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Flood Impact Assessment Report

Warringah Recreation Centre, North Manly, NSW 2100

Prepared for: Webber Architects

Document no: NA240429

Revision no: 02

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Revisions

Revision	Description	Date	Prepared by	Approved by
01	Issue for client review	10/07/2024	E. L	G. L
02	Issue for DA	30/07/2024	E. L	G. L

Review Panel

Division/ office	Name
Sydney	Greogry Lyell

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Appendices

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1 Introduction

ACOR Consultants Pty Ltd (ACOR) has been engaged to undertake a Flood Impact Assessment Report in accordance with the development controls outlined in Warringah DCP Clause E11 for the proposed re-development of Warringah Recreation Centre at 433 Pittwater Road, North Manly.

In the preparation of this report, ACOR has relied upon certain data and information contained within the following documents:

- Architectural drawings prepared by Webber Architects (10 May 2024) – refer to Annexure A Proposed Architectural Plans
- Flood Management Report prepared by Stellen Consulting (29 Feb 2024) - refer to Annexure B
- Warringah Development Control Plan Clause E11 (2011)
- Manly Lagoon Flood Study prepared by BMT WBM Pty Ltd (Aug 2013)
- Manly Lagoon Floodplain Risk Management Study and Plan prepared by WMA Water (Oct 2018)

The purpose of this report is to assess the proposed development in compliance with Northern Beaches Council flood planning requirements, to assess the flood risk to life and property, and to provide flood protection measures to minimize the risk to the personal safety of occupants and the risk of property damage for the proposed development.

2 Site

The land parcel is legally known as Lot 2742 DP752038, located within RE1: Public Recreation. The proposed re-development is located within the south-eastern portion of the land parcel.

The site is bounded by vegetation to the north, Brookvale Creek to the west, Kentwell Road to the south, and Pittwater Road to the east.

The site is a developed site, currently consisting of a mixed array of sporting facilities, in a flood planning area.

Figure 1: Existing Site - Areial Image and Locality(NearMap)

The proposed development will involve the construction of a new squash building, new tennis court facilities, a new pedestrian bridge, soft and hard landscaping elements, the Warringah Golf Club Building, and two carparking areas. Refer to the enclosed architectural drawings (Annexure A).

The development has been managing and developing in different stages, and at the time of writing this report, the Warringah Golf Club Building and the east & west carparks have been designed by others.

Hence, this report will solely assess flood impacts on the squash building, tennis court facilities, and internal link road areas as shown in Figure 2.

Figure 2: Proposed Development and Assessment Area

3 Flood Characteristics

'Flood Risk Management Report' prepared by Stellen Consulting (29 Feb 2024) has identified the flood extent for the site. The entire site will be inundated during the 1% AEP and PMF events from floodwater arising from lagoon flooding within Brookvale Creek.

3.1 1% AEP Flood Level

1% AEP floodwaters impact the site at elevation 3.2 – 3.3 m AHD, causing inundation of the site up to 0.3 m depths.

3.2 PMF Level

PMF floodwaters impact the site at elevation 5.69 m AHD.

3.3 Flood Planning Level

A reduced freeboard of 0.3m has been adopted as the velocity depths product (VxD) is less than 0.3 m^2/s. The flood planning level (FPL) should be set at 1% AEP flood level plus 0.3 m freeboard, resulting in **3.6 m AHD.**

3.4 Flood Risk Precinct

The site has been assessed as Medium Risk Percent, adjoining Brookvale Creek which is identified as a High Flood Risk Precinct.

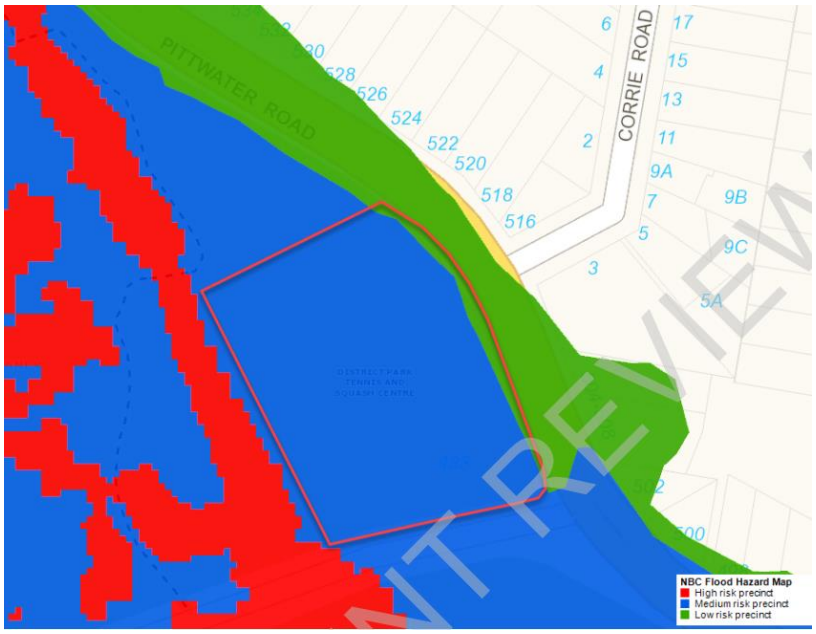

Figure 3: Flood Risk Precinct (extracted from Stellen Consulting Flood Management Report)

3.5 Hydraulic Category

The '1% AEP Hydraulic Categories' in the Manly Lagoon Flood Study has shown the subject site is located within Flood Fringe.

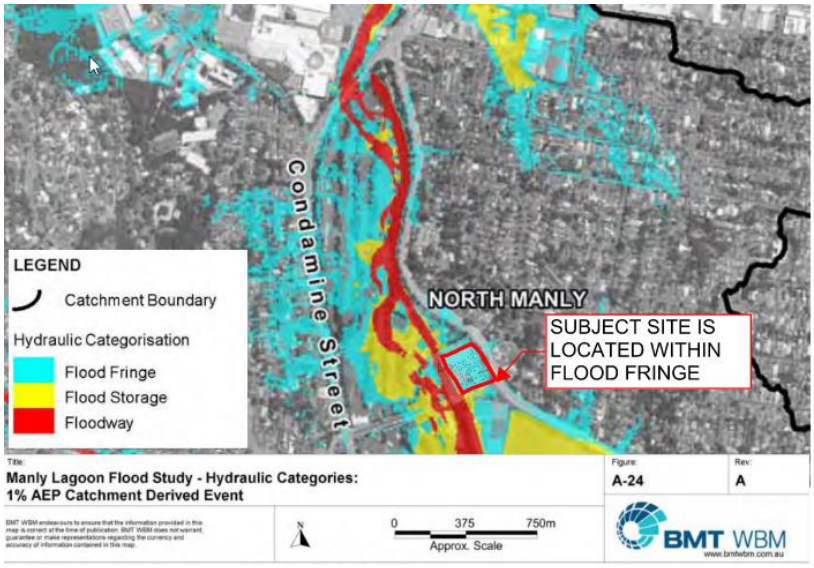

Figure 4: Hydraulic Category (extracted from Manly Lagoon Flood Study)

3.6 Hazard Category

The '1% AEP True Hydraulic Hazard" in the Manly Lagoon Floodplain Risk Management Study & Plan has shown the subject site has been assessed as H1: generally safe for people, vehicles and buildings and H2: unsafe for small vehicles.

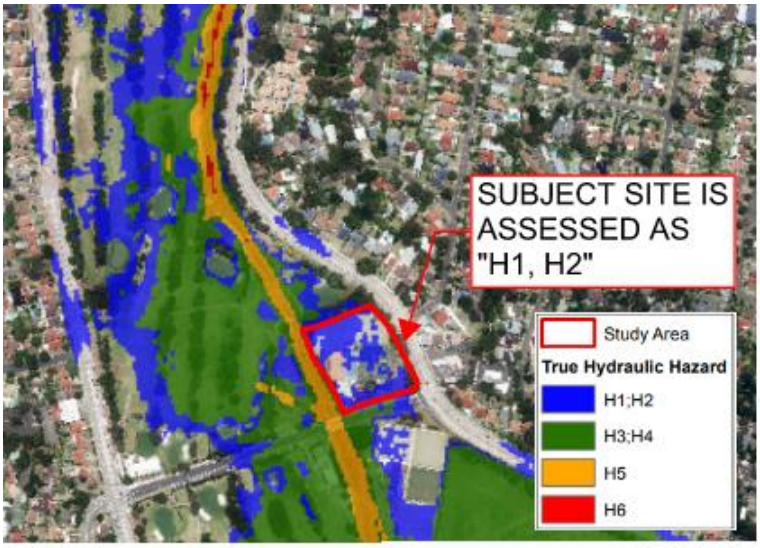

Figure 5: 1% AEP Hydraulic Hazard (extracted from Manly Lagoon Floodplain Risk Management Study & Plan)

3.7 Flood Life Hazard Category

The flood life hazard of the subject site has been assessed as H5.

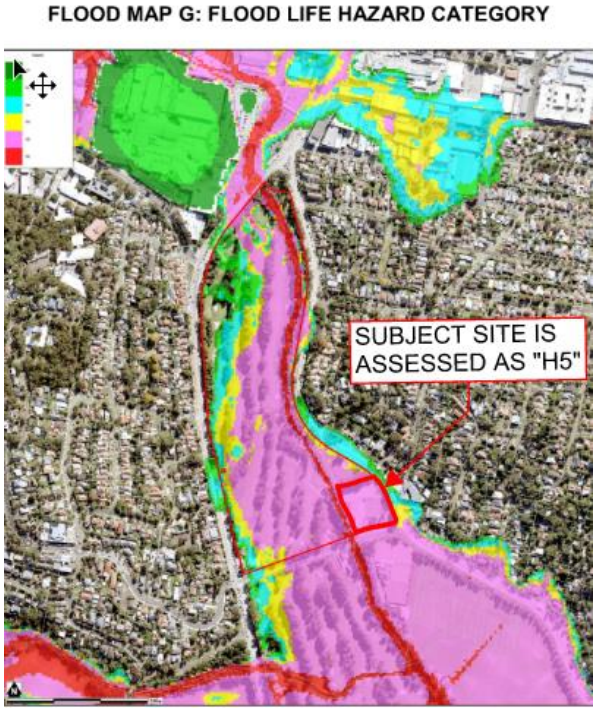

Figure 6: Flood Life Hazard Category (extracted from Stellen Consulting Flood Management Report)

4 Flood Planning Requirements

The site is subject to the provision of the Warringah DCP Clause E11: Flood Prone Land.

According to Warringah DCP Clause E11, controls relate to category below apply to “Business & Industrial Use and Recreational & Environmental Use” within Medium Risk Precinct (Refer to Figure 7).

- A. Flood Effects Caused by Development
- B. Building Components & Structural Soundness
- C. Floor Levels
- D. Car parking
- E. Emergency Response
- F. Fencing
- G. Storage of Goods
- H. Pools

Specifically, the proposed squash club building is categorized as “Business & Industrial Use” while the proposed tennis courts are categorized as “Recreational & Environmental Use”.

		Medium Flood Risk Precinct				
		Vulnerable & Critical Use	Residential Use	Business & Industrial Use	Recreational & Environmental Use	Subdivision & Civil Works
A	Flood effects caused by Development	A1 A2	A1 A2	A1 A2	A1 A2	A1 A2
B	Building Components & Structural	B1 B2 B3	B1 B2 B3	B1 B2 B3	B1 B2 B3	
C	Floor Levels	C2 C3	C1 C3 C4 C6	C1 C3 C4 C6 C7	C3	C5
D	Car Parking	D1 D2 D3 D4 D7	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1 D2 D3 D4 D5 D6	D1
E	Emergency Response	E1 E2	E1	E1	E1	E3
F	Fencing	F1	F1	F1	F1	F1
G	Storage of Goods	G1	G1	G1	G1	
H	Pools	H1	H1	H1	H1	H1

Figure 7: DCP Development Control Matrix.

4.1 Flood Effects Caused by Development

Control A1:

Development shall not be approved unless it can be demonstrated in a Flood Management Report that it has been designed and can be constructed so that in all events up to the 1% AEP event:

a) *There are no adverse impacts on flood levels or velocities caused by alterations to the flood conveyance; and*
b) *There are no adverse impacts on surrounding properties; and*
c) *It is sited to minimise exposure to flood hazard.*

Major developments and developments likely to have a significant impact on the PMF flood regime will need to demonstrate that there are no adverse impacts in the Probable Maximum Flood.

The proposed development of the site contains excavation with a footprint of 4823 m^2. The preliminary bulk earthworks quantities (cut) of the subject site are estimated to be 616 m^3.

Figure 8: Bulk Earthworks Plan

The anticipated necessary fill for the squash court building, the golf club site (by Stellen Consulting) and the eastern carpark (by Council) is 488 m^3 up to the 1% AEP flood level RL3.2.

Conversely, the cut volume is 616 m^3 in the subject site, resulting in a conservative compensatory net cut volume of 128m^3. This improves the flood storage of the site, and hence, the flood affectation of the site is not increased or made worse by the proposed development.

Control A2:

Development shall not be approved unless it can be demonstrated in a Flood Management Report that in all events up to the 1% AEP event there is no net loss of flood storage. Consideration may be given for exempting the volume of standard piers from flood storage calculations.

If Compensatory Works are proposed to balance the loss of flood storage from the development, the Flood Management Report shall include detailed calculations to demonstrate how this is achieved.

Considering the compensatory net cut volume of 128m^3, flood storage will be increased and meet control A2.

4.2 Building Components and Structural Soundness

Control B1:

All buildings shall be designed and constructed with flood compatible materials in accordance with "Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas", Hawkesbury-Nepean Floodplain Management Steering Committee (2006).

The proposed squash club building to be constructed from flood compatible materials to elevation 3.6 m AHD. Extensive guidance on flood compatible building materials and methods is provided in 'Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas' (HNFMSC 2006).

Control B2:

All new development must be designed and constructed to ensure structural integrity up to the Flood Planning Level, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. Where shelter-in-place refuge is required, the structural integrity for the refuge is to be up to the Probable Maximum Flood level. Structural certification shall be provided confirming the above.

The proposed building is to be constructed to withstand the loads imposed by the 3.6 m AHD, including hydrostatic, hydrodynamic, buoyancy and debris impact forces. The structural design should be certified by a practicing Structural Engineer with relevant experience designing structures on flood prone lands.

Control B3:

All new electrical equipment, power points, wiring, fuel lines, sewerage systems or any other service pipes and connections must be waterproofed and/or located above the Flood Planning Level. All existing electrical equipment and power points located below the Flood Planning Level within the subject structure must have residual current devices installed that turn off all electricity supply to the property when flood waters are detected.

Connection to mains power supply, including metering equipment should be located above 3.6 m AHD. All electrical wiring, switches and outlets should, where possible be located above 3.6 m AHD. Earth core leakage systems or safety switches are to be installed. All wiring, connections and conduit below 3.6m AHD should be suitable for submergence in water. Conduits shall be installed so they will be self-draining in the event of flooding.

Heating and air-conditioning systems, including fuel supply and ducting, should be installed above 3.6 m AHD. Where this is not possible, they should be installed in such a manner as to minimise damage from submersion. This may be achieved through measures such as access for cleaning and draining of water after flood events, manually operated cut off valves for fuel supply lines and ducts, securely fastening heating equipment and fuel storage tanks to prevent buoyancy and movement and venting of fuel supply tanks at an elevation of 3.6 m AHD.

4.3 Floor Levels

Control C1:

New floor levels within the development shall be at or above the Flood Planning Level.

Although tennis courts' floor levels aren't restricted by FPL requirement due to their classification as outdoor recreational areas, the proposed squash club building's FPL should be 3.6 m AHD, setting at the 1% AEP flood level plus a 0.3 m freeboard.

Control C3:

All new development must be designed and constructed so as not to impede the floodway or flood conveyance on the site, as well as ensuring no net loss of flood storage in all events up to the 1% AEP event. For suspended pier/pile footings:

a) *The underfloor area of the dwelling below the 1% AEP flood level is to be designed and constructed to allow clear passage of floodwaters, taking into account the potential for small openings to block; and*
b) *At least 50% of the perimeter of the underfloor area is of an open design from the natural ground level up to the 1% AEP flood level; and It is sited to minimise exposure to flood hazard.*
c) *No solid areas of the perimeter of the underfloor area would be permitted in a floodway*

The site is located within Flood Fringe in a 1% AEP event and has no net loss of flood storage in all events up to the 1% AEP event.

Control C4:

A one-off addition or alteration below the Flood Planning Level of less than 30 square metres (in total, including walls) may be considered only where:

a) *It is an extension to an existing room; and*
b) *The Flood Planning Level is incompatible with the floor levels of the existing room; and*
c) *Out of the 30 square metres, not more than 10 square metres is below the 1% AEP flood level.*

This control will not be permitted if this provision has previously been utilised since the making of this Plan. The structure must be floodproofed to the Flood Planning Level, and the Flood Management Report must demonstrate that there is no net loss of flood storage in all events up to the 1% AEP event.

The proposed squash building levels are above the FPL therefore this control is not applicable.

Control C6:

Consideration may be given to the retention of an existing floor level below the Flood Planning Level when undertaking a first floor addition provided that:

a) *it is not located within a floodway; and*
b) *the original foundations are sufficient to support the proposed final structure above them. The Flood Management Report must include photos and the structural certification required as per Control B2 must consider whether the existing foundations are adequate or should be replaced; and*
c) *none of the structural supports/framing of existing external walls of are to be removed unless the building is to be extended in that location; and*
d) *the ground floor is floodproofed.*

Not applicable.

Control C7:

Consideration may be given to a floor level below the Flood Planning Level within the first 5 metres from the street front in an existing business zone provided it can be demonstrated that:

a) *The minimum floor level is no lower than the adjacent footpath level, and*
b) *The maximum internal distance from the front of the building is 5 metres, which can only apply to one side of an individual premises, and*
c) *The maximum area for the floor area to be below the Flood Planning Level for an individual premises is 30 square metres, and*

d) *There is direct internal access between areas above and below the Flood Planning Level for each individual premises*

The proposed squash building levels are not below the FPL therefore this control is not applicable.

4.4 Car Parking

Controls D1 - 6:

1. *Open carpark areas and carports shall not be located within a floodway.*
2. *The lowest floor level of open carparks and carports shall be constructed no lower than the natural ground levels, unless it can be shown that the carpark or carport is free draining with a grade greater than 1% and that flood depths are not increased.*
3. *Carports must be of open design, with at least 2 sides completely open such that flow is not obstructed up to the 1% AEP flood level. Otherwise it will be considered to be enclosed.*
   When undertaking a like-for-like replacement and the existing garage/carport is located on the street boundary and ramping is infeasible, consideration may be given for dry floodproofing up to the 1% AEP flood level.
4. *Where there is more than 300mm depth of flooding in a car park or carport during a 1% AEP flood event, vehicle barriers or restraints are to be provided to prevent floating vehicles leaving the site. Protection must be provided for all events up to the 1% AEP flood event.*
5. *Enclosed Garages must be located at or above the 1% AEP level*
6. *All enclosed car parks (including basement carparks) must be protected from inundation up to the Flood Planning Level. All access, ventilation, driveway crests and any other potential water entry points to any enclosed car parking shall be above the Flood Planning Level.*
   Where a driveway is required to be raised it must be demonstrated that there is no net loss to available flood storage in any event up to the 1% AEP flood event and no impact on flood conveyance through the site.
   Council will not accept any options that rely on electrical, mechanical or manual exclusion of the floodwaters from entering the enclosed carpark.

There is no proposed carpark, so these controls are not applicable to the site.

4.5 Emergency Response

Controls E1:

If the property is affected by a Flood Life Hazard Category of H3 or higher, then Control E1 applies and a Flood Emergency Assessment must be included in the Flood Management Report.

If the property is affected by a Flood Life Hazard Category of H6, then development is not permitted unless it can be demonstrated to the satisfaction of the consent authority that the risk level on the property is or can be reduced to a level below H6 or its equivalent.

If the property is flood affected but the Flood Life Hazard Category has not been mapped by Council, then calculations for its determination must be shown in the Flood Management Report, in accordance with the "Technical Flood Risk Management Guideline: Flood Hazard", Australian Institute for Disaster Resilience (2012).

Where flood-free evacuation above the Probable Maximum Flood level is not possible, new development must provide a shelter-in-place refuge where:

a) *The floor level is at or above the Probable Maximum Flood level; and*
b) *The floor space provides at least 2m2 per person where the flood duration is long (6 or more hours) in the Probable Maximum Flood event, or 1m2 per person for less than 6 hours;*
c) *It is intrinsically accessible to all people on the site, plainly evident, and self-directing, with sufficient capacity of access routes for all occupants without reliance on an elevator; and*

d) *It must contain as a minimum: sufficient clean water for all occupants; portable radio with spare batteries; torch with spare batteries; and a first aid kit*

Class 10 classified buildings and structures (as defined in the Building Codes of Australia) are excluded from this control.

In the case of change of use or internal alterations to an existing building, a variation to this control may be considered if justified appropriately by a suitably qualified professional.

Note that in the event of a flood, occupants would be required to evacuate if ordered by Emergency Services personnel regardless of the availability of a shelter-in-place refuge.

The flood life hazard of the subject site has been assessed as H5 (refer to Figure 6). Flood Emergency Assessment has been included below. The effectiveness of the assessment/ plan is based on the reliance of evacuation for the Warringah Recreation Club, and the plan is owned, understood and practiced by the site management and administration staff.

4.5.1 Flood Emergency Assessment

4.5.1.1 Flood Evacuation

The State Emergency Service of New South Wales (NSW SES) is responsible for providing flood updates and issuing Flood Evacuation Warnings and Flood Evacuation Orders. Flood information issued by the NSW SES may be received by local, radio and television news, SMS messaging, Facebook and door-knocking in affected communities. The timing for evacuation of persons is to be established in consultation with the NSW SES.

To increase the flood-readiness of the occupants of the property, owners/occupiers of the site should be made aware of FloodSafe kits developed by the NSW SES which aid household development of a Flood Emergency Plan. Information regarding FloodSafe kits is available from https://www.ses.nsw.gov.au/disaster-tabs-header/flood/.

Additionally, Northern Beaches Flood Warning System will provide a basic flash flood warning system to the community, through live publishing of rainfall and water level gauges. The information is provided on a public website and available from http://www.mhl.nsw.gov.au/users/NBFloodWarning/. Site management is recommended to monitor rainfall and water levels in the adjacent creek (Brookvale Creek) regarding the potential for, or occurrence of intensive rainfall events that may lead to flooding.

4.5.1.2 Evacuate Route

Manly Lagoon Floodplain Risk Management Study and Plan states “current advice is to watch out for 70mm rainfall in 3 hours and/or 150mm rainfall in 24 hours and when flash flooding is likely, leave low-lying homes and business well before any flooding begins. Evacuation is the best action to take, but only if it is safe to do so.”

During small flood events, evacuation route for pedestrian and vehicular access is through Kentwell Road to a higher point located in Corrie Road as shown in purple arrow. (Refer to **Error! Reference source not found.**).

Figure 9: Evacuation Route (extracted from Stellen Consulting Flood Management Plan)

4.5.1.3 Sage Congregation Area

Evacuation can be an effective strategy if there is sufficient time available and evacuation is properly planned and executed. Evacuation is dependent on flood warning time and effective warning time and time to enact the evacuation before evacuation routes are cut or emergency services are no longer able to rescue the occupants due to unsafe weather or flood conditions or because occupants are overwhelmed.

The proposed squash building floor levels (3.6 m AHD) allows occupants to shelter within the building during any flood event up to 1% AEP event; however, control E1 requires the floor level of shelter-in-place is at or above the PMF.

The proposed golf club is part of the board Warringah Recreation Centre development so the first floor of the golf club building can be utilized as a flood free 'communal refuge' area.

The proposed golf club first floor should be set above the PMF 5.69 m AHD with a minimum area of 345 m^2, allowing a minimum of 2 m^2 of space available per occupant to shelter within the building during any flood event up to and including the PMF.

4.6 Fencing

Control F1:

Fencing, (including pool fencing, boundary fencing, balcony balustrades and accessway balustrades) shall be designed so as not to impede the flow of flood waters and not to increase flood affectation on surrounding land. At least 50% of the fence must be of an open design from the natural ground level up to the 1% AEP flood level. Less than 50% of the perimeter fence would be permitted to be solid. Openings should be a minimum of 75 mm x 75mm.

All fencing around the tennis courts within the overland flow path shall be of an open type to allow for the free flow of floodwaters throughout the site.

4.7 Storage of Goods

Control G1:

Hazardous or potentially polluting materials shall not be stored below the Flood Planning Level unless adequately protected from floodwaters in accordance with industry standards.

All fencing around the tennis courts within the overland flow path shall be of an open type to allow for the free flow of floodwaters throughout the site.

4.8 Pools

Control H1:

Pools located within the 1% AEP flood extent are to be in-ground, with coping flush with natural ground level. Where it is not possible to have pool coping flush with natural ground level, it must be demonstrated that the development will result in no net loss of flood storage and no impact on flood conveyance on or from the site.

All electrical equipment associated with the pool (including pool pumps) is to be waterproofed and/or located at or above the Flood Planning Level.

All chemicals associated with the pool are to be stored at or above the Flood Planning Level.

There is no proposed pool, so this control is not applicable to the site.

5 Conclusion

Based on available information, the proposed development has been assessed against the Warringah DCP Clause E11 and ACOR is of the view the proposed development complies with Northern Beaches Council flood planning requirements.

The subject site is assessed as medium hazard during 1% AEP events and is anticipated the 1% AEP floodwaters impact the site at elevation 3.3 m AHD, causing inundation of the site up to 0.3 m depths, while the PMF floodwaters impact the site frontage at elevation 5.69 m AHD.

There are no FPL applicable to the tennis courts, while the proposed squash club building floor levels are recommended to be set at 3.6 m AHD.

The first floor of the proposed golf club, as being part of the board Warringah Recreation Centre development, first floor should be set above the PMF 5.69 m AHD, hence enabling shelter-in-place arrangements during all storm events up to and including the PMF.

The site also provides evacuation routes through Kentwell Road to a higher point located in Corrie Road during small flood events.

The flood affectation of the site is not increased or made worse by the proposed development, in fact, the net cut volume of 128 m^3 improves the flood storage of the site.

We trust the above complies with Northern Beaches Council's flood requirements upon the proposed development. If there are any queries or wish to discuss anything further, please do not hesitate to contact the undersigned.

Yours faithfully,

ACOR Consultants Pty Ltd

Gregory Lyell

Civil Team Leader

CPEng, NER, APEC Engineer, IntPE(AUS)

Appendix A Proposed Architectural Plans Prepared by Webber Architects

WARRINGAH RECREATION CENTRE

NORTHERN BEACHES COUNCIL

KENTWELL RD AT PITTWATER RD, NORTH MANLY

Lot 2742 DP 752038

DRAWING LIST	
DWG	DRAWING NAME
0200	SITE ANALYSIS
0200a	SITE ANALYSIS
0201	SITE PLAN - DEMOLISHED
0202	SITE PLAN - PROPOSED

PROJECT ADDRESS

NOT TO SCALE

REV	DATE	DESCRIPTION	BY	CHK
A	10.05.2024	ISSUED FOR COORDINATION	CT	

DRAWINGS COLOUR CODED
PRINT ALL COPIES IN COLOUR

BUILDER TO CONFIRM ALL DETAILS, SETOUTS (TILE, BUILDING, ETC.), FALLS, DIMENSIONS & CONNECTIONS ON SITE PRIOR TO CONSTRUCTION

northern beaches council

NSW GOVERNMENT

webber

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Nominated Architect: Jon Webber AIA NSW ARB No 6630 | ABN 83 140 602 188

ISSUED

PRELIMINARY ONLY

NOT FOR CONSTRUCTION

COVERSHEET
WARRINGAH RECREATION CENTRE
KENTWELL RD AT PITTWATER RD, NORTH MANLY
Lot 2742 DP 752038

COMMENCEMENT DATE : SEPT 2023

SHEET NUMBER : **000000 / 0101 / A**

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CONTRACTOR NOTES

Note 01	All proprietary fixtures and fittings are to be installed to manfacturers specifications and comply with relevant Australian Standards.
Note 02	All GPO's to be 300mm above finished floor level unless otherwise noted.
Note 03	The Contractor is to supply, install, and certify hard-wired smoke dectectors as required by current relevant codes and regulations. Locations indicated on plan are indicative only to maintain architectural aesthetic. Code compliance should be confirmed with the Architect on site prior to installation.
Note 04	The Architectural services layout drawing and the product specification outline is produced to convey the intent of the architectural design and selected fittings & fixtures. The electrical Contractor is responsible for design, install, and certifying entire electrical installation to the current edition of the Building Code (including Part 3.12.5.5) & relevant Australian standards. Locations indicated on plan are indicative only and code compliance should be confirmed with the Architect on site prior to installation.
Note 05	The Contractor is to provide 48 hours notice for inspection by the Architect upon completion of electrical rough-in of cabling prior to provision of wall linings or finishes.
Note 06	The Contractor is to confirm with the lighting supplier that the nominated lighting diagram will provide adequate lux lighting levels. Should suitable levels not be achieved with the current selections the Contractor will work with the lighting supplier to recommend alternative fittings or fixture layouts. The Contractor is to provide dimmable downlights & dimmer controls to lighting circuits nominated on the drawings.
Note 07	The Contractor is responsible to investigate condition and code compliance of existing services, mains supply, distribution and switchboards or wiring nominated to be reincorporated in the works and advise the Architect of outcomes.
Note 08	The Contractor is responsible to coordinate identical colour temperature fittings throught the same internal and external space.
Note 09	The Contractor must provide written certification for compliance with statutory or BASIX energy requirements.
Note 10	Contractor to ensure all fittings, outlets, and switches are located clear of water sources to Australian Standard requirements.
Note 11	All light switches are to be installed bewteen 900mm and 1000mm above finished floor level.
Note 12	The Contractor is responsible for preparation, submission, andpayment of relevant authority fees and applications to complete the works.
Note 13	All lights to be fluoroescent or LED fittings - Contractor to provide confirmation nominated fittings are suitable.
Note 14	Provided image may not accurately represent final product.
Note 15	Contractor to allow for power connections to external A/C condensor unit, hot water system and rainwater tank pump.

KEYNOTE LEGEND

AWN	
B1	BALUSTRADE - TYPE 1
BOL1	BOLLARD - TYPE 1
BR5	BIKE RACK - 5 BIKES
CON1	CONCRETE - TYPE 1
CON2	CONCRETE - TYPE 2
CON3	CONCRETE - TYPE 3
F1	FENCE - TYPE 1
F2	FENCE - TYPE 2
F3	FENCE - TYPE 3
FRP	FIRE PLACE
G1	GATE - TYPE 1
G2	GATE - TYPE 2
GD	GRATED DRAIN
H1	HANDRAIL - TYPE 1
HC	HOSE COCK
LP1	LIGHT POLE - TYPE 1
LP2	LIGHT POLE - TYPE 2
LP3	LIGHT POLE - TYPE 3
LP4	LIGHT POLE - TYPE 4
MAT1	
MRS1	METAL ROOF SHEETING - TYPE 1
ODF	OUTDOOR DRINKING FOUNTAIN
RW1	RETAINING WALL - TYPE 1
SF1	STREET FURNITURE - TYPE 1
SF2	STREET FURNITURE - TYPE 2
SF3	STREET FURNITURE - TYPE 3
SGN1	SIGN - TYPE 1
TCE	TENNIS COURT EQUIPMENT
TFB1	TIMBER FLOOR BOARDS - TYPE 1
TGSI	TACTILE GROUND SURFACE INDICATOR
XHYD	EXISTING HYDRANT

REFLECTED CEILING PLAN & SERVICES LEGEND

LIGHTING & ELECTRICAL SERVICES

OVEN	7.01	GPO - SINGLE (SPECIFIC USE MAY BE INDICATED)
2	7.02	GPO - DOUBLE
2 +USB	7.03	GPO - DOUBLE +USB
WP	7.04	GPO - WEATHERPROOF SINGLE
2 WP	7.05	GPO - WEATHERPROOF DOUBLE
x 3	7.06	LIGHT SWITCH - MULTI-GANG
F	7.07	FAN SWITCH
	7.08	DOWNLIGHT - EXTERNAL
	7.09	DOWNLIGHT - INTERNAL FIXED RECESSED
IP65	7.10	DOWNLIGHT - INTERNAL FIXED RECESSED WET AREA
	7.11	DOWNLIGHT - INTERNAL GIMBAL RECESSED
IP65	7.12	DOWNLIGHT - INTERNAL GIMBAL RECESSED WET AREA
	7.13	DOWNLIGHT - INTERNAL FIXED SURFACE MOUNTED
IP65	7.14	DOWNLIGHT - INTERNAL FIXED SURFACE MOUNTED WET AREA
	7.15	DOWNLIGHT - INTERNAL GIMBAL SURFACE MOUNTED
IP65	7.16	DOWNLIGHT - INTERNAL GIMBAL SURFACE MOUNTED WET AREA
	7.17	DOWNLIGHT - INTERNAL WALL LIGHT
IP65	7.18	DOWNLIGHT - INTERNAL WALL LIGHT WET AREA
	7.19	BATHROOM HEAT LIGHT
	7.20	EXTERNAL MOTION SENSOR FLOOD LIGHT
P1	7.21	INTERNAL PENDANT LIGHT - TYPE 1
P2	7.22	INTERNAL PENDANT LIGHT - TYPE 2
P3	7.23	INTERNAL PENDANT LIGHT - TYPE 3
	7.24	FLUORESCENT LIGHT
	7.25	MOTION SENSOR
	7.26	CEILING FAN WITH LIGHT
	7.27	CEILING FAN NO LIGHT

BUILDING SERVICES

DB	7.50	ELECTRICAL DISTRIBUTION BOARD
SB	7.51	ELECTRICAL SWITCH BOARD
MSB	7.52	ELECTRICAL MAIN SWITCH BOARD
COMM	7.53	COMMUNICATIONS RACK
HWS	7.54	HOT WATER SYSTEM
GAS	7.55	GAS METER / CONNECTION POINT
WAT	7.56	WATER METER / CONNECTION POINT
NTD	7.57	NBN NETWORK TERMINATION DEVICE
PCD	7.58	NBN PREMISES CONNECTION DEVICE
SEC	7.59	SECURITY SYSTEM CONNECTION POINT
PV	7.60	PHOTOVOLTAIC INVERTER SYSTEM
BATT.	7.61	PHOTOVOLTAIC ELECTRIC STORAGE BATTERY
TV	7.62	TV AERIAL CONNECTION POINT
FB	7.63	FIRE BLANKET
S	7.64	HARDWIRED SMOKE ALARM
	7.65	HARDWIRED DOOR BELL
	7.66	WIFI CONNECTION POINT
EXIT	7.67	EMERGENCY EXIT SIGN
A P	7.68	CEILING ACCESS PANEL
G	7.69	GAS BAYONET
S	7.70	SECURITY SYSTEM CONTROL PANEL
D	7.71	DATA OUTLET - SINGLE
D 2	7.72	DATA OUTLET - DOUBLE
P	7.73	TELEPHONE OUTLET
L	7.74	LIFT CONTROL PANEL
	7.75	FOXTEL CONNECTION POINT

BUILDING SERVICES - MECHANICAL

A/C COND	7.90	AIR CONDITIONING - CONDENSER UNIT
A/C	7.91	AIR CONDITIONING - SURFACE MOUNTED UNIT
A/C GRILLE	7.92	AIR CONDITIONING - WALL GRILLE
	7.93	AIR CONDITIONING - CEILING VENT
IN	7.94	AIR CONDITIONING - AIR INTAKE
A/C	7.95	AIR CONDITIONING - SYSTEM CONTROL PANEL
	7.96	EXHAUST FAN - INTAKE
	7.97	EXHAUST FAN - SURFACE MOUNTED INTAKE
	7.98	EXHAUST FAN - OUT FLOW

NOT ALL SYMBOLS ARE USED IN THIS PROJECT

GREY OUT ANY TEXT WHICH IS NOT USED IN THE PROJECT AND REMOVE THIS NOTE

SAFETY IN DESIGN NOTES

CONTRACTORS REQUIREMENTS

SD1	THE SAFETY RISK MITIGATION ITEMS BELOW ARE BASED ON WEBBER ARCHITECT'S DESIGN OFFICE EXPERIENCE AND DO NOT NECESSARILY ACCOUNT FOR ALL CONSTRUCTION, OPERATION, MAINTENANCE AND DEMOLITION SAFETY RISKS BASED ON INFORMATION AVAILABLE WHEN THIS DRAWING WAS MADE, IN ITS CAPACITY AS DESIGNER ONLY, WEBBER ARCHITECTS HAS ATTEMPTED TO IDENTIFY SAFETY RISKS PERTAINING TO CONSTRUCTION, OPERATION, MAINTENANCE AND DEMOLITION PHASES OF THE BUILDING OR ASSET. INCLUSION (OR NOT) OF ANY ITEM DOES NOT REDUCE OR LIMIT OBLIGATIONS OF THE CONSTRUCTOR, USER, MAINTAINER AND DEMOLISHER TO UNDERTAKE APPROPRIATE RISK MANAGEMENT ACTIVITIES TO REDUCE RISK AND IS NOT AN ADMISSION BY WEBBER ARCHITECTS THAT INCLUSION OF ANY ITEM IS THE DESIGNER'S RESPONSIBILITY.
SD2	ESTABLISH A SECURE CONSTRUCTION ZONE TO INCORPORATE THE ENTIRE WORKSITE BY MEANS OF TEMPORARY FENCING, HOARDING OR SIMILAR TO EXCLUDE ACCESS TO UNAUTHORISED PERSONS. MAINTAIN A CONTROLLED ENTRY & SITE INDUCTION PROCESS FOR VEHICLES AND CONTRACTORS.
SD3	ESTABLISH A SITE SHED OR OFFICE WITHIN THE CONSTRUCTION ZONE. LOCATE NEAR CONTRACTOR AMENITIES, ACCESS TO COMMUNICATIONS, FIRST AID, POTABLE WATER SUPPLY & TEMPORARY FIRE FIGHTING EQUIPMENT. DETERMINE EMERGENCY EVACUATION POINTS, ACCESS FOR EMERGENCY SERVICES & CONGREGATION AREAS. INFORM ALL PERSONS DURING THE SITE INDUCTION PROCESS. DISPLAY AFTER HOURS EMERGENCY CONTACT DETAILS IN A PROMINENT POSITION ON THE SITE.
SD4	OBTAIN ALL AVAILABLE INFORMATION OF THE EXISTING SITE OR BUILDING STRUCTURE PRIOR TO COMMENCEMENT ON SITE, INCLUDING HAZMAT REPORT, GEOTECHNICAL INVESTIGATION, DIAL BEFORE YOU DIG INFORMATION, BUILDING CONDITION REPORT OR THE LIKE. DETERMINE LOCATION OF HAZARDS & HAZARDOUS MATERIALS OR AREAS BY MEANS OF SUPPLIED INFORMATION AND DEMARCATE.
SD5	PRIOR TO UNDERTAKING THE FOLLOWING, NOTIFY ALL AFFECTED PARTIES, CONSULTANTS, CONTRACTORS, NEIGHBOURING PROPERTIES, BUILDING OCCUPANTS & STATUTORY AUTHORITIES OF COMMENCEMENT OF WORK, DELIVERY & HEAVY VEHICLE MOVEMENTS, SERVICE OUTAGES, DUST OR NOISE GENERATING ACTIVITIES, DEMOLITION, HAZARDOUS SUBSTANCES REMOVAL OR THE LIKE.
SD6	MAINTAIN A CLEAN AND TIDY SITE AT ALL TIMES TO REDUCE THE CHANCE OF SLIPS, TRIPS OR INJURY TO SITE OCCUPANTS. STOCKPILE MATERIALS & IMPLEMENT A DESIGNATED WASTE MANAGEMENT STRATEGY.
SD7	DETERMINE THE IMPACT OF THE WORKS ON PUBLIC ROADS, TRAFFIC OR PEDESTRIAN PATHS. IMPLEMENT MEASURES TO MITIGATE THIS IMPACT.
SD8	INSTALL TEMPORARY MEASURES OR CONSTRUCT PERMANENT BUILDING ELEMENTS THAT CONTRIBUTE TO SAFETY SUCH AS HANDRAILS AND TOE BOARDS, SCAFFOLDING, FALL ARREST SYSTEMS, FALLING OBJECT CONTROL, ACCESS STAIRS, WASTE CHUTES AND THE LIKE AS EARLY AS POSSIBLE. PROVIDE SAFETY BARRIERS AT EDGES OF OPENINGS AND ELEVATED AREAS.
SD9	REVIEW ADEQUACY OF WORKING SPACE AVAILABLE FOR CONSTRUCTION ACTIVITIES. ENSURE SEPARATION OF PLANT AND PERSONNEL ON SITE, INCLUDING MOVEMENTS OF BOTH. PROVIDE PROTECTION TO PERSONNEL FROM PLANT & EQUIPMENT IF NECESSARY.
SD10	LOCATE LIFTING SLEW AND LAYDOWN AREAS AWAY FROM REGULAR CONSTRUCTION TRAFFIC. LOCATE STOCKPILES & HEAVY EQUIPMENT INCLUDING CRANES AWAY FROM BURIED SERVICES AND BUILDING BOUNDARIES. SEEK ADVICE FROM SUITABLY QUALIFIED GEOTECHNICAL OR STRUCTURAL ENGINEER PRIOR TO HEAVY SURFACE PLANT & EQUIPMENT OR STOCKPILING NEAR OPEN EXCAVATIONS OR RETAINING STRUCTURES.
SD11	ENSURE ISOLATION SAFE SYSTEMS OF WORK OR PROTECTIVE MEASURES ARE INSTALLED BEFORE WORKING NEAR LIVE ELECTRICAL OR BUILDING SERVICES INFRASTRUCTURE. PROVIDE PROTECTION OF EXISTING & NEW ELECTRICAL SYSTEMS DURING CONSTRUCTION.
SD12	OBTAIN PERMITS, GROUND SERVICES SEARCH, GEOTECHNICAL EXCAVATION & STRUCTURAL OR CIVIL ENGINEER'S RECOMMENDATION PRIOR TO EXCAVATION GRATER THAN 1 METRE DEPTH OR ADJACENT EXISTING OR PROPOSED BUILDINGS, FOUNDATIONS, RETAINING WALLS OR STRUCTURES. MITIGATE RISK OF COLLAPSE DUE TO GROUND OR SURFACE WATER, OR UNSUITABLE SOIL CONDITIONS. WRITTEN RISK ASSESSMENTS AREA ADVISED FOR ACCESS TO OPEN EXCAVATIONS. PROVIDE ACCESS & EGRESS TO EXCAVATIONS APPROPRIATE IN CASE OF INUNDATION, COLLAPSE OR ENGULFMENT.
SD13	SEEK ADVICE FROM SUITABLY QUALIFIED STRUCTURAL ENGINEER IF PLANNING CRANE LIFTS OR HOIST INSTALLATION ON PARTIALLY ERECTED OR SUSPENDED STRUCTURES.
SD14	SEEK ADVICE FROM SUITABLY QUALIFIED STRUCTURAL ENGINEER BEFORE CORING, CHASING, CUTTING OR REMOVAL OF EXISTING OR NEW CONCRETE & REINFORCEMENT. INSTRUCT SERVICES CONTRACTORS UNDER NO CIRCUMSTANCES CAN STRUCTURAL MEMBERS BE CUT OR DRILLED TO ACCOMMODATE NEW SERVICES WITHOUT PRIOR WRITTEN APPROVAL FROM A SUITABLY QUALIFIED STRUCTURAL ENGINEER.
SD15	ESTABLISH LOCATIONS OF LIVE EMBEDMENT BEFORE CUTTING THROUGH SLABS, WALLS ETC.
SD16	DEVELOP STRUCTURAL STEELWORK, SUSPENDED CONCRETE, ROOF AND ELEVATED FRAME INSTALLATION SAFE WORK METHOD STATEMENT TO ELIMINATE & MINIMISE INSTALLATION RISKS PRIOR TO COMMENCEMENT AND HAVE A SUITABLY QUALIFIED ENGINEER REVIEW PRIOR TO ERECTION.
SD17	MINIMISE SITE BASED TREATMENTS (EG. WELDING, CUTTING, SPRAY PAINTING, GRIT BLASTING, HAZARDOUS MATERIALS AND CHEMICAL STORAGE). ENSURE ADEQUATE PROTECTION, SCREENING AND VENTILATION TO MINIMISE RISK TO PERSONNEL IF SITE TREATMENT IS UNAVOIDABLE.
SD18	AVOID WORKING IN CONFINED SPACES. IF CONFINED SPACES WORK CAN'T BE AVOIDED, PROVIDE A SAFE WORK METHOD STATEMENT ADDRESSING MITIGATION OF RISKS. PROVIDE ADEQUATE SIGNAGE TO TEMPORARY AND PERMANENT CONFINED SPACES TO AS 2865.
SD19	AVOID HOT WORKS ON SITE PARTICULARLY IN TIMBER FRAMED STRUCTURES. HOT WORKS TO COMPLY WITH REQUIRED PROCEDURES OR 'APPLICABLE HOT WORKS' PERMITS.
SD20	FACILITATE REGULAR SITE OCCUPATIONAL HEALTH & SAFETY INSPECTIONS BY THE CLIENT OR CLIENT'S REPRESENTATIVE TO MEET THE REQUIREMENTS OF THE CONTRACT AND CURRENT LEGISLATION. MAINTAIN A HARD COPY OF SITE OH&S RECORDS AND POLICIES ON SITE AT ALL TIMES.
SD21	OBTAIN A COPY OF THE FOLLOWING PROJECT SPECIFIC INFORMATION FROM THE ARCHITECT PRIOR TO COMMENCEMENT OF WORK AND DISTRIBUTE TO RELEVANT PARTIES: - DIAL BEFORE YOU DIG - BUILDING CONDITION REPORT - SITE SURVEY - DESIGNER'S SAFETY AND RISK ASSESSMENT REPORT

SAFETY IN DESIGN LEGEND

	HAZARD DESCRIPTION
A	INDICATES AMENITIES, FACILITIES, AND FIRST AID SERVICES
E	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH LIVE ELECTRICAL HAZARDS
EX	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH EARTHWORKS / EXCAVATION
FE	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH FIRE AND EMERGENCIES
MT	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH MANUAL TASKS AND/OR MAINTENANCE ACCESS
N	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH NOISE EXPOSURE
P	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH PLANT EQUIPMENT
PM	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH THE MOVEMENT OF PEOPLE AND/OR MATERIALS
R	INDICATES PROJECT SPECIFIC RISKS - OUTLINED BELOW WHERE APPLICABLE
S	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH HAZARDOUS SUBSTANCES
SS	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH STRUCTURAL SAFETY AND/OR DEMOLITION WORKS
WE	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH WORKING ENVIRONMENT AND/OR CONFINED SPACES
WH	INDICATES HIGH RISK ACTIVITIES ASSOCIATED WITH WORKING AT HEIGHTS AND/OR FALLING OBJECTS

	PROJECT SPECIFIC RISKS
R POWER LINES	THIS IS A PROJECT SPECIFIC RISK

REV	DATE	DESCRIPTION	BY	CHK
A	10.05.2024	ISSUED FOR COORDINATION	CT	

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GENERAL NOTES
WARRINGAH RECREATION CENTRE
KENTWELL RD AT PITTWATER RD, NORTH MANLY
Lot 2742 DP 752038
COMMENCEMENT DATE : SEPT 2023

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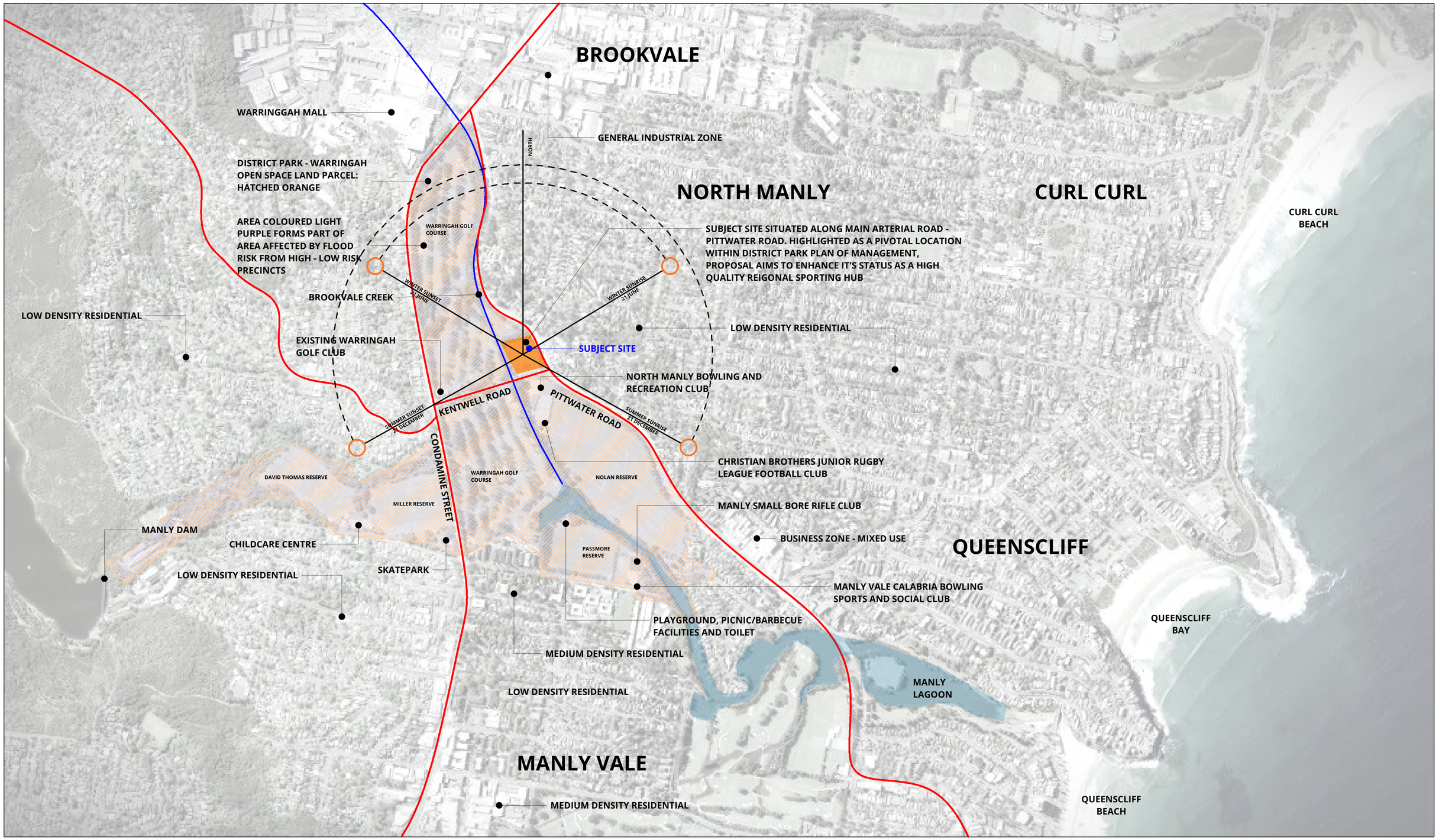
SCALE 1:100 @ A1

PRINT DATE: 10/05/2024 9:49:30 AM **FILE PATH:** C:\Users\CelineT\Documents\2950_231009_Warringah Rec_central_R23_celineQG8ZG.rvt



SITE ANALYSIS PLAN - OVERVIEW

NOT TO SCALE

REV	DATE	DESCRIPTION	BY	CHK
A	01.11.2023	FOR INFORMATION	CT	
B	13.11.2023	FOR RETURN BRIEF	CT	
C	11.01.2024	FOR RETURN BRIEF	CT	
D	10.05.2024	ISSUED FOR COORDINATION	CT	

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Nominated Architect: Jon Webber AIA NSW ARB No 6630 | ABN 83 140 602 188

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SITE ANALYSIS
WARRINGAH RECREATION CENTRE
KENTWELL RD AT PITTWATER RD, NORTH MANLY
Lot 2742 DP 752038

COMMENCEMENT DATE : SEPT 2023

SCALE

SHEET NUMBER : **000000 / 0200 / D**

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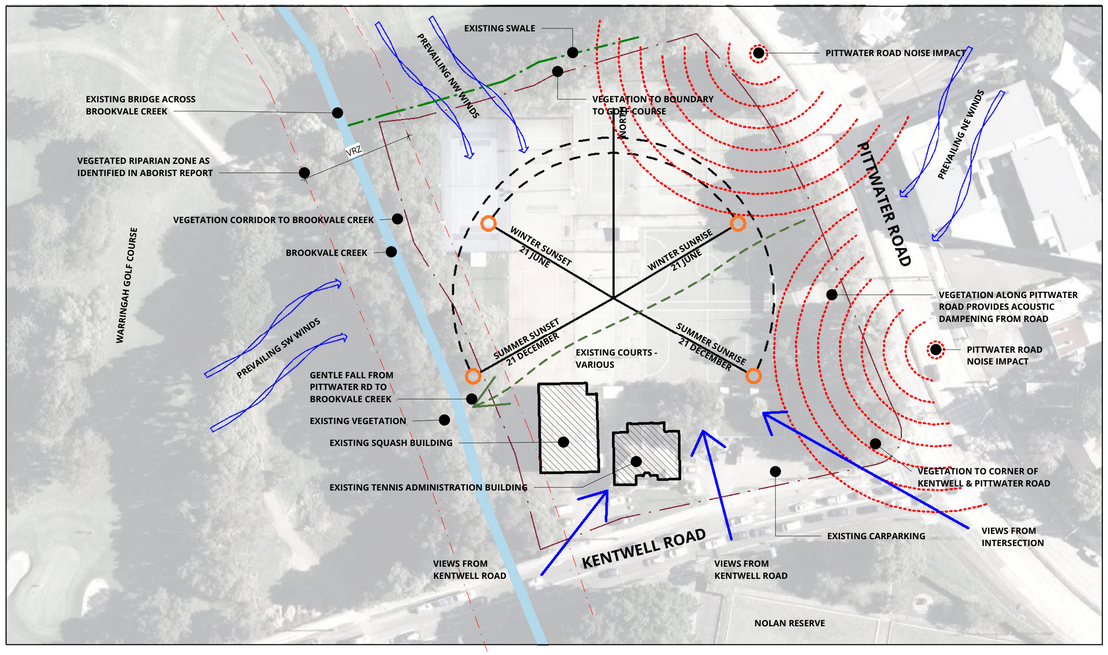
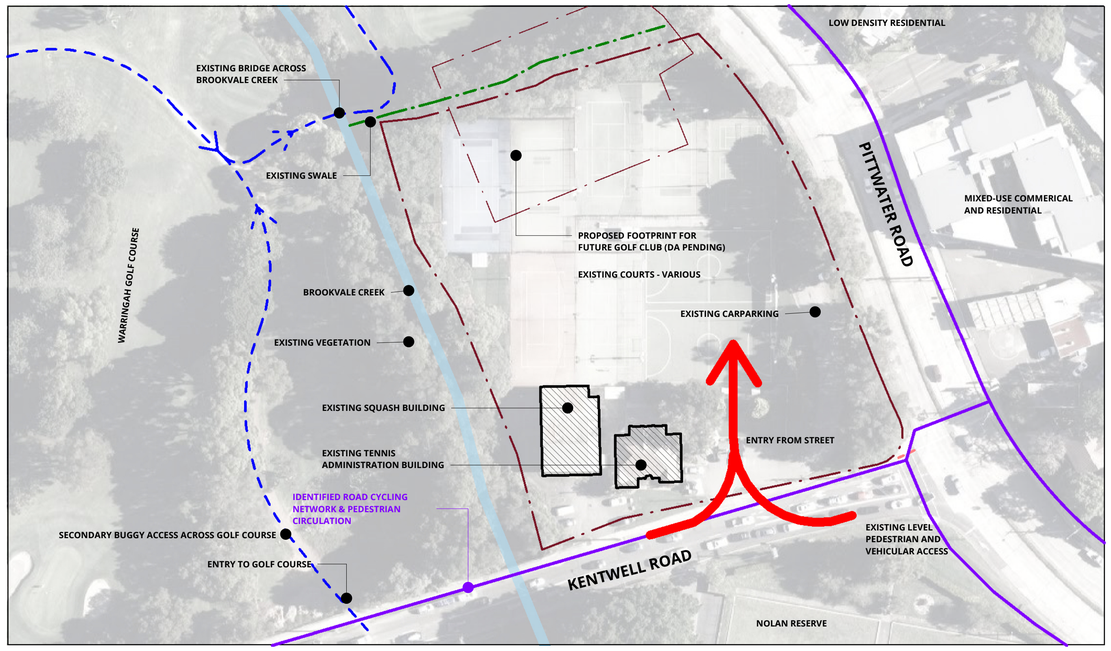


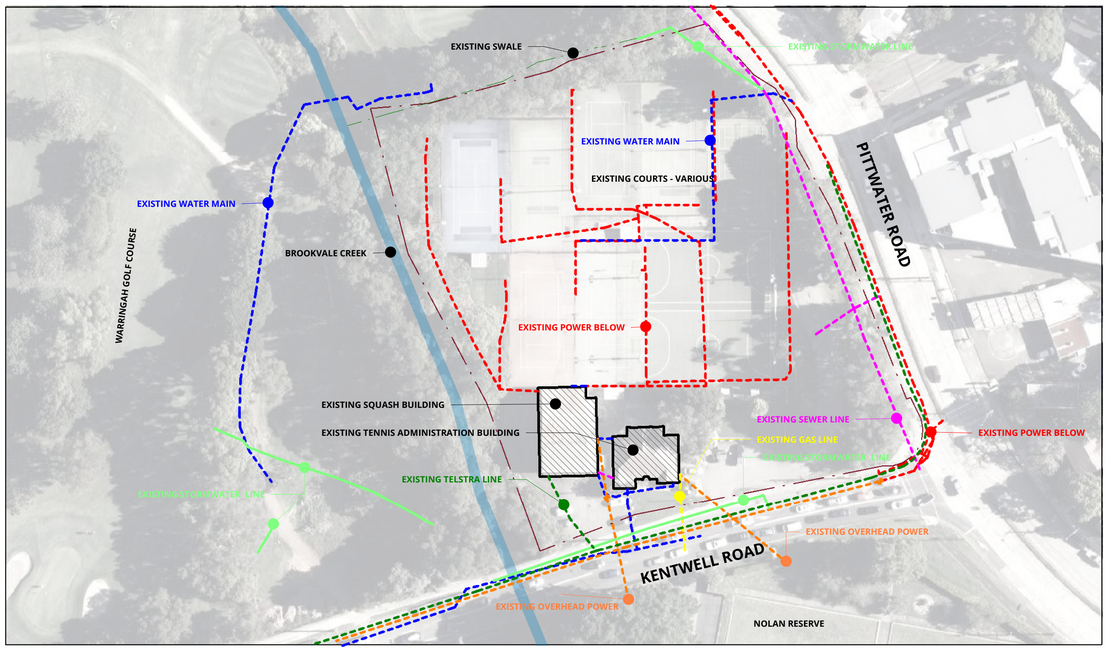
SITE ANALYSIS PLAN - ENVIRONMENTAL

NOT TO SCALE



SITE ANALYSIS PLAN - SITE CIRULATION

NOT TO SCALE



SITE ANALYSIS PLAN - SERVICES

NOT TO SCALE

OPPORTUNITIES

- VIEWS FROM KENTWELL ROAD AND PITTWATER ROAD INTERSECTION ALLOWS OPPORTUNITY TO PRESENT KEY ADDRESS TO ROAD AND PUBLIC REALM
- FLEXIBLE CIRCULATION WITHIN SITE DUE TO THE EXISTING LEVELS
- UTILISE TREE CANOPY ALONG PITTWATER ROAD FOR SPECTATOR VIEWING OF COURTS/URBAN RESTING AREAS
- CAPTURING FOCUSED, DIRECT CIRCULATION PATHWAYS DUE TO LOCALITY OF PROPOSED GOLF CLUB
- EXISTING ESTABLISHED LANDSCAPING PRESENTS OPPORTUNITY TO INTEGRATE WITH NEW FACILITIES

CONSTRAINTS

- SITE IS SUBJECT TO FLOODING IMPACTS WHICH MAY EFFECT SITE DESIGN WITH INCREASING RISK WITH PROXIMITY TO CREEK
- IN-GROUND SERVICES TO BE RE-DIRECTED
- MODERATE LEVEL OF TRAFFIC NOISE FROM PITTWATER ROAD
- VEGETATED RIPARIAN ZONE REDUCES SITE SIZE
- PENDING DA CONDITIONS MAY IMPACT FUNCTIONALITY OF SITE
- FINAL SITE CONDITION POST DEMOLITION IS NOT YET KNOWN

REV	DATE	DESCRIPTION	BY	CHK
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B	13.11.2023	FOR RETURN BRIEF	CT	
C	11.01.2024	FOR RETURN BRIEF	CT	
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Nominated Architect Jon Webber AIA NSW ARB No 6920 | ABN 83 140 910 186

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SITE ANALYSIS
WARRINGAH RECREATION CENTRE
KENTWELL RD AT PITTWATER RD, NORTH MANLY
Lot 2742 DP 752038

COMMENCEMENT DATE : SEPT 2023
SCALE

SHEET NUMBER : **000000 / 0200a / D**

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KEYNOTES

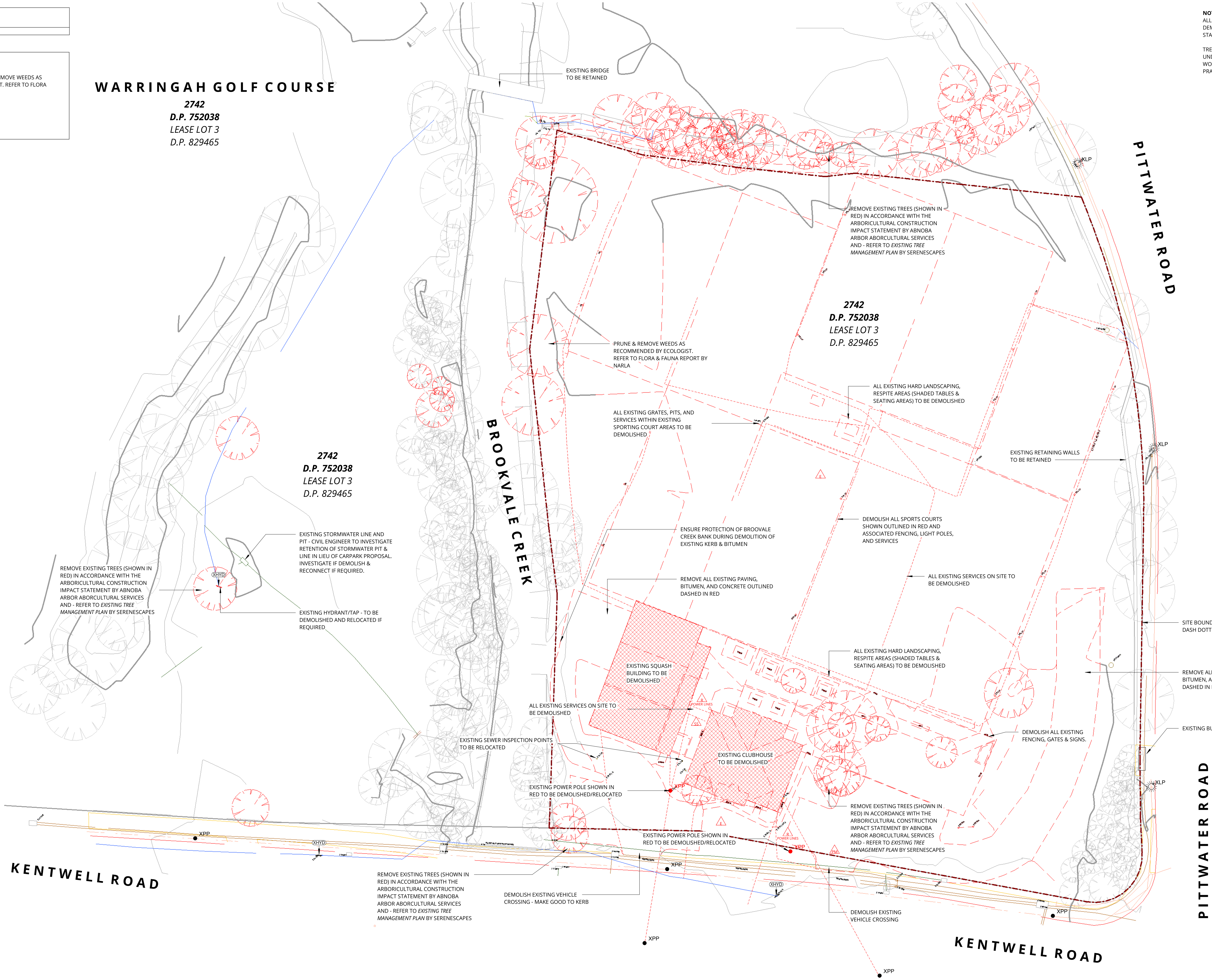
XHYD	EXISTING HYDRANT

SITE PLAN LEGEND

- DEMOLISH TREES, PRUNE & REMOVE WEEDS AS RECOMMENDED BY ECOLOGIST. REFER TO FLORA & FAUNA REPORT BY NARLA.
- XPP — EXISTING POWER POLE
- XLP — EXISTING LIGHT POLE

NOTE:
ALL DEMOLITION TO BE IN ACCORDANCE WITH AS2601 - THE DEMOLITION OF STRUCTURES AND ANY OTHER RELEVANT STANDARDS AND CODES OF PRACTICE

TREE REMOVAL AS PER THE ABORIST REPORT MUST BE UNDERTAKEN BY SUITABLY EXPERIENCED & QUALIFIED TREE WORKERS AS PER THE PROVISIONS WITHIN THE 'CODE OF PRACTICE: AMENITY TREE INDUSTRY, 1998 – SAFEWORK NSW.



WARRINGAH GOLF COURSE
2742
D.P. 752038
LEASE LOT 3
D.P. 829465
EXISTING BRIDGE TO BE RETAINED
PITTWATER ROAD
REMOVE EXISTING TREES (SHOWN IN RED) IN ACCORDANCE WITH THE ARBORICULTURAL CONSTRUCTION IMPACT STATEMENT BY ABNOBA ARBOR ABORCULTURAL SERVICES AND - REFER TO EXISTING TREE MANAGEMENT PLAN BY SERENESCAPES
PRUNE & REMOVE WEEDS AS RECOMMENDED BY ECOLOGIST. REFER TO FLORA & FAUNA REPORT BY NARLA
ALL EXISTING HARD LANDSCAPING, RESPITE AREAS (SHADED TABLES & SEATING AREAS) TO BE DEMOLISHED
ALL EXISTING GRATES, PITS, AND SERVICES WITHIN EXISTING SPORTING COURT AREAS TO BE DEMOLISHED
EXISTING RETAINING WALLS TO BE RETAINED
XLP
BROOKVALE CREEK
ENSURE PROTECTION OF BROOVALE CREEK BANK DURING DEMOLITION OF EXISTING KERB & BITUMEN
DEMOLISH ALL SPORTS COURTS SHOWN OUTLINED IN RED AND ASSOCIATED FENCING, LIGHT POLES, AND SERVICES
EXISTING STORMWATER LINE AND PIT - CIVIL ENGINEER TO INVESTIGATE RETENTION OF STORMWATER PIT & LINE IN LIEU OF CARPARK PROPOSAL. INVESTIGATE IF DEMOLISH & RECONNECT IF REQUIRED.
XHYD
EXISTING HYDRANT/TAP - TO BE DEMOLISHED AND RELOCATED IF REQUIRED
REMOVE ALL EXISTING PAVING, BITUMEN, AND CONCRETE OUTLINED DASHED IN RED
ALL EXISTING SERVICES ON SITE TO BE DEMOLISHED
SITE BOUNDARY SHOWN DASH DOTTED
EXISTING SQUASH BUILDING TO BE DEMOLISHED
ALL EXISTING SERVICES ON SITE TO BE DEMOLISHED
EXISTING SEWER INSPECTION POINTS TO BE RELOCATED
EXISTING CLUBHOUSE TO BE DEMOLISHED
DEMOLISH ALL EXISTING FENCING, GATES & SIGNS.
EXISTING BUS STOP TO BE RETAINED
EXISTING POWER POLE SHOWN IN RED TO BE DEMOLISHED/RELOCATED
POWER LINES
XPP
KENTWELL ROAD
DEMOLISH EXISTING VEHICLE CROSSING - MAKE GOOD TO KERB
DEMOLISH EXISTING VEHICLE CROSSING

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SITE PLAN - DEMOLISHED
WARRINGAH RECREATION CENTRE
KENTWELL RD AT PITTWATER RD, NORTH MANLY
Lot 2742 DP 752038

COMMENCEMENT DATE : SEPT 2023

0 1000 2000 3000 4000 5000 mm
SCALE 1:100 @ A1

PROJECT NORTH

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KEYNOTES

AWN	
B1	BALUSTRADE - TYPE 1
BOL1	BOLLARD - TYPE 1
BR5	BIKE RACK - 5 BIKES
CON1	CONCRETE - TYPE 1
CON2	CONCRETE - TYPE 2
CON3	CONCRETE - TYPE 3
F1	FENCE - TYPE 1
F2	FENCE - TYPE 2
F3	FENCE - TYPE 3
FRP	FIRE PLACE
G1	GATE - TYPE 1
G2	GATE - TYPE 2
GD	GRATED DRAIN
H1	HANDRAIL - TYPE 1
LP1	LIGHT POLE - TYPE 1
LP2	LIGHT POLE - TYPE 2
LP3	LIGHT POLE - TYPE 3
LP4	LIGHT POLE - TYPE 4
MRS1	METAL ROOF SHEETING - TYPE 1
ODF	OUTDOOR DRINKING FOUNTAIN
RW1	RETAINING WALL - TYPE 1
SF1	STREET FURNITURE - TYPE 1
SF2	STREET FURNITURE - TYPE 2
SF3	STREET FURNITURE - TYPE 3
SGN1	SIGN - TYPE 1
TCE	TENNIS COURT EQUIPMENT
TGSI	TACTILE GROUND SURFACE INDICATOR
XHYD	EXISTING HYDRANT

SITE PLAN LEGEND

PROPOSED TREES & LANDSCAPING REFER TO LANDSCAPING PLAN FOR FURTHER DETAIL

XPP EXISTING POWER POLE

XLP EXISTING LIGHT POLE

WARRINGAH GOLF COURSE
2742
D.P. 752038
LEASE LOT 3
D.P. 829465
WARRINGAH GOLF COURSE
EXISTING BRIDGE TO BE RETAINED - NO WORKS PROPOSED
RELOCATED SWALE WORKS - REFER TO SWALE UPGRADE LANDSCAPE & CIVIL DESIGN PREPARED BY CIVILLE FOR NORTHERN BEACHES COUNCIL
PITTWATER ROAD
CONCRETE FOOTPATH & LANDING TO WESTERN CARPARK CONNECTING FOOTBRIDGE
WARRINGAH GOLF CLUB
GENERAL BUILDING FOOTPRINT SHOWN GREY
AREA SHOWN HATCHED & BEYOND SITE BOUNDARY OUT OF SCOPE - REFER TO DOCUMENTATION PREPARED BY GROUP ARCHITECTS FOR WARRINGAH GOLF CLUB ASSOCIATED WORKS
12m HIGH GOLF BARRIER: DYNEEMA NETTING OR EQUIVALENT. CONFIRM SPECIFICATION WITH PROJECT MANAGER.
POTENTIAL CART ACCESS TO GOLF COURSE/SHARED TURNING ZONE
PROPOSED KERB SET DOWN COMPLIANT AS PER AS1428 THE RAMP AND SLOPING SIDES TO BE SLIP RESISTANT NATURAL FINISH TO MATCH KERBING.
PROPOSED PEDESTRIAN FOOT BRIDGE ACROSS BROOKVALE CREEK COMPLIANT WITH AS1428 - DESIGN AND CONSTRUCT BY NOMINATED CONTRACTOR
ALLOW TO TRANSITION EXTERNAL CONCRETE FOOTPATH TO EXTERNAL TERRACE BY WARRINGAH GOLF CLUB
ACCESSIBLE PARKING BAY & SHARED AREA TO AS2890.6 AND A1428.1
MAIN ENTRY
ACCESSIBLE PUBLIC TOILETS
COUNCIL ADMIN SPACE
PROPOSED KERB SET DOWN COMPLIANT AS PER AS1428 THE RAMP AND SLOPING SIDES TO BE SLIP RESISTANT NATURAL FINISH TO MATCH KERBING.
PROPOSED PEDESTRIAN CROSSING
PROPOSED LANDSCAPE
EXISTING RETAINING WALLS TO BE RETAINED
ACCESSIBLE PARKING BAY & SHARED AREA TO AS2890.6 AND A1428.1
NEW CONCRETE PEDESTRIAN FOOTPATH
ALLOW 5 DUAL OUTLET EV CHARGING POINT CARPARK BAYS BY OTHERS
PROPOSED LANDSCAPING EDGE WITH TIERED RETAINING WALLS TO RATIONALISE LEVEL CHANGE
TENNIS UMPIRE CHAIR - SELECTION TO BE CONFIRMED WITH PROJECT MANAGER
COMMERCIAL GRADE UV PROTECTION SHADE SAIL 4 OF & SUPPORT POSTS
CONNECT WATER TO FREESTANDING OUTDOOR DRINKING FOUNTAIN AS SPECIFIED
PROPOSED CARPARK SWALE CONNECTED TO EXISTING STORMWATER SYSTEM - REFER TO COUNCIL CARPARK DOCUMENTATION
EXISTING RETAINING WALLS TO BE RETAINED
ALLOW WATER POINT TO SQUASH BUILDING FOR LANDSCAPE MAINTAINANCE
ACCESSIBLE PARKING BAY & SHARED AREA TO AS2890.6 AND A1428.1
EXISTING BUS STOP TO BE RETAINED
PROPOSED KERB SET DOWN COMPLIANT AS PER AS1428
PROPOSED CARPARK SWALE CONNECTED TO EXISTING STORMWATER SYSTEM - REFER TO COUNCIL CARPARK DOCUMENTATION
3600.00 FFL
BROOKVALE CREEK
TENNIS COURT 01
DESIGNED AS PER TINSW GUIDELINES
TENNIS COURT 02
DESIGNED AS PER TINSW GUIDELINES
TENNIS COURT 05
DESIGNED AS PER TINSW GUIDELINES
TENNIS COURT 03
DESIGNED AS PER TINSW GUIDELINES
TENNIS COURT 04
DESIGNED AS PER TINSW GUIDELINES
EASTERN CARPARK
REFER TO CARPARK DESIGN BY COUNCIL
WESTERN CARPARK
REFER TO CARPARK DESIGN BY COUNCIL
ELEVATED PEDESTRIAN BOARDWALK - OPTIONAL/FUTURE STAGE
PROPOSED LANDSCAPE & COURTYARD
PROPOSED SQUASH BUILDING
FALL
ROOF 1
ROOF 2
ALLOW 6 DUAL OUTLET EV CHARGING POINT CARPARK BAYS BY OTHERS
2320 EXISTING RL
2600 EXISTING RL
2500 EXISTING RL
NEW VEHICLE CROSSING TO WESTERN CARPARK AS DOCUMENTED BY CIVIL ENGINEER
EXISTING SHARED PATH TO BE RETAINED
TIE IN BOARDWALK LEVELS TO EXISTING SHARED PATH
TENTATIVE LOCATION FOR ELECTRICAL SUBSTATION & ASSOCIATED SETBACKS - TO BE CONFIRMED
TIE IN PROPOSED FOOTPATH LEVELS TO EXISTING SHARED PATH
NEW VEHICLE CROSSING TO EASTERN CARPARK AS DOCUMENTED BY CIVIL ENGINEER
KENTWELL ROAD
KENTWELL ROAD
PITTWATER ROAD
XPP
XLP

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BUILDER TO CONFIRM ALL DETAILS, SETOUTS (TILE, BUILDING, ETC.), FALLS, DIMENSIONS & CONNECTIONS ON SITE PRIOR TO CONSTRUCTION

northern beaches council

NSW GOVERNMENT

webber

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Suite 206, 8 Clarke Street Crows Nest NSW 2065
sydney@webberarchitects.com

Nominated Architect Jon Webber AIA NSW ARB No 6830 | ABN 83 140 652 188

ISSUED

PRELIMINARY ONLY

NOT FOR CONSTRUCTION

SITE PLAN - PROPOSED
WARRINGAH RECREATION CENTRE
KENTWELL RD AT PITTWATER RD, NORTH MANLY
Lot 2742 DP 752038

COMMENCEMENT DATE : SEPT 2023

SCALE 1:100 @ A1 (0 1000 2000 3000 4000 5000 mm)

PROJECT NORTH

SHEET NUMBER : **000000 / 0202 / A**

PRINT DATE: 10/05/2024 9:49:36 AM FILE PATH: C:\Users\CelineTi\Documents\2950_231009_Warringah Rec_central_R23_celineQG8ZG.rvt

Appendix B Flood Management Report Prepared by Stellen Consultants

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29 February 2024

Warringah Golf Club
397 Condamine Street
North Manly, NSW 2100

c/o Graeme McMullan <graeme@cleanenergyengineering.com.au>

Flood Management Report for the development of the New Warringah Golf & Community Club House at 433 Pittwater Road North MANLY

Dear Graeme,

1.0 Introduction

Stellen Consulting was engaged to assess the proposed development (Lot 2742 DP 752038) at 433 Pittwater Road, North Manly in reference to potential impacts arising from overland flow in Brookvale Creek. This report provides a detailed assessment of the flow information specific to the site and development.

The following documentation has been used in the preparation of this Flood Risk Management Report:

- Design drawings listed in Appendix A
- Council provided flood information and pre-DA advice flooding extract in Appendix B

The proposed development has been assessed in accordance with the flood requirements of Clause E11 of the Warringah Development Control Plan, using the information provided by the Council from the Manly Lagoon Flood Study (2013).

2.0 Description of the Development

The site, known as Warringah Recreation Area (Lot 2742 DP 752038), is approximately 1.04 ha. The existing development of the site consists of a clubhouse, squash court, sporting courts, driveway, and car parks (the existing site is shown below in Figure 1).

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Figure 1 - Site locality and previous development (SIX Maps)

The proposed master plan is shown in Figure 2. It introduces 6 new tennis courts, a club building with a loading area, parking, and car access. The architecture plans listed in Appendix A show the scope of the DA application of the new main building with a loading area of approximately 0.26 ha as part of the master plan. The design drawings also highlight the layout of the tennis courts, car parks, and the access driveway as shown in Figure 3.

Figure 2 - Proposed master plan layout

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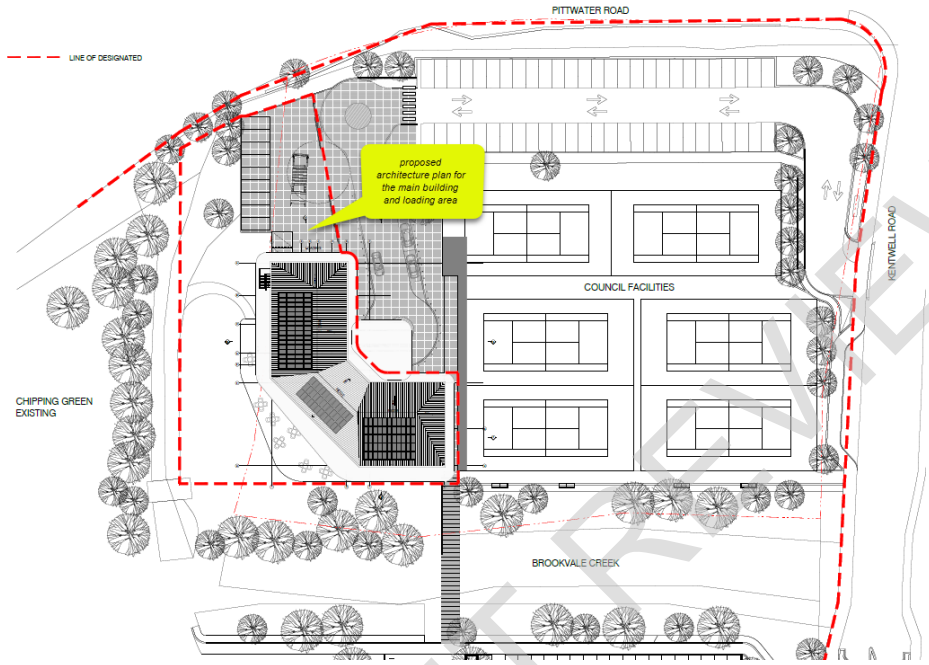

Figure 3 - Proposed architectural plan

The main building proposes two floors: Ground floor at RL 3.60 and the first floor at RL 8.00. The proposed works also include site grading according to the civil design prepared by Stellen Consulting (Ref: P171112-DR-CV-002-01). The proposed work and design levels are shown in the architectural and civil drawings in Appendix A.

Advice from Northern Beaches Council at the time of preparation of this report is that there will be a Squash Court Building on the site, although it is not shown in the current available Master Plan and, as such, not in the Group Architect Plans. Stellen Consulting, at the Clients direction, has made allowance for this building using the footprint of the existing squash courts in all Flood & Overland Flow calculations

3.0 Flood Analysis & Assessment

Council's flood data predicts that during the 1% AEP event, the club will be inundated with floodwaters arising from flooding within Brookvale Creek. The overland flow path runs northeast through the site toward Pittwater Road. The main building has areas designated as medium risk, and Brookvale Creek is identified as being within the High Flood Risk Precinct, as shown in Figure 4.

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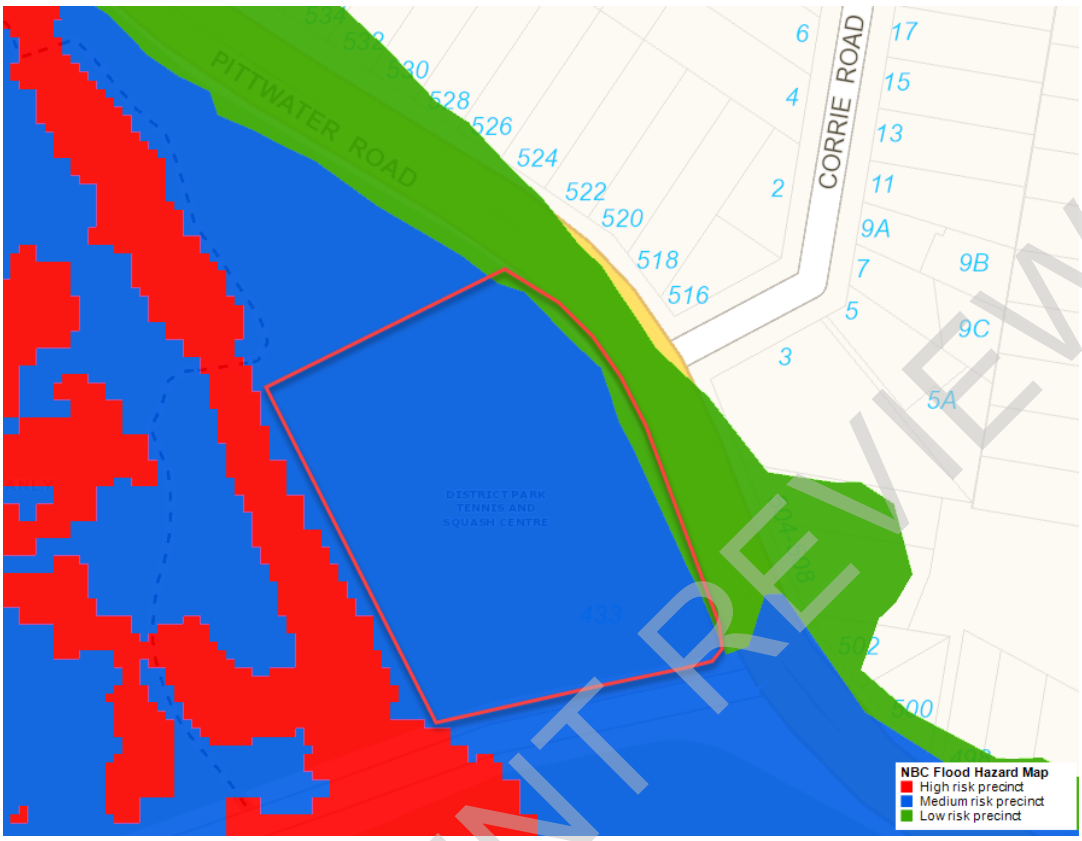

Figure 4 - Flood Risk Precinct

The following information was provided by Council for the vicinity of the main building:

- 1% AEP (100-year) maximum water level: 3.2-3.3m AHD
- Probable Maximum Flood (PMF) maximum water level: 5.69m AHD

Council's flood data suggests the floodwater depth across the site during a 1% AEP event peaks are not more than 0.3 and the velocity x depth product is less than $0.3m^2s^{-1}$ presenting a Flood Fringe hydraulic category.

For the main building assessment, the council has suggested that all floor levels within the development shall be at or above the Flood Planning Level (FPL) (flood level + 300mm freeboard). For this site, a Flood Planning Level (FPL) of 3.6m AHD has been adopted for the main building.

FPL = 3.60m AHD

The design has the proposed main building at RL 3.60 which is at the FPL.

4.0 Assessment of Council Conditions

The proposed development is categorised as a "business and industrial use, entertainment or recreation facility" development type. The main building has areas designated as medium risk. Below address the relevant controls that apply to the development.

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Flood Effects Caused by Development - A1

- The proposed main building results in a significant fill of approximately 669.65 m^3. However, the master plan along with the civil design proposes a conservative compensatory net cut volume of 57.46 m^3 for the proposed works for DA application at stage 1, assuming that the existing clubhouse and squash courts are retained. Considering the provision of the compensatory cut as described in the civil design prepared by Stellen consulting:
    - The development will not likely have significant adverse impacts on flood levels or velocities caused by alterations to the flood conveyance;
    - There will be no adverse impacts on surrounding properties; and
    - Flood hazards will likely remain unchanged due to the development.

Flood Effects Caused by Development - A2

- Considering the provision of the compensatory cut as described in the civil design prepared by Stellen consulting, the development results in a net increase in the flood storage of at least 57.46 m^3.
- Civil design for access and parking prepared by Stellen Consulting confirm that there is no additional fill is proposed from that what initially presented in the DA application and demonstrated as compensatory cut and fill
- Providing that no additional fill is proposed, the proposed development comply with this control and no flood effects caused by development.

Building Components and Structural Soundness - B1

- The proposed development shall be constructed as flood compatible in accordance with the *Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas*, Hawkesbury-Nepean Floodplain Management Steering Committee (2006), up to the flood planning level of 3.6m AHD.

Building Components and Structural Soundness – B2

- New development must be designed and constructed to ensure structural integrity up to the Probable Maximum Flood level, taking into account the forces of floodwater, wave action, flowing water with debris, buoyancy and immersion. The structural integrity of the refuge is to be up to the Probable Maximum Flood level. Structural certification shall be provided confirming the above.

Building Components and Structural Soundness – B3

- New electrical equipment, power points, wiring, fuel lines, sewerage systems or other service pipes and connections to be located above the Flood Planning Level of 3.6m AHD.

Floor Levels – C1

- The floor levels within the main building are proposed at or above the Flood Planning Level of 3.6m AHD.

Floor Levels – C2

- NA

Floor Levels – C3

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- The main building at the development is categorised in a flood fringe in a 1% AEP event. It proposes a compensatory cut of 57.46 m^3 (minimum) described in the civil design prepared by Stellen consulting. This results in a net increase in flood storage.

Floor Levels – C4

- NA

Floor Levels – C5

- the proposed works improve the flood storage within site.

Floor Levels – C6

- NA

Floor Levels – C7

- No floor level is proposed below the flood planning level

Car Parking – D1

- Proposed car park within the loading area is proposed within Flood Fringe hydraulic category during the 1% AEP

Car Parking – D2

- No car park is proposed below the natural ground level; however, the whole site is graded a maximum of 0.5% according to the civil design for the cut and fill plan. As a result, the water depths at 9 car parks within the loading area are expected to be greater than 300mm. □ Vehicle barriers or restraints are to be provided to prevent floating vehicles from leaving the site.

Car Parking – D3

- NA

Car Parking – D4

- Vehicle barriers or restraints are to be provided to prevent floating vehicles from leaving the site. Protection must be provided for all event up to the 1 % AEP flood event.

Car Parking – D5, D6, and D7

- NA

Emergency Response – E1

- The flood life hazard category within the site is H5, and therefore flood emergency response plan is required. Detailed emergency response plan is provided in s5.0.

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Fencing – F1

- Any proposed fencing within the area affected by the 1% AEP floodwaters level up to the 1% AEP flood level of 3.3m AHD must be an open style fencing to allow clear passage of floodwaters and not to increase flood affectation on surrounding land. The fencing must be designed with a minimum of 50% open area from the natural ground level up to the 1% AEP flood level of 3.3m AHD. Openings should be minimum of 75 mm x 75 mm.

Storage of Goods – G1

- All proposed stores are located in the main building area, which is adequately protected from floodwaters to above the applicable Flood Planning Level (refer to architectural drawings). Given that all hazardous or potentially polluting materials will be stored above the FPL, all goods will be adequately protected from floodwater.

Pools – H1

- NA

5.0 Flood Emergency Response Plan

As a result of the flood life hazard category associated within the subject site, a Flood Emergency Response Plan has been prepared in accordance with:

- Northern Beaches Council's Notice of Determination (DA2022/2081) - Condition 12

General and Awareness Induction

Flood warning systems, emergency management and flood awareness are the most cost-effective means of reducing the flood danger to premises and staff within the golf club house and associated facilities. Therefore, all staffs should be aware of the flood threat in the locality and receive the necessary site induction, including the following:

- During what storm events the site might be inundated,
- What will likely happen during an extreme storm event
- How to prepare the premises in a way that will minimise damage and loss
- Be aware of where and how storm warnings will be issued and
- Be aware of emergency contact numbers:

Life-threatening emergencies 000 (triple zero)
NSW SES 132 500
NSW SES Facebook www.facebook.com/NSW.SES
NSW SES twitter twitter.com/nswses

Local Government Authority
Name: Northern Beaches Council

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Phone: Phone: 1300 434 434
Website: www.northernbeaches.nsw.gov.au

Flash floods are dangerous and can happen anywhere there is localised heavy rainfall. The New South Wales State Emergency Services provides resources and information regarding general and flash flooding on their website (www.ses.nsw.gov.au). A copy of their Flood safe guide for flash flooding is included in Appendix C of this report. This document should be distributed to staff and placed on notice boards within the golf club house and associated facilities.

The Bureau of Meteorology (BOM) (www.bom.gov.au) provides generic warnings for likely flash flooding in specific forecast areas (eg. the Sydney basin). These warnings are also relayed on local television and radio stations. However, these warnings are not targeted at any specific river system, nor do they advise times or severity of likely flash flooding. Therefore, it is recommended that an internal procedure be developed for monitoring rainfall and water levels in the adjacent creek (Brookvale Creek) to provide some indication of an impending flood event.

During the predicted critical storm events, flood waters arising from Brookvale Creek will overtop the banks and run through the site towards Pittwater Road. However, Brookvale Creek holds some water during the critical storm events before the site gets inundated. Therefore, it is recommended if any time the water overtopped Brookvale Creek's banks, the Flood Emergency Response Plan should be implemented.

Emergency Response

During the predicted critical storm events and/or when flooding is expected to occur, the area surrounding the development will become inundated with floodwaters. In general, two possible solutions are available to all flood-affected developments to allow for the safe refuge of the occupants above the PMF water level. The two options are:

1. **Evacuate** the area and move to an area outside of the flood extent and above the PMF, or

2. **Shelter in place:** move to an area above the floodwaters within the development and wait for floodwaters to subside.

Each of the above options was considered in the preparation of this Flood Emergency Response Plan for the occupants of the development.

Evacuate

Based on Council's flood information, the site is predicted to be inundated with floodwaters arising from flooding within Brookvale Creek during the 1% AEP and greater storm events. There is overland flow path running through the subject site toward Pittwater Road. During flood events smaller than the 1% AEP, evacuation would be possible with the supervision of emergency services.

An evacuation route to a high point located in Corrie Road is possible through Kentwell Road. To safely evacuate, the occupants of the site would be required to evacuate upon the commencement of flooding within the tennis courts and the surrounding of the club house and complete the evacuation before the inundation of Kentwell Road. Once Kentwell Road is inundated, evacuation of the site is no longer safe.

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The decision to evacuate should be made in consultation with emergency services , to evacuate the following tasks should be undertaken:

- Check that the evacuation route is clear and not inundated.
- Assemble staff at the car park area, northeast of the site.
- Undertake a check of club house and associated facilities of the site if time and flood levels permit, to ensure no one has been left behind.
- Guide all staff to follow the evacuation route through Kentwell Road to Corrie Road as shown on Figure 5.

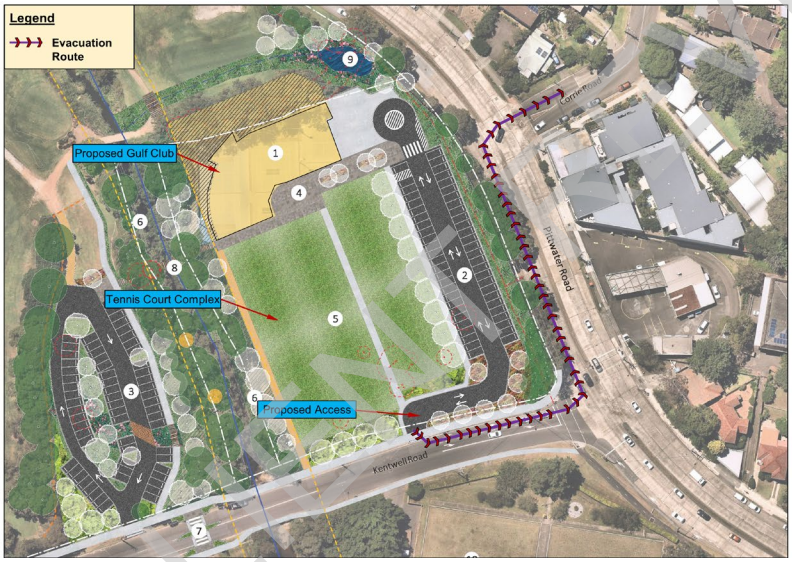

Figure 5 - Flood evacuation route

Shelter-in-place

The alternative solution to evacuating the building is to shelter-in-place and remain within the site in the first floor of the club house until floodwaters subside or emergency services advise otherwise. For the shelter-in-place method, a safe refuge above the PMF 5.69m AHD must be provided with a minimum of 2 m^2 of space available per occupant. The calculated number of occupants, space per occupant, first floor area available for a safe refugee are listed in Table 1.

Table 1: Available space at first floor for a safe refuge, and number of occupants

Club house	First floor area	Occupants	Available floor area per occupant
First floor	345 m2	172	2 m^2

Once the instruction is given for shelter-in-place, use the nearest access to the first floor. The site is provided with access through the stairs from the entry area and the walkway outside the club house as shown in Figure 6. A Shelter-in-place strategy also has the added benefit of reducing the occupant's exposure to potential flood waters and severe weather by allowing the occupants to remain safely indoors. Additionally, a shelter-in-place strategy

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reduces the likelihood of triggering an evacuation of the site due to minor flooding within the street that otherwise would not have resulted in inundation of the property

5.1 Recommended Emergency Response – Shelter-in-Place

The recommended Flood Emergency Response Plan during critical storm events is to shelter-in-place until floodwaters subside or emergency services advise otherwise. In the event that floodwaters begin to overtop Brookvale Creek, the recommended actions are:

- The occupants of the property shall be directed to the first floor (set at RL 8.00 m AHD), which is higher than the predicted PMF water level (5.69m AHD).
- The occupants must not exit until advised by emergency services or floodwaters subside.
- Emergency services shall be contacted stating the property's location; the situation faced, the number of people on the property and any additional measures to be carried out.

It is also recommended that a copy of this Flood Emergency Response Plan is kept on the premises at all times.

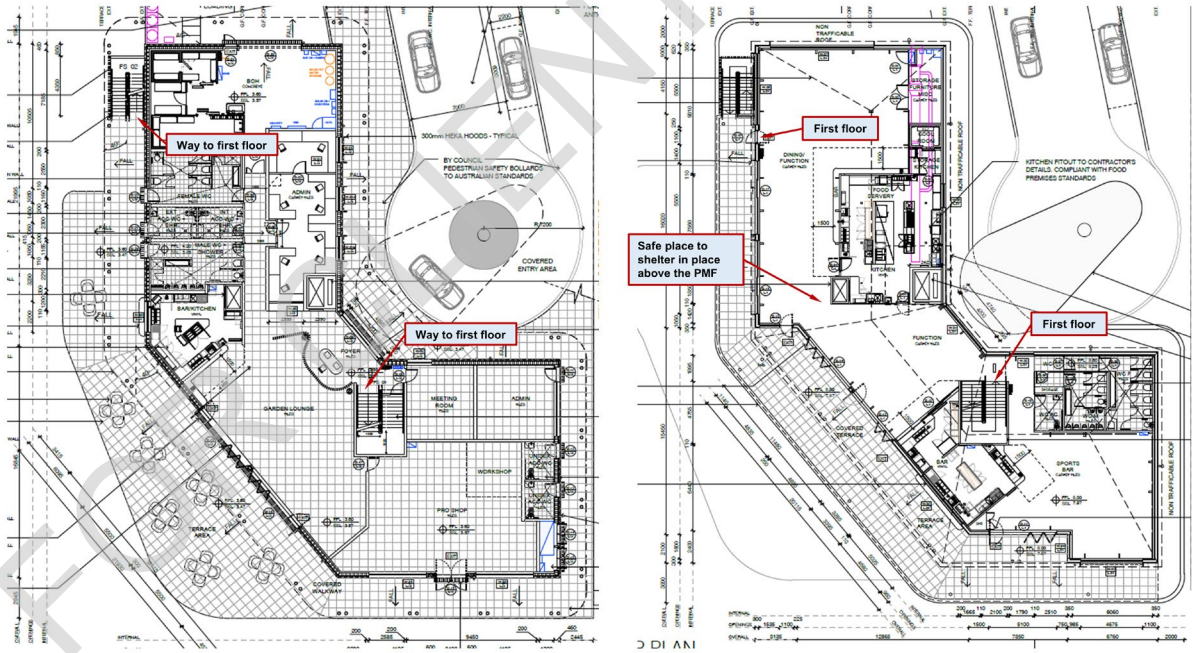

Figure 6 - Shelter in place plan

6.0 Conclusions and Recommendations

This Flood Management Report has been undertaken by Stellen Consulting based on information provided by Northern Beaches Council (Warringah) and available architectural plans and proposed civil design for site grading and levelling. The site has been identified by Council as within the 1% AEP flood and PMF extents.

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Based on the information, the proposed main building results in a significant fill of approximately 669.65m^3. However, the master plan, with the support of the civil design, propose a conservative compensatory net cut of 57.46m^3 for the proposed work for Stage 1 DA application. Considering the provision of the compensatory cut as described in the civil design prepared by Stellen consulting:

- The proposed works will not likely have adverse impacts on flood levels or velocities caused by alterations to the flood conveyance;
- There are no significant adverse impacts on surrounding properties; and
- Flood hazards will likely remain unchanged due to the development.
- Copy of the Flood Emergency Response Plan should be available and visible all the time in the premises

As noted in this report, the proposed development, if carried out in accordance with the recommendations within this report, is consistent with the flood-related requirements of Clause E11 of the Warringah DCP.

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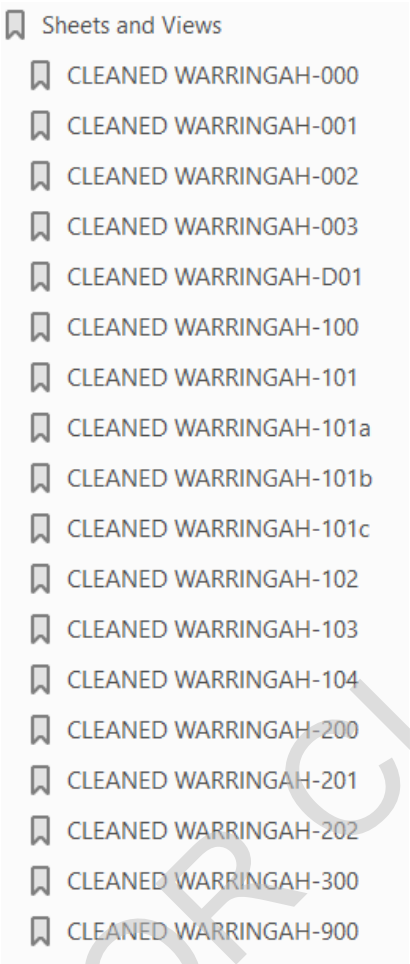
Appendix A

Architectural Drawings

The driveway design is described in the following Group Architects drawings dated 12/10/2022



Civil Design Drawings

The driveway design is described in the following Stellen Consulting drawings dated 21/10/2022:

CV-000	*Revision 1*	*Master Plan*
CV-001	*Revision 1*	*Civil Design Master Plan*
CV-100	*Revision 1*	*Cut/Fill Plan – Main Building and Access*
CV-102	*Revision 1*	*Cut/Fill Plan – Tennis Court*

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Appendix B
Council Supplied Flood Information

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Appendix C
Flood Safe Guide for Flash Flooding