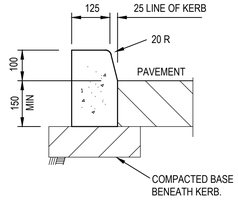
100 KERB AND GUTTER DETAIL (KG)

SCALE 1:10



PAVEMENT DETAIL WHERE UNCONTROLLED FILL

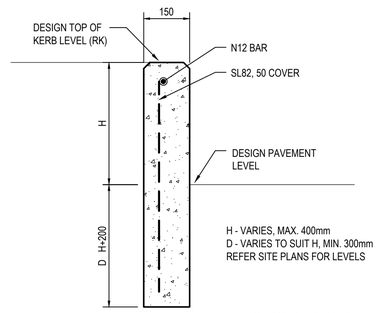
SCALE 1:10



100 mm KERB (KO)

SCALE 1:10

PROVIDE TOOLED JOINTS EVERY 3M MAX.



RETAINING KERB (RK)

SCALE 1:10

NOTE: PROVIDE TOOLED JOINTS EVERY 3m MAX

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CLIENT
CITY OF MARION

PROJECT
CAPELLA RESERVE
CAPELLA DRIVE
HALLETT COVE SA 5158

TITLE
CIVIL DETAILS

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	SHEET
JDH	JDH	--	--	1:10, 1:20	04 OF 04

PROJECT No	DRAWING No	REV
121130	C004	P02

DWG FILE: X:\121130 - CAPELLA SPORTS CLUB HALLET COVE\11 | BIM\6_CIS_DWG\1_Current\121130-C004.dwg - - MH PLOT TIME: 29 Aug 2019, 11:31am

06. APPENDIX C – SERVICES REPORT

Prepared by Trinamic Consultants – Services Engineering

- Capella Reserve - Services scope and budget report
- E1 SITE LIGHTING SKETCH PLAN (Rev 1)

CAPELLA RESERVE SPORTS PRECINCT
CAPELLA DRIVE, HALLET COVE
BUILDING SERVICES

1. SCOPE AND BUDGETS

1.1 DEMOLITION

- Isolation and supply of services to existing changeroom facilities and bore.

Allowance: $10,000

1.2 ELECTRICAL SERVICES

- Augmentation of existing SA Power Networks power supply.

Allowance: $50,000

- Upgrade of existing SA Power Networks transformer.

Allowance: $200,000

- Main switchboard and associated consumer mains.
- Local distribution boards, submain cabling and power supply to new clubrooms, new bore and lighting.
- Interior lighting, comprising LED fittings.
- Emergency and exit lighting.
- Electrical distribution and power outlets.
- Television antenna and outlets to clubroom.
- Car park lighting.
- Oval lighting comprising 4 of new 25-30m columns and floodlights.
- Incoming telecommunications lead in cable and distribution frame.
- Monitored intruder alarm and fire detection system

Budget: $585,000

1.3 MECHANICAL SERVICES

- Reverse cycle air conditioning to social area.
- Ventilation to new changerooms, toilets and kitchen.
- Commercial exhaust system to kitchen.

Budget: $164,000

1.4 HYDRAULIC SERVICES

- New SA Water sewer connection to suit the new building location.
- Upgrade existing water supply and provide backflow protection.
- Sanitary drainage, trade waste drainage and trade waste arrestor.

- Cold and hot water reticulation.
- Fixtures, fittings and tapware.
- Hot water unit and circulating pump.
- Thermostatic mixing valves.
- Natural gas connection and reticulation.

Budget: $328,000

1.5 WET FIRE SERVICES

- Site fire water supply.
- Double head external fire hydrant adjacent new building.
- Fire hose reels.
- Portable fire extinguishers and fire blankets.

Budget: $65,000

1.6 RELOCATE EXISTING BORE

- Combined services allowance

Budget: $20,000

2. SERVICES COST SAVING CONSIDERATIONS

2.1 ALTERNATIVE SITE OR BUILDING LAYOUT

- Reduction in oval lighting to suit reduced oval size. Saving based on reduction of 1 light fitting per pole however further calculations would need to be undertaken to confirm.

  Electrical Saving: $13,000

- Reinstate existing lighting columns and upgrade existing light fittings to 100 lux average.

  Suitability of existing lighting columns for re-use and relocation still to be determined (risk item).

  Electrical Saving: $119,000

- Reduce clubroom buliding by 2 x change rooms.

  Mechanical Saving: $40,000

  Electrical Saving: $26,000

  Hydraulic Saving: $70,000

  Wet Fire Saving: Nil

2.2 RETAIN SKATEPARK WITH REDUCED CARPARKING

- Reduction in carpark lighting.

Electrical Saving: $40,000

3. EXCLUSIONS

- Photo Voltaic system.
- Dedicated lighting to cricket nets.
- Telecommunications backbone and structured network cabling within the building.
- Computers, peripherals, active network equipment, wireless access equipment, or patching of same.
- Telephone system, telephone handsets or patching of same.
- Point of sale equipment.
- Audio-visual presentation wiring, equipment, screens or sound system.
- Public address system.
- Electronic scoreboard systems (power supply allowed for in estimates).
- Hearing augmentation systems for hearing impaired.
- Electronic access control systems.
- CCTV surveillance systems.
- White goods, kitchen or bar equipment.
- Cool room equipment.
- Post mix or beer keg cooling/dispensing equipment.
- Stormwater and roof drainage systems.
- Landscape irrigation.
- Rainwater tanks or rainwater reticulation.

4. ASSOCIATED BUILDER'S WORKS

The following Builder's works associated with the Mechanical, Electrical, Hydraulic and Fire Protection Services may be required for this project and are not incorporated within our budgets above:

- Builders site power, water and amenities.
- Removal and re-instatement of ceilings to allow installation of concealed

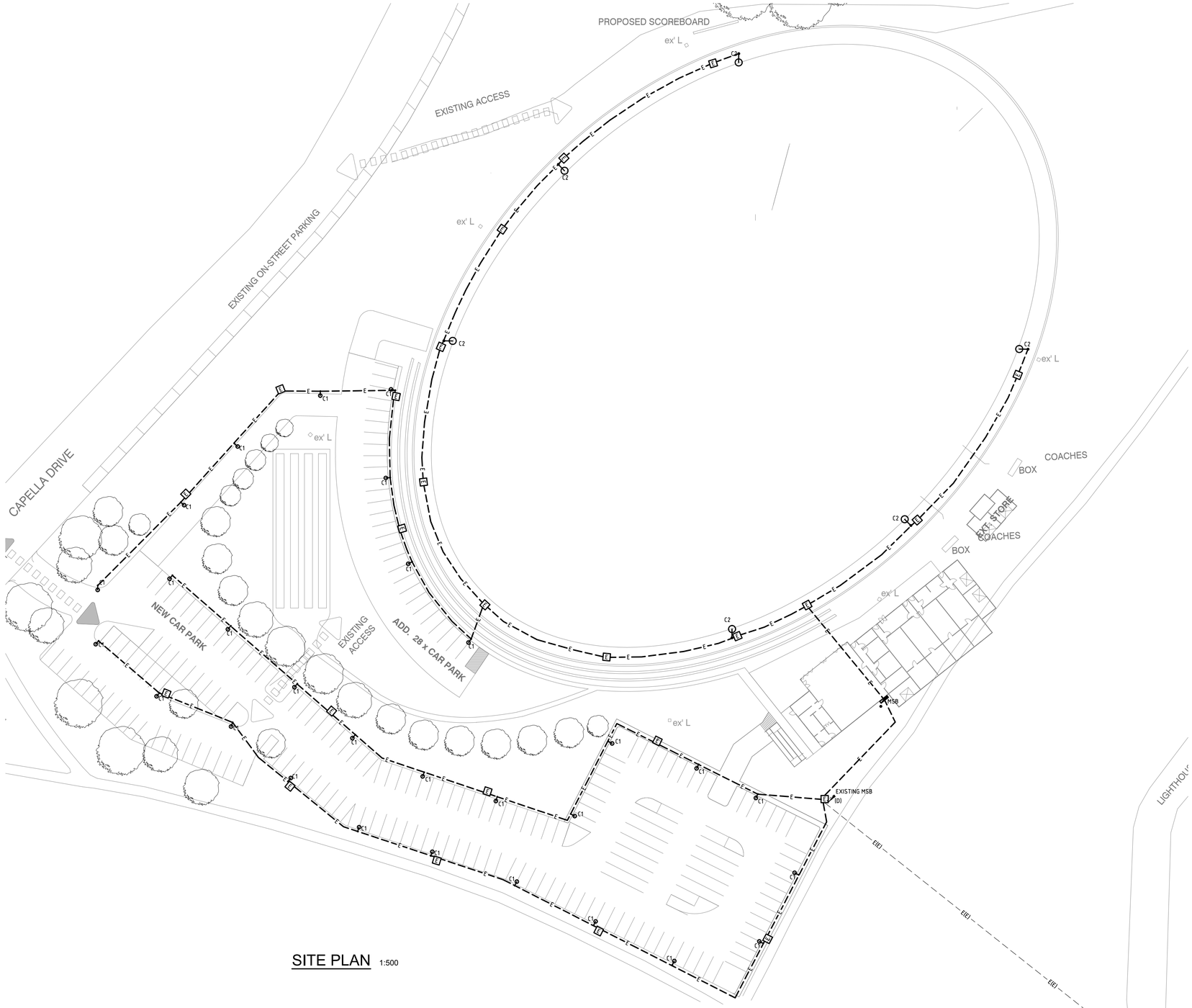
air conditioning plant.

- Trimmed roof penetrations (for ductwork, electrical conduits, pipework etc) including upstands and structural steel trimming where necessary (over-flashings to be provided by the relevant services trades).
- Forming of all openings in walls, floors, ceilings and the like, as required for ductwork, pipework, electrical conduits etc.
- Framing of ceilings and insulation around ceiling mounted services such as air registers, grilles, light fittings and the like.
- Patching and making good to building elements after installation of the services including building in of conduits, pipework and the like.
- Hinged access panels to provide access to serviceable components within false ceilings, walls, bulkheads, service risers and the like.
- Termite barriers for penetrations through on-ground slabs.
- Making good surfaces for underground services.
- Supply and installation of special equipment.

5. BASIS OF BUDGETS

Budgets are at current day rates, based on work in the Adelaide metropolitan area, but exclude:

- Goods and Services Tax
- Associated builder's work and attendance
- After-hours work
- Staged construction allowance
- Design or construction contingency
- Professional fees



SITE PLAN 1:500

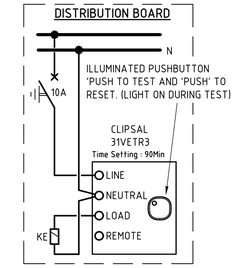
LEGEND

ELECTRICAL DISTRIBUTION

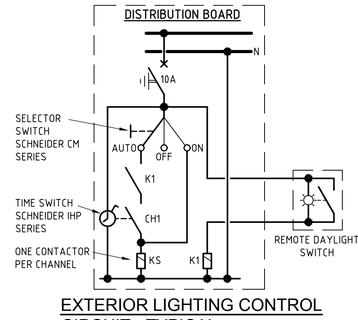
- E — ELECTRICAL CABLE ROUTE, CABLES IN UNDERGROUND CONDUIT
- E(E) — EXISTING ELECTRICAL CABLE ROUTE , CABLES IN UNDERGROUND CONDUIT
- E — ELECTRICAL CABLE PIT
- MSB — MAIN SWITCHBOARD
- DB — DISTRIBUTION BOARD
- EARTH ELECTRODE IN PIT
- n/nn/nnn — n = AMOUNT OF CONDUITS; nn = SIZE OF CONDUITS; nnn = INSTALLATION DEPTH OF CONDUITS

GENERAL LUMINAIRES

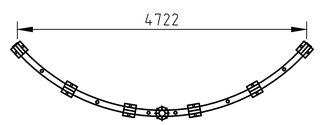
- C1 — NEW 5M GALVANISED LIGHTING COLUMN COMPLETE WITH 360W LED POST TOP
- C2 — RELOCATED EXISTING FLOODLIGHTING COLUMN COMPLETE WITH NEW CROSSARMS AND 12 x 1000W LED FLOODLIGHTS PER POLE



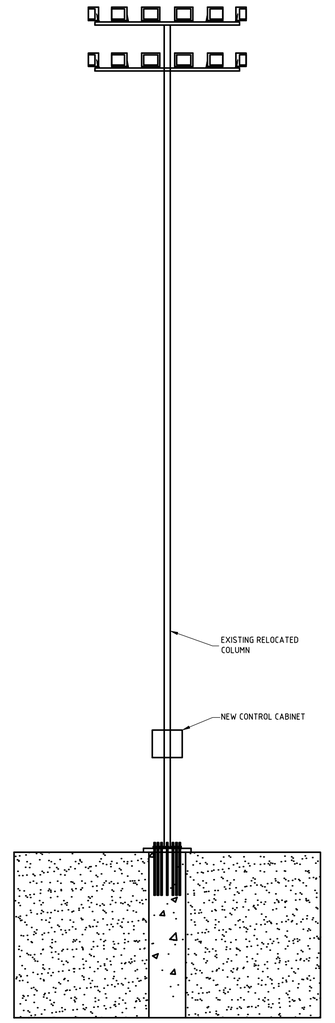
EMERGENCY EVACUATION LIGHTING MANUAL DISCHARGE TEST CIRCUIT FOR SINGLE POINT SYSTEMS TO AS/NZS 2293.1 - TYPICAL



EXTERIOR LIGHTING CONTROL CIRCUIT - TYPICAL



CROSSARM DETAIL - TYPICAL 1:50



COLUMN DETAIL - TYPICAL 1:100

Scale Bar Units in Millimetres
10 20 50 100

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DRAFT

REV.	DESCRIPTION	DATE
-	-	-

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JOB
CAPELLA RESERVE
CITY OF MARION
CAPELLA DR, HALLET COVE SA

DRAWING
ELECTRICAL SERVICES
SITE PLAN, LEGENDS AND DETAILS

SCALE	1:500, 1:100, 1:50	@ SHEET SIZE	A1
DESIGNED	DRAWN	CHECKED	
DW	DW	EB	

JOB No.	DRAWING No.	REV.
19071	E1	1
FILE NAME	No. IN SET	1 OF

07. APPENDIX D – TRAFFIC REPORT

Prepared by Cirqa – Traffic Engineering

- Capella Sports Club Redevelopment 28Aug19 V1

CAPELLA SPORTS CLUB REDEVELOPMENT
CAPELLA DRIVE, HALLETT COVE

TRAFFIC & PARKING REPORT (FEASIBILITY STAGE)

CIRQA™

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DOCUMENT CONTROL

Report title:	Capella Sports Club Redevelopment, Capella Drive, Hallett Cove – Traffic and Parking report
Project number:	19162
Client:	Flightpath Architects Pty Ltd
Client contact:	Matt Rundell

Version	Date	Details/status	Prepared by	Approved by
V1	28 Aug 19	For review	BNW	BNW

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(08) 7078 1801
www.cirqa.com.au

1. INTRODUCTION

CIRQA has been engaged to provide design and assessment advice for the Feasibility Study for the potential redevelopment of the Capella Drive Reserve in Hallett Cove. Specifically, CIRQA has been engaged to provide advice in respect to traffic and parking aspects of the proposal.

The proposal comprises the construction of a new sports pavilion, resurfacing of the main (existing) oval and reconstruction/expansion of the associated car parking areas.

This report provides a review of the subject site, the potential redevelopment, its access and parking provisions and the associated traffic considerations. The traffic and parking assessments have been based upon plans prepared by Flightpath Architects (drawing no. SK02 Revision 02, dated 22/08/2019, refer Appendix A).

2. BACKGROUND

2.1 SUBJECT SITE

The subject site is located on the eastern side of Capella Drive, Hallett Cove. The site bound by Barramundi Drive to the north, Coorabie Crescent and Lighthouse Drive to the east, the Coast-to-Vines shared path to the south and Capella Drive and Opala Court to the west. The City of Marion's Development Plan identifies that the site is located within a Community Zone (Recreation Policy Area).

The site currently comprises public reserve with a skate park, BMX track and soccer playing fields (as well as general reserve areas).

Vehicular access to the site is currently provided via a two-way crossover on Capella Drive opposite its intersection with Perry Barr Road. Additional crossovers are provided on other frontage roads, however these are only provided for maintenance access by Council vehicles. An 18-space car is provided on the site (accessed via the Capella Drive crossover).

Figure 1 illustrates the location of the subject site and associated access with respect to the adjacent road network.

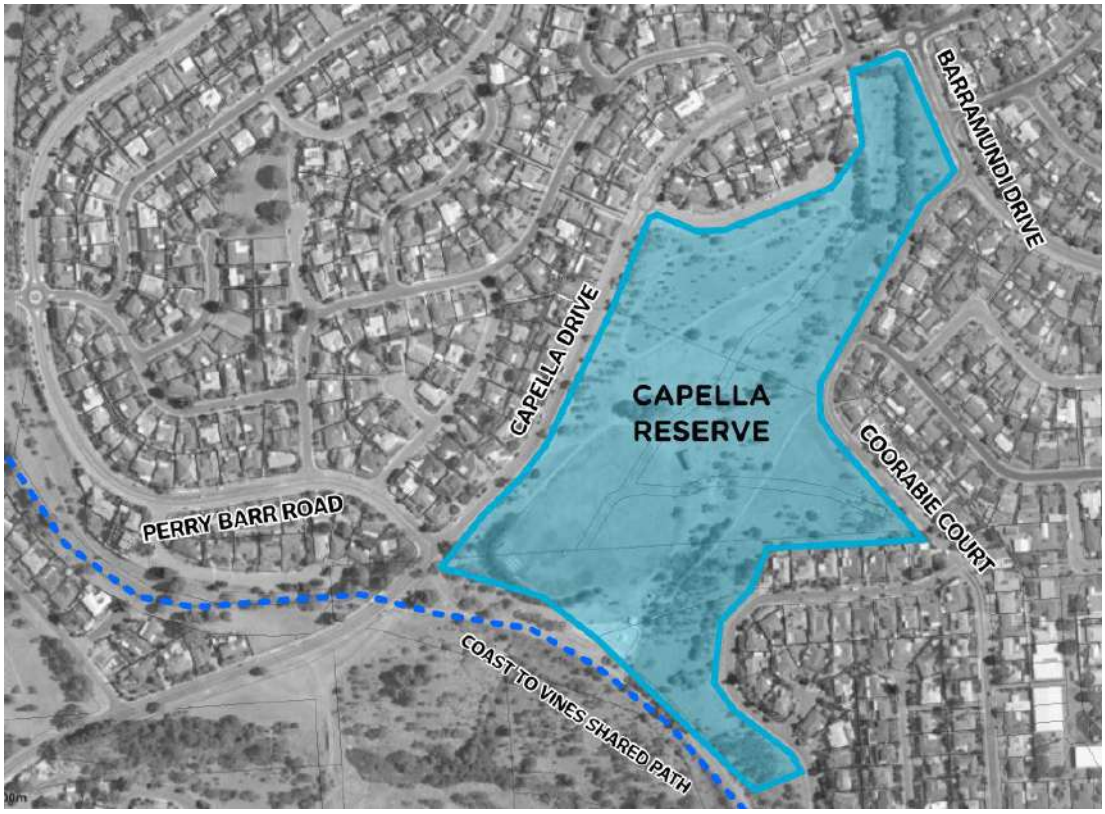


Figure 1 – Location of the subject site and existing access with respect to the adjacent road network

2.2 ADJACENT ROAD NETWORK

Capella Drive is a local road under the care and control of the City of Marion. The road functions as a 'collector road' for surrounding residential areas. Adjacent the site, Capella Drive comprises one traffic lanes and a wide parking lane in each direction. Within the vicinity of the sporting ground, individual parallel parking bays are linemarked with occasional kerbed protuberances on both sides of the road. Adjacent the site, a 50 km/h speed limit applies on Capella Drive.

Opposite the site's crossover, Capella Drive forms a T-intersection with Perry Barr Road (with Perry Barr Road forming the non-priority/terminating leg).

2.3 WALKING AND CYCLING

The site is well serviced for access via walking and cycling. A sealed footpath is provided on the western side of Capella Drive and the Coast-to-Vines shared (walking and cycling) path is provided adjacent the southern side of the site. Thw wide parking lanes also provide additional clearances for cyclists travelling within the Capella Drive carriageway. An additional north-south oriented shared path bisects the overall reserve (to the east of the sports field) which connects Coorabie Crescent to the Coast-to-Vines path. Footpaths and on-road bicycle lanes are also provided on Perry Barr Road.

2.4 PUBLIC TRANSPORT

Capella Drive is serviced by the 681/681A bus route with stops provided on both sides of the road immediately adjacent the site's south-western corner. The bus route is serviced regularly on weekdays and weekends and provides a connection between the Hallett Cove Beach Station and Flinders University.

In addition, the Hallett Cove Railway Station is located adjacent Perry Barr Road (approximately 650 m from the subject site). The Station is serviced regularly by the Seaford rail service which provides connection between the Seaford Railway Station and the Adelaide Railway Station.

3. PROPOSED DEVELOPMENT

3.1 LAND USE AND YIELD

The potential redevelopment comprises the upgrade of the facilities within the site to accommodate the relocation of the Cove Football Club (Australian Rules) and the Cove Cricket Club to the reserve. The potential upgrade is anticipated to include upgrade of the oval, new clubrooms (815.21 m² floor area) and additional parking provisions within the site.

3.2 ACCESS AND PARKING DESIGN

The potential site layout identified by Flightpath Architects identifies an expanded parking layout with the potential provision of 184 formalised parking spaces. The layout also includes the provision for an additional 28 informal spaces around the south-western corner of the oval (for spectator parking).

The car park layout complies with the requirements of the Australian/New Zealand Standard for "*Parking Facilities Part 1: Off-street car parking*" (AS/NZS 2890.1:2004) in that:

- spaces will be at least 2.5 m wide and 5.4 m long and;
- aisles will be at least 5.8 m wide; and
- a turn-around bay will be provided at the end of the blind parking aisle.

The plan does not currently identify any parking spaces for use by persons with disabilities. However, such spaces could easily be provided within the design with little or no impact on the total number of spaces provided. For instance, the spaces denoted "178" and "179" could be provided as spaces for use by persons with disabilities with the required adjacent shared area forming part of the adjacent path (with direct connection to the clubroom building).

Vehicular access to the subject site will remain via the existing access point on Capella Drive. However, it has been recommended that the driveway be widened to more appropriately accommodate commercial vehicles for servicing/deliveries as well as improved accommodation of two-way flow for domestic/light vehicles.

Cyclist and pedestrian access to the subject site will remain as per the existing conditions. However, additional connections within the car park will also be provided (connection to the Coast-to-Vines path could also be provided as part of future detailed design). The site layout does not specifically identify bicycle parking provision, however there is ample room to allow for the provision of bicycle rails in key locations (such as near the clubrooms).

3.3 SERVICING AND DELIVERIES

As illustrated in Figure 2, the site layout allows for accommodation of service and delivery vehicle movements (including turnaround provision). This will allow such vehicles to enter and exit the site in a forward direction. Servicing and deliveries would typically be undertaken outside of peak periods associated with the use of the sports field and clubrooms. Accordingly, such vehicles could store within vacant parking spaces when undertaking such movements (as is common at similar facilities). This will also allow accommodate of mini-buses and buses within the site should they be utilised for major events.

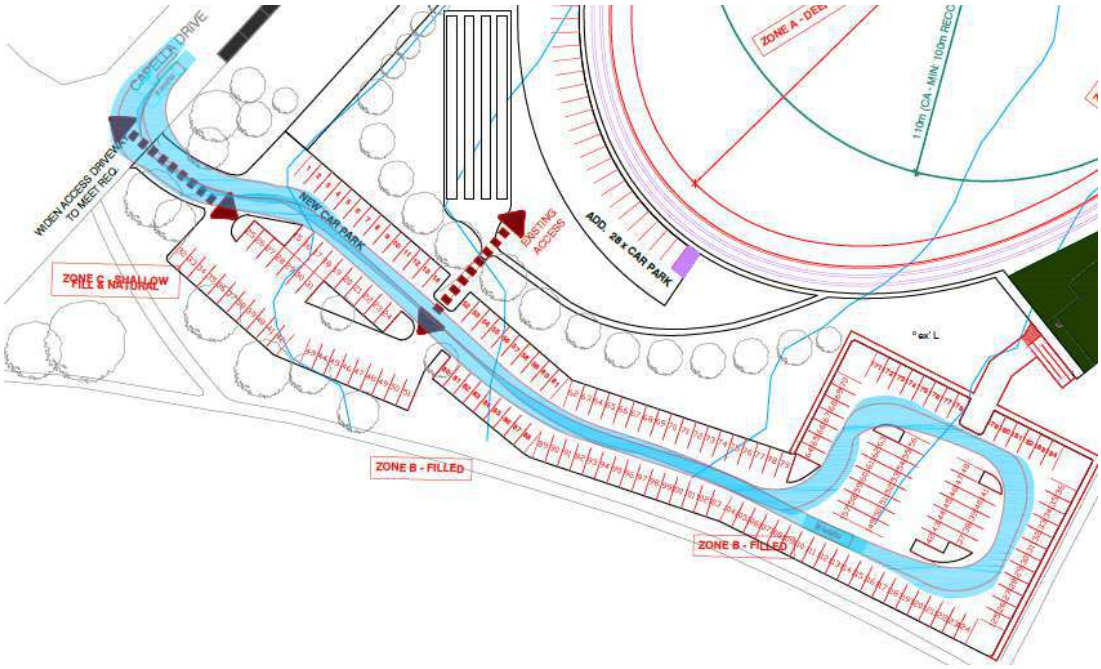


Figure 2 - Heavy rigid vehicle (12.5 m long) turn paths

4. PARKING ASSESSMENT

4.1 CAR PARKING

The City of Marion Development Plan does not identify a parking requirement specific to sporting fields. It does, however, identify a rate of 10 parking spaces per 100 m² of community centre floor area (which could apply to the clubroom). On this basis, the clubroom component would require 82 parking spaces.

In addition to the above assessment, in CIRQA's experience peak parking demands associated with shared Australian Rules Football and cricket ovals is generated by the Australian Rules Football (lower peak demands are generated by cricket matches due to reduced overlap of games and lower level of spectators). In our experience, peak demands associated with Australian Rules Football ovals are typically in the order of 100 to 120 vehicles per oval (for club/district competition use).

The provision of 184 formal and 28 informal spaces would therefore be more than adequate to accommodate peak demands associated with the oval and clubrooms with additional capacity for other use of the reserve (such as the skate park). In reality, a proportion (if not the majority) of the clubroom demand is already accounted for in the oval parking demand rate. However, this provides a conservative assessment of likely demands within the site.

In addition, it is noted that the Cove Football Club anticipates that, at times, overall attendances could be in the order of 300 people (players, officials and spectators). Assuming an average car occupancy of 1.5 people per vehicle, there would be a peak demand for 200 parking spaces. This would also be accommodated within the proposed level of parking. However, in reality, it is anticipated that during peak attendance events, higher car occupancies would likely be achieved and lower total demands realised. Nevertheless, there is ample on-street parking available on Capella Drive should additional demand be realised (albeit this would be considered unlikely or, at least, infrequent).

4.2 BICYCLE PARKING

There are no provision rates in Council's Development Plan or other relevant literature in relation to bicycle parking for sporting facilities. Nevertheless, if the Development Plan rate for 'shops' was applied to the clubroom building (of 1 space per 300 m² for employees and 1 space per 600 m² for patrons) was adopted, there would be a requirement for 5 bicycle parking spaces. Additional bicycle parking could also be provided for the oval itself. In total, it is considered that 10 bicycle parking spaces (equivalent to 5 double sided rails) would be adequate to accommodate typical demands. As noted above, while not currently indicated on the site layout, there is ample room within the site to accommodate such facilities.

5. TRAFFIC ASSESSMENT

There is limited data in relation to the traffic generation associated with recreation/leisure centres. The RMS (formerly RTA) *"Guide to Traffic Generating Land Uses"* identifies rates for a variety of sporting related uses, however does not specific any relevant rates to those associated with the proposal. The RMS Guide does note, however, that recreation facilities should be based on an 85th percentile approach.

An assessment of potential traffic generation based on a first principles approach has therefore been applied as follows:

- 26 players and coaching staff per team with two teams per game;
- up to 4 game officials;
- game lengths of approximately 1 hour (i.e. based on shorter junior games to conservatively assess overlap between games);
- an additional 20 spectator vehicles per game (in addition to those spectators arriving in the same vehicle as players, coaching staff and officials);
- all of the above attendees have been assumed to drive the site individually (in reality, some attendees would arrive/depart together and the overall generation would be lower);
- during the peak hour, traffic movements associated two games overlap (i.e. attendees for a subsequent match arrive on site within the same hour as attendees associated with the prior match depart); and
- no allowance has been made for additional movements associated with staff of the clubrooms. It is assumed such movements would occur outside of the peak overlap periods and a proportion would also be associated with the movements assumed above (i.e. supporters who volunteer at the clubroom bar).

On the basis of the above, it is conservatively forecast that the overlap of movements associated with two games could generate in the order of 150 peak hour trips generated by the proposal.

It is anticipated that the overlap movements would generally be split 50% in and 50% out at the site access. It is considered likely that 70% of movements would be to/from the north (i.e. primarily via Barramundi Drive to Lonsdale Road) and the remaining 30% to/from the north (i.e. primarily via Minnipa Drive and Sandison Road to Lonsdale Road).

On this basis, the following turning movements are forecast at the site's access point on Capella Drive:

- 53 left-in movements;
- 22 right-in movements;
- 53 right-out movements; and
- 22 left-out movements.

Generally, it is considered that such volumes will be within the capacity of the access point (and adjacent intersection of Capella Drive/Perry Barr Road). Of note, it is typically considered that a single access point for high turnover car park (such as a shopping centre) can generally service up to 300 spaces before excessive delays and queuing are generated (the subject proposal is below this level). It is also noted that the peak hour associated with the reserve uses would be outside of the peak commuter period on Capella Drive which will minimise impacts.

Nevertheless, given peak trip generation associated with sporting uses can be focussed on relatively short periods (game start/end times), further detailed traffic impact analysis could be undertaken during detailed design to ensure queuing and delay conditions are acceptable and the impact on the intersection of Capella Drive/Perry Barr Road. Consideration could be given to treatments (such as raised pavement treatments within the intersection, a roundabout or separate left and right turn lanes for egress movements) should Council seek a high level of service for movements into and out of the site and on the adjacent road network.

6. SUMMARY

The potential redevelopment of Capella Drive Reserve could include the upgrade of the existing sporting field to accommodate Australian Rules Football and cricket at the site as well an associated clubroom building.

The current site layout identifies a provision of 184 formal spaces and 28 informal/overflow spaces. Based on the parking assessment, it is considered that such provisions will be adequate to accommodate typical demands associated with the future site uses.

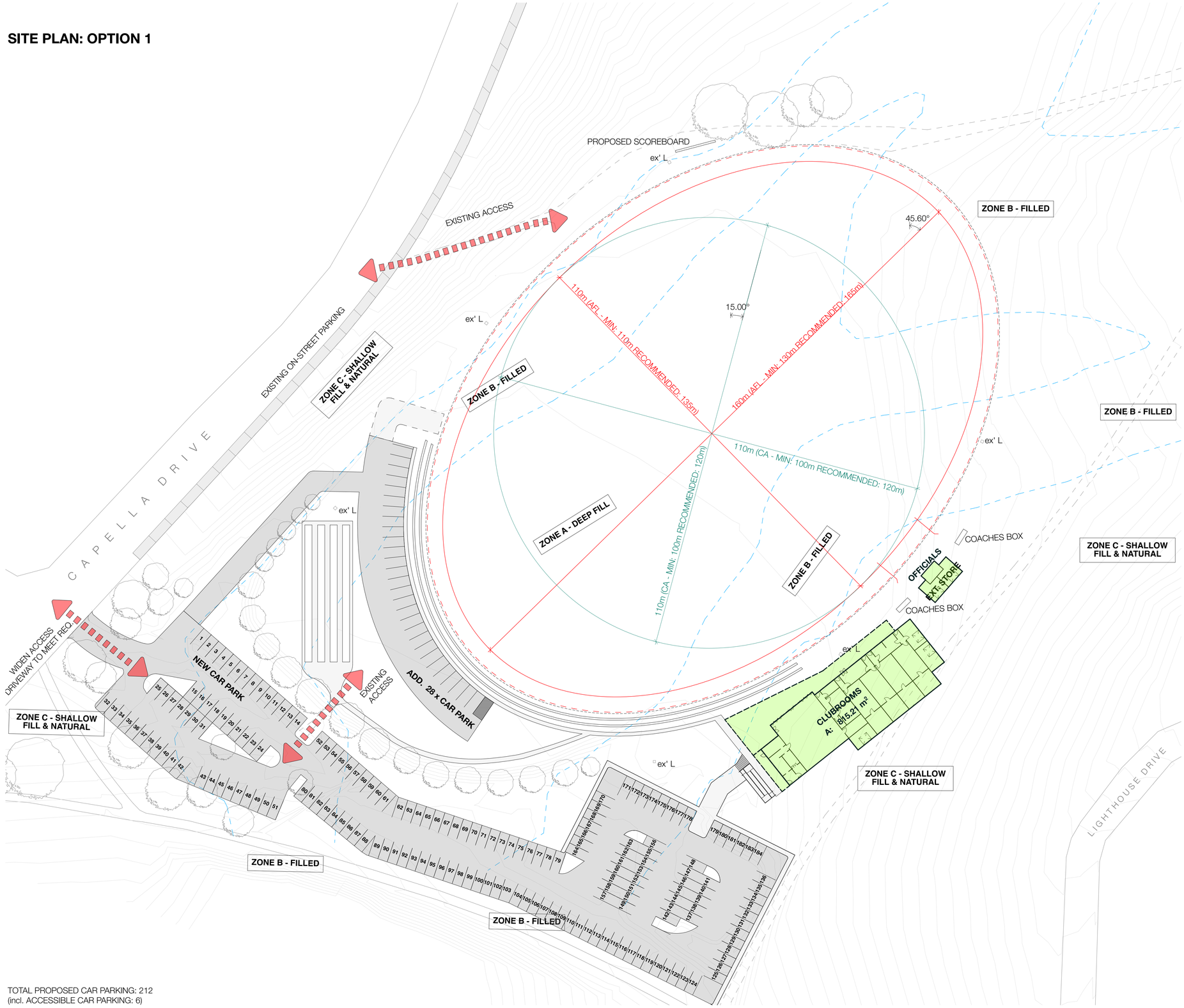
A high-level traffic impact assessment indicates that the (conservatively) forecast number of peak hour movements would be within the capacity of the site's access point. Nevertheless, further detailed analysis could be undertaken should the project proceed to consider whether additional traffic control treatments are desirable.

On the basis of the traffic and parking assessments undertaken, it is considered that adequate provisions can be achieved to service and accommodate the potential uses (albeit consideration will be required to be given to cost considerations which is outside the scope of this report).

APPENDIX A
FLIGHTPATH PLANS

SITE PLAN: OPTION 1

SITE LEGEND	
	ELEMENTS TO BE DEMOLISHED
	PROPOSED CAR PARKING
	PROPOSED ACCESS PATHWAY
	PROPOSED CLUBROOMS AND FACILITIES
	PROPOSED PICKET FENCE
	SITE FILL ZONE BOUNDARY
ex'	DENOTES EXISTING
L	LIGHT POST



TOTAL PROPOSED CAR PARKING: 212
(incl. ACCESSIBLE CAR PARKING: 6)

NOTE

The Builder shall check all dimensions and levels on site prior to construction. Notify any errors, discrepancies or omissions to the architect. Refer to written dimensions only. Do not scale drawings. Drawings shall not be used for construction purposes until issued for construction. This drawing reflects a design by Flightpath Architects and is to be used only for work when authorised in writing by Flightpath Architects.

All boundaries and contours are subject to survey drawing **W-01**. All levels to Australian Height Data. It is the contractors responsibility to confirm all measurements on site and locations of any services prior to work on site.

All documents here within are subject to Australian Copyright Laws.

Project Team

Refer to consultant documentation when directed

- BCA Consultant - ####
- Civil Engineer - ####
- Hydraulic Engineer ####
- Landscape Designer - ####
- Mechanical Engineer - ####
- Planning Consultant - ####
- Services - ####
- Structural Engineer - ####
- Surveyor - ####

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flightpath

RevID	Issue Name	Ch-ID	Change Name	Date
01	CONSULTANTS			7/8/19
02	CONSULTANTS			22/8/19

Project Status	PRELIMINARY
Project NO.	3587
Plot Date:	22/8/19
Client	CITY OF MARION
Site:	Capella Dr, Hallett Cove SA 5158
Drawn | Checked	SR | SXD

N

DRAWING TITLE :

GENERAL
SITE PLAN OPTION 1

PROJECT NAME :

CAPELLA RESERVE

REVISION NO.
02

DRAWING NO.
SK202

08. APPENDIX E – GEOTECHNICAL REPORT

Prepared by Wallbridge Gilbert Aztec (WGA) – Structural / Civil Engineers

- WGA189250-LT-GE-0002 Final Geotech Report Capella [A]

WGA
WALLBRIDGE GILBERT AZTEC

City of Marion
935 Marion Road
MITCHELL PARK SA 5043

3rd May 2019

Project No. ADL189250

Attention: Amy Liddicoat / Jessica Bennett

Dear Amy / Jess

CAPELLA RESERVE, HALLETT COVE – PRELIMINARY CONCEPT DESIGN SUPPLEMENTARY GEOTECHNICAL INVESTIGATION

1. INTRODUCTION

A supplementary geotechnical investigation has been conducted by Wallbridge Gilbert Aztec (WGA) at Capella Reserve in Hallett Cove.

This report follows on from our Preliminary Geotechnical Investigation, dated 26 April 2018 (Reference 1), which encountered extensive filling across the site.

The aim of the supplementary geotechnical investigation is to provide geotechnical input to assist with the preliminary concept design of the Capella Reserve upgrade, the components of which include:

- Various pavements and skate park improvements, across the existing southern car park area extending to the existing skate park;
- Possible building and footpaths along the south-eastern foot-slopes around the existing reclaimed water tanks;
- Possible refurbishment / extension of the existing building on the north-eastern corner of the oval;
- A potential playground area immediately north of the oval / soccer pitch;
- An upgrade of the north-western footpath.

In particular, the supplementary geotechnical investigation aims to provide a more detailed understanding of the lateral extent and thickness of the existing fill, particularly in the currently proposed development areas, and assist with a more refined zoning of the site relative to the possible upgrade components.

The construction / ground preparation options within each zone, and any associated risks are presented in Section 5, to better inform the preliminary concept design.

2. OUTLINE OF THE INVESTIGATION

The following scope of work has been conducted for the supplementary geotechnical investigation:

60 Wyatt Street
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WGASA Pty Ltd
ABN 97 617 437 724

- A desk top geotechnical assessment, involving review of available geotechnical data at the site, and a comprehensive comparison of existing survey contours received from council and historical contours (dated 1983).
- Drilling 9 boreholes (denoted BH1-19 to BH8-19, including BH2a-19) on 22nd March 2019 to variable depths between 0.4 m (refusal) and 5.3 m across the site.
- On-site logging of the soil profile by a Geotechnical Engineer from WGA.

Boreholes BH1-19 to BH8-19 were drilled with a 4WD mounted Rockmaster drilling rig, generally using continuous push tube sampling methods. In places, a solid auger was used to advance the borehole where push tube refusal was encountered in shallow fill.

Refusal was met in 4 of the 9 boreholes. Refusal with push tubes was met in fill materials within BH2-19, BH3-19 and BH6-19 on buried concrete or asphalt pieces at depths of 1.1 m, 3.8 m and 0.4 m, respectively. At BH2-19, auger refusal was also met at 1.2 m, therefore a second borehole (BH2a-19) was drilled immediately adjacent, and was advanced to natural soils with push tubes to a total depth of 5.3 m. At BH6-19, multiple attempts to penetrate the concrete pieces at shallow depth were undertaken with an auger unsuccessfully. Push tube refusal on weathered bedrock was met in BH5-19 at a depth of 2.8 m.

The boreholes were located to provide a broad coverage of the upgrade components outlined in Section 1, with due consideration of the expected fill depth (based on Reference 1 and review and comparison of contour plans). The boreholes were positioned on site within the restrictions imposed by surface features (slope and vegetation) and existing underground services.

The locations of the boreholes are shown approximately on Figure 1 (attached).

The subsurface profile encountered in the boreholes is described on the engineering logs (attached). Also attached are two explanation sheets which outline the terms and symbols used in the preparation of the logs.

3. SITE CONDITIONS

3.1 General

The general site conditions are outlined in Reference 1.

3.2 Extent of Filling

Based on historical aerial photography, the bike path to the south appears to be located on the crest of an old railway embankment which was built across a gully. The area of the recreational sports field (oval) appears to have previously been a drainage reserve (gully) which was backfilled during the late 1980's and 1990's. Similarly another connected gully extending east from the oval appears to have been backfilled in the past.

Anecdotally, council recollect that during construction of the oval, a drainage pipe was placed under the fill to connect into the culvert buried below the railway embankment. It is suspected that the drainage pipe connects to drainage infrastructure in the reserve further uphill near to Rogana Crescent.

A comparison of historical contours from a 1:2500 scale topographic cadastral orthophotographic map by Department of Lands, dated 1984 (contours dated October, 1983), and contours of the site provided by council from a recent survey (unknown date, presumably September, 2018) has been conducted, with the results presented as Figure 2.

It is noted that the 1983 contours clearly show the extents of the former drainage reserves to the north of the former railway embankment, which was already constructed by 1983.

As shown in Figure 2, the key outcomes from the comparison of historical and current contours are summarised below:

- The site has been extensively filled, with fill of varying depth extending across the majority of the site, except upon the higher (predominantly natural) slopes to the west, east and north;
- The deepest fill extends along the gully alignments of the former drainage reserves, generally ranging up to around 8 m deep, reducing in depth towards the north or east (uphill) for each leg of each drainage reserve gully;
- Within the existing oval, fill appears to extend to depths of up to 10 m to 14 m, along the drainage reserve gully alignment (deeper towards the south), with fill depths generally reducing towards the western and eastern flanks at the toe of the slopes;
- The existing clubhouse building on the north-eastern corner of the oval is positioned between the two gullies of the drainage reserves, and as such appears to be underlain by around 4 m to 5 m of fill;
- The existing reclaimed water tanks in the south-east portion of the reserve appear to have been constructed on natural soil and rock;
- The eastern portion of the skate park appears to be constructed in a cut in natural soils and rock, whist fill up to around 6 m deep is expected at the western extent of the skate park;
- The bituminous sealed car park at the south-western corner of the oval appears to be underlain by 1 m to 4 m of fill.

4. SUBSURFACE CONDITIONS

4.1 Regional Geology

The Geological Survey of South Australia "*Noarlunga*" (1:50,000 scale) map sheet indicates that Capella Reserve is underlain at shallow depth by Proterozoic aged flaggy, reddish, greenish or grey siltstone of the (possible) Angepena Formation. The weathered rock is typically overlain by a thin veneer of topsoil and residual soils.

4.2 Subsurface Conditions

The boreholes drilled as part of the supplementary geotechnical investigation all encountered fill. The depth of fill ranged between 1.05 m up to 4.2 m in the boreholes, as summarised in Table 1. In Reference 1, fill was encountered to depths 0.3 m to greater 6.55 m in 8 of 12 boreholes. A summary of the fill depths in each boreholes is presented in Table 1.

Notably, the fill depths encountered in the boreholes are consistent with the expected fill depths from a comparison of the historical and recent contours, thereby validating comparison presented in Figure 2.

Borehole*	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BH9	BH10	BH11	BH12
Depth of Fill (m)	>2.2	>6.55	>6.5	1.2	>1.7	NE	0.5	NE	NE	NE	0.35	0.3
Refusal Depth (m)	2.2	NE	NE	2.8	1.7	0.5	1.8	2.45	NE	NE	3.05	2.5

** Reference 1*

Borehole	BH1-19	BH2-19	BH2a-19	BH3-19	BH4	BH5	BH6	BH7	BH8
Depth of Fill (m)	1.05	>1.2	4.2	>3.8	1.0	1.4	>0.4	1.3	1.0
Refusal Depth (m)	NE	1.2	NE	3.8	NE	2.8	0.4	NE	NE

Table 1: Summary of depths of fill and refusal

The fill was of variable composition (sandy clay, clayey sand and clayey gravel of mainly low and medium plasticity, as well as silty sand, sandy gravel). The fill included waste materials such as concrete pieces, slag, metal, bricks and glass locally within most boreholes, with some pieces (particularly concrete pieces) expected to be larger than cobble size (around 200 mm). Low drilling resistance was noted in the fill in places, whilst refusal in larger size pieces of concrete and asphalt was also noted in some boreholes.

The fill in all boreholes is assessed to be uncontrolled for the purposes of footing and pavement design and construction.

The natural subsurface profile comprised low and medium plasticity, brown, orange brown and dark brown sandy clay (A and locally B horizon) over calcareous soils (variable calcrete capping and low plasticity sandy clay and clayey sand with silty fines and with a varying proportion of calcrete gravel reducing with depth). The calcareous soils generally transitioned weathered rock (predominantly siltstone).

Locally across the north Capella Reserve, a layer of medium to high plasticity, brown and orange brown with grey green mottled clay (mainly residual clay) was encountered between the calcareous soils and weathered rock (Reference 1).

The sandier and highly calcareous soils were assessed to have the potential to soften markedly upon inundation and may undergo collapse type settlements when inundated under load.

The moisture content of the fill and natural soils was typically relatively dry or less than the plastic limit. In BH3 (Reference 1), BH5-19 and BH8-19, all drilled in the edges of the oval, the clayey fill was relatively moist.

The regional groundwater level was not encountered in the boreholes. Perched groundwater may be encountered in the more permeable layers of fill and highly calcareous soils. Seasonal variations in groundwater may occur.

5. GEOTECHNICAL ASSESSMENT

5.1 General

As outlined in Section 1, preliminary concept design of the Capella Reserve upgrade would include the following components:

- Various pavements and skate park improvements, across the existing southern car park area extending to the existing skate park;
- Possible building and footpaths along the south-eastern foot-slopes around the existing reclaimed water tanks;
- Possible refurbishment / extension of the existing building on the north-eastern corner of the oval;
- A potential playground area immediately north of the oval / soccer pitch;
- An upgrade of the north-western footpath.

Invariably, some or most of these components will be underlain by uncontrolled fill.

In its current condition the uncontrolled fill is generally not suitable to support structures or pavements due to the potential for excessive differential settlement to occur in the future. Lightly loaded, flexible and easily maintained structures and pavements could be constructed over the existing fill, however the associated risk of ongoing settlements and maintenance requirements must be accepted by Council. The risk of excessive future differential settlement is greater where the fill is deeper and at the interface between relatively shallow and relatively deep fill.

In order to better inform council on potential development options across the reserve, this supplementary geotechnical investigation has developed a map of likely fill depths, together with zoning of areas with similar development potential and geotechnical constraints (Refer Figure 2).

A discussion of zoning and the associated geotechnical constraints follows.

5.2 Capella Reserve Upgrade Zoning Plan

Creation of the zoning plan for the Capella Reserve upgrade is heavily dependent on the expected depths of uncontrolled fill across the site.

On this basis, three zones have been selected for the site as follows:

- Zone A: Deep Fill: Fill depths expected to be greater than 6 m deep;
- Zone B: Fill Area: Fill depths expected to be between about 1.5 m and 6 m;
- Zone C: Shallow Fill or Natural: Fill depths less than around 1.5 m or natural ground.

The approximate lateral extent of each zone is presented on the attached Figure 2.

Table 2 presents a summary of the zoning, with associated development options and geotechnical constraints.

Ground preparation options mentioned in Table 2, refer to Option 1: Complete Removal and Replacement of Uncontrolled Fill and Option 2: Partial Removal and replacement of Uncontrolled Fill outlined in Reference 1.

Capella Reserve Upgrade Zone	Zone A: Deep Fill	Zone B: Fill Area	Zone C: Shallow Fill or Natural Ground
Expected Depths of Uncontrolled Fill	> 6 m [(1)] (up to around 14 m to 15 m)	Around 1.5 m to 6 m [(1)]	< 1.5 m [(1)]
Typical subsurface profile	Deep uncontrolled fill	Uncontrolled fill of varying thickness over calcareous soils grading weathered rock	Shallow uncontrolled fill over calcareous soils, residual soils and weathered rock
Geotechnical Considerations	Potential for large differential settlements. Unstable and difficult excavation conditions in fill. Relatively low footing bearing pressures would be required. Very deep and expensive footings for buildings and structures. Complete removal and replacement of fill (*Option 1*) impractical.	Potential for moderate to large differential settlements in fill. Unstable and difficult excavation conditions in fill. Relatively low footing bearing pressures would be required. Relatively deep footing requirements for buildings and structures. Complete removal and replacement of fill *(Option 1)* deeper than 3 m impractical. May consider Option 1 where the fill is less than 3 m deep for important structures, subject to costs.	Potential for some differential settlement in fill. Relatively low footing bearing pressures would be required in fill and highly calcareous soils. Higher bearing achievable in non-calcareous soils and weathered rock. Manageable footing depths. Consideration may be given to complete removal and replacement of fill *(Option 1)*, as required.
Building & Footing Types [1]	**Not recommended** or require very deep piled footings (8 m to 18 m deep) to natural weathered rock and suspended slabs. Difficult excavation conditions expected. ***Likely to be problematic and very expensive.***	Buildings require piles, pads or trench piers (2 m to 8 m deep, depending on fill depth) to natural soils or rock and suspended slabs. Difficult excavation conditions expected in fill. ***Likely to be expensive, potentially problematic***. Lightly loaded (<50 kPa), flexible and settlement tolerant building structures such as transportable units could be considered provided partial removal and replacement of the fill *(Option 2)* is undertaken, although may require periodic levelling.	Most building types with footings in natural soils < 2 m deep (depending on fill depth and footing load) and suspended slabs, or footings and slabs in controlled fill (*Option 1 treatment*). ***Preferred zone for permanent buildings.***
Flexible Pavement Types & Ground Preparation Requirements [1]	Unsealed granular, concrete pavers or bituminous spray seal. *Option 2 treatment of fill recommended, with impact rolling.* Ongoing maintenance expected to maintain surface drainage and serviceability.		Unsealed granular, concrete pavers or bituminous spray seal or hotmix. *Option 2 treatment of fill recommended.* Infrequent maintenance expected to maintain surface drainage and serviceability.
Concrete Pavements	**Not Recommended**	Not recommended. Based on past performance of skate park, may be considered with *Option 2 treatment of fill with impact rolling and the use of stiffening beams.*	May be used provided *Option 2 treatment of fill* is conducted.
Note: 1. Preliminary footing and pavement design parameters are provided in Reference 1.			

Table 2: Capella Reserve Zoning and Development Options

Capella Reserve Upgrade Zone	Zone A: Deep Fill	Zone B: Fill Area	Zone C: Shallow Fill or Natural Ground
Expected Depths of Uncontrolled Fill	> 6 m [(1)] (up to around 14 m to 15 m)	Around 1.5 m to 6 m [(1)]	< 1.5 m [(1)]
Typical subsurface profile	Deep uncontrolled fill	Uncontrolled fill over calcareous soils grading weathered rock	Shallow uncontrolled fill over calcareous soils, residual soils and weathered rock
Other potential components	Settlement tolerant grassed, play surfaces e.g. existing oval Unsealed trails / running tracks Flexible, lightly loaded playground equipment. Discrete Bouldering structures. Flexible, lightly loaded boardwalks. Sleeper steps on slopes. Landscaped, Tiered/ battered slopes with/without rock facing or gabion retaining (less than 1 m high) at relatively flat slopes of 1V:3H or flatter. **Allowance must be made for periodic relevelling of the above facilities.**		Synthetic and hard play areas subject to *Option 2 treatment of fill* Unsealed & sealed trails / running tracks subject *Option 2 treatment of fill.* Playground equipment. Consideration of more complex, heavier equipment or bouldering facility subject to footings in natural soils and rock. Boardwalks Retaining Structures, subject to footings in natural soils and rock

Table 2: Capella Reserve Zoning and Development Options (continued)

It is expected that this supplementary report (particularly Table 2 and Figure 2), together with Reference 1, provide sufficient information to enable a concept level development plan, and preliminary costings to be undertaken at the site.

Further site specific investigation may be required as part of detailed design, depending on the types of structures proposed and complexity of footings required.

6. LIMITATIONS

The recommendations contained within this report have been based on the subsurface conditions encountered in a limited number of boreholes, available historical data and the judgement and opinion of Wallbridge Gilbert Aztec. To the best of our knowledge, the subsurface conditions described in this report provide a reasonable interpretation of the typical subsurface conditions likely to be encountered at the site.

It must be accepted that variations in subsurface conditions are likely to occur over the site and such variations may impact on the design recommendations provided. Under no circumstances can it be assumed that this report represents the actual subsurface conditions at all locations over the site.

This report must be read in conjunction with the attached information sheet titled “Guide to interpreting your WGA geotechnical report”.

Should any aspect of our report require clarification, please contact the undersigned.

Yours faithfully

Jason Leach
for
WALLBRIDGE GILBERT AZTEC

Attachments:
Figure 1: Borehole Location Plan
Figure 2: Fill Depths & Zoning Plan
Engineering log for Boreholes (BH1-19 to BH8-19)
Explanation sheets
Guide to Interpreting your WGA Geotechnical Report

Reference:
1. City of Marion. Preliminary Geotechnical Investigation. Proposed Upgrade, Capella Reserve. Hallett Cove. WGA Job No. 189250 / Rev A, 26 April 2018.

JL:ol

Borehole locations approximate only

Drawn by	JL
Approved	RWG
Date	16/4/2019
Scale	nts
Original	A3

WGA
WALLBRIDGE GILBERT AZTEC

Client:	CITY OF MARION		
Project:	PROPOSED UPGRADE OF CAPELLA RESERVE, HALLETT COVE SUPPLEMENTARY GEOTECHNICAL INVESTIGATON		
Title:	SITE PLAN SHOWING BOREHOLE LOCATIONS		
Job No.:	189250	Ref.	Figure 1

LEGEND

10.9 = INFERRED FILL DEPTH IN m

BOUNDARIES SHOWN ON PLAN ARE APPROXIMATE ONLY

INFORMATION ISSUE
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	DRAFT	ENG.	CHKD

WGA
WALLBRIDGE GILBERT AZTEC

60 Wyatt Street, Adelaide
South Australia 5000
Telephone 08 8223 7433
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CAPELLA RESERVE
HALLETT COVE

FIGURE 2

FILL DEPTHS AND ZONING PLAN

©

A1

DOCUMENT NUMBER
Project Number WGA189250-SK Sheet No. CC-0001 Rev. -

Design JL Drawn TF

I:\2018\189201 - 189305\189250 - Capella Reserve Precinct Plan\WGA189250-SK-CC-0001.dwg - 3/4/2019 9:46 AM, TFoster

When sheet printed full size, the scale bar is 100mm.

0 50 100mm

WGA
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South Australia 5000
Telephone 08 8223 7433
Email adelaide@wga.com.au

Date Drilled: 22/03/2019
Date Logged: 22/03/2019
Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH1-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	sandy CLAY, low plasticity, brown, white, fine to coarse grained sand, with gravel	<Wp			FILL
		mainly sandy GRAVEL, fine to medium grained, grey, pale brown, fine to coarse grained sand, non plastic, grades brown, white, grey	D			
0.5		grades pale grey brown, white, black, gravel fine to coarse grained, includes concrete pieces, trace asphalt				
1.05		sandy CLAY, low to medium plasticity, brown, orange brown, white, fine to coarse grained sand, with gravel				
	CL	CLAY, medium plasticity, brown, orange brown, with sand	<Wp	Fb		NATURAL
1.5	CL	sandy CLAY, pale brown, white, fine to coarse grained sand, calcareous, trace fine to medium grained calcrete gravel	<Wp	Fb		
2.0						
		Borehole 1-19 Terminated at 2 m (Target Depth)				
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** Yes

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Date Drilled: 22/03/2018
Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube/auger
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH2-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	clayey SAND / sandy CLAY, low plasticity, fine to coarse grained, brown, black, white, with fine to coarse grained gravel (includes asphalt pieces)	D			FILL
0.5						
	FILL	mainly sandy GRAVEL, fine to medium grained, pale brown, brown, grey brown, fine to coarse grained sand, low plasticity				
		increased gravel				
1.0						
		layer of bituminous product				Push tube Refusal 1.1. n
1.2						Auger Refusal 1.2 m
		Borehole 2-19 Terminated at 1.2 m (Refusal)				
1.5						
2.0						
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** Yes

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Date Drilled:	22/03/2018
Date Logged:	22/03/2018
Logged by:	**JL**
Drilling Method:	Push Tube
Drill Rig/Mount:	Rockmaster/4WD

Borehole No.

BH2a-19

Page 1 of 2

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**

Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	sandy CLAY, low plasticity, brown, fine grained sand	<Wp			FILL
		grades gravelly				
0.5	FILL	sandy GRAVEL, fine to medium grained, pale grey, grey, pale yellow	D			
		brown, fine to coarse grained sand, non plastic				
	FILL	mainly sandy CLAY, low to medium plasticity, brown, white, fine to	<Wp			
		coarse grained sand, trace gravel				
1.0						
		grades gravelly clayey SAND, fine to coarse grained, grey brown, grey,	D			
		brown, low plasticity, fine to medium gravel (includes bituminous				
		pieces)				
1.5						
		more gravelly (increased bituminous pieces)				
2.0						
		less gravelly, brown, yellow brown, grey brown				uniform drilling
						resistance
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** Yes

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Logged by: JL
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Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH2a-19
Page 2 of 2

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	mainly sandy GRAVEL, fine to coarse grained (includes bituminous pieces), fine to coarse grained sand, non plastic	D			FILL
3.5						
	FILL	silty GRAVEL, fine to medium (siltstone), pale brown, pale yellow brown, pale grey, non plastic, with sand				
4.0						
	CL	CLAY, medium plasticity, dark brown, brown, trace sand	>Wp	H	>500	NATURAL
4.35						
4.5	CL	CLAY, low plasticity, pale brown, white, with sand, trace fine calcrete gravel, highly calcareous	<Wp	Fb		
5.0						
	CL/CH	grades medium to high plasticity	=Wp	H/Fb	>500	
5.3						
5.5		Borehole 2a-19 Terminated at 5.3 m (Target Depth)				
6.0						

Depth to Groundwater: None Observed **Trees at Site:** yes

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Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH3-19
Page 1 of 2

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	sandy CLAY, low plasticity, brown, pale brown, fine to medium grained	D			FILL
		sand, with gravel, calcareous	<Wp			
0.5		grades medium plasticity, orange brown, white	=Wp		>500	
0.65	FILL	concrete pieces or weak slab	D			
	FILL	clayey SAND, fine to medium grained, brown, orange brown, low	D			
1.0		plasticity, trace gravel (includes concrete pieces, bituminous pieces)				
		grey brown, with fine organic fibres				
		brown, with gravel				
1.5						
	FILL	GRAVEL, fine to coarse grained (concrete pieces)	D			
2.0		with sand, trace silt				
	FILL	dolomite crusher sand (sandy GRAVEL, fine grained, grey)	D			
2.5						
	FILL	mixture of soil and construction waste (50/50), soil includes clayey	D-M			
		SAND / sandy GRAVEL, brown, grey; waste includes bituminous				
3.0		pieces, gravels, timber				

Depth to Groundwater: None Observed **Trees at Site:** yes

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Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH3-19
Page 2 of 2

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Composition of soil: Soil Description (type, plasticity, grading, colour, secondary and minor components)	Condition of soil: Moisture Condition	Condition of soil: Consistency or Density Index	Condition of soil: Hand Penetrometer Reading (kPa)	Structure and additional observations: (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	as above	D			FILL
		piece of wood / timber				
		3.2 - 3.5 augered to straighten (inferred sandy clay)	M			
3.5						
3.8		concrete pieces				
4.0		Borehole 3-19 Terminated at 3.8 m (Refusal)				
4.5						
5.0						
5.5						
6.0						

Depth to Groundwater: None Observed **Trees at Site:** yes

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Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH4-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	silty SAND, fine to coarse grained, pale brown, brown, non plastic, with fine grained gravel	D			FILL
	FILL	mainly CLAY / sandy CLAY, low to medium plasticity, orange brown,	<Wp			
0.5		brown, grey brown, white, with fine to coarse grained sand, trace gravel				
1.0						
1.05	CL	sandy CLAY, low plasticity, dark brown, brown, fine to medium grained sand	<Wp	Fb		NATURAL
	SC	clayey SAND, fine to coarse grained, pale brown, pale grey brown, low plasticity, highly calcareous	D	MD		
1.5		with gravel (siltstone) increasing seams				
		grades SILTSTONE, fine to medium grained, grey brown, yellow brown, pale brown, extremely to distinctly weathered, extremely weathered to silty SAND, distinctly weathered pieces of high strength	D			
2.0						
		Borehole 4-19 Terminated at 2 m (Target Depth)				
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** yes

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Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH5-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Composition of soil: Soil Description (type, plasticity, grading, colour, secondary and minor components)	Condition of soil: Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	mainly CLAY / sandy CLAY, medium to high plasticity, brown, orange brown, grey brown, fine to medium grained sand, trace gravel, sandier pockets	>Wp			FILL, grassed oval
0.5						
		slag pieces, sandier				
1.0					>500	
1.5	CL	sandy CLAY, low to medium plasticity, brown, orange brown, fine to medium grained sand	=Wp	Fb		NATURAL
	CL	sandy CLAY, low plasticity, pale orange brown, white, fine to medium grained sand, thin calcrete capping / gravelly, highly calcareous	<Wp	Fb		
2.0						
		pale yellow orange				
2.5						
		SILTSTONE, fine to medium grained, brown, grey, distinctly weathered to high strength, silty seams	D			
2.8						
3.0		Borehole 5-19 Terminated at 2.8 m (Refusal)				

Depth to Groundwater: None Observed **Trees at Site:** Yes

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Date Drilled: 22/03/2018
Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube & Auger
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH6-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	gravelly clayey SAND, fine to coarse grained, brown, grey, white, low plasticity, fine to medium gravel	D			FILL
0.4		concrete				FILL
0.5		Borehole 6-19 Terminated at 0.4 m, Auger Refusal (2 locations)				
1.0						
1.5						
2.0						
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** No

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Date Drilled: 22/03/2018
Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH7-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Composition of soil: Soil Description (type, plasticity, grading, colour, secondary and minor components)	Condition of soil: Moisture Condition	Condition of soil: Consistency or Density Index	Condition of soil: Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	mainly sandy CLAY, low to medium plasticity, brown, white, pale brown, fine to coarse grained sand, with gravel	D			FILL
0.5						
		grades clayey SAND, fine to coarse grained, pale grey brown, pale brown, pale grey, low plasticity with fine to coarse grained gravel				
1.0						
	CL	CLAY, medium plasticity, brown, orange brown, with fine to medium sand	<Wp	Fb/H		NATURAL
1.5						
2.0	SC	clayey SAND, fine to coarse grained, pale orange brown, pale brown, low plasticity, trace calcrete gravel, highly calcareous	D			
		Borehole 7-19 Terminated at 2 m (Target Depth)				
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** Yes

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Date Drilled: 22/03/2018
Date Logged: 22/03/2018
Logged by: JL
Drilling Method: Push Tube
Drill Rig/Mount: Rockmaster/4WD

Borehole No.
BH8-19

Legend:

Moisture Condition	Density Index - Granular	Consistency - Cohesive	
D - Dry	VL/L - Very Loose/Loose	VS - Very Soft	Vst-Very Stiff
M - Moist	MD- Medium Dense	S - Soft	H - Hard
W - Wet	D/VD- Dense/Very Dense	F - Firm	Fb - Friable
Wp - Plastic Limit		St - Stiff	
USCS: Unified Soil Classification System		↓GW = Groundwater	

Job No: **ADL189250**
Location: **CAPELLA RESERVE, HALLETT COVE**

Depth below surface (m)	USCS Symbol	Soil Description (type, plasticity, grading, colour, secondary and minor components)	Moisture Condition	Consistency or Density Index	Hand Penetrometer Reading (kPa)	Structure and additional observations (e.g. soil origin, defects, cementing, likely I_{pt} (%))
	FILL	mainly sandy CLAY / clayey, medium to high plasticity, brown, orange brown, pale brown, fine to medium grained sand	>Wp			FILL, grasses, moist
					175	
0.5		pieces of asphalt				
					300	
		becoming gravelly clayey sand, fine to coarse grained, grey, pale brown, brown, low plasticity, fine to medium grained gravel	M			
1.0	CL	CLAY / sandy CLAY, low to medium plasticity, dark brown, with sand	>Wp	Vst/Fb		NATURAL
					330	roots
		grades medium plasticity, orange brown	>Wp	Fb		moist
1.5						
	CL	CLAY, low plasticity, pale orange brown, white, pale brown, with sand, trace gravel, highly calcareous	>Wp	F/St		increasing moisture
					<100	
2.0						
		Borehole 8-19 Terminated at 2 m (Target Depth)				
2.5						
3.0						

Depth to Groundwater: None Observed **Trees at Site:** no

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DESCRIPTION AND CLASSIFICATION OF SOILS(1) FOR ENGINEERING PURPOSES
EXPLANATION SHEET TO ACCOMPANY ENGINEERING LOGS (SHEET 1)

CLASSIFICATION SYMBOL & SOIL NAME
Soils are described in general accordance with the Unified Soil Classification (UCS) as shown in Table 1 on Sheet 2 using visual-tactile methods.

PARTICLE SIZES

NAME	FRACTION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 µm to 2.36 mm
	medium	200 µm to 600 µm
	fine	75 µm to 200 µm

MOISTURE CONDITION

Dry Looks and feels dry. Cohesive soils are hard, friable or powdery. Uncemented granular soils run freely through hands.

Moist Soil feels cool and darkened in colour. Cohesive soils can be mounded. Granular soils tend to cohere.

Wet Similar to moist but with free water forming on hands when handled.

CONSISTENCY OF COHESIVE SOILS

TERM	UNDRAINED STRENGTH Su (kPa)	FIELD ASSESSMENT
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 to 25	A finger can be pushed into the soil to about 25 mm depth.
Firm	25 to 50	The soil can be indented about 5 mm with the thumb.
Stiff	50 to 100	The surface of the soil can be indented with the thumb.
Very Stiff	100 to200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	Not able to be measured	Crumbles or powders when scraped by thumbnail.

The undrained shear strength is assessed in the field using a pocket or hand penetrometer (PP). The undrained shear strength is approximately one half of the hand penetrometer reading.

DENSITY INDEX OF GRANULAR SOILS

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 to 35
Medium Dense	35 to 65
Dense	65 to 85
Very Dense	Greater than 85

MINOR COMPONENTS

TERM	FIELD ASSESSMENT	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye.	Coarse grained soils: 5 to12% Fine grained soils: 15 to 30%

SOIL STRUCTURE

INCLUSIONS		CEMENTING	
Layers	Continuous across exposure or sample.	Weakly Cemented	Easily broken up by hand in air or water.
Lenses	Discontinuous layers of lenticular shape.	Moderately Cemented	Effort is required to break up the soil by hand in air or water.
Pockets	Irregular inclusions of different material.		

SOIL ORIGIN

MATERIALS WEATHERED IN-SITU

Extremely weathered material	Structure and fabric of parent rock visible.
Residual soil	Structure and fabric of parent rock not visible.

TRANSPORTED SOILS

Aeolian	Deposited by wind.
Alluvial	Deposited by streams and rivers.
Colluvial	Deposited on slopes (transported downslope by gravity)
Fill	Placed by man. Fill may be markedly more variable between tested locations than naturally occurring soils.
Marine	Deposited in ocean basins, bays, beaches and estuaries.

Note: (1) materials found in the ground are generally described as a soil if the material can be remoulded or disintegrated by hand in the field condition or in water. Other materials are described using rock description terms.

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Table 1: SOIL CLASSIFICATION AND FIELD IDENTIFICATION AND DESCRIPTION (SHEET 2)

FIELD IDENTIFICATION PROCEDURES (excluding particles larger than 60 mm and basing fractions on estimated mass)						USC	PRIMARY NAME
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than half of coarse fraction is larger than 2.0 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.			GW	GRAVEL
			Predominantly one size or a range of sizes with more intermediate sizes missing.			GP	GRAVEL
		GRAVELS WITH FINES (Appreciable amount of fines	Non-plastic fines (for identification procedures see ML below)			GM	SILTY GRAVEL
			Plastic fines (for identification procedures see CL below)			GC	CLAYEY GRAVEL
	SANDS More than half of coarse fraction is smaller than 2.0 mm	CLEAN SANDS (Little or no fines)	Well graded. Wide range in grain sizes and substantial amounts of all intermediate sizes.			SW	SAND
			Poorly graded. Predominantly one size or a range of sizes with some intermediate sizes missing			SP	SAND
		SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML Below)			SM	SILTY SAND
			Plastic fines (for identification procedures see CL below)			SC	CLAYEY SAND
	IDENTIFICATION PROCEDURES ON PARTICLES <0.2 mm						
FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	SILTS & CLAYS Liquid limit less than 50	**DRY STRENGTH**	**DILATANCY**	**TOUGHNESS**			
		None to low	Quick to slow	None		ML	SILT
		Medium to high	None	Medium		CL	CLAY
		Low to medium	Slow to very slow	Low		OL	ORGANIC SILT
	SILTS & CLAYS Liquid limit greater than 50	Low to medium	Slow to very slow	Low to medium		MH	SILT
		High	None	High		CH	CLAY
		Medium to high	None	Low to medium		OH	ORGANIC CLAY
HIGHLY ORGANIC SOILS		Identified by colour, odour, spongy feel and frequently by fibrous texture.				Pt	PEAT

* Low plasticity – Liquid Limit W_L Less than 35 % * Medium plasticity - W_L between 35% and 50%

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WALLBRIDGE GILBERT AZTEC

GUIDE TO INTERPRETING YOUR **WGA GEOTECHNICAL REPORT**

This geotechnical report has been prepared by an experienced WGA Engineer. These notes have been prepared by WGA to assist the Client interpret and understand the report limitations.

SCOPE OF SERVICES

This report has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and WGA. In some circumstances, the scope of the services may have been altered by a range of factors such as time, budget and access restrictions.

GEOTECHNICAL INVESTIGATIONS

Geotechnical engineering is based extensively on professional judgment and opinion. It is far less precise than other engineering disciplines.

Geotechnical engineering reports are prepared to meet the specific needs of individual clients. This report was prepared expressly for the Client for the purposes indicated in the agreed scope of services. Use by any other persons for any purpose, or by the Client for a different purpose, may result in problems.

For example, a report prepared for a consulting civil engineer may not be adequate for a construction contractor or even another consulting engineer.

This report must not be used for any project other than that originally specified at the time the report was prepared, without seeking additional geotechnical advice.

PROJECT-SPECIFIC FACTORS

This report is based on a subsurface investigation designed to meet the requirements of a specific project. The subsurface investigation was formulated based on factors which include the nature of the development, its size and configuration, the location of any existing development on the site, and the location of access roads and parking areas. Unless further geotechnical advice is obtained in writing, this report may not provide appropriate recommendations if:

- the nature of the proposed development is changed; or
- the size, configuration, location or orientation of the proposed development is modified.

The report findings cannot be applied to any other sites, including adjacent sites.

SUBSURFACE CONDITIONS

Subsurface conditions are created by natural processes and the activity of man and may, therefore, be modified by changing natural forces or man-made influences. For example, water levels can vary with time and fill may be placed on a site. The report is based on conditions which existed at the time of subsurface exploration.

Construction operations at, or adjacent to, the site and natural events such as floods or groundwater fluctuations may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report. WGA should be kept informed of any such events and should be consulted to determine if additional investigations are necessary

THIRD PARTY INTERPRETATION OF FINDINGS

WGA should be retained to assist other design professionals in the interpretation of relevant geotechnical findings, and to review the adequacy of plans and specifications relative to geotechnical issues. Costly problems can occur when other design professionals develop plans based on misinterpretations of a geotechnical report.

ENGINEERING LOGS SHOULD NOT BE SEPARATED FROM THE REPORT

The report presents the findings of the geotechnical investigation and must not be copied or altered in any way.

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Engineering logs and cross-sections are developed by geotechnical engineers based upon their interpretation of field logs and laboratory testing of samples. These logs and figures should not be redrawn for inclusion in other documents or separated from the report in any way.

To reduce the likelihood of misinterpretation, contractors should be given access to the complete geotechnical report prepared or authorised for use. The following publication should be referenced for further information.
Guidelines for the Provision of Geotechnical Information in construction Contracts (Engineers Australia, National Headquarters, Canberra 1987).

RELIANCE ON SUPPLIED DATA

In preparing the report, WGA may have relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations. Unless otherwise stated in the report, WGA has not verified the accuracy or completeness of such data. WGA will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misinterpreted or otherwise not fully disclosed to WGA.

LIMITATIONS OF SITE INVESTIGATIONS

In making an assessment of a site from a limited number of boreholes or test pits it is inevitable that variations will occur between test locations. Subsurface exploration identifies specific subsurface conditions only at those points from which samples have been taken. The likelihood that subsurface variations will not be detected can be reduced by increasing the frequency of test locations, although this has cost implications. The investigation program undertaken is a professional estimate of a reasonable scope of investigation required to provide a general profile of the subsurface conditions. The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geotechnical model and an engineering opinion is formed about overall subsurface conditions and their likely behaviour with regard to the proposed development.

Despite subsurface exploration, the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface conditions and anomalies.

The engineering logs are the subjective interpretation of the subsurface conditions encountered at a particular location, made by experienced personnel. The interpretation may be limited by the method of investigation, and cannot always be definitive. For example, inspection of an excavation or test pit allows a greater area of the subsurface profile to be inspected than borehole investigations, however, such methods are limited by depth and site disturbance restrictions.

The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained from the subsurface exploration. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, the services of WGA should be retained through design and construction stages, to identify variances, conduct additional tests if required and recommend solutions to any problems encountered on site.

09. APPENDIX F – COST PLAN REPORT

Prepared by Donald Cant Watts Corke – Cost Consultant

DONALD
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WATTS
CORKE

Flightpath
Capella Sports Club Redevelopment

Concept Cost Plan Report
30 August 2019

DONALD CANT WATTS CORKE

Capella Sports Club Redevelopment

Concept Cost Plan Report

30 August 2019

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Donald Cant Watts Corke (SA) Pty Ltd has prepared this proposal in accordance with the instructions of their prospective clients the Flightpath for their sole and specific use. Any other persons who use any information contained herein do so at their own risk. This proposal has been prepared in accordance with generally accepted consulting practices and no other warranty, expressed or implied, is made as to the professional advice included in this proposal. The appreciation and methodology contained within this proposal are based on information provided by others and the assumption is that all relevant information has been supplied by these individuals and bodies from whom it has been requested. Information obtained from third parties has not been independently verified.

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Contents

1 EXECUTIVE SUMMARY

1.1 PROJECT BUDGET

We note that we have not been advised of the approved Total Project Budget at this stage.

1.2 PROJECT SCOPE OF WORKS

The proposed scope of works includes the construction of a new sports / community club building at the Capella Reserve adjacent the existing skatepark at the rear of the site.

The scope of works includes extension of the existing soccer oval to create a new Australian Football League (AFL) compliant oval and other associated carpark works, etc.

This updated Concept Cost Plan now includes costings on the larger oval, increased retaining walls, alterations to the carpark including 130mm thick concrete slab in lieu of bitumen carpark and updated services estimates.

1.3 PROCUREMENT AND PROGRAM

We have assumed procurement via a competitively let Lump Sum AS2124 form of contract.

We have not been provided with a current program, however have anticipate that construction works will be undertaken concurrently as a single staged, consecutive project.

2 CONCEPT COST PLAN

We have produced our Concept Cost Plan on 30 August 2019, which was representative of the documentation developed and issued to us at that time.

2.1 BASIS OF COST PLAN

Our Concept Cost Plan has been based on the following documentation:

- WGA's - Capella Reserve, Hallett Cove – Preliminary Concept Design Supplementary Geotechnical Investigation.
- Flightpath Architect's SK02, SK03, SK101, SK202, SK203 issued on 28 August 2019.
- Meinhardt footing layout plan (SK02) dated 13 August 2019.
- Meinhardt site works (civil drawings) C001, C002 and C003 issued on 29 August 2019.
- Trinamic Consultants email dated 29 August 2019 including high-level budgets for engineering services components;

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COST PLAN SUMMARY

Table 1 – Concept Cost Plan

Description	Amount
Preliminaries	$646,814
Demolition	$131,325
Substructure	$209,175
Columns	$38,920
Roof	$297,480
External Walls	$121,500
Windows	$12,000
External Doors	$95,300
Internal Walls	$105,120
Internal Doors	$89,050
Wall Finishes	$48,250
Floor Finishes	$77,800
Ceiling Finishes	$74,195
Fitments	$194,840
Special Equipment	$32,000
Hydraulic Services	$344,400
Mechanical Services	$172,200
Fire Protection Services	$68,250
Electrical Services	$614,250
Site Preparation	$405,886
Roads, Footpaths and Paved Areas	$596,440
Boundary Walls, Fencing and Gates	$34,125
Outbuildings and Covered Ways	$100,000
Landscaping and Improvements	$1,006,195
External Stormwater Drainage	$264,485
External Services	$270,000
Total Construction Cost (Excluding GST)	**$6,050,000**
Design Contingency (10%)	$607,100
Construction Contingency (5%)	$332,900
Professional Fees	Excluded
Escalation	Excluded
Total Project Cost (Excluding GST)	**$6,990,000**

3 CONCEPT COST PLAN SAVINGS

We advise the potential for the following savings Excluding GST.

Table 2 – Cost Options

Description	Amount
Reducing size of the oval	$290,000
Reinstate existing lighting (Provided by Trinamic Consultants)	$119,000
Reduced Clubrooms	$400,000
Retain skate park	$350,000
Altering concrete carpark to bitumen carpark with Tensar Grid	$120,000

4 QUALIFICATIONS AND ASSUMPTIONS

The following assumptions have been made in the preparation of our Concept Cost Plan;

- Construction industry conditions and rates, which we believe applicable in August 2019.
- The required areas of site will be available and unrestricted to the General Building Contractor.
- We have assumed that construction works will be undertaken concurrently as a single staged, consecutive project.
- All works will be undertaken during typical construction industry working hours, no allowance has been made for night works.
- Various assumptions have been made regarding the amount of structure required. These details will need to be refined in later phases of design and as the engineering design evolves.
- Assumptions have been made with regard to the re-use and/or removal of excavated material.
- An allowance has been made for the repair and treatment of soft spots to the existing oval.
- We have assumed procurement via competitive tender using a Lump Sum AS2124 Contract.

5 EXCLUSIONS

The following have specifically been excluded from our Concept Cost Plan and should be considered when assessing overall financial modelling for the proposed project;

- Restricted contract periods necessitating a fast-track design/documentation phase and/or construction phase.
- Latent conditions including but not limited to striking ground water, unfavourable soil profiles, hazardous materials, services infrastructure risks, etc unless otherwise identified.
- Loose furniture, fixtures and fittings (such as artwork, curtains, blinds, televisions and the like) unless otherwise identified.
- Active information and communication technologies (ICT) equipment such as computers/laptops, projectors, etc.
- Audio/Visual Systems (AV) equipment, Hearing Augmentation Systems and the like.
- PV Solar System and battery storage systems.
- Telstra or NBNCo or any telecommunications services provider fees and charges.
- PABX / VoIP Systems and telephone handsets, Intercom Systems, Public Address System, Closed Circuit Television Systems (CCTV), etc.
- Oval cricket pitch (it is our understanding this will be shaped and formed seasonally, as we have no appreciation for when this project will be constructed, we have excluded this item).
- Out of hours work.
- Land, legal or finance costs.
- Professional Fees
- Escalation beyond August 2019.

APPENDIX A – CONCEPT COST PLAN OPTION 1

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CAPELLA SPORTS CLUB REDEVELOPMENT

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
PRELIMINARIES	1,097	m2	590	646,814
DEMOLITION	1,097	m2	120	131,325
SUBSTRUCTURE	1,097	m2	191	209,175
COLUMNS	1,097	m2	35	38,920
ROOF	1,097	m2	271	297,480
EXTERNAL WALLS	1,097	m2	111	121,500
WINDOWS	1,097	m2	11	12,000
EXTERNAL DOORS	1,097	m2	87	95,300
INTERNAL WALLS	1,097	m2	96	105,120
INTERNAL DOORS	1,097	m2	81	89,050
WALL FINISHES	1,097	m2	44	48,250
FLOOR FINISHES	1,097	m2	71	77,800
CEILING FINISHES	1,097	m2	68	74,195
FITMENTS	1,097	m2	178	194,840
SPECIAL EQUIPMENT	1,097	m2	29	32,000
HYDRAULIC SERVICES	1,097	m2	314	344,400
MECHANICAL SERVICES	1,097	m2	157	172,200
FIRE PROTECTION SERVICES	1,097	m2	62	68,250
ELECTRICAL SERVICES	1,097	m2	560	614,250
SITE PREPARATION		m2		405,886
ROADS, FOOTPATHS AND PAVED AREAS	6,834	m2	87	596,440
BOUNDARY WALLS, FENCING AND GATES	13,304	m2	3	34,125
OUTBUILDINGS AND COVERED WAYS	68	m2	1,471	100,000
LANDSCAPING AND IMPROVEMENTS	18,545	m2	54	1,006,195
EXTERNAL STORMWATER DRAINAGE	6,264	m2	42	264,485
EXTERNAL SERVICES	18,545	m2	15	270,000
TOTAL CONSTRUCTION COST (EXCLUDING GST)	816	m2	7,414	**6,050,000**
DESIGN CONTINGENCY	10	%		607,100
CONSTRUCTION CONTINGENCY	5	%		332,900
PROFESSIONAL FEES (EXCLUDED)				EXCL
ESCALATION (EXCLUDED)				EXCL
TOTAL PROJECT COST (EXCLUDING GST)				**6,990,000**
GST (10%)	10	%		699,000

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CAPELLA SPORTS CLUB REDEVELOPMENT

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
TOTAL PROJECT COST (INCLUDING GST)				**7,689,000**
Options				
Cost savings for bitumen and mesh in lieu of concrete slab carpark	1	item	-120,000	-120,000

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CAPELLA SPORTS CLUB REDEVELOPMENT

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
PRELIMINARIES				
Allowance for Preliminaries (12%)	1	item	646,814.00	646,814
DEMOLITION				
Demolish and dispose of existing Clubhouse	151	m2	150.00	22,650
Demolish and dispose of existing carpark	646	m2	25.00	16,150
Demolish and Dispose of existing Skate Park including shade structure (Provisional Sum)	1	item	80,000.00	80,000
Allowance to demolish sundry fixtures on site	1	item	12,525.00	12,525
SUBSTRUCTURE				
110mm thick reinforced concrete slab on ground	817	m2	105.00	85,785
300mm x 600mm reinforced concrete footing including excavation, DPM, reinforcement and concrete	458	m	160.00	73,280
Allowance for slab setdown to amenities	31	m	80.00	2,480
Allowance for slab setdown to Coolroom	11	m	80.00	880
Allowance for sundry items and crack bars	1	item	2,500.00	2,500
75mm reinforced concrete slab to covered area complete	295	m2	150.00	44,250
Substructure allows for Design Methodology 1 and Footing Schedule 2 to allow for Cutting to natural level with cost to build on existing site levels listed below the line		Note	EXCL	EXCL
COLUMNS				
Allowance for columns to Clubrooms	817	m2	35.00	28,595
Allowance for columns to attached Cover	295	m2	35.00	10,325
ROOF				
Metal Clad roof to Clubrooms complete including accessories and roof plumbing	817	m2	265	216,505
Metal Clad roof to Cover complete including accessories and roof plumbing	295	m2	265	78,175
Allowance to connections to stormwater system	1	item	2,800.00	2,800
No allowance for roof safety system & roof access		Note	EXCL	EXCL
EXTERNAL WALLS				
Assume metal clad external wall complete including internal lining, Insulation and stud frame	486	m2	250	121,500
WINDOWS				
External aluminium framed glazing	15	m2	600.00	9,000
Aluminium framed and glazed operable server window to Kiosk	1	item	3,000	3,000
EXTERNAL DOORS				
Aluminium framed solid core door including hardware	7	no.	1,200.00	8,400

CAPELLA SPORTS CLUB REDEVELOPMENT

DONALD CANT WATTS CORKE

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
EXTERNAL DOORS				*(Continued)*
Aluminium framed double door including hardware	1	no.	1,600.00	1,600
Aluminium framed glazed double door including hardware	1	no.	4,000.00	4,000
External metal roller door assumed manually operated 2500 x 2100mm	3	no.	2,500.00	7,500
External metal roller door to Kiosk window assumed manually operated	1	no.	1,800.00	1,800
Glazed multi panel sliding door 2400mm high including frame and hardware - assumed manually operated	1	item	72,000	72,000
INTERNAL WALLS				
Internal Partition Complete including paint finish	593	m2	170	100,810
Extra-over insulated coolroom panels panels to Cool Room assumed 100mm	30	m2	70.00	2,100
Extra over for moisture resistant plasterboard to wet areas	442	m2	5.00	2,210
No Allowance for impact resistant plasterboard		Note		EXCL
INTERNAL DOORS				
Aluminium framed swing doors including frame	19	no.	1,200.00	22,800
Cavity slider including hardware	3	no.	1,300.00	3,900
Insulated coolroom panel including hardware	1	no.	2,300.00	2,300
Aluminium framed insulated gravity feed door including hardware	3	no.	1,750.00	5,250
Metal roller door to Kiosk window assumed manually operated	1	no.	1,800.00	1,800
Acoustic multi panel sliding door 2400mm high including frame and hardware - assumed manually operated	1	item	53,000	53,000
WALL FINISHES				
Wall tiles to wet areas assumed 2100mm high	305	m2	150.00	45,750
Allowance for splash backs	1	item	2,500.00	2,500
FLOOR FINISHES				
Carpet tiles including underlay	219	m2	65.00	14,235
Skirting to carpet	62	m	20.00	1,240
Moisture resilient vinyl flooring	295	m2	80.00	23,600
Coving to vinyl floor	257	m	25.00	6,425
Seal and polish exposed concrete	87	m2	20.00	1,740
Insulated floor finish to cool room	8	m2	130.00	1,040
Vinyl skirting	86	m	15.00	1,290
Floor tiles including screed	176	m2	150.00	26,400
Aluminium skirting to Coolroom	11	m	30.00	330
Allowance for division strips, Entrance mats	1	item	1,500.00	1,500

DONALD CANT WATTS CORKE

CAPELLA SPORTS CLUB REDEVELOPMENT

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
CEILING FINISHES				
Insulation coolroom panel ceiling	8	m2	130.00	1,040
Flush plasterboard ceiling including frame and insulation	775	m2	90.00	69,750
Extra over for moisture resistant plasterboard	181	m2	5.00	905
Allowance for bulkheads	1	item	2,500.00	2,500
FITMENTS				
Bench seating to Umpires	8	m	450.00	3,600
Full height storage cupboards	5	m	1,200.00	6,000
Stainless steel perimeter bench with open shelf below	19	m	1,200.00	22,800
Dividing curtains to Umpires & First Aid	6	m	100.00	600
Lockers and bench seating to Changerooms	64	m	1,070.00	68,480
Toilet partition	12	no.	1,800.00	21,600
Shower partition	20	no.	2,100.00	42,000
Shower curtain to Access WC	1	no.	250.00	250
Mirror	7	no.	330.00	2,310
Stainless steel grab rails to Access WC	1	no.	850.00	850
Stainless steel grab rails to Ambulant toilets	2	no.	300.00	600
Fitments to toilets such as soap dispensers, toilet roll holders, etc.	1	item	4,000.00	4,000
Allowance for sundry fitments such as coat hooks and pin-boards and the like	1	item	2,500.00	2,500
Allowance for Storage to coolroom	1	item	3,750.00	3,750
Allowance for Storage to Stores	1	item	10,000.00	10,000
Allowance for Storage to Office	1	item	3,000.00	3,000
Allowance for corporate & DDA signage	1	item	2,500.00	2,500
SPECIAL EQUIPMENT				
Allowance for pie warmer and microwave to Kiosk	1	item	2,000.00	2,000
Allowance for kitchen equipment to Kitchen	1	item	20,000.00	20,000
Allowance for Self contained tap system and equipment to Bar	1	item	10,000.00	10,000
Grease arrestor included in services		Note	INCL	INCL
HYDRAULIC SERVICES				
Allowance for Hydraulic Services, as advised by Trinamic Consultants on 29.08.2019	1	item	328,000.00	328,000
Allowance for BWIC with Hydraulic Services	1	item	16,400.00	16,400
MECHANICAL SERVICES				
Allowance for Mechanical Services, as advised by Trinamic Consultants on 29.08.2019	1	item	164,000.00	164,000

DONALD CANT WATTS CORKE

CAPELLA SPORTS CLUB REDEVELOPMENT

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
MECHANICAL SERVICES				*(Continued)*
Allowance for BWIC with Mechanical Services	1	item	8,200.00	8,200
FIRE PROTECTION SERVICES				
Allowance for Fire Protection Services, as advised by Trinamic Consultants on 29.08.2019	1	item	65,000.00	65,000
Allowance for BWIC with Fire Protection Services	1	item	3,250.00	3,250
ELECTRICAL SERVICES				
Allowance for Electrical Services, as advised by Trinamic Consultants on 29.08.2019	1	item	585,000.00	585,000
Allowance for BWIC with Electrical Services	1	item	29,250.00	29,250
SITE PREPARATION				
Clear site	26,957	m2	3.00	80,871
Cut to Stockpile on site assumed to be reused on site	4,001	m3	15.00	60,015
Fill from stockpile	3,422	m3	25.00	85,550
Clean sand/toil soil to import to fill on-site	355	m3	70.00	24,850
Allowance to alter and batter slope	1	item	21,000.00	21,000
Allowance for repairing soft spots to site assumed 20% of finished levels (Provisional Sums)	1	item	100,000.00	100,000
Allowance to alter levels of skate park to suite new carpark - Levels unknown (Provisional Sum)	1	item	25,000.00	25,000
Cut down and de-stump trees to site	8	no.	450.00	3,600
Allowance to take-up and dispose of trees and bush not identified on site lay out (Provisional Sum)	1	item	5,000.00	5,000
ROADS, FOOTPATHS AND PAVED AREAS				
Concrete slab to carpark inlcuding reinforcement sub base control joints, linemarking and medians	6,209	m2	85.00	527,765
Unsealed crossover to field from carpark	121	m2	25.00	3,025
Bitumen pedestrian walkway to site complete	570	m2	45.00	25,650
Concrete stairs to site complete	1	item	10,000.00	10,000
Ramp to site complete including forming levels	1	item	30,000.00	30,000
BOUNDARY WALLS, FENCING AND GATES				
White Picket Fence to edge of oval	455	m	75.00	34,125
OUTBUILDINGS AND COVERED WAYS				
Store and Officials box complete	1	item	100,000.00	100,000
LANDSCAPING AND IMPROVEMENTS				
Turf to Oval	15,645	m2	15.00	234,675

CAPELLA SPORTS CLUB REDEVELOPMENT

DONALD CANT WATTS CORKE

2019.08 CAPPELLA CONCEPT COST PLAN - UPDATED

Description	Quantity	Unit	Rate	Total
LANDSCAPING AND IMPROVEMENTS				*(Continued)*
Allowance for terrace seating (Provisional Sum)	1	item	100,000.00	100,000
Allowance for Landscaping to remaining site	5,241	m2	20.00	104,820
Concrete sleeper retaining walls to site including aggregate pipe	531	m2	450.00	238,950
Allowance for fall protection to retaining walls	275	m	250.00	68,750
AFL fitments to oval including coaches box, goals and the like (Provisional Sum)	1	item	44,000.00	44,000
No allowance to forming cricket pitch		Note	EXCL	EXCL
Score Board (Provisional Sum)	1	item	15,000.00	15,000
Allowance for netting behind one goal (Provisional Sum)	1	item	40,000.00	40,000
Cricket Cadges to site (Provisional Sum)	1	item	160,000.00	160,000
EXTERNAL STORMWATER DRAINAGE				
Allowance for detention basin including excavation	161	m2	250.00	40,250
Allowance for Grated inlet Pits Complete	8	no.	2,000.00	16,000
Allowance for Junction Boxes Complete	6	no.	1,500.00	9,000
Allowance for Stormwater pipes complete	501	m	200.00	100,200
Kerb and gutter	85	m	120.00	10,200
Kerb only	101	m	85.00	8,585
Retaining Kerb	620	m	100.00	62,000
Spoon Drain	55	m	150.00	8,250
Allowance for connections	1	item	10,000.00	10,000
EXTERNAL SERVICES				
Allowance for Augmentattion of existing SA Power networks power supply as advised by Trinamic Consultants on 29.08.2019	1	item	50,000.00	50,000
Allowance for Upgrade of SA Power networks transformer as advised by Trinamic Consultants on 29.08.2019	1	item	200,000.00	200,000
Relocate Existing Bore as advised by Trinamic Consultants on 29.08.2019	1	item	20,000.00	20,000
External elements not listed here are included in services summary		Note		INCL

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Potential Turf Maintenance costs for Majors Road

Pitch Area: 3 pitches: 25,530 m^2

Item	Rate per hectare	Estimated cost 2.25 Hectares
Mowing	$80 x 40 mowing's	$8,160
Spring Turf Renovation	$6000	$15,300
Fertilizer	$600	$1,530
IPOS Audits		$1,181
Watering (mains Rate)		$55,000
Other	$500	$2000
Total		**$83,171**

Pitch Area: 2 pitches: 17,020m^2

Item	Rate per hectare	Estimated cost 1.7 Hectares
Mowing	$80 x 40 mowing's	$5,440
Spring Turf Renovation	$6000	$10,200
Fertilizer	$600	$1,020
IPOS Audits		$895
Watering (mains Rate)		$35,000
Other	$500	$2000
Total		**$54,555**

Areas per WGA plans: 115m (105m with 5m player runoff each end) x 74m (68m, 43 runoff each side)

Financial Operating Model - Cove Football (Soccer) Club - Southern Football Facility

		FFSA Lease Arrangement	CoM Ownership
INCOME			
	Trading Income	115,000	103,000
	Hire Fees	178,000	12,000
	Sponsorships / Advertising	10,000	10,000
	(COGS)	51,750	46,350
TOTAL INCOME		**251,250**	**78,650**
EXPENSES	Cleaning	11,000	11,000
	Electricty	17,500	17,500
	Salary (incl on costs)	90,000	-
	Insurance	3,500	3,500
	R&M	8,500	8,500
	Water Consumption - Building only	3,500	3,500
	Turf Maintenance Costs incl. Grounds water	50,000	5,500
	Security	3,000	4,000
	Waste Disposal	2,500	2,500
	Rent	30,000	7,000
	Administration	15,000	5,000
	Advertising	10,000	10,000
TOTAL EXPENSES		**244,500**	**78,000**
SURPLUS/ DEFICIT		6,750	650

Assumptions:

- Cove Football Club are lease to operate
- Rent paid FFSA is 30K pa as advised by Michael Carter at meeting dated 30 October 2019
- Facility Manager is hired to operate the facility if operated by FFSA to activate site to meet operating costs
- Financials are based on the FFSA Profit and Loss Statements for The Parks and Adelaide Shores, which is owned and operated by the FFSA
- FFSA will seek to recover turf maintenance costs, whilst under the CoM leasing and licencing policy, Club is only required to pay 10% of water costs
- Hire Fees - Club will be required to hire out the facility to meet the proposed lease costs by the FFSA