PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT

PLANSET: CONCEPT STORMWATER MANAGEMENT PLAN

CLIENT: BRETT CROWTHER

DRAWING LIST		
DWG NO.	REV	DWG TITLE
GENERAL		
PS01-A000	D	COVER SHEET
CONSTRUCTION MANAGEMENT WORKS		
PS01-B300	B	GROUND FLOOR EROSION & SEDIMENT CONTROL PLAN
PS01-B310	A	EROSION & SEDIMENT CONTROL DETAILS
DRAINAGE		
PS01-E100	D	BASEMENT DRAINAGE PLAN
PS01-E101	C	GROUND FLOOR DRAINAGE PLAN
PS01-E200	B	DRAINAGE DETAILS
PS01-E600	A	DRAINS CATCHMENT PLAN, DETAILS, LAYOUT AND RESULTS
PS01-E700	B	MUSIC CATCHMENT PLAN, DETAILS, LAYOUT AND RESULTS

LOCALITY PLAN
NOT TO SCALE

LGA: NORTHERN BEACHES COUNCIL

1-3 GONDOLA STREET, NORTH NARRABEEN, NSW
LOTS 187/DP16719 & 188/DP16719

GENERAL NOTES:
1. THIS PLAN IS FOR DEVELOPMENT APPLICATION PURPOSE AND NOT FOR CONSTRUCTION. DESIGN TO BE REVIEWED AND UPDATED FOR CONSTRUCTION CERTIFICATE.
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH, AND THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE RELEVANT AUSTRALIAN STANDARDS, COUNCIL SPECIFICATIONS, AND ALL PROJECT CONSULTANT'S PLANS AND REPORTS.
3. INTERNAL SURVEY INFORMATION AND EXTERNAL SITE BOUNDARY SHOWN BASED ON SURVEY INFORMATION PROVIDED BY C&A SURVEYORS ON 08/03/2024.
4. ARCHITECTURAL INFORMATION SHOWN BASED ON DESIGN BY MACKENZIE ARCHITECTS INTERNATIONAL 29/02/2024.
5. LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
D	**ARCHITECTURAL AMENDMENT**	**13/12/2024**	**NP**	**PC**		
C	MINOR AMENDMENTS	25/10/2024	NP	PC	AVG	GT
B	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE

GRID: ---
DATUM: ---
PROJECT MANAGER: GT

CLIENT: BRETT CROWTHER

PROJECT NAME/PLANSET TITLE: PROPOSED RESIDENTIAL DEVELOPMENT
CONCEPT STORMWATER MANAGEMENT PLAN
1-3 GONDOLA STREET, NORTH NARRABEEN, NSW
LOTS 187/DP16719 & 188/DP16719

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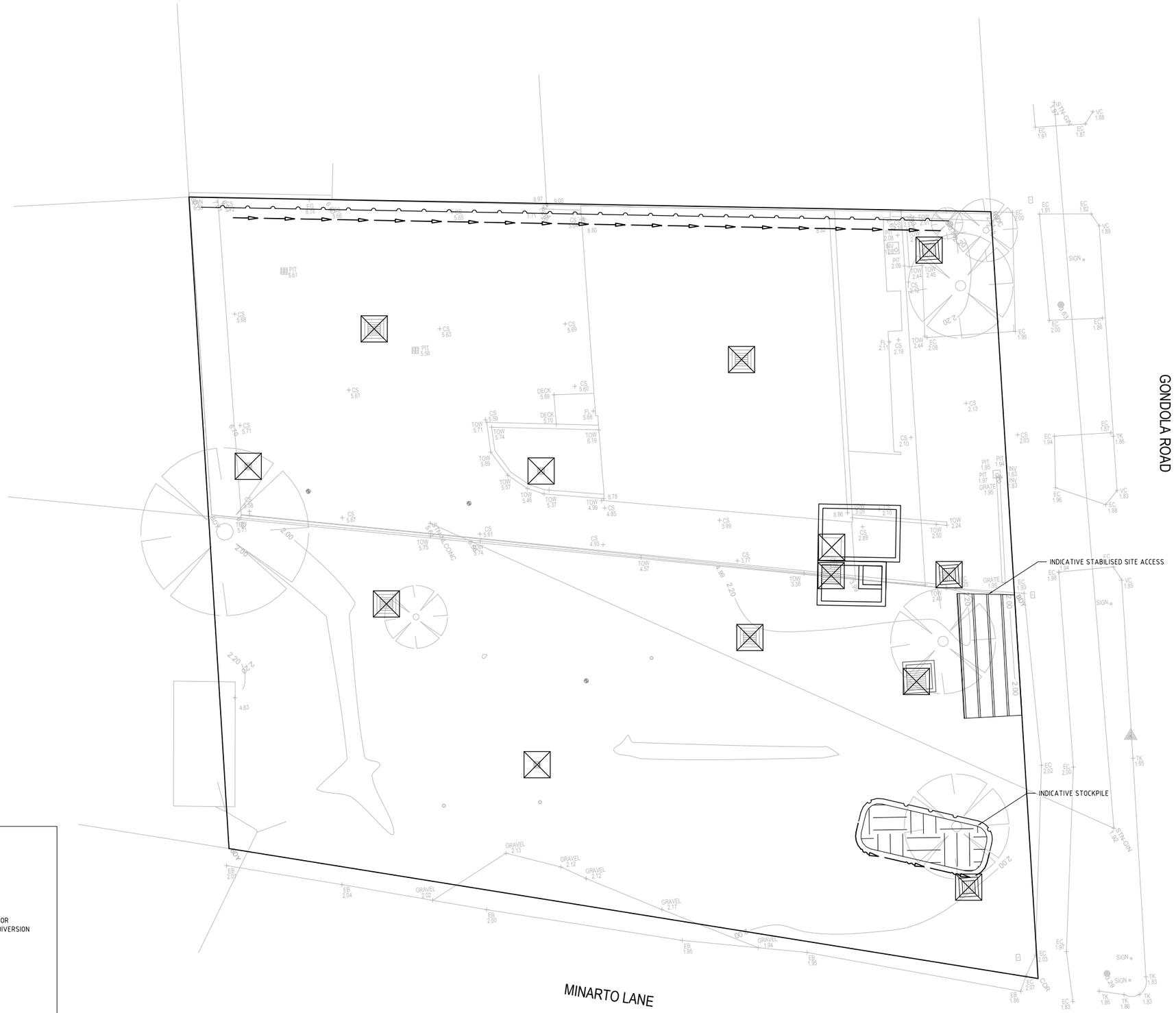
DRAWING TITLE: COVER SHEET

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-A000	D

DRAWING ID: P2310036-PS01-R05-A000

PRINTED: ---- - USER: MORPHAGE
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



KEY:

- INDICATIVE STOCKPILE
- SEDIMENT FENCE
- EARTH BANK (LOW FLOW) FOR UPSTREAM STORM WATER DIVERSION
- GEOTEXTILE & MESH AND GRAVEL FILTER
- STABILISED SITE ACCESS WITH SHAKER PAD

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE: 0 1 2 3 4 5 6 7 8 9 10 METRES
A1 (A3) 1:100 (1:200)

GRID	DATUM	PROJECT MANAGER
---	mAHD	GT

CLIENT: BRETT CROWTHER

PROJECT NAME/PLANSET TITLE
PROPOSED RESIDENTIAL DEVELOPMENT
CONCEPT STORMWATER MANAGEMENT PLAN
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DRAWING TITLE: GROUND FLOOR EROSION & SEDIMENT CONTROL PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-B300	B

DRAWING ID: P2310036-PS01-R05-B300

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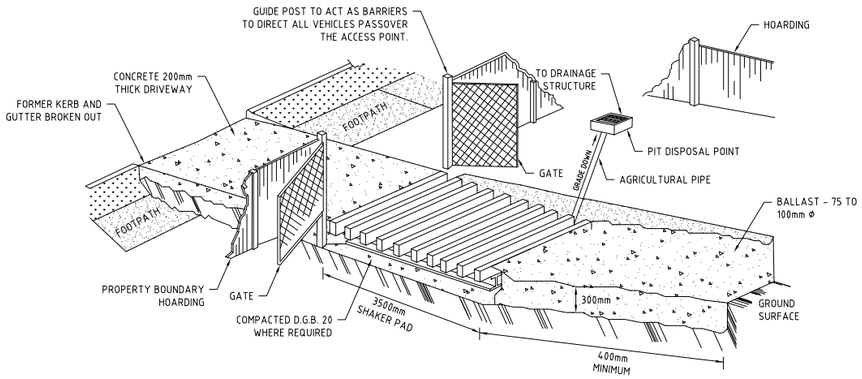
STABILISED ACCESS POINT

TYPE II SAP

THE TYPE II SAP DESIGN IS MORE DEFINED IN THAT IT REQUIRES AN AREA OF BALLAST WITHIN THE SITE COMBINED WITH A SHAKER PAD; ADJACENT THE SHAKER PAD AND IN THE PUBLIC WAY IS A TEMPORARY (CONCRETE) VEHICULAR CROSSING. (SEE DIAGRAM)

STABILISED ACCESS POINT - TYPE 2



IN BOTH TYPE I AND TYPE II SAP'S, THE TEMPORARY VEHICULAR CROSSING MUST:

- CONNECT TO AN EXISTING GUTTER LAYBACK (WHERE THE KERB AND GUTTER EXIST) . IF A GUTTER LAYBACK DOES NOT EXIST THEN THE CONNECTION MUST BE MADE TO THE GUTTER BY REMOVING THE ADJCENT KERB SECTION ONLY.
- CONNECT TO A DISH CROSSING (WHERE KERB AND GUTTER DOES NOT EXIST). IF A DISH CROSSING DOES NOT EXIST, THEN IT MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS CONTAINED IN COUNCIL'S ISSUED FOOTPATH CROSSING LEVELS.

IT SHOULD BE NOTED THAT THESE TYPES OF SAPS ARE CONSIDERED TO BE APPLICABLE FOR THE MAJORITY OF ACTIVITIES HOWEVER SOME SITES MAY REQUIRE SPECIAL CONSIDERATION.

SHAKER PAD (CATTLE GRID)

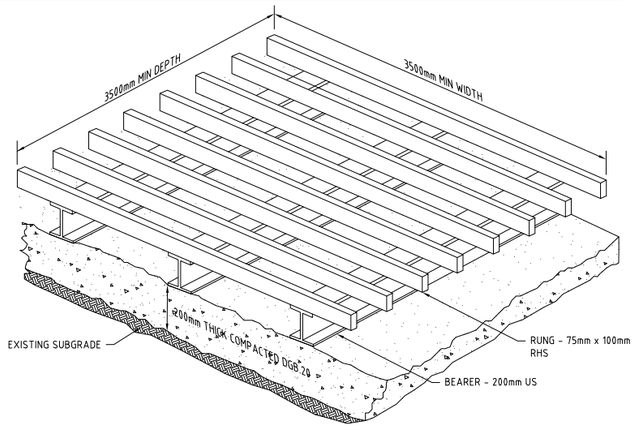
A CORRECTLY DESIGNED AND INSTALLED SHAKER PAD WILL ASSIST IN PREVENTING SEDIMENT TRANSFERE FROM A SITE. ANY STABILISED ACCESS POINT (SAP) CAN BE DESIGNED WITH A SHAKER PAD (COMPULSOPRY IN TYPE II SAP'S)

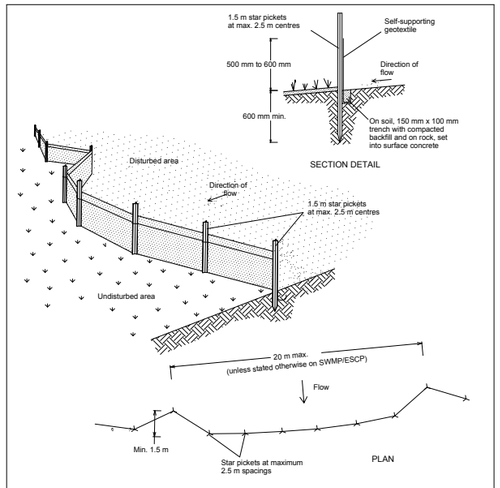
SHAKER PADS CAN BE DESIGNED AND CONSTRUCTED TO ENABLE RE-USE ON FUTURE PROJECTS.

THE SHAKER PAD:

- MUST BE DESIGNED AND CERTIFIED BY A PRACTICING STRUCTURAL ENGINEER. THE CERTIFIED DESIGN SHOULD BE SUBMITTED WITH THE RELEVENT APPLICATION.
- CAN BE CONSTRUCTED FROM ANY SUITABLE MATERIAL.
- MUST BE LOCATED ON A SUITABLY PREPARED AND COMPACTED SUB-GRADE/BASE MATERIAL.
- MUST BE SITUATED SUCH THAT THE RUNGS OF THE SHAKER PAD ARE LEVEL WITH THE ADJOINING NATURAL SURFACE.
- MUST BE A MINIMUM OF 3.5m IN LENGTH.
- MUST BE A MINIMUN OF 3.5m IN WIDTH.
- MUST HAVE CLEAR SPACING BETWEEN RUNGS OF 200 - 250mm.
- RUNGS MUST HAVE A MAXIMUM WIDTH (BEARING AREA) OF 75mm.
- MUST HAVE A MINIMUM CLEAR DEPTH OF 300mm IE FORM THE ROP OF THE RUNG TO THE FINISHED SUB-GRADE/BASE LEVEL.

THE SHAKER PAD MUST BE PROVIDED WITH SUITABLE BARRIERS AT THE SIDES TO ENSURE THAT ALL TYERS OF VEHICLES LEAVING THE SITE TRAVERSE THE DEVICE.

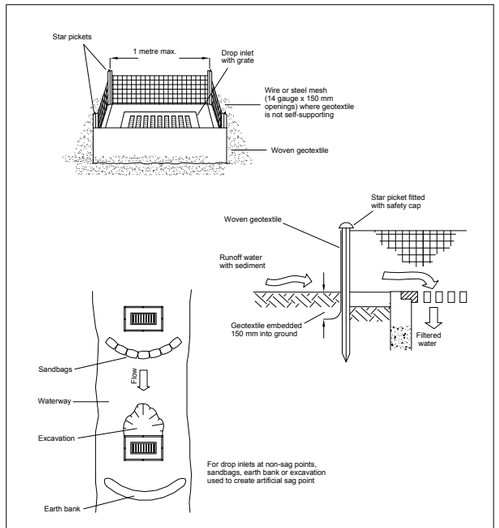




Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

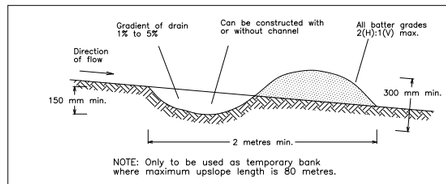
SEDIMENT FENCE — SD 6-8



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

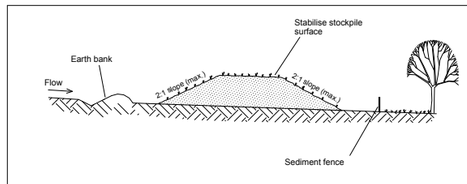
GEOTEXTILE INLET FILTER — SD 6-12



Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) — SD 5-5



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES — SD 4-1

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE

GRID	DATUM	PROJECT MANAGER
---	---	GT

CLIENT: BRETT CROWTHER

PROJECT NAME/PLANSET TITLE
PROPOSED RESIDENTIAL DEVELOPMENT
CONCEPT STORMWATER MANAGEMENT PLAN
1-3 GONDOLA STREET, NORTH NARRABEEN, NSW
LOTS 187/DP16719 & 188/DP16719

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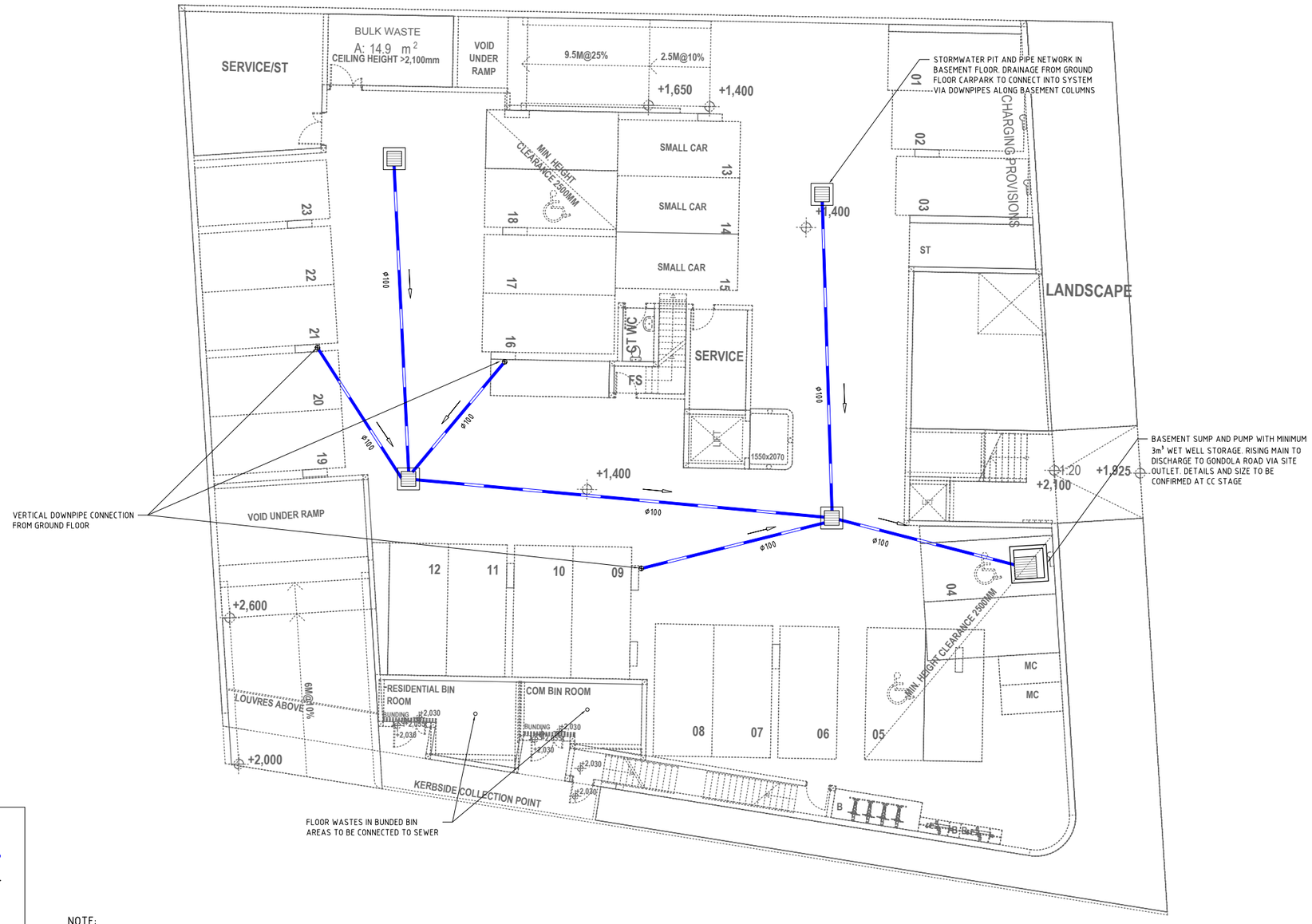
DRAWING TITLE
EROSION & SEDIMENT CONTROL DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-B310	A

DRAWING ID: P2310036-PS01-R05-B310



KEY

- STORMWATER PIPELINE
- SITE BOUNDARY
- DOWNPIPE
- SURFACE INLET PIT
- FLOW DIRECTION

NOTE:

1. CONCEPT DESIGN ONLY. ALL PIPE SIZES AND PIT LOCATIONS ARE INDICATIVE AND ARE SUBJECT TO DETAILED DESIGN.
2. AS PER SECTION 9.2 OF THE PITTWATER DCP – A4.11 NORTH NARRABEEN LOCALITY 'WATER MANAGEMENT FOR DEVELOPMENT POLICY' DOCUMENT, OSD IS NOT REQUIRED FOR THE SITE. THE DEVELOPMENT IS LOCATED WITHIN THE COUNCIL ESTABLISHED FLOOD PLAIN FOR THE 100, 20 AND 5 YR ARI STORM EVENTS AS PER THE PITTWATER OVERLAND FLOW MAPPING AND FLOOD STUDY – VOLUME 2 (2013) DOCUMENT PREPARED BY CARDNO.

DEVELOPMENT APPLICATION

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C	MINOR AMENDMENTS	25/10/2024	NP	PC	AVG	GT
B	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE: A1 (A3) 1:100 (1:200) — 0 1 2 3 4 5 6 7 8 9 10 METRES

GRID	DATUM	PROJECT MANAGER
---	mAHD	GT

CLIENT: BRETT CROWTHER

PROJECT NAME/PLANSET TITLE: PROPOSED RESIDENTIAL DEVELOPMENT
CONCEPT STORMWATER MANAGEMENT PLAN
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DRAWING TITLE: BASEMENT DRAINAGE PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-E100	D

DRAWING ID: P2310036-PS01-R05-E100

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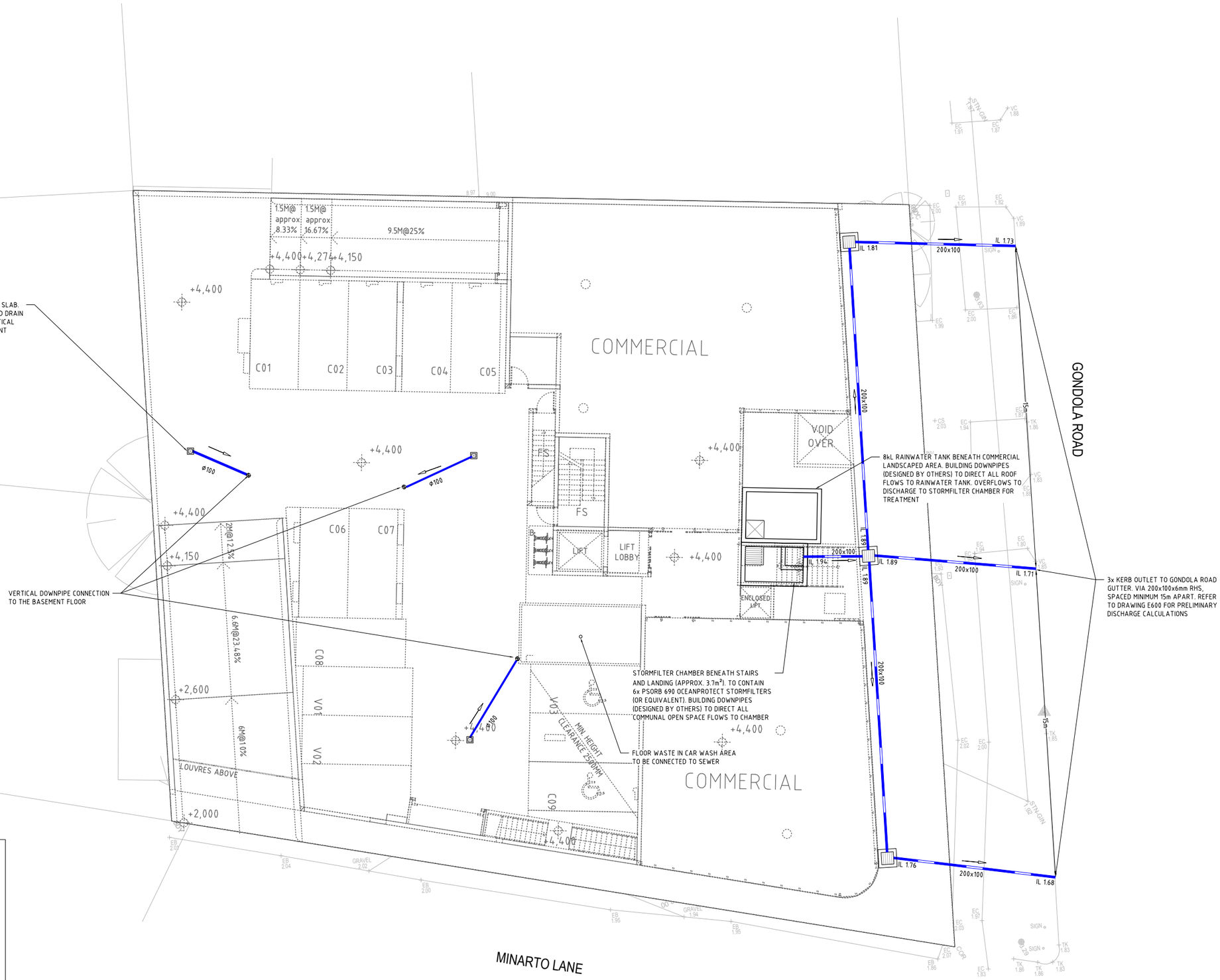

KEY

- STORMWATER PIPELINE
- SLUNG DRAINAGE LINE
- SITE BOUNDARY
- DOWNPIPE
- PROPOSED PIT
- FLOW DIRECTION

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
C	MINOR AMENDMENTS	25/10/2024	NP	PC	AVG	GT
B	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE: A1 (A3) 1:100 (1:200) — 0 1 2 3 4 5 6 7 8 9 10 METRES

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

GRID	DATUM	PROJECT MANAGER
---	mAHD	GT

CLIENT: BRETT CROWTHER

PROJECT NAME/PLANSET TITLE: PROPOSED RESIDENTIAL DEVELOPMENT
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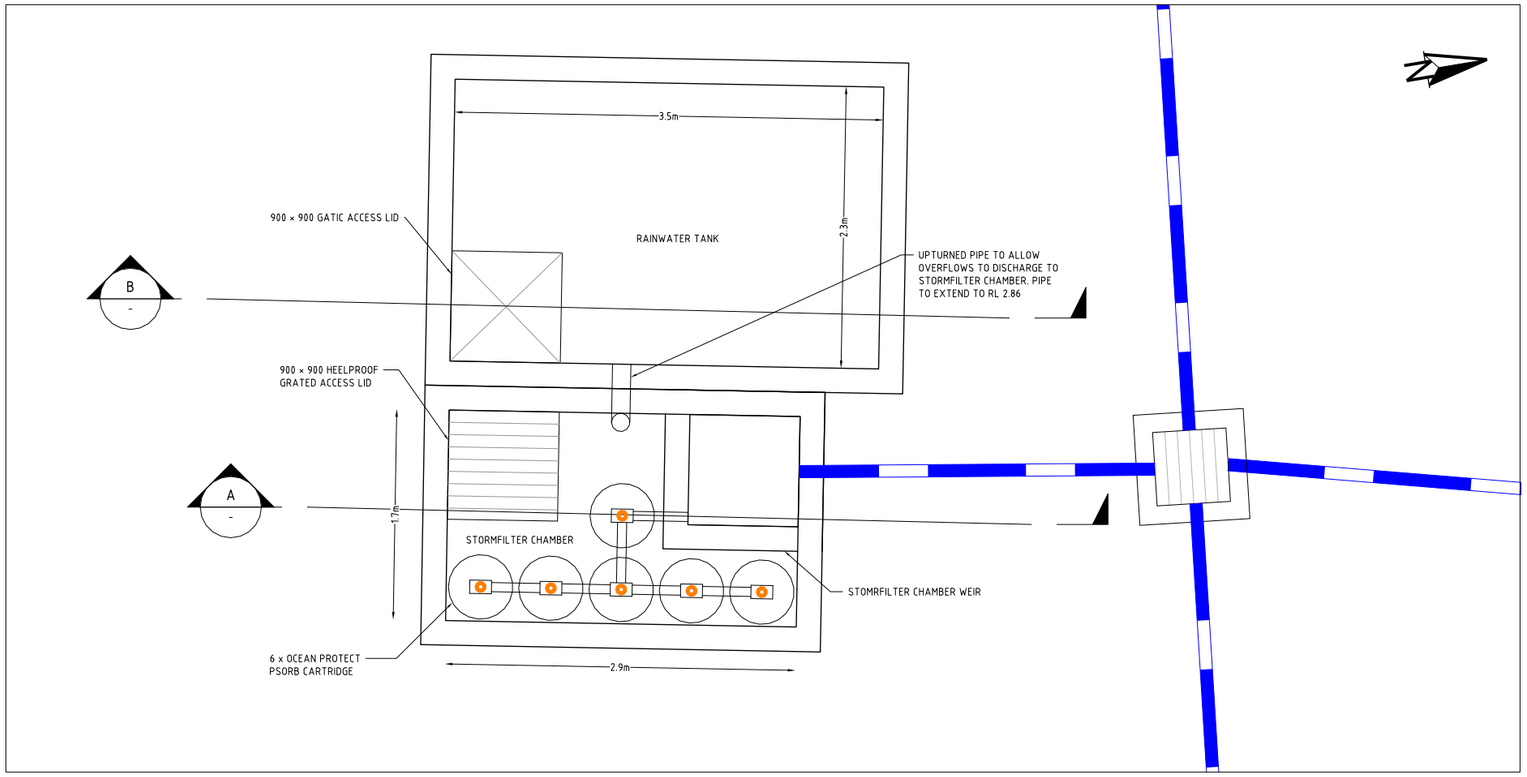
DRAWING TITLE: GROUND FLOOR DRAINAGE PLAN

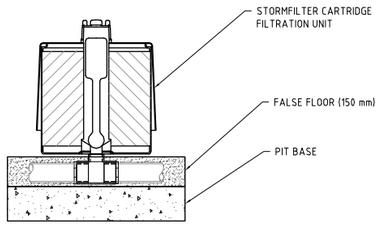
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-E101	C

DRAWING ID: P2310036-PS01-R05-E101



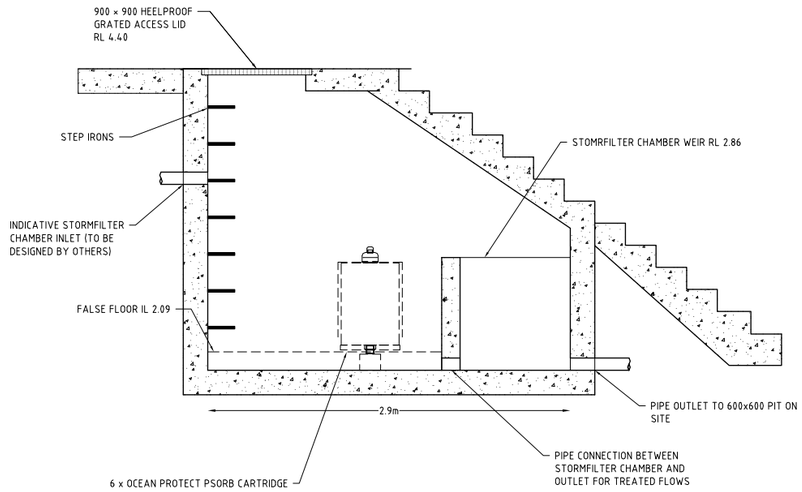
RAINWATER TANK AND STORMWATER CHAMBER PLAN

SCALE 1:25



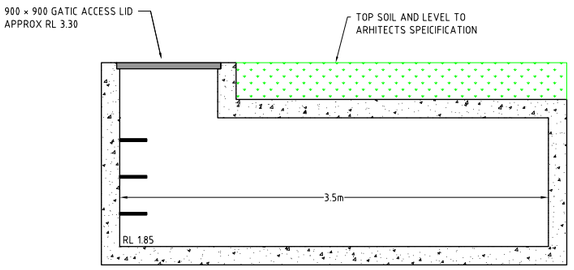
STORMFILTER CARTRIDGE INSTALLATION DETAIL

NOT TO SCALE



SECTION A - STORMFILTER CHAMBER

SCALE 1:25



SECTION B - RAINWATER TANK

SCALE 1:25

NOTE:
1. RAISED PLANTER BOXES IN FIRST FLOOR AND COMMUNAL OPEN SPACE ARE TO DRAIN THROUGH PITS FITTED WITH OCEANGUARD PIT INSERTS (OR APPROVED EQUIVALENT)

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE
0 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50 METRES
A1 (A3) 1:25 (1:50)

GRID	DATUM	PROJECT MANAGER
---	mAHD	GT

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PROJECT NAME/PLANSET TITLE
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DRAWING TITLE: DRAINAGE DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-E200	B

DRAWING ID: P2310036-PS01-R05-E200

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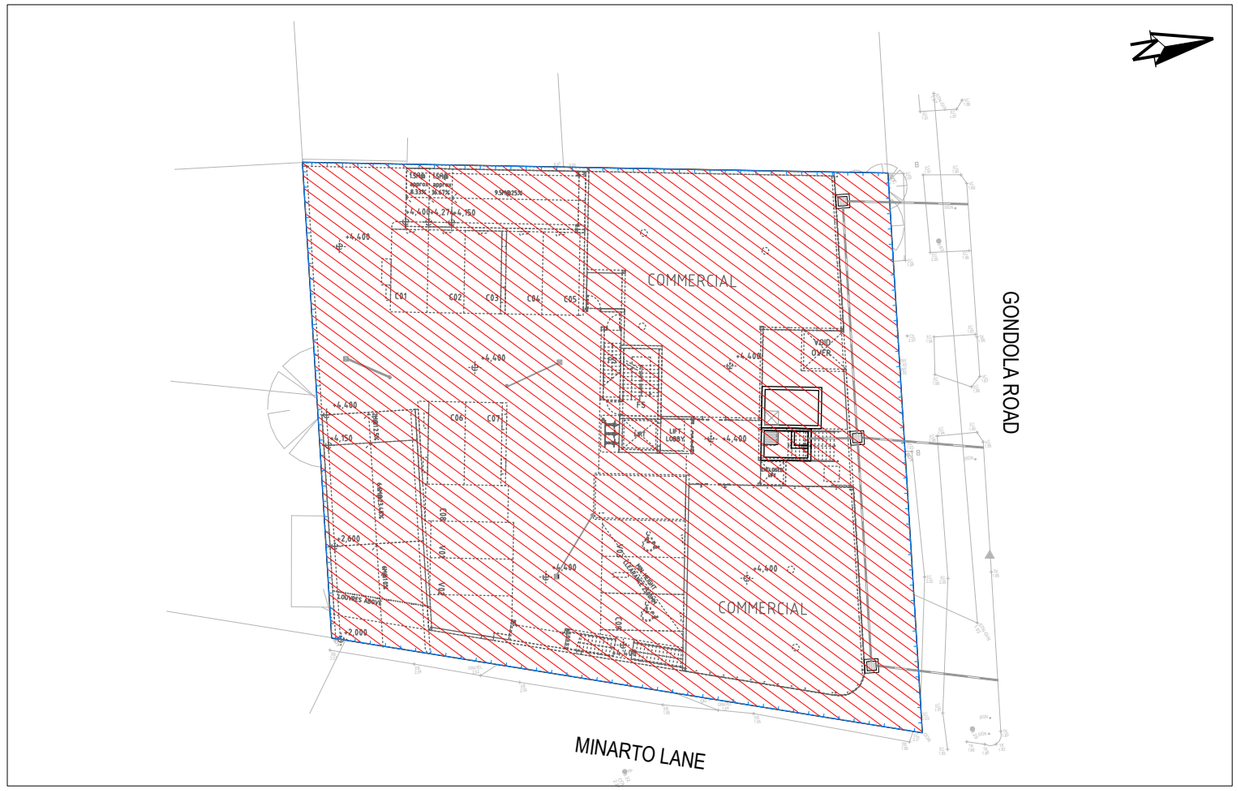
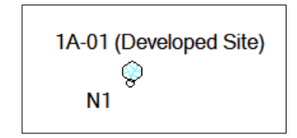
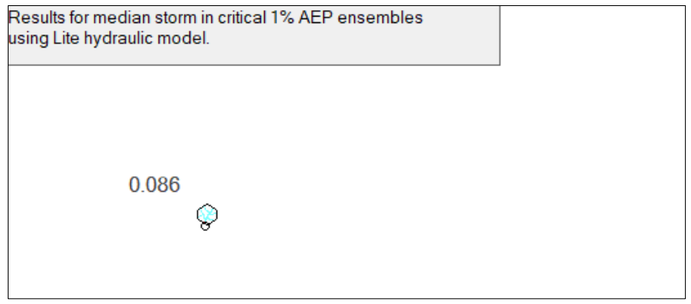


DRAINS CATCHMENT PLAN

SCALE 1:200



DRAINS CATCHMENTLAYOUT (P2310036DRN02V01)



DRAINS CATCHMENT RESULTS (P2310036DRN02V01)

DRAINS CATCHMENT DETAILS (P2310036DRN02V01)

KEY	DRAINS NODE	NODE DESCRIPTION	AREA (ha)	% IMPERVIOUS AREA
	1A101	ENTIRE SITE	0.129	88%
TOTAL AREA			0.129	= 100% OF TOTAL AREA
TOTAL IMPERVIOUS AREA			0.114	= 88% OF TOTAL AREA
TOTAL PERVIOUS AREA			0.015	= 12% OF TOTAL AREA

NOTES:

1. AS DISCUSSED WITH COUNCIL'S OFFICER 'UMA' ON 22/10/2024:
   - DISCHARGE FROM ANY INDIVIDUAL OUTLET IS LIMITED TO 30L/s AT EACH DISCHARGE LOCATION.
   - MULTIPLE DISCHARGE POINTS TO THE KERB CAN BE PROPOSED, PROVIDED THEY ARE MINIMUM 15m APART.
2. A DRAINS MODEL (ILSAX) HAS BEEN CREATED BASED ON THE POST DEVELOPMENT SITE. RESULTS INDICATE 86L/s WILL BE GENERATED IN THE 1% AEP STORM.
3. THREE OUTLETS HAVE BEEN PROPOSED TO LIMIT DISCHARGE LESS THAN 30L/s AT EACH DISCHARGE LOCATION.

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT

SCALE: 0 2 4 6 8 10 12 14 16 18 20 METRES — A1 (A3) 1:200 (1:400)

GRID	DATUM	PROJECT MANAGER
---	mAHD	GT

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CLIENT: BRETT CROWTHER

PROJECT NAME/PLANSET TITLE: PROPOSED RESIDENTIAL DEVELOPMENT
CONCEPT STORMWATER MANAGEMENT PLAN
1-3 GONDOLA STREET, NORTH NARRABEEN, NSW
LOTS 187/DP16719 & 188/DP16719

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DRAWING TITLE: DRAINS CATCHMENT PLAN, DETAILS, LAYOUT AND RESULTS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-E600	A

DRAWING ID: P2310036-PS01-R05-E600

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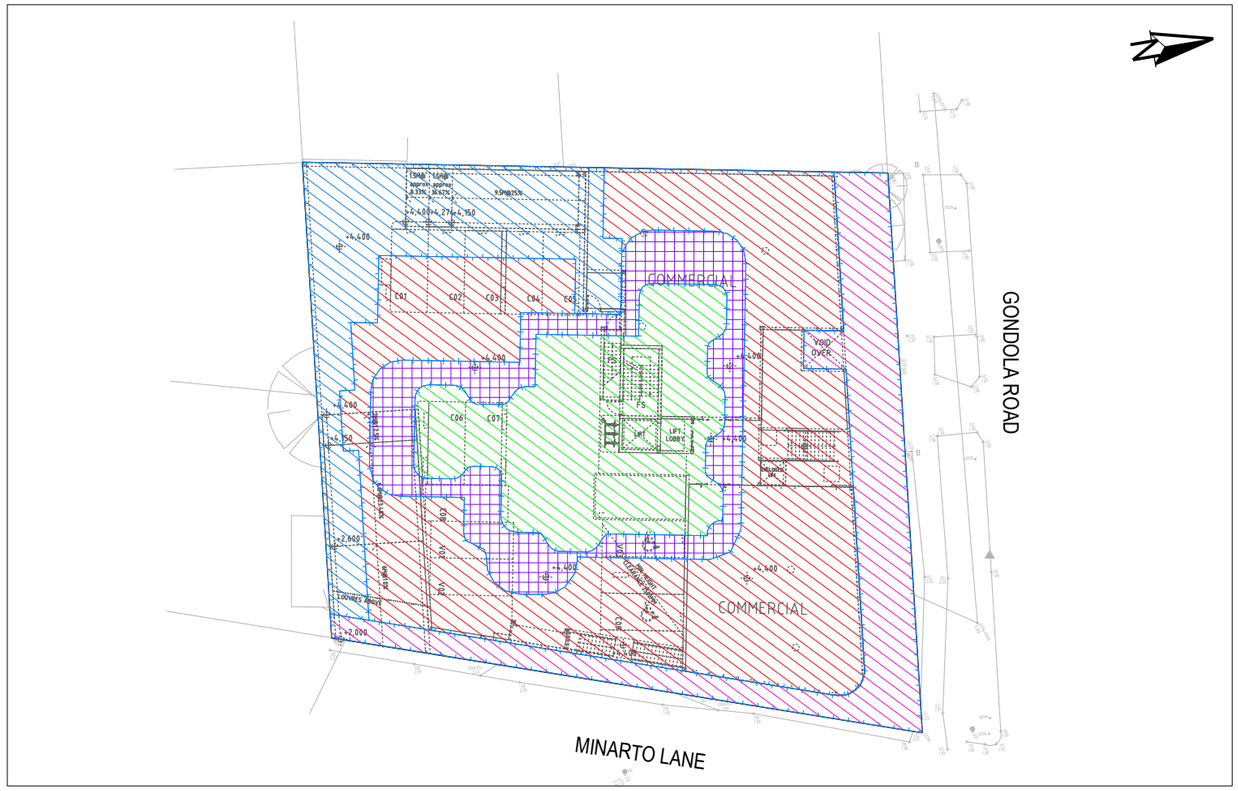
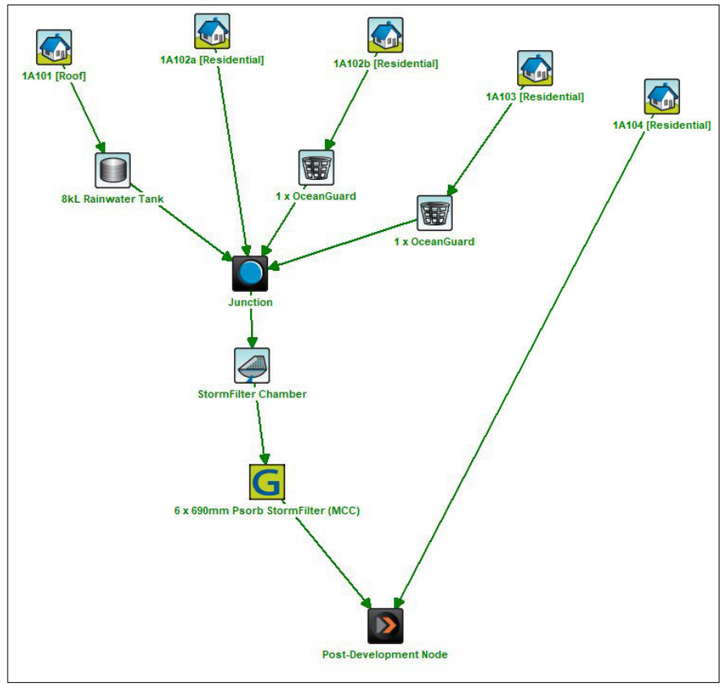
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



MUSIC CATCHMENT PLAN

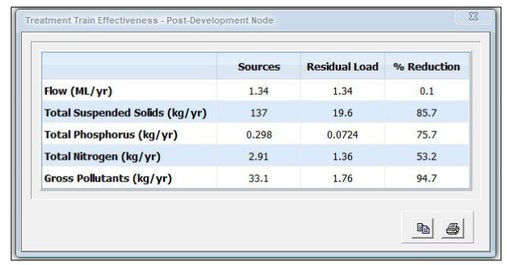
SCALE 1:200



MUSIC CATCHMENT LAYOUT (P2310036MUS03V02)

MUSIC CATCHMENT DETAILS (P2310036MUS03V02)

KEY	MUSIC NODE	NODE DESCRIPTION	AREA (ha)	% PAVED
	1A101	ROOF	0.052	100%
	1A102a	RESIDENTIAL ROOF	0.022	100%
	1A02b	RESIDENTIAL ROOF PLANTER BOX	0.016	100%
	1A103	RESIDENTIAL GROUND FLOOR PLANTER BOX	0.019	100%
	1A104	RESIDENTIAL BYPASS	0.019	20%
TOTAL AREA			0.129	= 100% OF TOTAL AREA
TOTAL IMPERVIOUS AREA			0.114	= 88% OF TOTAL AREA
TOTAL IMPERVIOUS AREA			0.015	= 12% OF TOTAL AREA



	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.34	1.34	0.1
Total Suspended Solids (kg/yr)	137	19.6	85.7
Total Phosphorus (kg/yr)	0.298	0.0724	75.7
Total Nitrogen (kg/yr)	2.91	1.36	53.2
Gross Pollutants (kg/yr)	33.1	1.76	94.7

MUSIC CATCHMENT RESULTS (P2310036MUS03V02)

NOTE:
1. STORMWATER QUALITY REDUCTION TARGETS ARE TSS 65%, TP 55%, TN 45% AND GP 90%. PROPOSED STORMWATER QUALITY TREATMENT STRATEGY ACHIEVED REDUCTION TARGETS.
2. RAISED PLANTER BOXES IN FIRST FLOOR AND COMMUNAL OPEN SPACE ARE TO DRAIN THROUGH PITS FITTED WITH OCEANGUARD PIT INSERTS (OR APPROVED EQUIVALENT).

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	TO ADDRESS COUNCIL RFI	24/10/2024	NP	PC	AVG	GT
A	INITIAL RELEASE	02/04/2024	NP	IS	AVG	GT

SCALE: A1 (A3) 1:200 (1:400) — 0 2 4 6 8 10 12 14 16 18 20 METRES

GRID	DATUM	PROJECT MANAGER
---	mAHD	GT

CLIENT: BRETT CROWTHER

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PROJECT NAME/PLANSET TITLE
PROPOSED RESIDENTIAL DEVELOPMENT
CONCEPT STORMWATER MANAGEMENT PLAN
1-3 GONDOLA STREET, NORTH NARRABEEN, NSW
LOTS 187/DP16719 & 188/DP16719

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DRAWING TITLE: MUSIC CATCHMENT PLAN, DETAILS, LAYOUT AND RESULTS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2310036	PS01	R05	PS01-E700	B

DRAWING ID: P2310036-PS01-R05-E700

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)