Civil DA Report

Mona Vale Surf Life Saving Club

Prepared for Northern Beaches Council c/o Warren and Mahoney / October 2018

171328

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Structural
Civil
Traffic
Facade
Consulting
Engineers

Contents

1.0 Introduction

Taylor Thomson Whitting has been engaged by Northern Beaches Council c/o Warren and Mahoney Architects to provide civil engineering advice to support the Development Application for the redevelopment of Mona Vale Surf Life Saving Club, Surfview Road, Mona Vale.

2.0 Site Overview

2.1 Site Location and Topography

Mona Vale Surf Life Saving Club (the site) is located adjacent to Mona Vale Beach on the southern side of Surfview Road, refer to figure 1. The site is relatively open with car parking to the north east, Apex Park to the north and west, an open grassed area to the south east, and Mona Vale beach to the south. Natural sand dunes are located along the land side of Mona Vale beach. Beyond the site is predominately residential land, with Mona Vale golf course and Mona Vale Hospital located to the south west.

Figure 1: Site Location

The topography of the site is relatively flat with a 1% gradient along Surfview Road, refer to figure 2. The low point in Surfview Road is located to the north west of the existing building (RL 6.91m), and a high point located to the north of the building (RL 7.59m). Levels to the south of the building fall from the south east corner (RL 7.62m) to the south west corner (RL 7.32m). An overland flow route existing from the low point in Surfview road which runs south towards the beach. The floor level of the building varies from RL 7.42m to RL 7.85m. The dunes rise to a maximum RL 8.60m before falling across the beach. The topographical survey is in included in Appendix A.

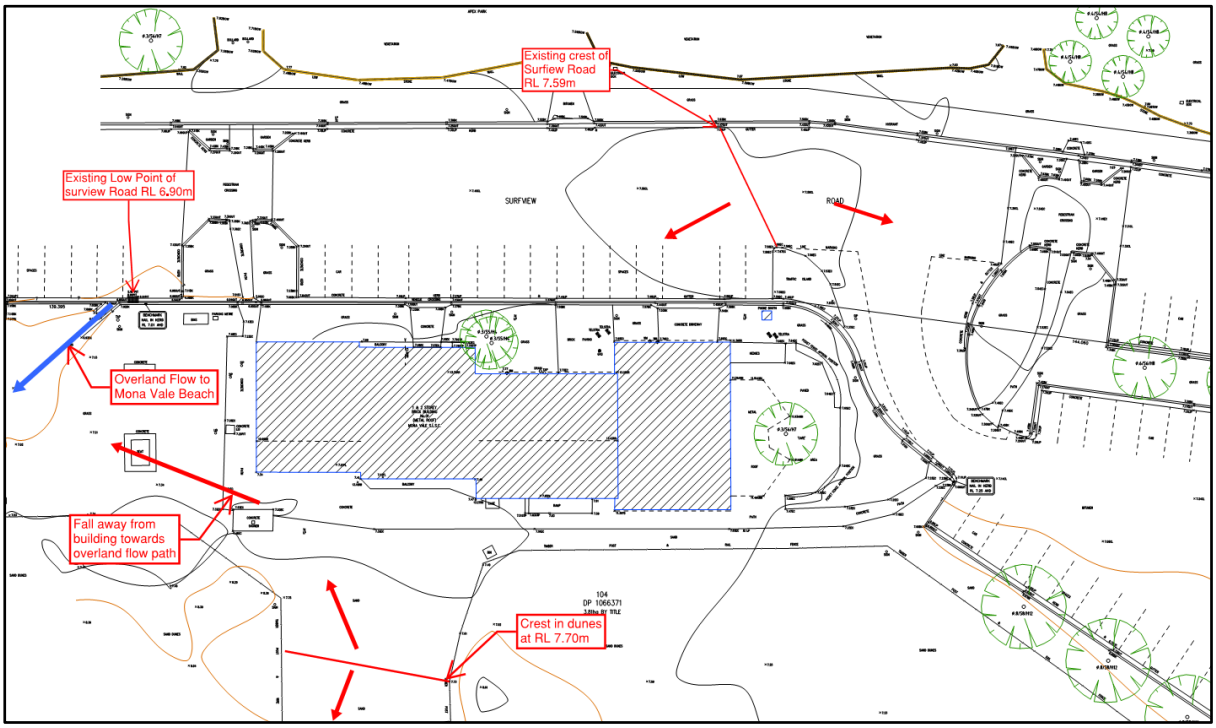

Figure 2: Extract of Topographical Survey

3.0 Proposed Development

The proposed development consists of demolition of the existing buildings and reconstruction of a new two storey building. The new building will have a larger building footprint than the existing building and is generally located in the same position. Dur to the constraints of the roads and the beach, the general gain in site area is to the south west of the building, within the open grassed area. Proposed architectural visualisations are shown in figures 3, and 4. The proposed architectural plans area also included in Appendix B.

Figure 3: Proposed Development Visualisation from North West

Figure 4: Proposed Development Visualisation from South East

4.0 Stormwater

4.1 Existing Stormwater

The site generally falls west towards Surfview Road. The existing impermeable area of the site is approximately 1000 sqm. The existing building roof has several downpipes that discharge to kerb outlets along Surfview Road. The existing café roof and paved area to the north east of the building discharges to a kerb outlet within the public car park to the east. The exiting paved area to the south of the building has no formal stormwater collection and discharges directly to the sand dunes. The total impermeable area draining to Council stormwater system is approximately 850 sqm.

There are two existing below ground rainwater storage tanks located beneath the external café seating area.

4.2 Proposed Stormwater

The proposed impermeable area will increase compared to the existing situation. In accordance with Northern Beaches Council stormwater policy on site detention (OSD) is required for any increase greater than 50 sq.m. The proposed impermeable area is 945 sq.m and a comparison of existing impermeable areas is shown in table 1 below.

Catchment Areas	Existing Area	Proposed Area
Roof Draining to Car Park	47 sqm	0 sqm
External Surface Draining to Car Park	93 sqm	0 sqm
Roof Draining to Surfview Road	590 sqm	830 sqm
External Surface Draining to Surfview Road	120 sqm	115 sqm
Draining to Sand subgrade (infiltration)* *not included in impermeable area total	*150 sqm*	*580 sqm*
Total Impermeable Area	**850 sqm**	**945 sqm**

Table 1: Existing and Proposed Impermeable Areas

The existing area draining to the sand dunes through infiltration has been discounted from the total impermeable areas. The proposed external surfaces seaward of the building can be constructed from permeable paving or with free draining infiltration trenches or planting for impermeable surfaces. This will maintain infiltration to the sand subgrade, without concentrating runoff to the sand dunes, or increasing runoff to the council system.

The increase in impermeable area of 95 sqm (from 850 to 945 sqm) requires an OSD volume of 5,700 litres in accordance with Council's policy of 6000 litres capacity for every 100 sqm increase. However, if the impermeable areas change through the design development then the corresponding OSD volume will also need to be changed.

The OSD volume required is be dependent on the detailed design of the impermeable areas and must be in accordance with the Council requirements as shown in figure 5.

The existing rainwater tanks will be removed and replaced with a 20,000 kl below ground tank, as detailed by the hydraulic engineer ref; *Northrop drawing SY170978 HSK02 rev 5.*

Additional Hard (Impervious) Surface Area (square metres)	Minimum Capacity of On-Site Detention Tank (Litres)	Discharge Rate Litres/Sec
0 -50	Nil	Nil
>50 - 75	4,500	2
>75 - 100	6,000	3
>100 - 150	9,000	4
>150 - 200	12,000	6
>200 - 250	15,000	7
>250 - 300	18,000	9
>300 - 400	24,000	12
>400 - 500	30,000	15
>500 - 600	36,000	18
>600 - 700	42,000	21
>700 - 800	48,000	24
>800 - 900	54,000	27
>900 - 1,000	60,000	30
>1,000*	A minimum storage capacity of 60 litres per m2 of additional hard/impervious surface area, and a discharge rate which replicates the discharge from the site were it to be undeveloped.	

Figure 5: OSD Requirements for additional impermeable areas (Pittwater 21 DCP)

The proposed stormwater will connect the new roof and external impermeable areas to the OSD tank before discharging to the existing stormwater pit to the north west of the site. If impermeable areas are less than existing, then no OSD will be required and a direct connection can be made to a new pit on Surfview Road. This new pit will connect to the existing pit to the west of the site. The proposed stormwater concept layout is shown in figure 6 and appendix C.

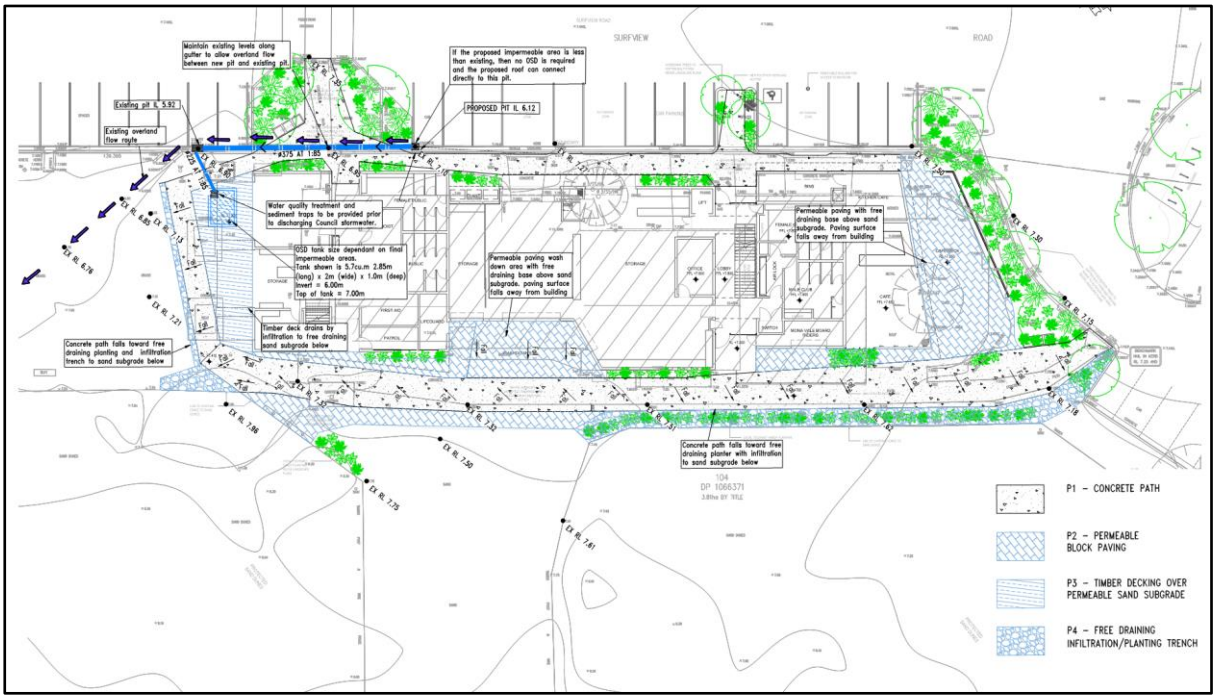

Figure 6: Proposed Stormwater Concept Layout

4.3 Stormwater Quality

The Pittwater DCP 2014 outlines the requirements for stormwater quality control in section B5.9. The prescribed outcome is that no increase in pollutants discharged with stormwater into the environment. This control is only applicable when the development results in additional impervious surfaces of more than 50 square meters. If all external of the external surfaces are constructed with permeable paving, there will be a net reduction in impermeable surfacing and no quality controls would be required.

Roofs and external impermeable areas of the site are required to incorporate stormwater quality improvement measures to undertake pre-screening, primary and secondary treatment of stormwater. In addition, infiltration through the sand subgrade is provided to the seaward side of the building, with the use of permeable paving, and free draining infiltration trenches/planting. The proposed treatment train includes a Stormwater360 Enviropod catch pit insert (or equivalent) and an OSD tank as described in Section 4.2. The proposed site and treatment train has been modelled in MUSIC. The existing site has been modelled in MUSIC and compared to the proposed site in table 2. Modelling was undertaken in accordance with the Northern Beaches Council WSUD Technical Guide and the layout of the models is in Appendix D.

Pollutant	Existing Site Loads	Proposed Site Loads
Gross Pollutants (kg/yr)	30	8.43
Total Suspended Solids (kg/yr)	84.7	67
Total Phosphorus (kg/yr)	0.24	0.21
Total Nitrogen (kg/yr)	2.69	2.55

Table 2: Target Pollutant Reductions vs Proposed Pollutant Reductions

5.0 Flooding

The McCarrs Creek, Mona Vale and Bayview Flood Study, along with discussions with Northern Beaches Council confirms that the proposed building footprint is not within the Flood Planning Area, refer to Appendix E. Localised overland flooding is associated with the low point in Surfview Road to the west of the development site and is contained within the road reserve below top of kerb height. The development site is located outside the medium and low risk flood precinct area as can be seen in Figure 7. As the development site is outside the flood planning area, there is no associated flood planning level associated with the overland flooding.

Figure 7: McCarrs Creek, Mona Vale and Bayview Flood Study (2016)

A separate report by Royal Haskoning DHV, covers coastal hazards, risks and coastal inundation ref; *PA1621-Mona Vale SLSC acceptable risk-FINAL-v2*

This report confirms that building floor levels will be sufficiently higher than the existing natural ground levels to provide suitable protection from coastal inundation.

6.0 Construction Phase Erosion and Sediment Control

During the construction phase of the project, an erosion and sediment control plan, refer to figure 8, will be implemented to prevent sediment laden stormwater from entering the council drainage network and Mona Vale Beach. Stormwater controls on site are detailed in the erosion and sediment control plan, refer to figure 8 and drawing SKC02 in Appendix C. This plan is in accordance with the “Blue Book” - Managing Urban Stormwater: Soils and Construction (Landcom NSW). The plan may vary based on construction staging and methodology, but will typically include:

- Protection of stormwater and kerb inlet pits;
- Silt fences;
- Dust control; and
- Vehicle wash down.

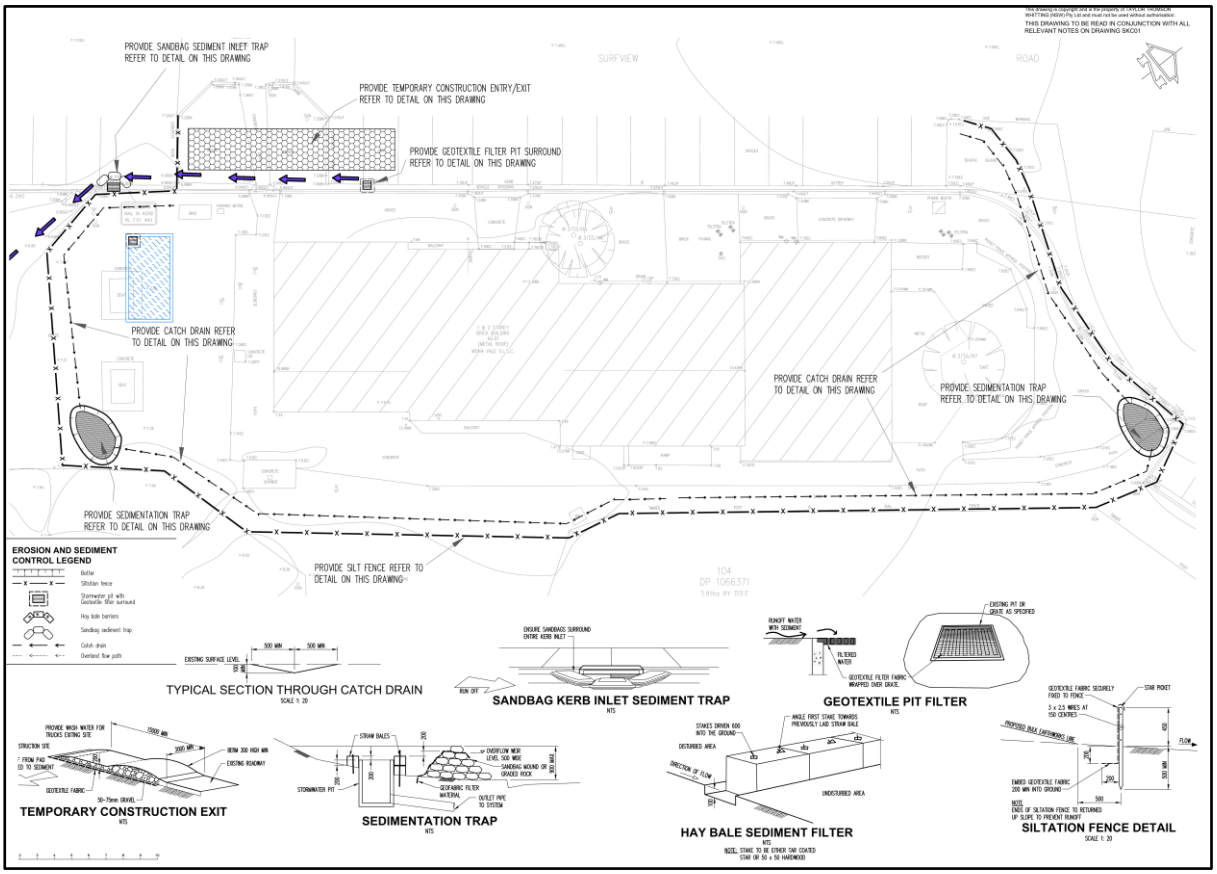

Figure 8: Extract of SKC102 Erosion and Sediment Control Plan

7.0 Traffic

Refer to the separate Traffic Impact Assessment by TTW.

Prepared by
TAYLOR THOMSON WHITTING
(NSW) PTY LTD

Eirian Crabbe
Associate

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Appendix A

Topographical Survey

NOTE:

THE DIMENSIONS HAVE BEEN TAKEN FROM THE TITLE PLAN (DP1066371). THE LAND IS HELD SUBJECT TO THE LIMITATION ON THE TITLE UNDER SECTION 28T(4) OF THE REAL PROPERTY ACT 1900. A PLAN OF REDEFINITION IS REQUIRED TO BE PREPARED AND REGISTERED WITH LAND AND PROPERTY INFORMATION NSW (LPI) TO REMOVE THE LIMITATION AND CONFIRM THE DIMENSIONS AND AREAS OF THE LOT.

THIS DETAIL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. IF ANY CONSTRUCTION OR DESIGN WORK, WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.

PRIOR TO ANY CONSTRUCTION WORK, SURVEY MARKS SHOULD BE PLACE TO DEFINE THE PROPERTY BOUNDARIES.

SERVICES SHOWN ARE INDICATIVE ONLY. POSITIONS ARE BASED ON SURFACE INDICATOR(S) LOCATED DURING FIELD SURVEY. CONFIRMATION OF THE EXACT POSITION SHOULD BE MADE PRIOR TO ANY EXCAVATION WORK. OTHER SERVICES MAY EXIST WHICH ARE NOT SHOWN.

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) USING PM 46360 WITH RL 10.275 (AHD).

RIDGE & GUTTER HEIGHTS HAVE BEEN OBTAINED BY INDIRECT METHOD AND ARE ACCURATE TO ± 0.05m.

CONTOURS SHOWN DEPICT THE TOPOGRAPHY. EXCEPT AT SPOT LEVELS SHOWN THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. THE SPOT LEVELS ARE TRUE FOR THEIR POSITION, AND ARE INTENDED TO BE USEFUL TO REPRESENT THE GENERAL TERRAIN. CARE SHOULD BE TAKEN IF EXTRAPOLATING.

LIMITED TITLE: LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.
B647456 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912) BY TITLE.
RESERVATIONS & CONDITIONS - SEE CROWN GRANT(S)
A407589 COVENANT BY TITLE
A311923 COVENANT BY TITLE
B537379 COVENANT BY TITLE

BOUNDARIES HAVE NOT BEEN LOCATED BY SURVEY. THE BOUNDARIES SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM THE TITLE DEPOSITED PLAN AND ARE APPROXIMATE RELATIVE TO THE DETAIL SURVEY.

Existing crest of Surfiew Road RL 7.59m

Existing Low Point of surview Road RL 6.90m

Overland Flow to Mona Vale Beach

Fall away from building towards overland flow path

Crest in dunes at RL 7.70m

103
DP 1062148

APEX PARK

SURFVIEW ROAD

104
DP 1066371
3.81ha BY TITLE

1 & 2 STOREY BRICK BUILDING No.01 (METAL ROOF) MONA VALE S.L.S.C.

BENCHMARK NAIL IN KERB RL 7.01 AHD

BENCHMARK NAIL IN KERB RL 7.25 AHD

LEGEND

BENCH MARK	▲
TELSTRA PIT	TEL
ELECTRIC LIGHT POLE	LP
POWER POLE	PP
SIGN POST	SP
SEWER INSPECTION PIT	SIP
SEWER VENT	SEWER
MANHOLE	MH
SEWER MANHOLE	SMH
STOP VALVE	SV
WATER HYDRANT	HYD
WATER METER	WM
GAS METER	GM
STATE SURVEY MARK	SSM

TSS TOTAL SURVEYING SOLUTIONS
ARTARMON | CAMDEN | MANLY VALE

REVISION No.	REVISION DATE:	COMMENT:

LEGEND:
EC - EDGE OF CONCRETE
BK - BACK OF KERB
GUT - GUTTER
RR - ROOF RIDGE
FL - FLOOR LEVEL
INV - INVERT LEVEL
Ø.4/S10/H16 - DIAMETER/SPREAD/HEIGHT
TB - TOP OF BANK
BB - BOTTOM OF BANK
TW - TOP OF WALL
BOW - BOTTOM OF WALL

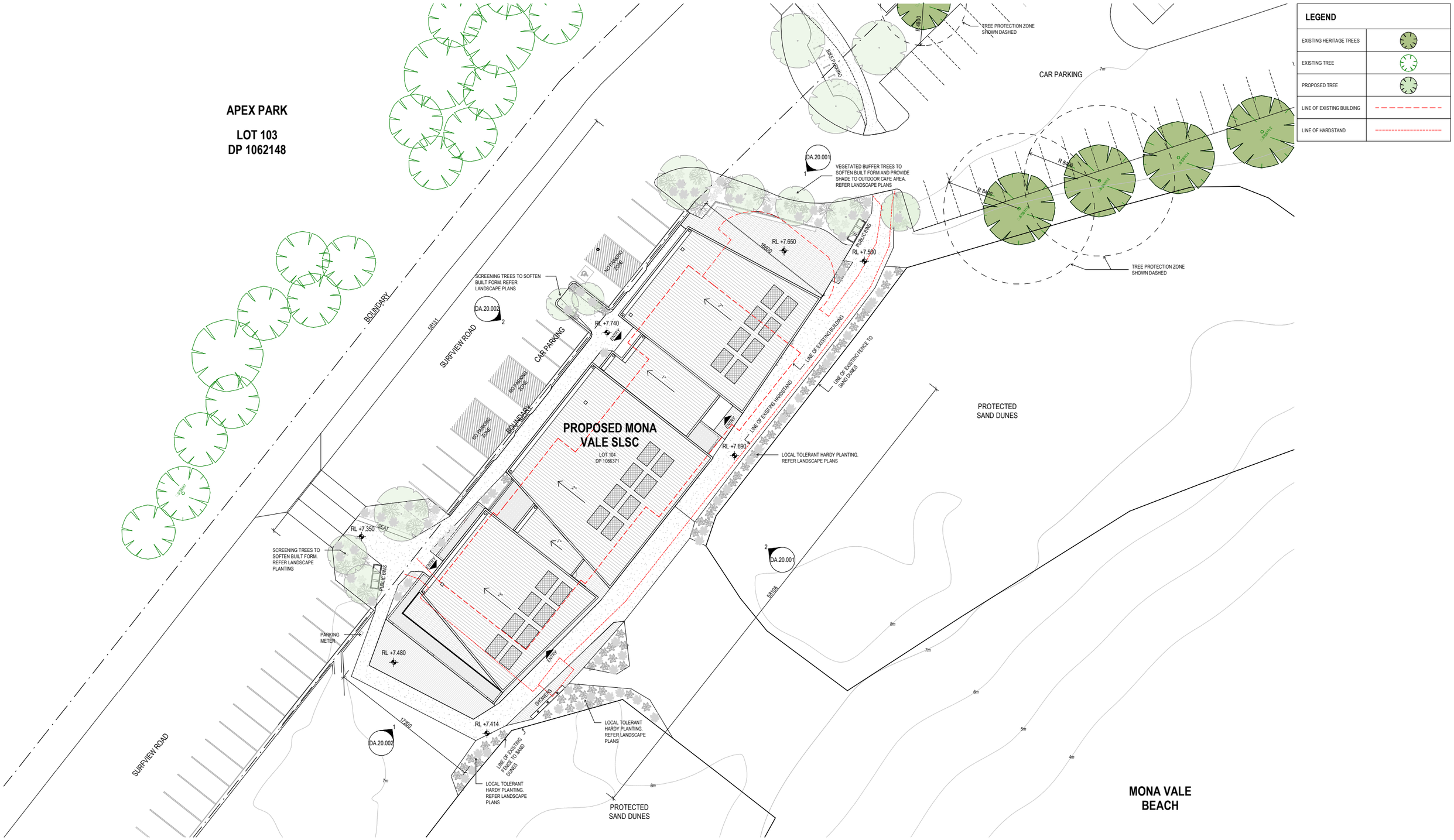
BAR SCALE
0 1 2 3 4 5 10m
PLOTTED SCALE 1:100 (A0 SIZE SHEET)

PLAN SHOWING DETAIL & LEVELS OVER LOT 104 IN DP1066371

CLIENT:	WARREN AND MAHONEY ARCHITECTS AUSTRALIA	JOB No.: 171679	LGA: NORTHERN BEACHES
PROJECT:	MONA VALE	PLAN No.: 171679_A	DATUM: AHD
ADDRESS:	1 SURFVIEW ROAD, MONA VALE	DATE: 25/08/2017	SCALE: 1:100@A0
		DRAWN: DF	CONT. INTERVAL: 0,5m
		CHK: GS	SHEET 2 OF 7

Appendix B

Proposed Development Plans



1 DA.20.001 PROPOSED SITE PLAN
1 : 200

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Revisions

A	15.10.18	DEVELOPMENT APPLICATION

Notes
All drawings to be read in conjunction with Architectural schedules + specification/s.

Architectural drawings are subject to further co-ordination with Structural, Civil, Building Services and relevant disciplines.

N
TRUE NORTH

Consultants
Project Manager
NORTHERN BEACHES COUNCIL
Planner
MECONE
Structural Engineer
TTW
Mechanical Engineer
NORTHROP
Electrical Engineer
NORTHROP

Client
northern beaches council

Architect
WARREN AND MAHONEY®

Project Title
Mona Vale Surf Club

Surf View Road, Mona Vale, NSW

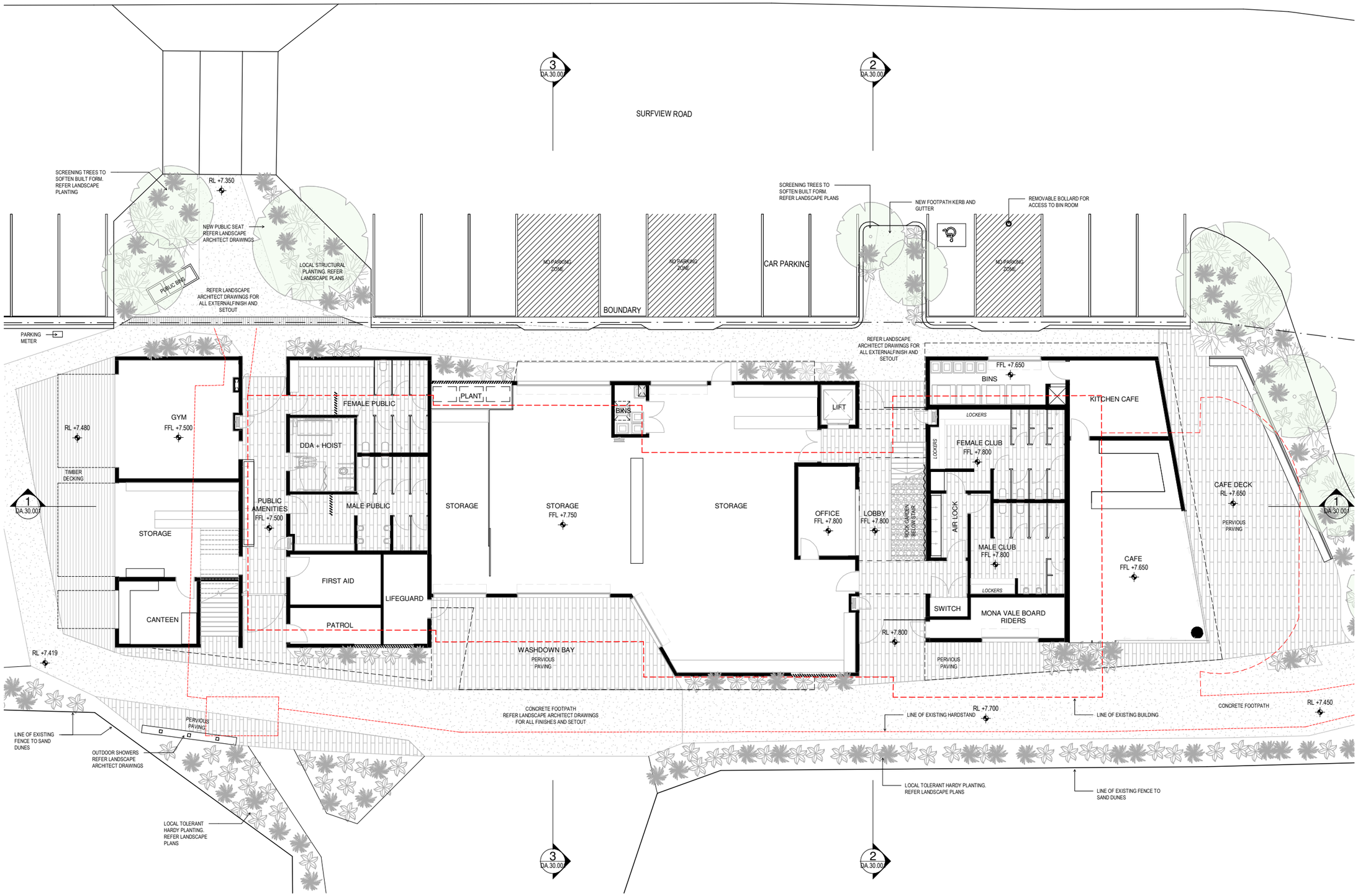
Drawing Title
PROPOSED SITE PLAN

Drawing Status
PRELIMINARY

Drawing Details

Scale	1 : 200@ A1
Date	15.10.18
Job No	8089
Drawn	AW
Checked	NB

Drawing No A.DA.02.004
Revision A



LEGEND	
EXISTING HERITAGE TREES	
PROPOSED TREE	
LINE OF EXISTING BUILDING	
LINE OF HARDSTAND	

1 DA.20.001 LEVEL 00 - DA

1 : 100

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Revisions

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BUILDING NORTH

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NORTHERN BEACHES COUNCIL
Planner

Structural Engineer
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Mechanical Engineer
NORTHROP
Electrical Engineer
NORTHROP

Client

northern beaches council

Architect

WARREN AND MAHONEY®

Project Title

Mona Vale Surf Club

Surf View Road, Mona Vale, NSW

Drawing Title

GA PLAN - GROUND LEVEL

Drawing Status

PRELIMINARY

Drawing Details

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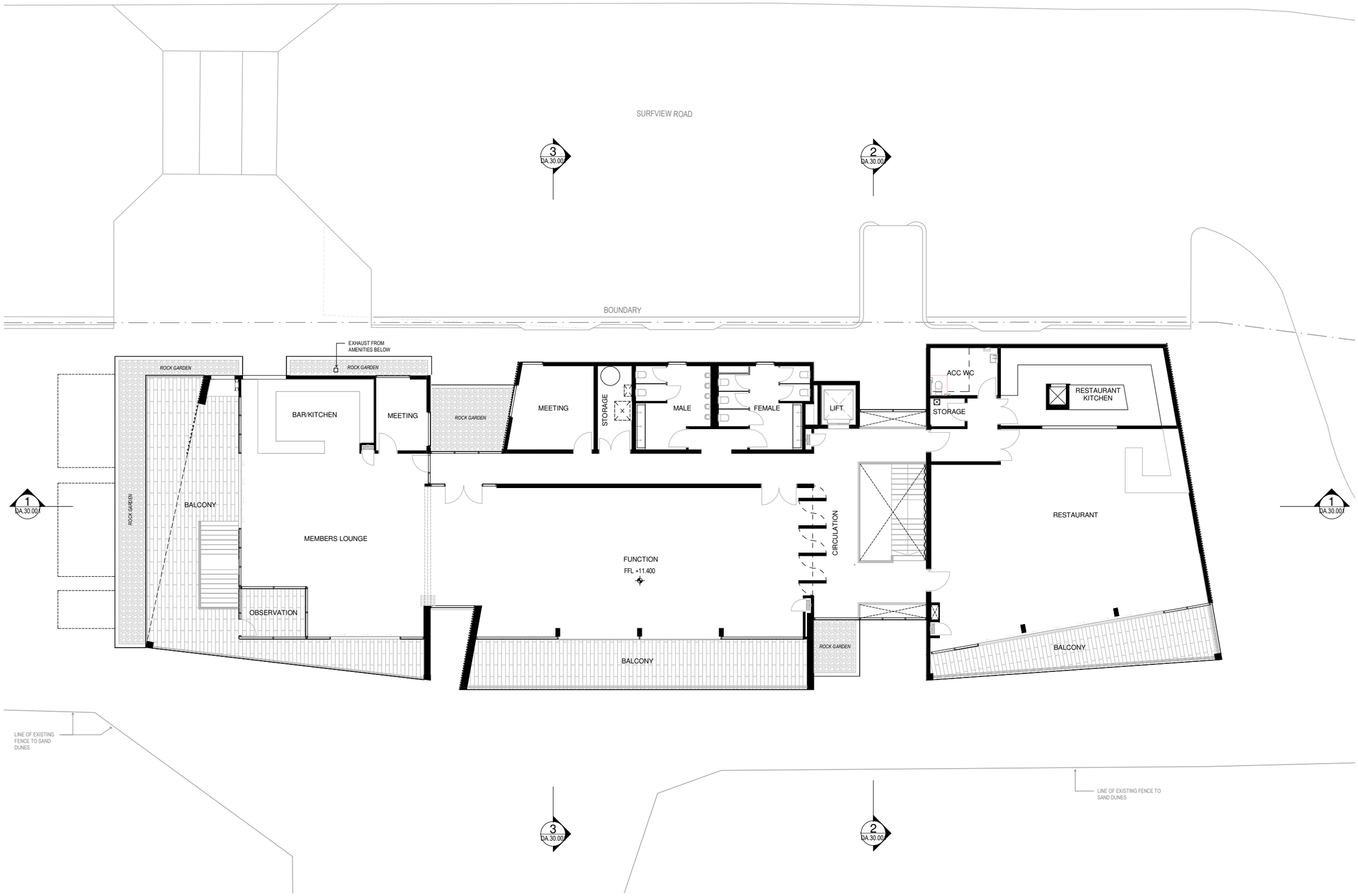
Date	15.10.18
Job No	8089
Drawn	AW
Checked	NB

Drawing No A.DA.10.001

Revision A



1 DA.20.001 LEVEL 01 - DA

1 : 100

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NORTHROP
Electrical Engineer
NORTHROP

Client

northern beaches council

Architect

WARREN AND MAHONEY®

Project Title

Mona Vale Surf Club

Surf View Road, Mona Vale, NSW

Drawing Title

GA PLAN - LEVEL 1

Drawing Status

PRELIMINARY

Drawing Details

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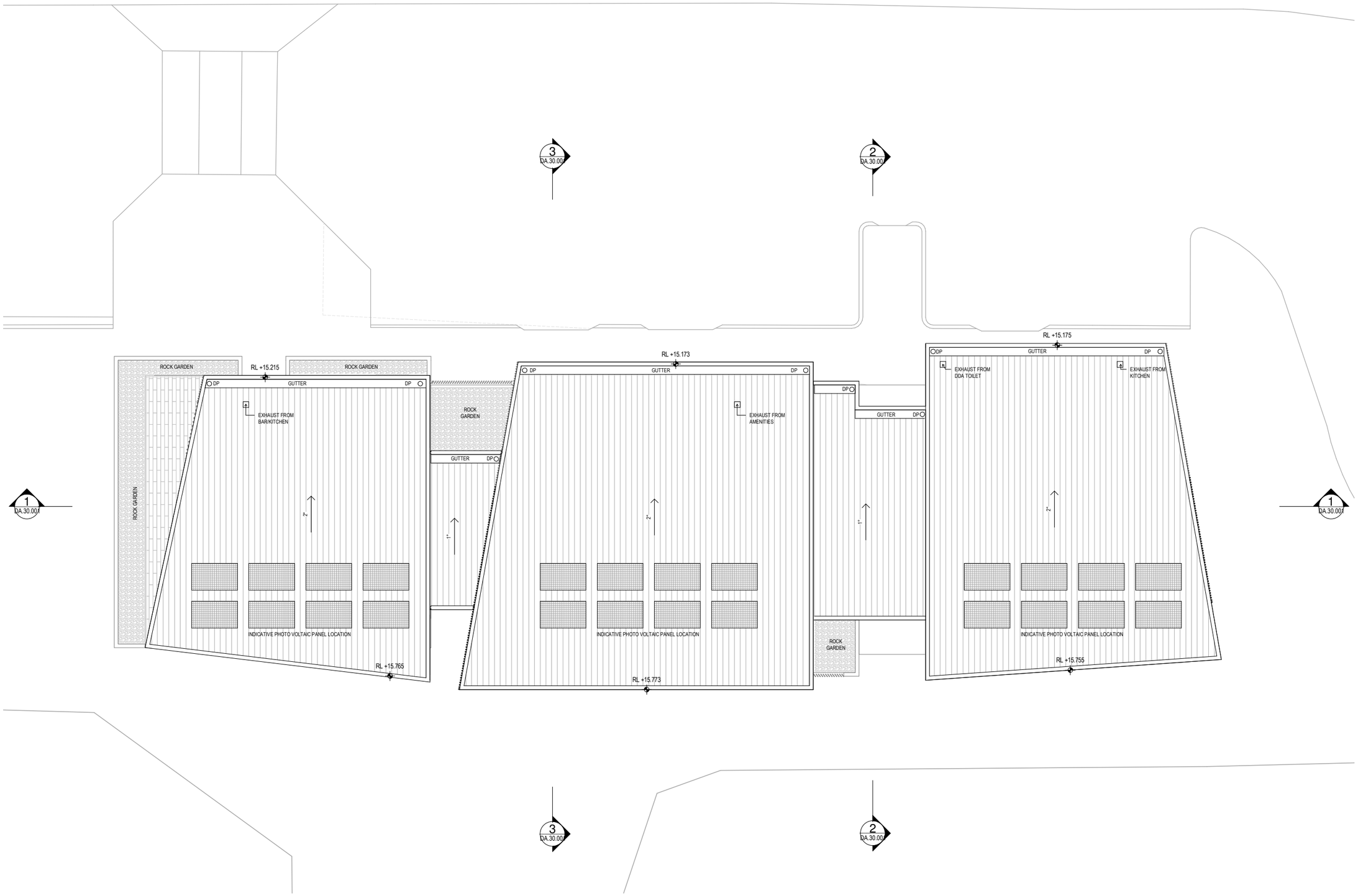
Drawing No A.DA.10.002

Revision A



1 SK.004 LEVEL 02 - DA Roof Plan

1 : 100

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Drawing Title

ROOF PLAN

Drawing Status

PRELIMINARY

Drawing Details

Scale	1 : 100@ A1
Date	15.10.18
Job No	8089
Drawn	AW
Checked	NB

Drawing No A.DA.11.001

Revision A

Appendix C

Proposed Stormwater Concept

MONA VALE SURF LIFESAVING CLUB, SURFVIEW ROAD, MONA VALE, CIVIL WORKS

GENERAL NOTES

1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the Engineer.
2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
3. Make smooth connection with all existing works.
4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority, the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
7. For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

1. These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
Warren and Mahoney	GA Plan	A.DA.10.001		

CONCRETE FINISHING NOTES

1. All exposed concrete pavements are to be broomed finished.
2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

STORMWATER DRAINAGE NOTES

1 Stormwater Design Criteria :
- (A) Average recurrence interval –
  - 1:100 years for roof drainage to first external pit
  - 1:20 years for paved and landscaped areas
- (B) Rainfall intensities –
  - Time of concentration: 6 minutes
  - 1:100 years = ____ mm/hr
  - 1:20 years = ____ mm/hr
- (C) Runoff coefficients –
  - Roof areas: C_{100} =
  - Roads and paved areas: C_{20} =
  - Landscaped areas: C_{20} =

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.
3. Pipes up to 300 dia shall be sewer grade uPVC with solvent welded joints.
4. Equivalent strength VCP or FRP pipes may be used subject to approval.
5. Precast pits may be used external to the building subject to approval by: ____
6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
7. Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
8. Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
10. Care is to be taken with levels of stormwater lines. Grades shown are not to be reduced without approval.
11. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O.
12. Subsoil drains to be slotted flexible uPVC U.N.O.
13. Adopt invert levels for pipe installation (grades shown are only nominal).

KERBING NOTES

Includes all kerbs, gutters, dish drains, crossings and edges.

1. All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
2. Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
3. Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
4. Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
5. In the replacement of kerbs –
   Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.
   Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.
   Existing kerbs are to be completely removed where new kerbs are shown.

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels :
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : ISG OR MGA OR LOCAL
Survey prepared by :
Setout Points : CONTACT THE SURVEYOR

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.

Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

BOUNDARY AND EASEMENT NOTE

The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : **No boundary information received. Refer architect for boundary information and locations**

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.
Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

EROSION AND SEDIMENT CONTROL NOTES

1. All work shall be generally carried out in accordance with
   (A) Local authority requirements,
   (B) EPA – Pollution control manual for urban stormwater,
   (C) LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book").
2. Erosion and sediment control **drawings and notes are** provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities.
   The erosion and sediment control **plan** shall be implemented and adopted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff sites.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Construct turf lined swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system.This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions. Refer to geotechnical report by (insert report details) for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by (insert report details) for details.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshall to supervise vehicle movements where necessary.

SITEWORKS LEGEND

● F22.20	Finished surface level
F22.00	Finished contour
K&G	Kerb and gutter
KO	Kerb only
FK	Flush kerb
DD	Dish drain
MK	Mountable kerb
MIK	Mountable integral kerb
MIK+TE	Mountable integral kerb with thickened edge
IK+TE	Integral kerb with thickened edge
TE	Thickened edge
IK	Integral kerb
IK+ED	Integral kerb with edge downturn
K&T	Kerb and toe
IL10.00 600 ø "Z" 1.25% Q=345 L/s IL9.65	Stormwater pit, flow direction and line with Invert level upstream Pipe size and class Pipe grade Flow (Litres per second) Invert level downstream
GD	Grated drain
IR	Intermediate riser with subsoil drainage line (100 dia)
FP	Flushing point with subsoil drainage line (100 dia)
DP	Down pipe
RP	Rodding point
	Concrete encased stormwater line
	Stormwater line with pipe taper and flow direction Taper kerb to zero height over 500 mm
	Wheelstop
RW#	Blockwork retaining wall
RW#	Brickwork retaining wall
DEJ	Dowelled expansion joint
SJ	Sawn joint
KJ	Keyed construction joint
WPJ	Weakened plane joint
EJ	Expansion joint
TKJ	Tied keyed joint
	Grass catch drain
	Overland flow path
	Guard Rail

EXISTING SEVICES LEGEND

— S — — S — — S —	Existing sewer
— — W — — W — — W —	Existing water
— — — EU — — —	Existing underground electrical
— — — EA — — —	Existing aerial electrical
— — — T — — — T —	Existing communications
— — — G — — — G —	Existing gas
— — — SW — — —	Existing stormwater

EROSION AND SEDIMENT CONTROL LEGEND

	Batter
x — x	Siltation fence
	Stormwater pit with Geotextile filter surround
	Hay bale barriers
	Sandbag sediment trap
	Catch drain
	Overland flow path

DRAWING SCHEDULE

DRAWING NO.	DRAWING NAME
SKC01	NOTES AND LEGEND SHEET
SKC02	EROSION AND SEDIMENT CONTROL PLAN
SKC03	OVERALL SITEWORKS PLAN
SKC06	DETAILS SHEET 1

FileName: SKC01.dwg - USER: eKranc - Plot File Created: Oct 30, 2018 - 5:38pm

A1 0 1 2 3 4 5 6 7 8 9 10

PRELIMINARY

Rev	Description	Eng	Draft	Date
P1	PRELIMINARY	EC	JW	30.10.18

Architect
ARCHITECTS NAME
ARCHITECTS ADDRESS

Civil Engineer
Taylor Thomson Whitting
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project
MONA VALE SURF LIFESAVING CLUB, SURFVIEW ROAD, MONA VALE

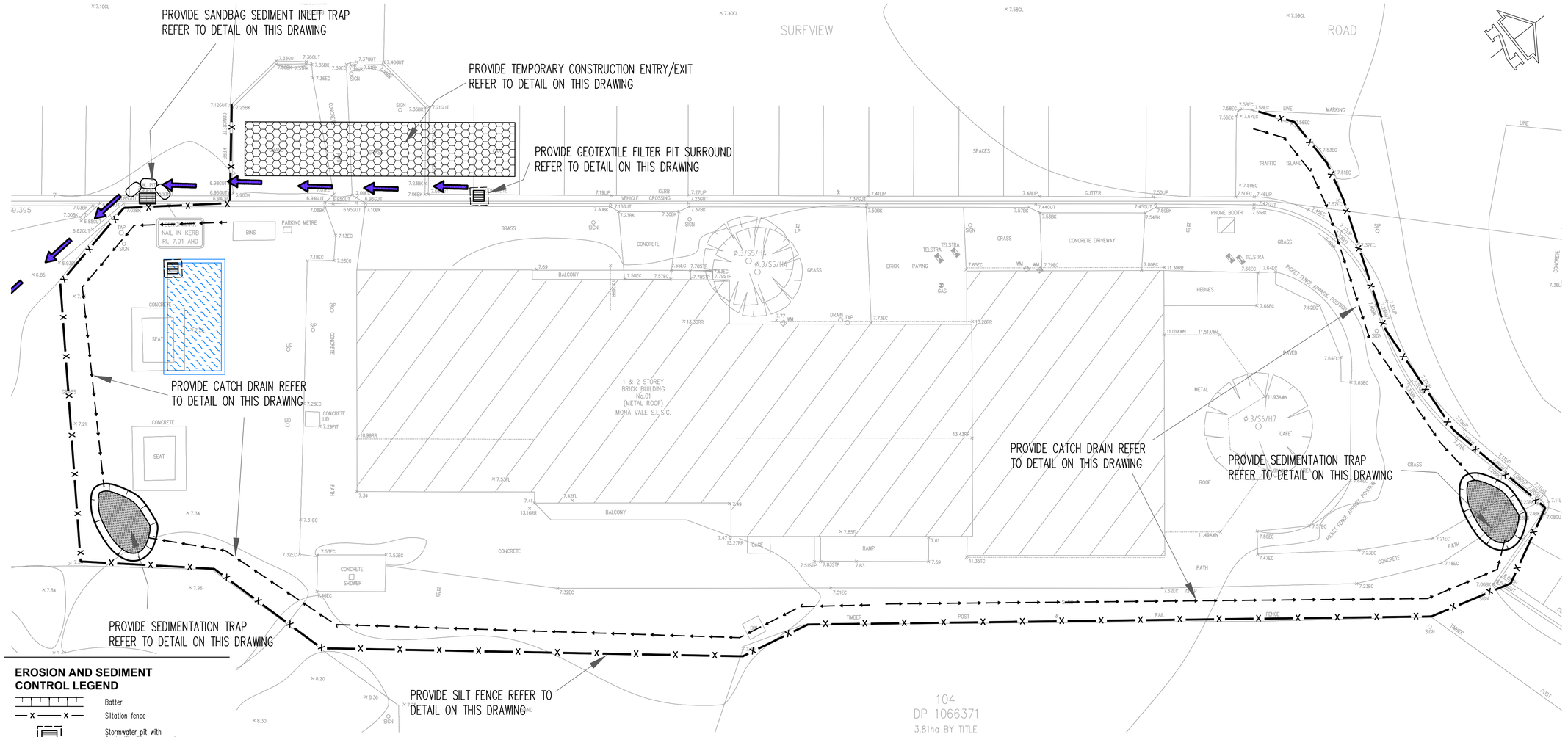
Sheet Subject
NOTES AND LEGEND SHEET

Scale : A1	Drawn	Authorised
NTS	LM	

Job No	Drawing No	Revision
171328	SKC01	P1

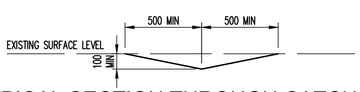
Plot File Created: Oct 30, 2018 - 5:38pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING SKC01

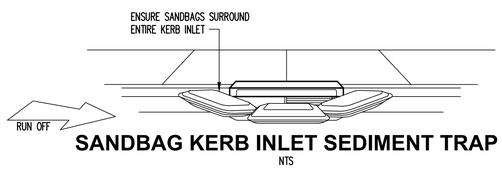


EROSION AND SEDIMENT CONTROL LEGEND

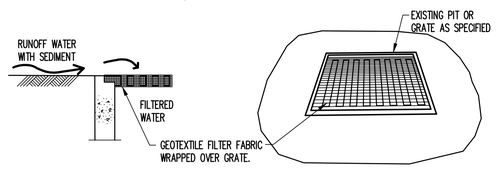
- Batter
- Siltation fence
- Stormwater pit with Geotextile filter surround
- Hay bale barriers
- Sandbag sediment trap
- Catch drain
- Overland flow path



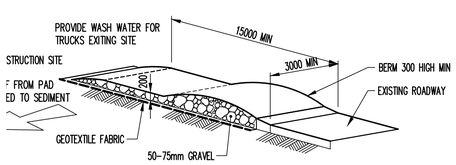
TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1: 20



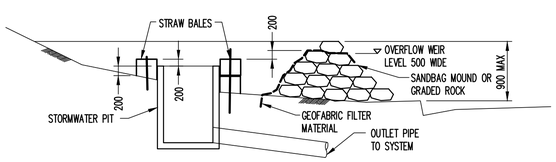
SANDBAG KERB INLET SEDIMENT TRAP
NTS



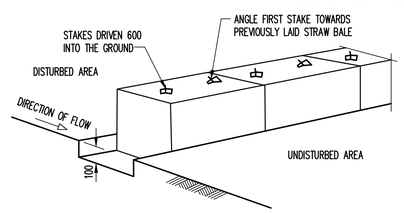
GEOTEXTILE PIT FILTER
NTS



TEMPORARY CONSTRUCTION EXIT
NTS

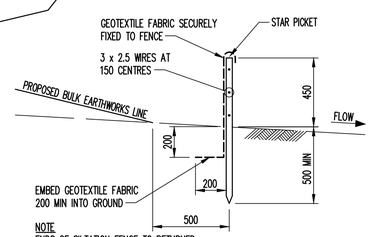


SEDIMENTATION TRAP
NTS



HAY BALE SEDIMENT FILTER
NTS

NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD



NOTE
ENDS OF SILTATION FENCE TO RETURNED UP SLOPE TO PREVENT RUNOFF

SILTATION FENCE DETAIL
SCALE 1: 20

CON
RUNOFI
DIRECT
TRAP

FileName: SKC02.dwg - USER: drlanc - Plot File Created: Oct 30, 2018 - 3:28pm

A1 0 1

Rev	Description	Eng	Draft	Date
P1	PRELIMINARY	EC	JW	30.10.18

Architect
ARCHITECTS NAME
ARCHITECTS ADDRESS

Civil Engineer
Taylor Thomson Whitting
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project
MONA VALE SURF LIFESAVING CLUB, SURFVIEW ROAD, MONA VALE

Sheet Subject
EROSION AND SEDIMENT CONTROL PLAN

Scale : A1	Drawn	Authorised
1:125	LM	

Job No	Drawing No	Revision
171328	SKC02	P1

Plot File Created: Oct 30, 2018 - 3:28pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING SKC01

Maintain existing levels along gutter to allow overland flow between new pit and existing pit.

If the proposed impermeable area is less than existing, then no OSD is required and the proposed roof can connect directly to this pit.

Existing pit IL 5.92

PROPOSED PIT IL 6.12

Existing overland flow route

Ø225 AT 1.85

Ø375 AT 1:85

EX RL 7.35

EX RL 6.90

EX RL 6.95

EX RL 7.10

EX RL 7.27

EX RL 1.50

EX RL 7.30

EX RL 6.85

EX RL 7.13

EX RL 6.76

EX RL 7.21

Water quality treatment and sediment traps to be provided prior to discharging Council stormwater.

OSD tank size dependant on final impermeable areas.
Tank shown is 5.7cu.m. 2.85m (long) x 2m (wide) x 1.0m (deep)
Invert = 6.00m
Top of tank = 7.00m

Permeable paving wash down area with free draining base above sand subgrade. paving surface falls away from building

Permeable paving with free draining base above sand subgrade. Paving surface falls away from building

Timber deck drains by infiltration to free draining sand subgrade below

Concrete path falls toward free draining planting and infiltration trench to sand subgrade below

EX RL 7.15

EX RL 7.32

EX RL 7.32

EX RL 7.51

EX RL 7.62

EX RL 7.18

EX RL 7.96

EX RL 7.50

EX RL 7.75

EX RL 7.61

Concrete path falls toward free draining planter with infiltration to sand subgrade below

SURFVIEW ROAD

SURFVIEW ROAD

104
DP 1066371
3.81ha BY TITLE

BENCHMARK
NAIL IN KERB
RL 7.25 AHD

P1 – CONCRETE PATH

P2 – PERMEABLE BLOCK PAVING

P3 – TIMBER DECKING OVER PERMEABLE SAND SUBGRADE

P4 – FREE DRAINING INFILTRATION/PLANTING TRENCH

FileName: SKC03.dwg – USER: erlonc – Plot Plot Created: Oct 30, 2018 – 5:29pm

A1 0 1 2 3 4 5 6 7 8 9 10

PRELIMINARY

Rev	Description	Eng	Draft	Date
P2	PRELIMINARY	EC	JW	30.10.18
P1	PRELIMINARY	DU	JW	30.08.18

Architect
ARCHITECTS NAME
ARCHITECTS ADDRESS

Civil Engineer
Taylor Thomson Whitting
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project
MONA VALE SURF LIFESAVING CLUB, SURFVIEW ROAD, MONA VALE

Sheet Subject
PROPOSED STORMWATER CONCEPT PLAN

Scale : A1 1:125
Drawn LM
Authorised

Job No 171328
Drawing No SKC03
Revision P2

Plot File Created: Oct 30, 2018 - 5:29pm

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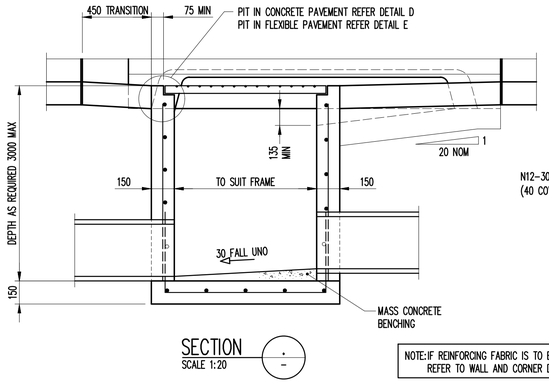

SECTION
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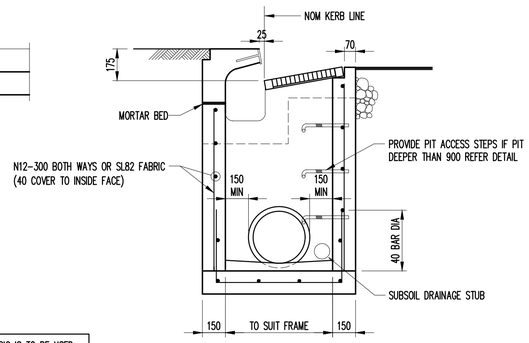

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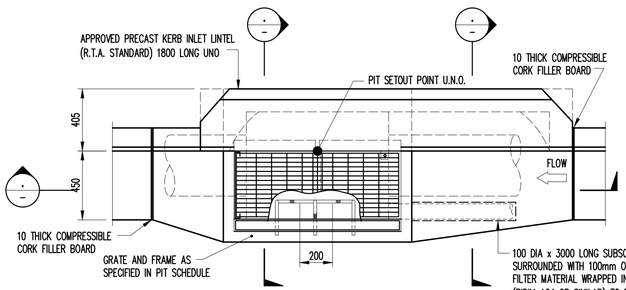
NOTE:IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS



PLAN
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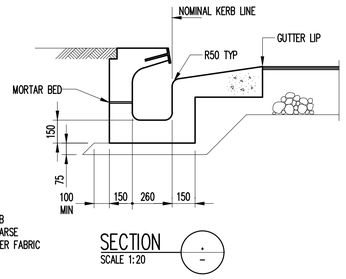

SECTION
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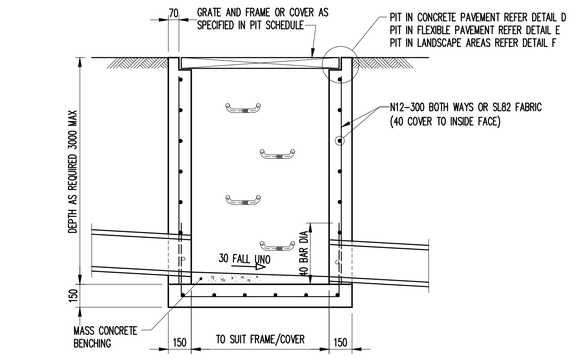
PIT TYPE A



SECTION
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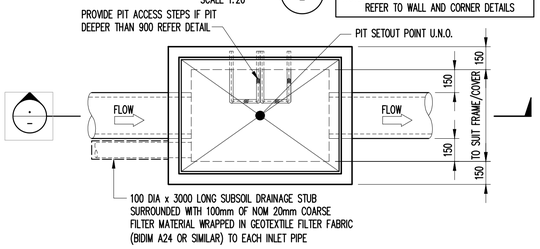
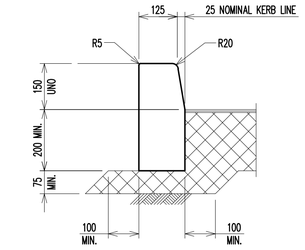


PLAN
SCALE 1: 20

PIT TYPE B



KERB ONLY (KO)
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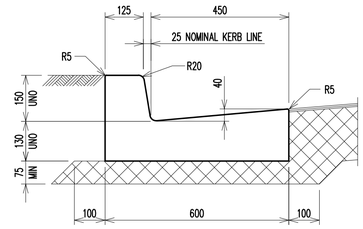
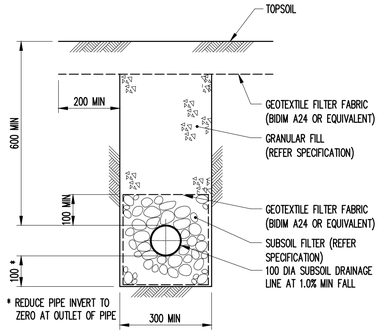
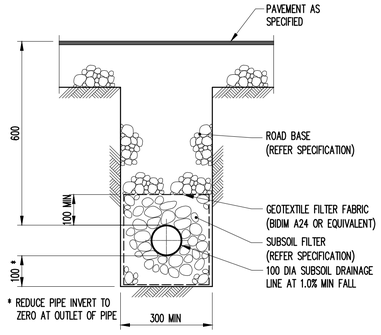


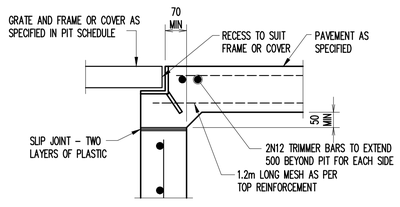
KERB AND GUTTER (K&G)
SCALE 1:10



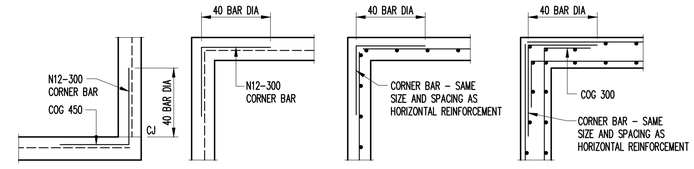
SUBSOIL IN LANDSCAPED AREAS
SCALE 1: 10



SUBSOIL IN PAVED AREAS
SCALE 1: 10

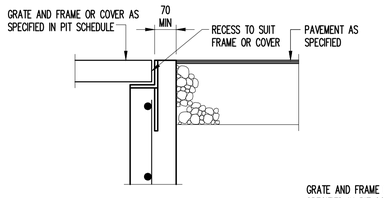


DETAIL D
SCALE 1: 10



PIT CORNER DETAILS
SCALE 1: 20

DESIGNER TO VERIFY EXTENT OF DETAILING



DETAIL E
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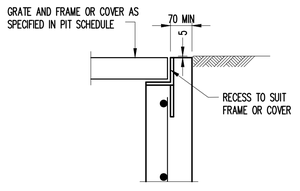

DETAIL F
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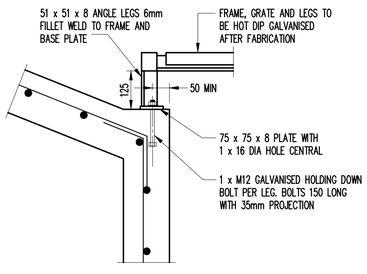


DETAIL G
SCALE 1: 10

PRELIMINARY

A1 0 1 2 3 4 5 6 7 8 9 10

Rev	Description	Eng	Draft	Date
P1	PRELIMINARY	EC	JW	31.10.18

Architect
ARCHITECTS NAME
ARCHITECTS ADDRESS

Civil Engineer
Taylor Thomson Whitting
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project
MONA VALE SURF LIFESAVING CLUB, SURFVIEW ROAD, MONA VALE

Sheet Subject
DETAILS SHEET 1

Scale : A1
NTS

Drawn
LM

Authorised

Job No
171328

Drawing No
SKC06

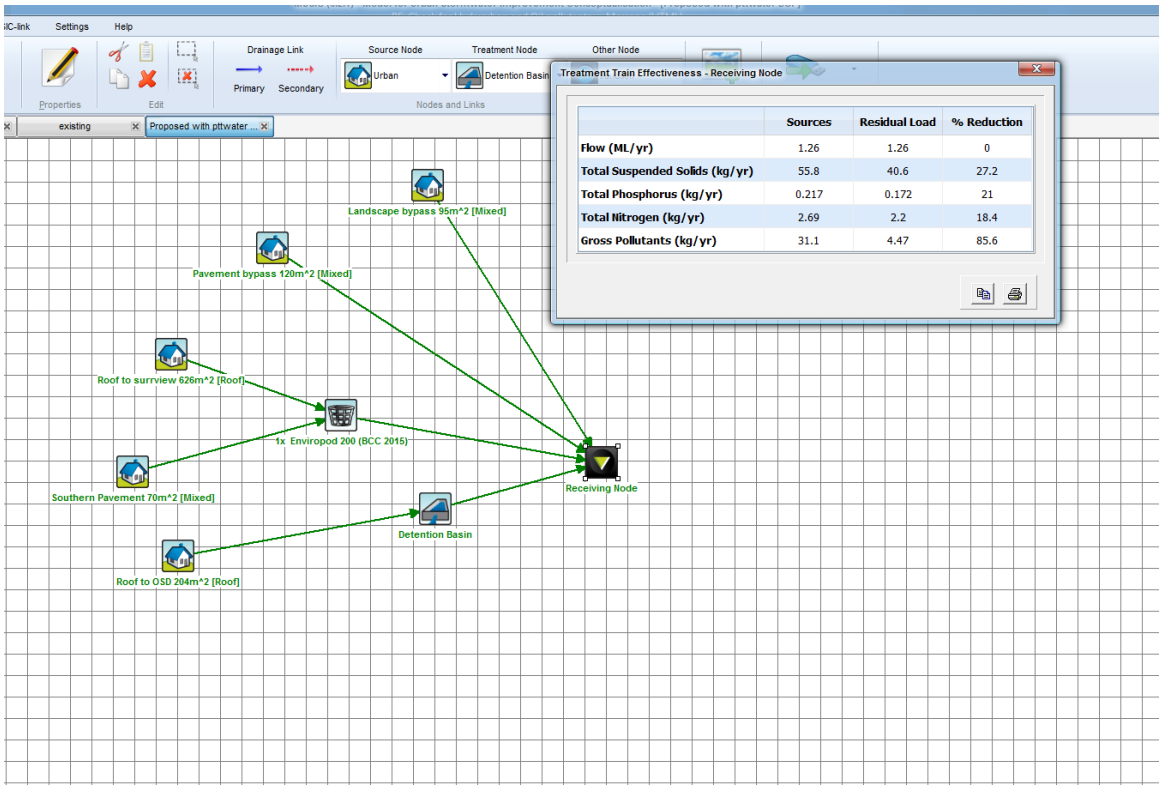
Revision
P1

Plot File Created: Oct 30, 2018 - 5:38pm

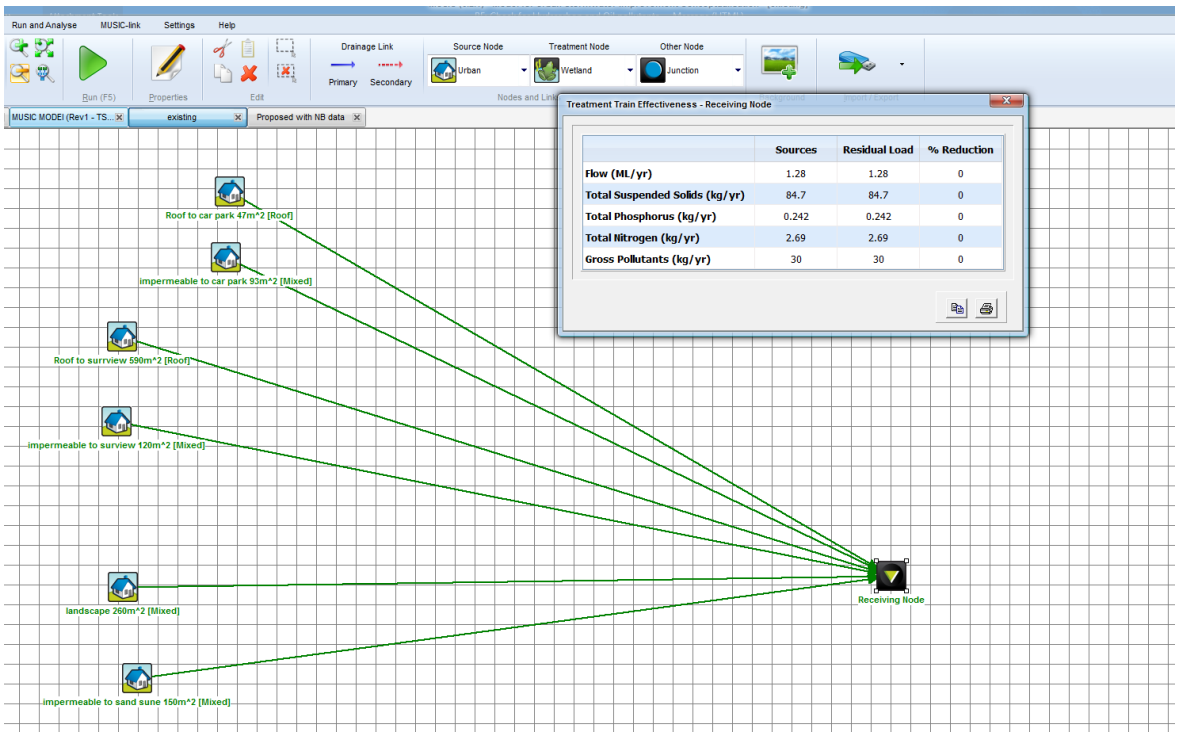
Appendix D

MUSIC Modelling

Proposed Site



Existing Site



Appendix E

Council Flood Information

Eirian Crabbe

From: Patrick Stuart <Patrick.Stuart@northernbeaches.nsw.gov.au> on behalf of Flood plain <floodplain@northernbeaches.nsw.gov.au>
Sent: Monday, 27 November 2017 12:22 PM
To: Eirian Crabbe
Subject: RE: TTW_171382: Mona Vale SLSC - Flood and Coastal Planning Levels - Flood Information
Attachments: Mona Vale Surf Club - Flood Risk Precinct Map.pdf

Categories: 171382

Hi Eirian,

I have passed on the coastal planning level request to Paul Hardie, Principal Officer – Coasts and Estuary, 9970 1375, paul.hardie@northernbeaches.nsw.gov.au

In terms of flooding, the property identified as Mona Vale Surf Club, Surfview Rd, Mona Vale, the existing building footprint is not within the Flood Planning Area. See the attached Map. This information is based on the McCarrs Creek, Mona Vale and Bayview Flood Study (2016).

For the medium and low risk flood precinct area shown in the attached map:
The 1% AEP (100 year) Flood level is 7.56m AHD.
The Flood Planning Level (FPL) is 7.86m AHD.
The Probably Maximum Flood (PMF) Level is 7.64m AHD.

The above information is currently the best information available to Council on flooding in the area, but may be subject to change in the future.

The above flood information does not mean that the site is not affected by coastal planning levels. Refer to Coastal planning Information for this.

If you have any flood related questions give me a call or email floodplain@northernbeaches.nsw.gov.au

Regards,
Patrick.

Patrick Stuart
Team Leader Water Cycle Management

Stormwater Floodplain Engineering
t 02 9976 1606 **m** 0435 966 850
patrick.stuart@northernbeaches.nsw.gov.au
northernbeaches.nsw.gov.au

From: Eirian Crabbe [mailto:Eirian.Crabbe@ttw.com.au]
Sent: Tuesday, 21 November 2017 10:11 AM
To: Flood plain <floodplain@northernbeaches.nsw.gov.au>
Subject: TTW_171382: Mona Vale SLSC - Flood and Coastal Planning Levels

Hi there,

I am working on the Mona Vale Surf Life Saving Club development. We are currently looking at setting the Floor Level and access arrangements. Please could you confirm the Flood Planning Level and Coastal Planning Level for this property.

Please let me know if you require any further information.

Many Thanks

Eirian

Eirian Crabbe

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