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**SITE BASED STORMWATER
MANAGEMENT PLAN**

FOR

**PROPOSED INDUSTRIAL DEVELOPMENT
93 BUKULLA STREET, WACOL QLD 4076**

JOB NO: 25.1595 SBSMP

APRIL 2026

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CERTIFICATION

Site Based Stormwater Management Plan

Job Number: 25.1595 SBSMP
Issue No: A
Report Date: 29/04/2026

Author: Mary Nguyen

Site Address: 93 Bukulla Street, Wacol Qld 4076
RP Description: Lot 13 on SP 132727
Proposed Development: Industrial Development
Brisbane City Council Ref: A006934383



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DATE: 29/04/2026

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1 INTRODUCTION

DEQ Consulting Pty Ltd has been commissioned to prepare a Site Based Stormwater Management Plan for inclusion with the Development Application package submission to Brisbane City Council for a proposed material change of use development at 93 Bukulla Street, Wacol Qld 4076.

This Site Based Stormwater Management Plan has been prepared to address the requirements of Brisbane City Council's Water Quality Objectives and to be in accordance with the State Planning Policy 2017 'State Interest – Water Quality'.

Details regarding all analysis and calculations are described in this report.

2 SITE CHARACTERISTICS

2.1 LOCATION

The subject site (Lot 13 on SP 132727) is approximately 4516 m² in total area and is currently occupied by an existing building structures, sheds and associated unsealed pavements. A site location plan is shown on Figure 1 below. The site is facing Bukulla Street to the North (site's frontage), Bullock Head Creek to the South-West, and by industrial property to the East.

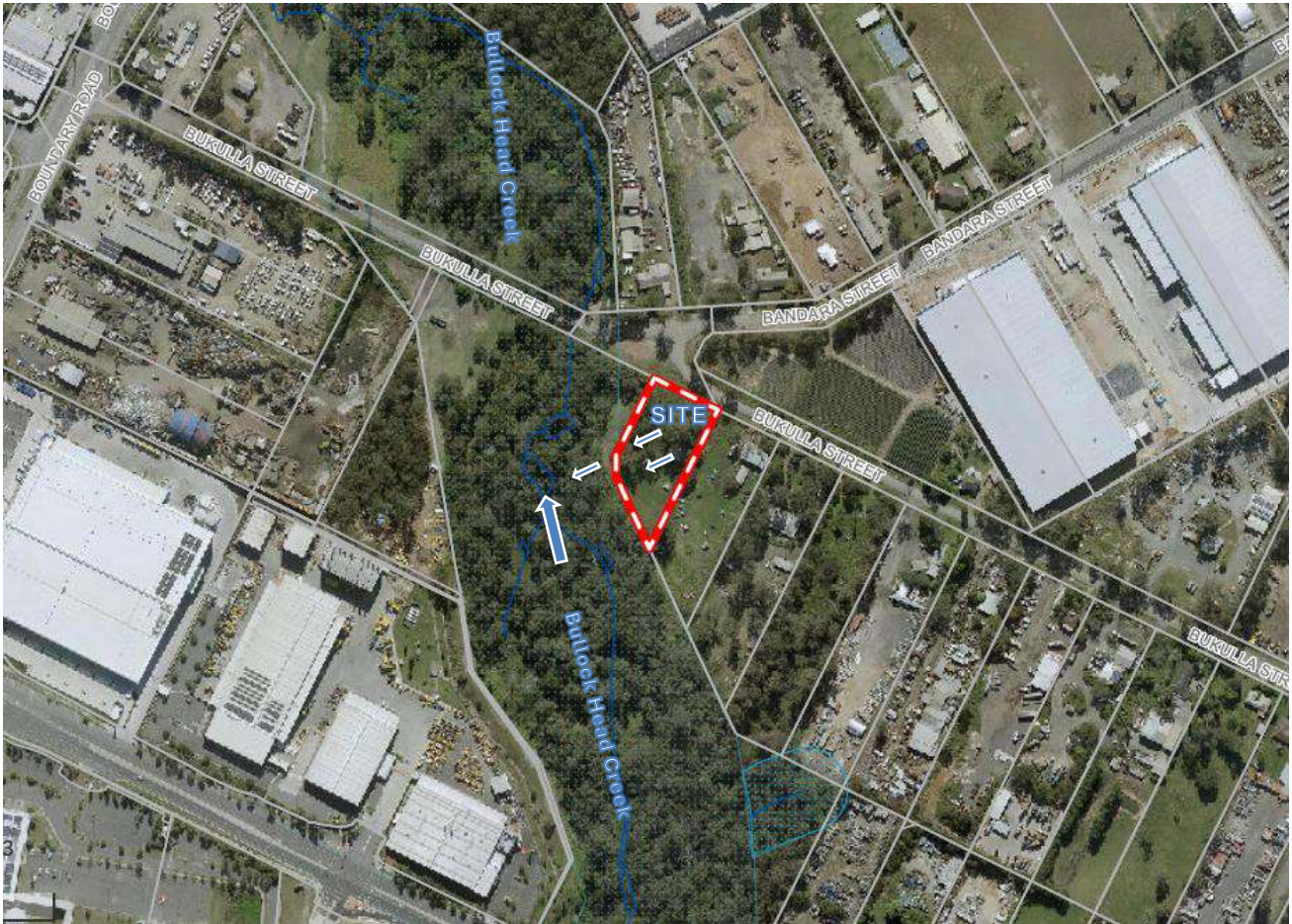


Figure 1 - Site Location Plan

Refer Appendix A - Site Survey Plan & Existing Services

2.2 TOPOGRAPHY AND SITE DRAINAGE

The natural ground levels grade generally at approximately 1 in 12.5 (8,0%) towards the South/West boundaries of the development site. Stormwater runoff currently discharges across these boundaries as broad sheet flow and ultimately into existing downstream Bullock Head Creek.

3 DEVELOPMENT PROPOSAL

3.1 PROPOSED DEVELOPMENT

It is proposed to provide industrial development including a new shed with associated driveway hardstand (a material change of use). Vehicle access to the site is proposed via a new 9.0m wide concrete crossover from Bukulla Street.

The development proposal shall be in accordance with Local Authority Guidelines, Development Codes, State Planning Policies and Australian Standards.

Refer Appendix B – Development Proposal

3.2 PROPOSED STORMWATER DRAINAGE

Council records indicate Bullock Head Creek within the South/West immediate downstream boundaries of the development site as a lawful point of discharge for the proposed development as shown in Figure 2.

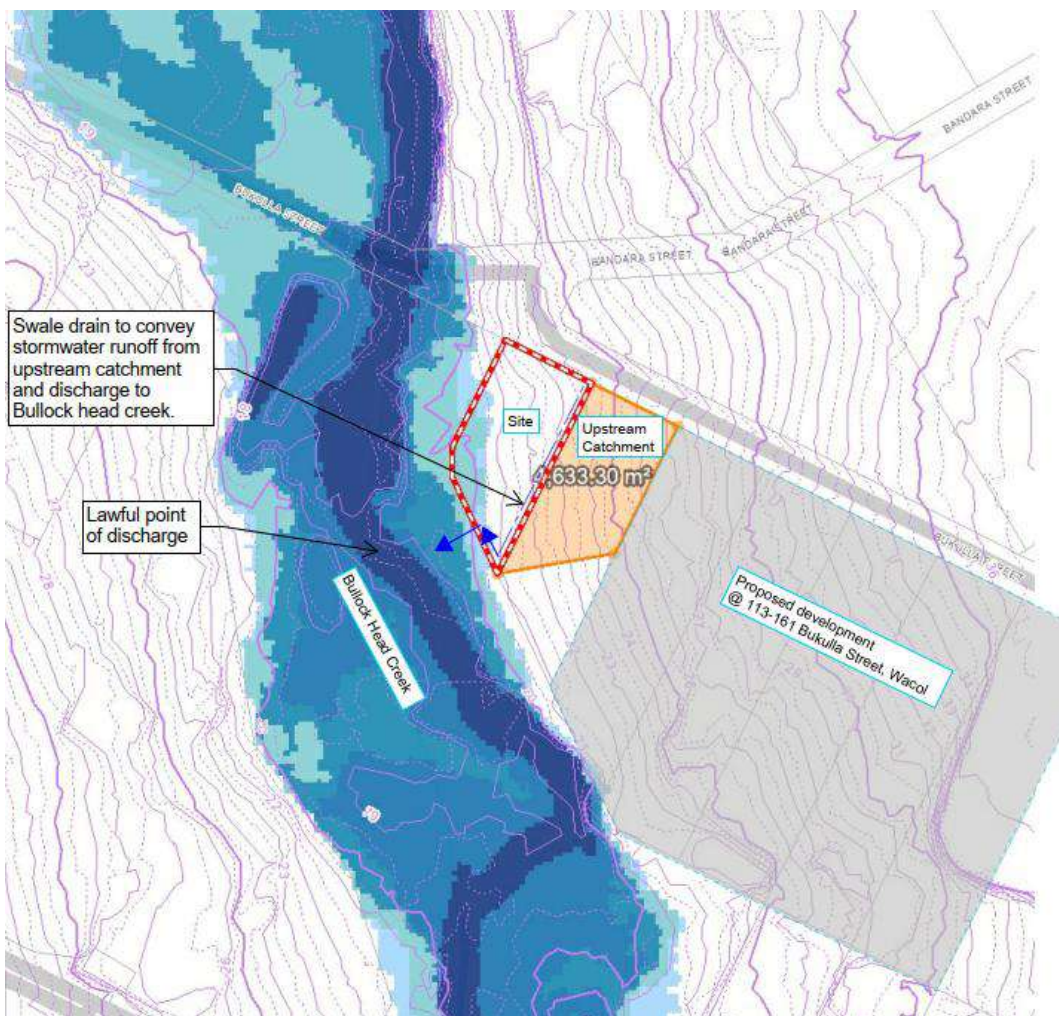


Figure 2 - Site Lawful Point of discharge.

A private stormwater drainage network is proposed to collect the proposed developable site area runoff and convey the flows to the proposed downstream civil drainage network. The ground level runoff within the site is to be collected by sheet flow within the internal driveway, hardstand area and conveyed to the Stormwater Quality Improvement Devices (SQIDs) located within the development site prior to discharge to Bullock Head Creek.

The roofwater runoff from the proposed development is proposed to be collected and piped to the civil drainage network 'end of line' for stormwater quality treatment prior to discharge to Bullock Head Creek. Surcharge of the on-site drainage system (Q50 major less Q2 piped) within the site will be conveyed by sheet flow within the site via designated flow paths to the downstream quality treatment system prior to discharge to Bullock Head Creek.

In order to capture and convey the Eastern external catchment of approximate 4640m², a 1.5m wide drainage easement with swale drain (Q50 major) is also proposed to accommodate and divert this external runoff towards Bullock Head Creek.

All managed stormwater flows, and associated drainage discharge are ultimately proposed to connect to the downstream lawful point of discharge with no adverse impacts when compared to pre-development conditions.

It is noted that flows for all storm events increase due to the increase in the impervious area of the proposed development. However, no stormwater detention is required due to Bullock Head creek is immediate downstream of the site. Besides, Brisbane river flooding becomes a critical flood event in Bullock Head creek downstream of the Ipswich Motorway as Figure 3 below shows the site with respect to the Brisbane River flood overlay flooding. The critical flood event however is creek/waterway. Hence, upstream of this point (south of the Ipswich Motorway), any consideration for detention provided on site would not assist in mitigating any flooding due to the Brisbane River.

Creek flooding is the critical flood event in Bullock Head creek from the Ipswich Motorway to the top of the creek catchment as shown on Figure 4 below. The proposed discharge point is located within the lower reaches of this section of the catchment. According to the Brisbane City Council Infrastructure Design Planning Scheme Policy, it is undesirable to have detention in the lower sections of catchment where it may allow peak flows from the site to coincide with the wider catchment flood peak, hence no detention is required for the development site.

Proposed stormwater design shall be in accordance with requirements of Councils Drainage Planning Scheme Policy and the Queensland Urban Drainage Manual (QUDM, 2013).

Refer Appendix C – Civil Siteworks Concept Plan



Figure 3 - Brisbane River Flood Planning Overlay.

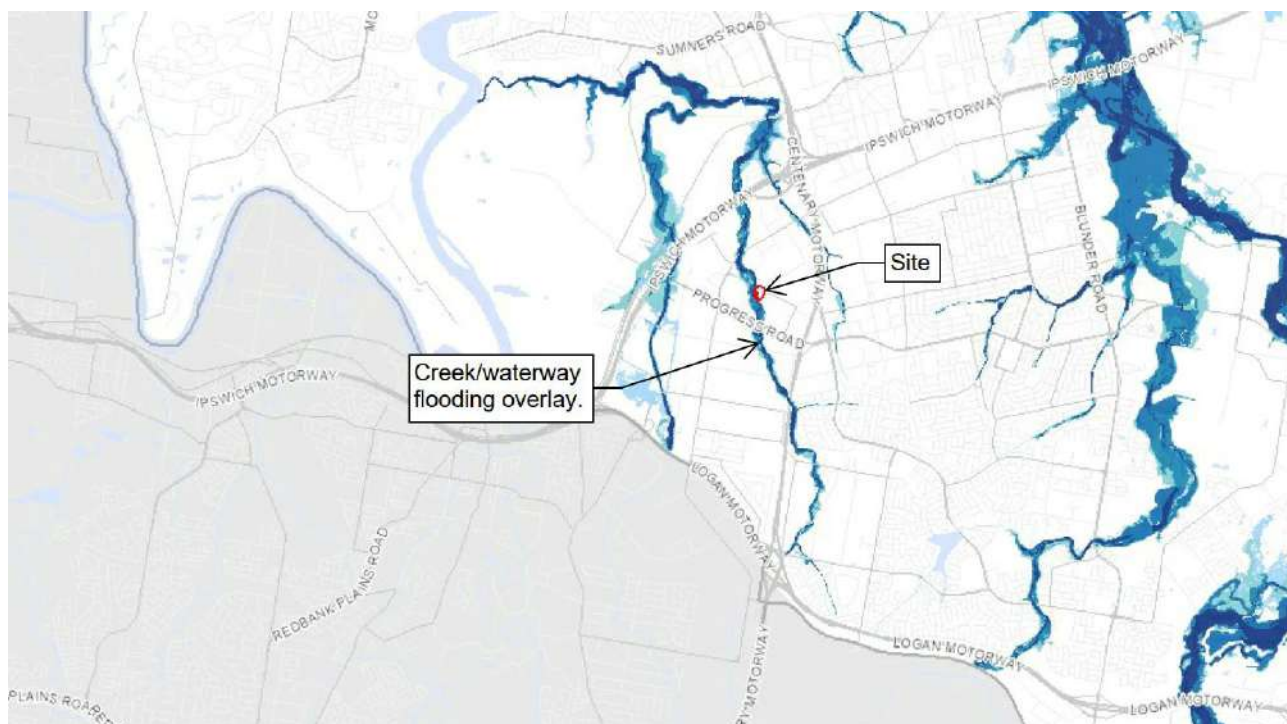


Figure 4 - Creek / Waterway Flood Planning Overlay.

4 CONSTRUCTION PHASE WATER QUALITY MANAGEMENT

4.1 POLLUTANTS

Pollutants typically generated during the construction phase of the development are shown below (BCC, 2008).

Table 1 - Pollutants Typically Generated During the Construction Phase

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, off-cuts
Sediment	Unprotected exposed soils and stockpiles during earthworks and building
Hydrocarbons	Fuel and oil spills, leaks from construction vehicles, leaks from cars and delivery vehicles
Toxic materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash water (e.g. from tile works)
pH altering substances	Acid sulphate soils, cement slurry and wash waters

Source: Brisbane City Council Subdivision and Development Guidelines (2008).

4.2 POTENTIAL IMPACTS

The construction phase of a development has the potential to release significant amounts of coarse / fine sediments and other pollutants into the city's waterways. Potential impacts on the surrounding environment will be minimised during the construction phase with measures as outlined in this SBSMP and Erosion and Sediment Control Plan to be provided at the Operational Works phase.

4.3 EROSION AND SEDIMENT CONTROL MEASURES

4.3.1 Prestart

ESC measure- silt fences, diversion drains & dust control (clearing).

Where possible, disturbance to the existing surface is to be limited to the immediate work area. The existing ground cover is not to be striped until contractor is ready for earthworks. Silt fence to be erected along boundary and around the construction area and is to be cleaned by the contractor when the capacity is reduced by 25%.

4.3.2 Bulk Earthworks

ESC measure- silt fences, diversion drains & dust control.

Earthworks areas are to be protected against wind & water erosion. Silt fences are to be erected around the base of earthworks and materials stockpiles. Stockpiles and construction

materials are not permitted to be stored within the road reserve. Diversion drains to be provided at upstream boundaries to reduce flows onto earthworks areas.

4.3.3 Construction

ESC measure- silt fences, diversion drains, dust & litter control.

ESC measures are to be provided as soon as earthworks have commenced and staged to suit construction, the contractor is responsible for this action. A temporary construction exit is to be located at each entry onto the site. The contractor is to ensure no dust is tracked onto surrounding roads. Dust producing areas shall be swept to remove silt / dust. Wetting of roads is only permitted where sweeping has failed.

At least one bin or litter trap is to be provided for waste material. Concrete runoff from wash-down of exposed aggregate areas is to be prevented from discharging off the site.

Excavated material from the laying of services is to be placed on the high side of trench. The contractor is to stockpile topsoil & subsoil separately. Where under pavement, the trenches are to be backfilled with CBR 15 material, otherwise the trenches are to be backfilled, capped with topsoil and compacted to 100mm min above adjacent ground level.

4.3.4 Maintenance Period

ESC measure - silt fences, ground cover, dust control.

Silt fences are to remain in place during the maintenance period until landscaping is established / accepted "On Maintenance" by Brisbane City Council .

4.4 PERFORMANCE OBJECTIVES AND INDICATORS

BCC's *Guideline on Identifying and Applying Water Quality Objectives in Brisbane City* (2000) states that stormwater runoff during the construction phase must be in accordance with the following concentration ranges (or upper limits) shown in the next table.

Table 2 - Construction Phase Pollutants

Pollutant	Criteria
Total Suspended Solids (TSS)	<50mg/L
pH	6.5 – 8.5
Total Nitrogen (mg/L)	0.65
Turbidity (NTU)	Less than 10% above background
Total Phosphorus (mg/L)	0.070
Dissolved Oxygen	80 to 105 percent saturation
Oils and Grease	No visible films or odours
Litter	No anthropogenic material greater than 5m

Source: Brisbane City Council Guideline on Identifying and Applying Water Quality Objectives in Brisbane City (2000).

4.5 MONITORING AND MAINTENANCE

The requirement of monitoring during the construction phase will be:

- Work activities are restricted to designated construction areas.
- Earthworks and site clearing are undertaken in accordance with the Erosion and Sediment Control Plans
- Erosion and sediment control devices are to be constructed / installed in accordance with the Erosion and Sediment Control Plans
- Water quality monitoring at the nominated monitoring stations must be carried out monthly and following significant rainfall (>25mm in 72 hrs)
- Stormwater discharges from the site are not having any adverse effect on the downstream environment.
- Monitoring and recording of the performance of the drainage control devices including water quality testing where required.
- Any failure in the stormwater system shall be immediately rectified to prevent uncontrolled discharge from the site.
- Any failure to the stormwater system causing damage to surroundings should implement immediate remedial work to the damaged area.

4.6 RESPONSIBILITY AND REPORTING

The Construction Contractor will be responsible for the implementation of the Stormwater Management Plan during the course of all construction activities. Regular inspections of the devices (and records of any failures) shall be reported to the Construction Manager.

Refer Appendix D – Erosion and Sediment Control Inspection Checklists

5 OPERATIONAL PHASE - WATER QUALITY MANAGEMENT

5.1 INTRODUCTION

The operational phase of the Management Plan focuses on appropriate consideration of Stormwater Quality Improvement Devices (SQIDs) and Water Sensitive Urban Design (WSUD) principles to be incorporated into the total water cycle management of the development site.

5.2 POLLUTANTS

Pollutants typically generated during the operational phase of the development are shown below (BCC, 2008).

Table 3 - Pollutants Typically Generated During the Operational Phase

Pollutant	Sources
Litter	Construction packaging, construction waste materials, paper, food packaging
Sediment	Exposed soils and stockpiles
Oxygen demanding substances	Organic or chemical matter
Nutrients (N & P)	Nitrogen, phosphorus
Pathogens / Faecal coliforms (bacteria & viruses)	Sewage
Hydrocarbons (including oil & grease)	Fuel and oil spills
Heavy metals (often associated with fine sediment)	Sediment runoff
Surfactants	Detergents from car washing, cleansing agents
Organochlorines & organophosphates	Pesticides, herbicides
Thermal pollution	Heat (i.e. runoff from impervious areas)
pH altering substances	Washwaters

Source: Brisbane City Council Subdivision and Development Guidelines (2008).

5.3 OBJECTIVES

The State Planning Policy 2017 'State Interest – Water Quality', supports the requirement for a formal stormwater Management plan to demonstrate compliance with the following stormwater quality load and concentration-based reduction objectives:

Table 4 - Water Quality Objectives (Load Based)

Pollutant Type	Objective
Fine Sediment (TSS)	≥ 80%
Total Phosphorus	≥ 60%
Total Nitrogen	≥ 45%
Gross Pollutants (> 5mm)	≥ 90%

Source: State Planning Policy 2017 'State Interest – Water Quality'.

The above target objectives are also generally consistent with the current local authority water quality objectives.

5.4 STORMWATER QUALITY IMPROVEMENT DEVICE DETAILS

It is proposed the address the developments stormwater quality treatment requirement with an approved underground proprietary stormwater treatment system within the proposed WSUD treatment train.

A proprietary stormwater treatment device will capture stormwater flows from the proposed developed site areas for stormwater quality treatment requirements. This device is to be position towards to end of the treatment train, following the primary / secondary treatment devices. Two options have been modelled and are shown below.

Table 5 - Proprietary Stormwater Treatment Device Details

Option	Supplier	Device	Type	Number of Units	Accompanying Pre-treatment Device/s
A	ATLAN	Atlan Filter	Atlan Filter (FIL-3.0) Full Height_SQIDEP	4	Four (4) Atlan Stormsacks – STS.6060_SQIDEP
B	OCEAN PROTECT	Storm Filter	690 NPSORB Storm Filter_SQIDEP	5	Five (5) OceanGuard (SQIDEP)

The treatment train shall ensure the supply and installation of the above projects are undertaken in accordance with the manufacturers' recommendations and specifications.

5.5 MUSIC RAINFALL PARAMETERS

Stormwater quality modelling has been undertaken for the proposed development utilising current MUSIC software to quantitatively determine the effectiveness of the system.

Modelling of the site utilising nearest appropriate Rainfall Station - analysed for a period of 10 years (1980 To 1989) using a 6-minute time-step period. Potential evapo-transpiration data has been taken from the MUSIC software package.

5.6 MUSIC SOURCE NODE PARAMETERS

The MUSIC source node parameters were taken from the Water by Design MUSIC Modelling Guidelines – Version 3.0 (2018) and are shown in the next table.

Table 6 - MUSIC Base and Storm Flow Concentration Parameters for Brisbane Catchments

Split Catchment Land Use								
Surface Type	Land Use	Flow Type	TSS log ¹⁰ values		TP log ¹⁰ values		TN log ¹⁰ values	
			Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Industrial	Roof	Baseflow	n/a	n/a	n/a	n/a	n/a	n/a
		Stormflow	1.30	0.44	-0.89	0.36	0.25	0.32
	Roads	Baseflow	0.78	0.45	-1.11	0.48	0.14	0.20
		Stormflow	2.43	0.44	-0.30	0.36	0.25	0.32
	Ground Level	Baseflow	0.78	0.45	-1.11	0.48	0.14	0.20
		Stormflow	1.92	0.44	-0.59	0.36	0.25	0.32

Source: Water by Design MUSIC Modelling Guidelines – Version 3.0 (2018)

Table 7 - MUSIC Runoff Generation Parameters – Industrial

Parameter	Industrial
Rainfall Threshold (mm/day)	1
Soil Storage Capacity (mm)	18
Initial Storage (% of Capacity)	10
Field Capacity (mm)	80
Infiltration Capacity Coefficient – a	243
Infiltration Capacity Exponent – b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Daily Deep Seepage Rate (%)	0

Source: Water by Design MUSIC Modelling Guidelines – Version 3.0 (2018)

5.7 MUSIC CATCHMENT PARAMETERS

Details on each catchment (source node) are detailed in the next table.

Table 8 - MUSIC Catchment (Lumped Catchment) Parameters

Catchment	Area	Effective Percentage Impervious
	ha	%
Industrial – Split Roof	0.030	100
Industrial – Split Road	0.407	100
Industrial – Split Landscape	0.014	0

5.8 MUSIC TREATMENT NODE PARAMETERS

5.8.1 Option A: ATLAN Nodes

The ATLAN “Option A” is modelled as part of a treatment train that includes two nodes: An Atlan Vault (Atlan Circa Vault FIV.250D precast concrete tank with a minimum filter bay area of 4.0m²_SQIDEP) followed by the Atlan Filter (Cartridges) “4/Atlan Filter (FIL-3.0) full height_SQIDEP”. 2nd and 3rd party field testing data can be provided by ATLAN upon request.

Details of the Detention within Atlan Filter node are shown in the table below.

Table 9 – Option A_ATLAN Vault

Surface Area	Extended Detention Depth	Permanent Pool Volume	Exfiltration Rate	Evapo. Loss as % of PET	Equivalent Pipe Diameter	Overflow Weir Width	Notional Detention Time
m ²	m	m ³	mm/hr	m	mm	m	hrs
4.0	0.85	0.0	0.00	0.00	90	0.5	0.0543

For Atlan Filter (Cartridges) “4/Atlan Filter (FIL-3.0) full height_SQIDEP”:

GP	in 15.0	out 15.0	TP	in 100.0	out 26.0
TSS	in 100.0	out 15.0	TN	in 100.0	out 41.0

5.8.2 Option B: OCEANPROTECT Nodes

The OCEANPROTECT “Option B” is modelled as part of a treatment train that includes two nodes: An SF Precast Φ2300mm Manhole followed by the Storm Filter “5/Storm Filter (690 NPSORB) _SQIDEP”. 2nd and 3rd party field testing data can be provided by Ocean Protect upon request.

Details of the Detention within Storm Filter node are shown in the table below.

Table 10 – Option B_SF Precast Φ 2300mm manhole

Surface Area	Extended Detention Depth	Permanent Pool Volume	Exfiltration Rate	Evapo. Loss as % of PET	Equivalent Pipe Diameter	Overflow Weir Width	Notional Detention Time
m ²	m	m ³	mm/hr	m	mm	m	hrs
3.1	0.77	0.0	0.00	0.00	70	2	0.0662

For Storm Filter “5/Storm Filter (690 NP SORB)_SQIDEP”:

GP	in 1000.0	out 15.0	TP	in 10.0	out 2.80
TSS	in 1000.0	out 130.0	TN	in 100.0	out 35.0

5.9 MUSIC MODEL

5.9.1 Option A: ATLAN Treatment Train

The MUSIC model analysed is shown in the figure below.

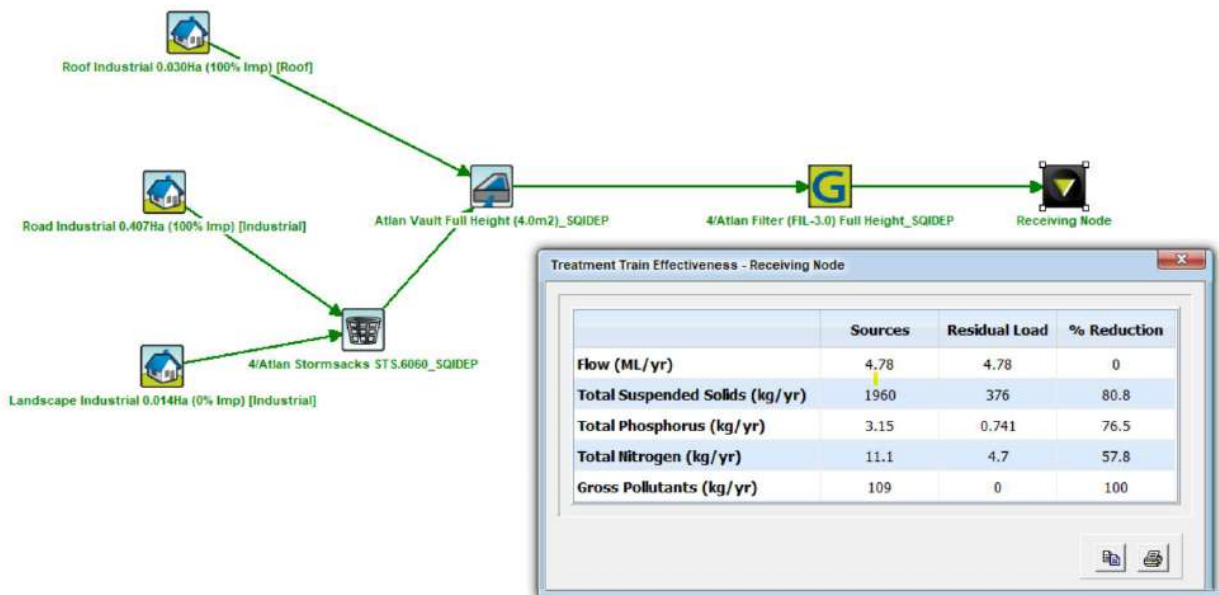


Figure 5 – Option A MUSIC Model Layout

5.9.2 Option B: Ocean Protect Treatment Train

The MUSIC model analysed is shown in the figure below.

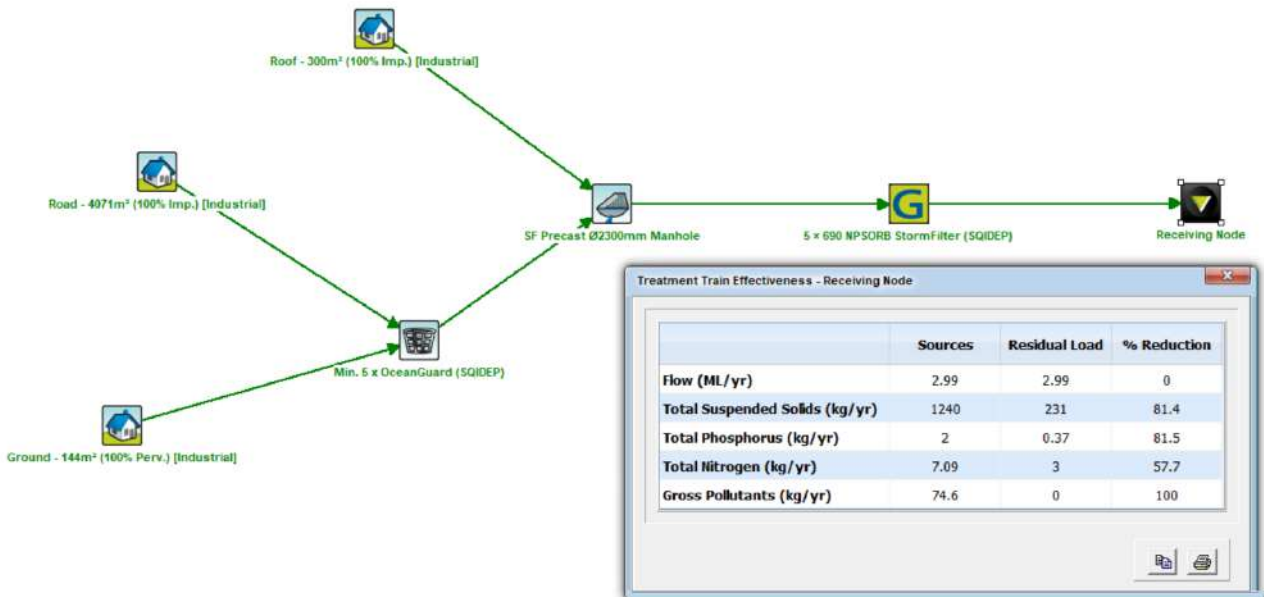


Figure 6 – Option B MUSIC Model Layout

5.10 MUSIC RESULTS

The results of the MUSIC modeling for each option demonstrate the following pollutant removal rates of target pollutants as shown in the following tables.

Table 11 - MUSIC Model Results - Load Based

Pollutant Type	Objective	“OPTION A” MUSIC Result Achieved (Atlan)	“OPTION B” MUSIC Result Achieved (Ocean Protect)	Water Quality Objective Achieved
Total Suspended Solids (TSS)	≥ 80.0%	80.8%	81.4%	☑
Total Phosphorus (TP)	≥ 60.0%	76.5%	81.5%	☑
Total Nitrogen (TN)	≥ 45.0%	57.8%	57.7%	☑
Gross Pollutants (> 5mm)	≥ 90.0%	100%	100%	☑

The above tables demonstrate that the proposed stormwater management system for the proposed development provides a sufficient treatment train to achieve all the required target pollutant load reduction objectives to meet Council’s requirements.

5.11 MAINTENANCE

Periodical maintenance will be required of the proposed stormwater treatment train to ensure optimum efficiency of the proposed treatment train. A Facilities Maintenance Plan, Maintenance Agreement & Operations and Maintenance Manual is expected to be provided by the third-party supplier based on the nominated stormwater management system. This maintenance plan, agreement and manual are expected to be issued to the tenant to appoint the relevant personnel to undertake the various work required. A copy of the proprietary stormwater quality treatment system documentation, brochures associated documents are attached to this report.

Refer Appendix F – Stormwater Quality Management

6 CONCLUSION

6.1 STORMWATER QUANTITY MANAGEMENT

6.1.1 Operational Phase

The proposed development achieves an outcome that will attain a developed catchment runoff non-worsening result when compared to the runoff from the predeveloped catchment. Nevertheless, a 7kL Stormwater Detention onsite is proposed.

6.2 STORMWATER QUALITY MANAGEMENT

6.2.1 Construction Phase

All construction work will be undertaken in accordance with the Erosion and Sediment Management Plan prepared in association with the detail design documentation for the Operational Works submission.

6.2.2 Operational Phase

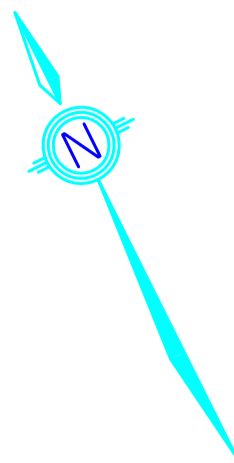
It has been demonstrated that the proposed treatment train to be included in the stormwater drainage system as part of the development proposal satisfies the intents and purposes of Brisbane City Council 's Stormwater Quality Objectives and the requirements of the State Planning Policy 2017 'State Interest – Water Quality'.

7 REFERENCES

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- Department of Natural Resources and Water, 2007. *Queensland Urban Drainage Manual Fourth Edition, 2016*. Institute of Public Works Engineering Australasia, Queensland Division.
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- Brisbane City Council, 2000. *Guideline on Identifying and Applying Water Quality Objectives in Brisbane City (Version 1, 2000)*. Brisbane City Council, Brisbane.
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- Morton Bay Regional Council, 2005. *Pine Rivers Shire Council Design Standards – Part 2 – Drainage – Section 4 – Design Standard*, Morton Bay.

APPENDIX A

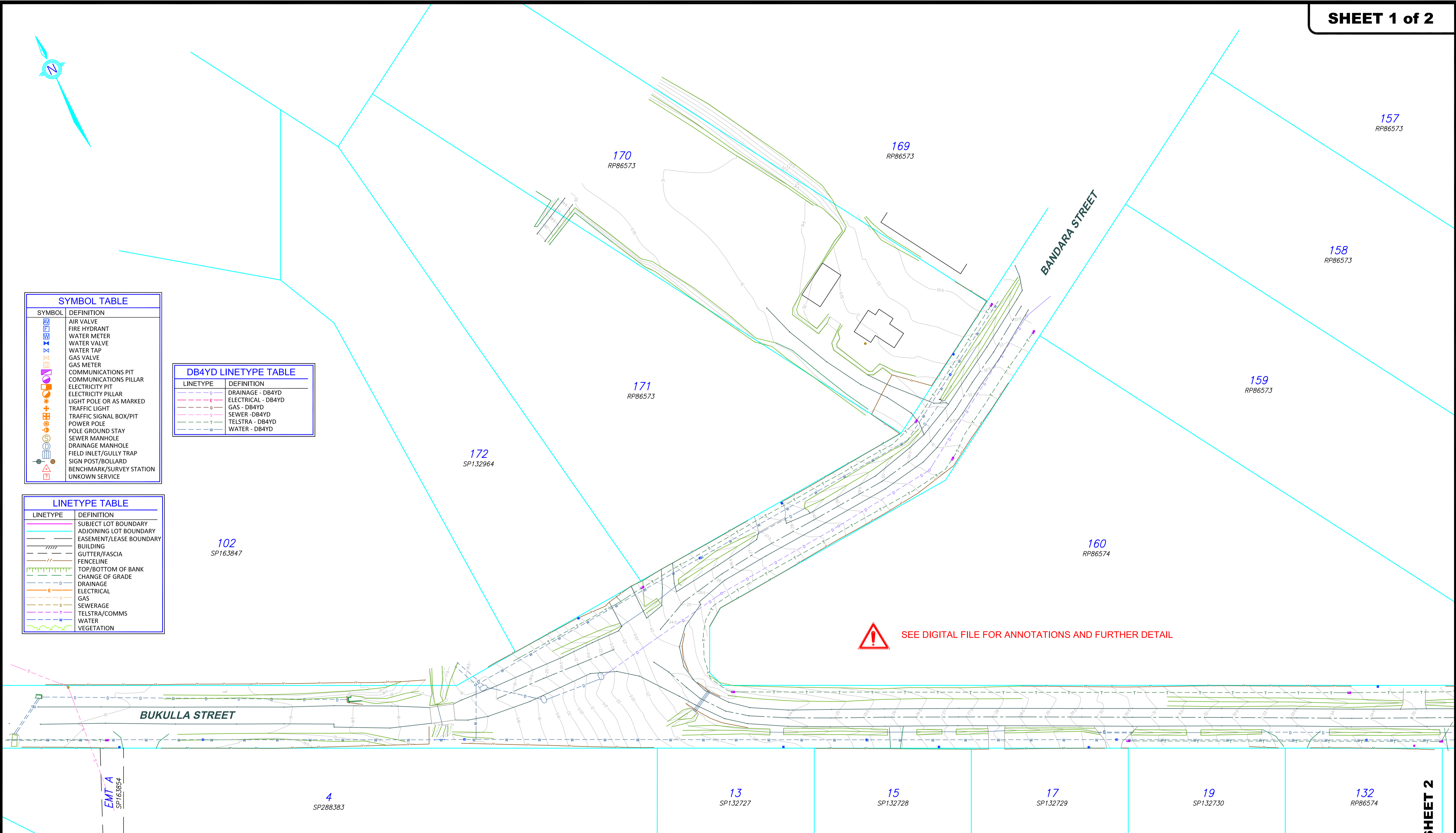
SITE SURVEY PLAN & EXISTING SERVICES



SYMBOL TABLE	
SYMBOL	DEFINITION
	AIR VALVE
	FIRE HYDRANT
	WATER METER
	WATER VALVE
	WATER TAP
	GAS VALVE
	GAS METER
	COMMUNICATIONS PIT
	ELECTRICITY PILLAR
	ELECTRICITY PIT
	LIGHT POLE OR AS MARKED
	TRAFFIC LIGHT
	TRAFFIC SIGNAL BOX/PIT
	POWER POLE
	POLE GROUND STAY
	SEWER MANHOLE
	DRAINAGE MANHOLE
	FIELD INLET/GULLY TRAP
	SIGN POST/BOLLARD
	BENCHMARK/SURVEY STATION
	UNKNOWN SERVICE

DB4YD LINETYPE TABLE	
LINETYPE	DEFINITION
	DRAINAGE - DB4YD
	ELECTRICAL - DB4YD
	GAS - DB4YD
	SEWER - DB4YD
	TELSTRA - DB4YD
	WATER - DB4YD

LINETYPE TABLE	
LINETYPE	DEFINITION
	SUBJECT LOT BOUNDARY
	ADJOINING LOT BOUNDARY
	EASEMENT/LEASE BOUNDARY
	BUILDING
	GUTTER/FASCIA
	FENCELINE
	TOP/BOTTOM OF BANK
	CHANGE OF GRADE
	DRAINAGE
	ELECTRICAL
	GAS
	SEWERAGE
	TELSTRA/COMMS
	WATER
	VEGETATION



FLOOD SEARCH ALERT
Lawson Surveys has not completed a flood search on this property. Check council for flood information.
Please contact Lawson Surveys for a quote or for further advice.

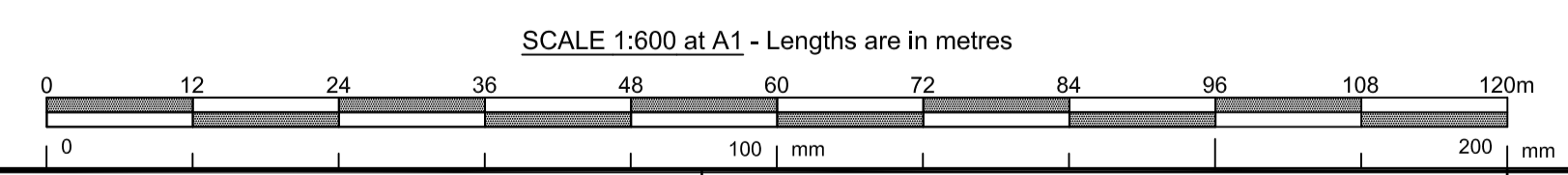
TITLE SEARCH ALERT
Lawson Surveys has not carried out a Title Search on this property. Check DNRM for easements & encumbrances.
Please contact Lawson Surveys for a quote or for further advice.

"GROUND LEVEL" ALERT
As per Brisbane City Council City Plan 2014 the contours shown on this plan can not be used to determine Maximum Building Heights.
Please contact Lawson Surveys for a quote or for further advice on calculation of Maximum Building Heights.

SERVICES ALERT
Underground services shown have been plotted from records only and possibly from visible features on site. The location of all services must be identified & located prior to any excavation. Service identification has been determined by visible feature marking & needs to be confirmed prior to construction.
The services are symbolic representations only, and whilst they are accurately positioned, they are not to scale.

IDENTIFICATION SURVEY ALERT
The Surface Detail & Contour Survey, as prepared by Lawson Surveys, does not guarantee the location of boundary pegs.
Please contact Lawson Surveys for a quote or for further advice.

GENERAL NOTES
Contour Interval 0.5m
Boundaries have been approximately positioned & remain subject to an Identification Survey.
Tree Species may not be accurate - it is an indication of tree type only.
North Point is indicative only & may not be an accurate representation of True North.
If in doubt contact Lawson Surveys.



PLAN SHOWING SURFACE DETAIL & CONTOURS	
LEVEL DATUM AHD - VIDE PSM 126565 RL 31.760	SCALE 1:600 @ A1
LOCAL AUTHORITY BRISBANE CITY COUNCIL	DATE 28/09/2023
MERIDIAN IS267757	SURVEYED BY RC
DWG NAME ACAD-21272-DT	DRAWN BY RC

CLIENT DUNDRUM CIVIL P/L
LOCATION BUKALLA, BANDARA & TERABA STs RICHLANDS
RPD LOT 143 & 160 ON RP86574

LAWSON SURVEYS
A.B.N 46 272 949 047
CONSULTING LAND SURVEYORS
9B / 62 BISHOP STREET
KELVIN GROVE QLD 4059
Ph 07 3352 3326 Fax 07 3352 6991
mail@lawsonsurveys.com.au
www.lawsonsurveys.com.au

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REFERENCE **21272-DT**

SEE SHEET 2

APPENDIX B

DEVELOPMENT PROPOSAL (REFER ARCHITECTURAL DRAWINGS)

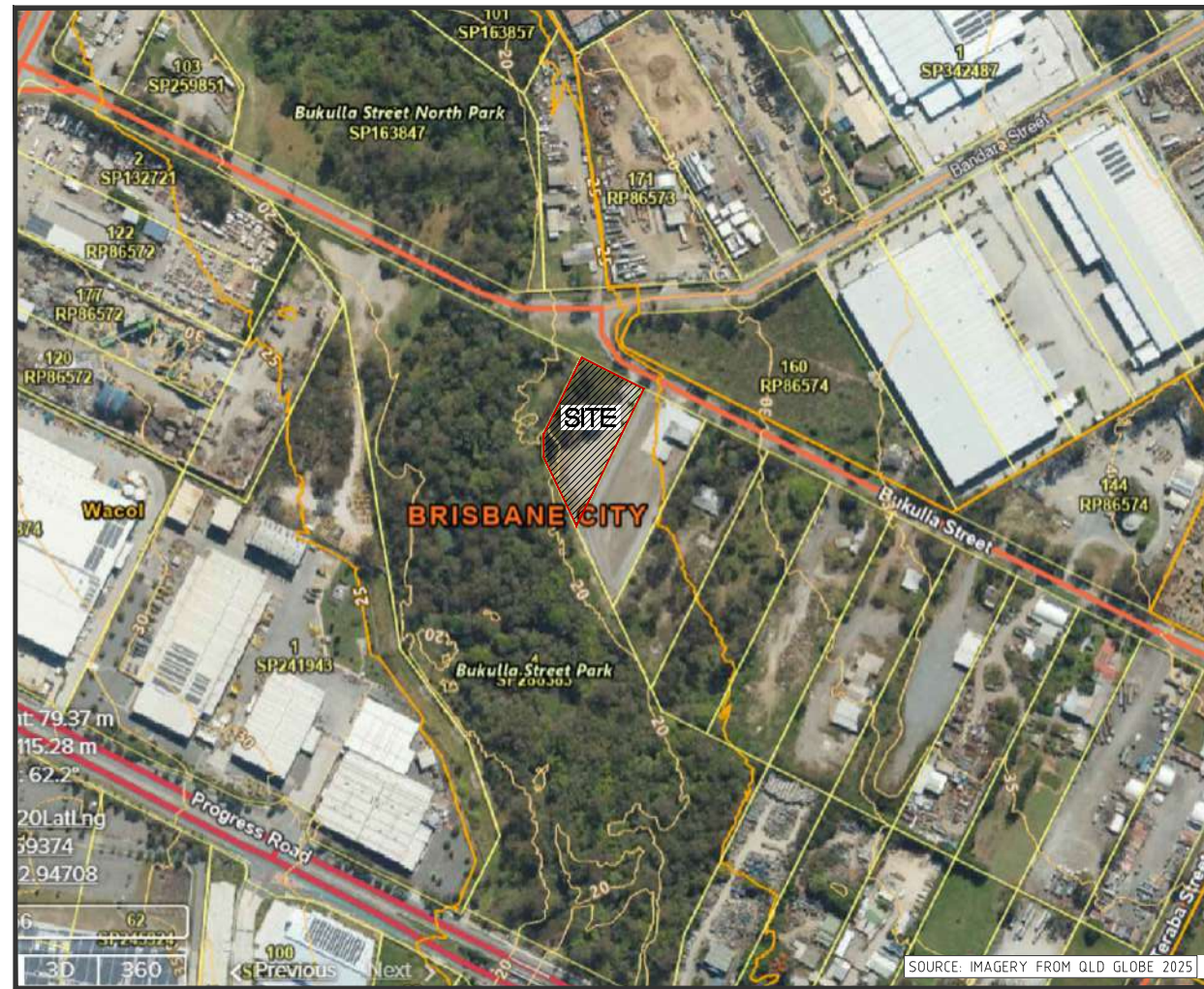
APPENDIX C

CIVIL CONCEPT PLAN

CIVIL DA CONCEPT PLANS

MCU DEVELOPMENT

93 BUKULLA STREET, WACOL. QLD 4077



CONCEPT COORDINATION NOTES

1. REFER ARCHITECTS DRAWINGS FOR CONCEPT DEVELOPMENT LAYOUT
2. REFER TRAFFIC ENGINEERS REPORT FOR TRAFFIC CODE COMPLIANCE CONFIRMATIONS.

CONCEPT STORMWATER DRAINAGE NOTES

1. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR IS TO CHECK THAT THE PROPOSED PIPE WORKS DO NOT CLASH WITH THE IDENTIFIED EXISTING SERVICES PRIOR TO ANY TRENCH EXCAVATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CLASHES ARE FOUND FOR ADVICE OF ANY REDESIGN REQUIREMENTS.
2. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH CURRENT COUNCIL STANDARD SPECIFICATIONS AND DRAWINGS, UNLESS NOTED OTHERWISE.
3. ALL uPVC STORMWATER PIPES SHALL BE CLASS SN8, RCP PIPES SHALL BE CLASS 2, FRC PIPES SHALL BE CLASS 1 UNLESS NOTED OTHERWISE.
4. ROOFWATER DRAINAGE TO CONNECT INTO PITS AS REQUIRED. FOR ROOFWATER DRAINAGE DETAILS REFER HYDRAULICS CONSULTANT'S DRAWINGS.
5. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
6. PROVIDE 'AS CONSTRUCTED' SURVEY OF ALL STORMWATER DRAINAGE INFRASTRUCTURE.



NOTE: LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A DIAL BEFORE YOU DIG SEARCH PRIOR TO COMMENCEMENT OF WORKS. ANY POTENTIAL CONFLICT OF EXISTING SERVICES SHALL BE REPORTED TO THE SUPERINTENDENT.

LOCALITY PLAN

IMAGE SOURCED FROM QLD GLOBE
LOCAL AUTHORITY: BRISBANE CITY COUNCIL
NTS

REAL PROPERTY DESCRIPTION
LOT 13 ON SP.132727

DRG	DRAWING TITLE
SK.01	DRAWING REGISTER AND GENERAL NOTES
SK.02	CONCEPT PLAN - SHEET 1 OF 3
SK.03	CONCEPT PLAN - SHEET 2 OF 3
SK.04	CONCEPT PLAN - SHEET 3 OF 3
SK.05	CONCEPT EARTHWORKS PLAN - SHEET 1 OF 2
SK.06	CONCEPT EARTHWORKS PLAN - SHEET 2 OF 2

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL STAMPED APPROVED BY RELEVANT AUTHORITY. ALL WORKS ARE TO BE CONSTRUCTED TO THE SATISFACTION OF RELEVANT AUTHORITIES. THE CONTRACTOR IS RESPONSIBLE FOR ORGANISING NECESSARY PERMITS, AUTHORISATION AND SUBSEQUENT INSPECTIONS AS REQUIRED BY RELEVANT AUTHORITIES.

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27.04.26	P3	PRELIMINARY ISSUE 3	MTN				
10.12.25	P2	PRELIMINARY ISSUE 2	MTN				
27.10.25	P1	PRELIMINARY ISSUE 1	MTN				

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E: structural@deq.com.au
E: civil@deq.com.au

PROPOSED DEVELOPMENT
93 BUKULLA STREET
WACOL. QLD 4077

DUNDRUM CIVIL PTY LTD

CIVIL SITEWORKS
DRAWING REGISTER
AND NOTES

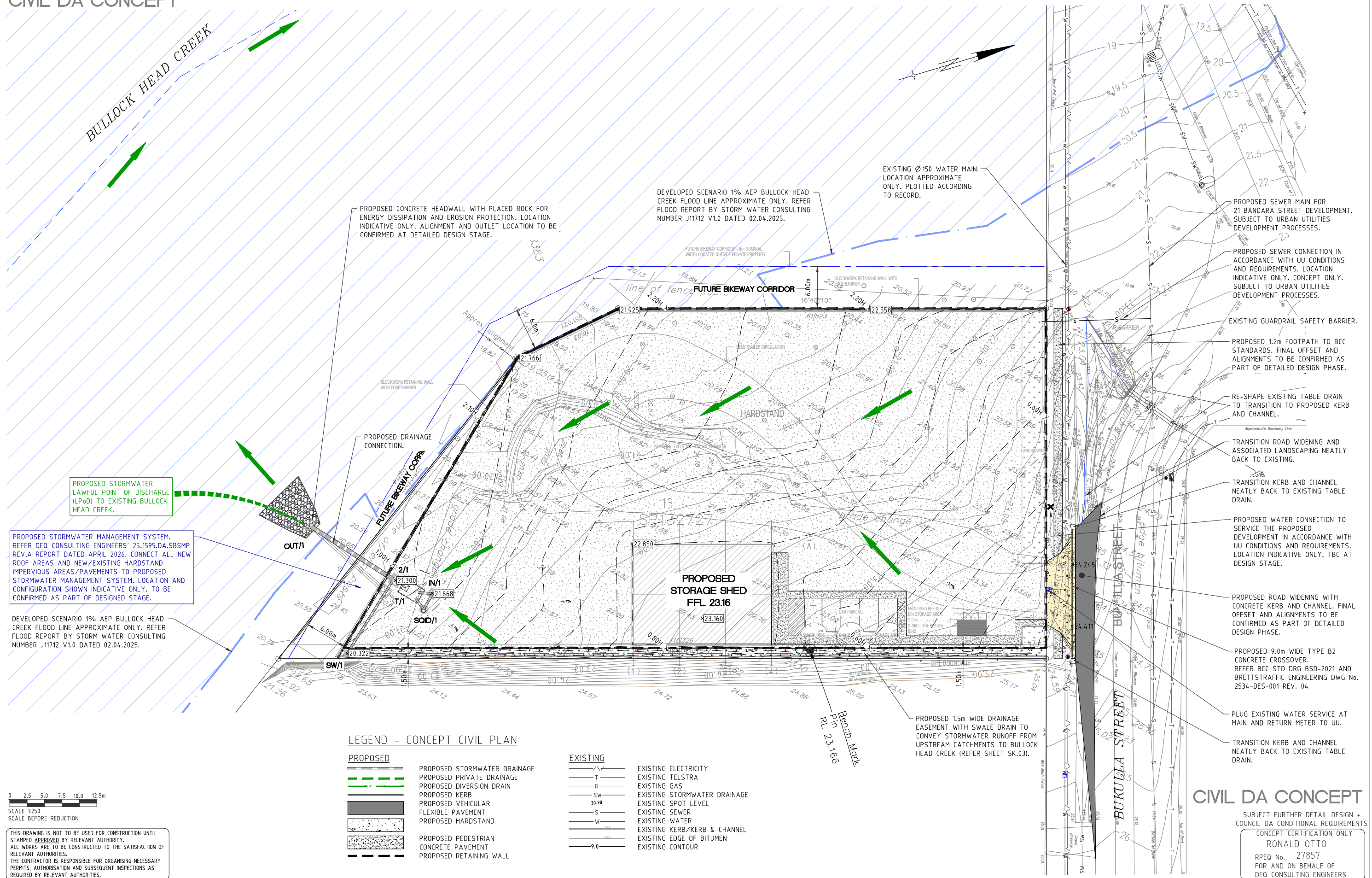
CIVIL DA CONCEPT

SUBJECT FURTHER DETAIL DESIGN +
COUNCIL DA CONDITIONAL REQUIREMENTS

CONCEPT CERTIFICATION ONLY
RONALD OTTO
RPEQ No. 27857
FOR AND ON BEHALF OF
DEQ CONSULTING ENGINEERS

SCALE AS SHOWN @ A1	DATE APRIL 2026
CONTACT: RO	SHEET 1 OF 6
25.1595	SK.01 P3
JOB No.	DRG. No. AMMT.
CHECKED RO	DATUM : AHD

CIVIL DA CONCEPT



LEGEND - CONCEPT CIVIL PLAN

PROPOSED		EXISTING	
	PROPOSED STORMWATER DRAINAGE		EXISTING ELECTRICITY
	PROPOSED PRIVATE DRAINAGE		EXISTING TELSTRA
	PROPOSED DIVERSION DRAIN		EXISTING GAS
	PROPOSED KERB		EXISTING STORMWATER DRAINAGE
	PROPOSED VEHICULAR FLEXIBLE PAVEMENT		EXISTING SPOT LEVEL
	PROPOSED HARDSTAND		EXISTING SEWER
	PROPOSED PEDESTRIAN CONCRETE PAVEMENT		EXISTING WATER
	PROPOSED RETAINING WALL		EXISTING KERB/KERB & CHANNEL
			EXISTING EDGE OF BITUMEN
			EXISTING CONTOUR

0 2.5 5.0 7.5 10.0 12.5m
SCALE 1:250
SCALE BEFORE REDUCTION

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PROPOSED DEVELOPMENT
93 BUKULLA STREET
WACOL, QLD 4077
DUNDRUM CIVIL PTY LTD

CIVIL SITEWORKS
CONCEPT PLAN
SHEET 1 OF 3

CIVIL DA CONCEPT

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RONALD OTTO
RPEQ No. 27857
FOR AND ON BEHALF OF
DEQ CONSULTING ENGINEERS

SCALE	AS SHOWN @ A1	DATE	APRIL 2026
CONTACT:	RO	SHEET	2 OF 6
JOB No.	25.1595	DRG. No.	SK.02
CHECKED	RO	DATUM	: AHD

CIVIL DA CONCEPT



NOTE: LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A DIAL BEFORE YOU DIG SEARCH PRIOR TO COMMENCEMENT OF WORKS. ANY POTENTIAL CONFLICT OF EXISTING SERVICES SHALL BE REPORTED TO THE SUPERINTENDENT.

INTERNAL PROPOSED LEVELS

REFER ARCHITECT'S DRAWINGS FOR ALL PROPOSED SETUPS, LEVELS, GRADES/FALLS, BUILDING AND CARPARK SETOUT & HYDRAULICS CONSULTANT'S DRAWINGS FOR ROOFWATER AND PLUMBING AND DRAINAGE CONNECTION DETAILS.

PROPOSED INSPECTION OPENING AND MAINTENANCE ACCESS STRUCTURE TO MANUFACTURERS RECOMMENDATION AND SPECIFICATIONS (PROVIDE MINIMUM 600mmx900mm OVER THE TANK OUTLET & INLETS WITH STEP IRONS WHERE PIT ACCESS IS GREATER THAN 1.35m - UNLESS NOTED OTHERWISE). DETENTION TANKS TO INCORPORATE CHILD-PROOF LOCKING SYSTEM FOR ALL SURFACE GRATE ACCESS POINTS.

PROPOSED QUALITY MANAGEMENT

NOTE:

REFER SITE BASED STORMWATER MANAGEMENT PLAN BY DEQ CONSULTING ENGINEERS, REPORT JOB NUMBER: 25.1595 SBSMP REV.A DATED APRIL 2026 WITH THE REVIEW OF THIS PLAN.

WATER QUALITY TREATMENT SYSTEM: PROPRIETARY QUALITY TREATMENT FILTER SYSTEMS (OR APPROVED EQUIVALENT):

OPTION A:

- 4 ATLAN STORMSACKS - STS.6060_SQIDEP.
- 4 ATLAN FILTER (FIL-3.0) FULL HEIGHT_SQIDEP

OPTION B:

- MIN. 5 OCEANGUARDS - OG-200_SQIDEP.
- 5 TALL (690) NP PSORB STORMFILTER_SQIDEP

PROPOSED ON-SITE DETENTION NOTE:

ROOFWATER DISCHARGE SHALL BE IN ACCORDANCE WITH APPROVED HYDRAULIC CONSULTANTS DRAWINGS.

ALLOW TO CONNECT ALL ROOFWATER (INCLUDING MAJORITY OF EXTERNAL IMPERVIOUS AREAS) TO DETENTION STRUCTURE/S.

PROPRIETARY DETENTION STRUCTURE/S SHALL ACHIEVE A MINIMUM TOTAL SIZE OF 7.0 CUBIC METERS (7.0kL) AND AND SATISFY THE REQUIREMENTS OF COUNCILS STORMWATER MANAGEMENT REQUIREMENTS.

STRUCTURE NOTE: OPTIONS OF PROPRIETARY DETENTION STRUCTURE/S - EXAMPLES MAY INCLUDE:

- "AUSTRALIAN TANKS" UNDERGROUND PRE-CAST CONCRETE TANK SYSTEMS
- "CHAMBERMAXX" UNDERGROUND PROPRIETARY UNITS
- CAST INSITU STRUCTURE - STRUCTURAL RPEQ ENGINEERED TANK DESIGN (E.G. CONCRETE BLOCK AND BONDEK SLAB OR APPROVED EQUIVALENT)

THIS DISCHARGE METHOD IS FOR PRIVATE DRAINAGE ONLY AND ALL ASSOCIATED CONNECTIONS AND FITTINGS MUST BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE APPROVED HYDRAULIC CONSULTANTS DRAWINGS, MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS, AND SATISFY THE REQUIREMENTS OF THE PLUMBING CODE OF AUSTRALIA (CURRENT NCC - VOLUME 3) AND AS/NZS 3500 SERIES.

NOTE: ALL DEVELOPMENT SITE FLOWS SHALL ULTIMATELY DISCHARGE TO CIVIL PIT AT REAR BOUNDARY (FOR GRAVITY DISCHARGE THE DEVELOPMENTS LAWFUL POINT OF DISCHARGE (EXISTING BULLOCK HEAD CREEK).

0 0.2 0.4 0.6 0.8 1.0m

SCALE 1:20
SCALE BEFORE REDUCTION

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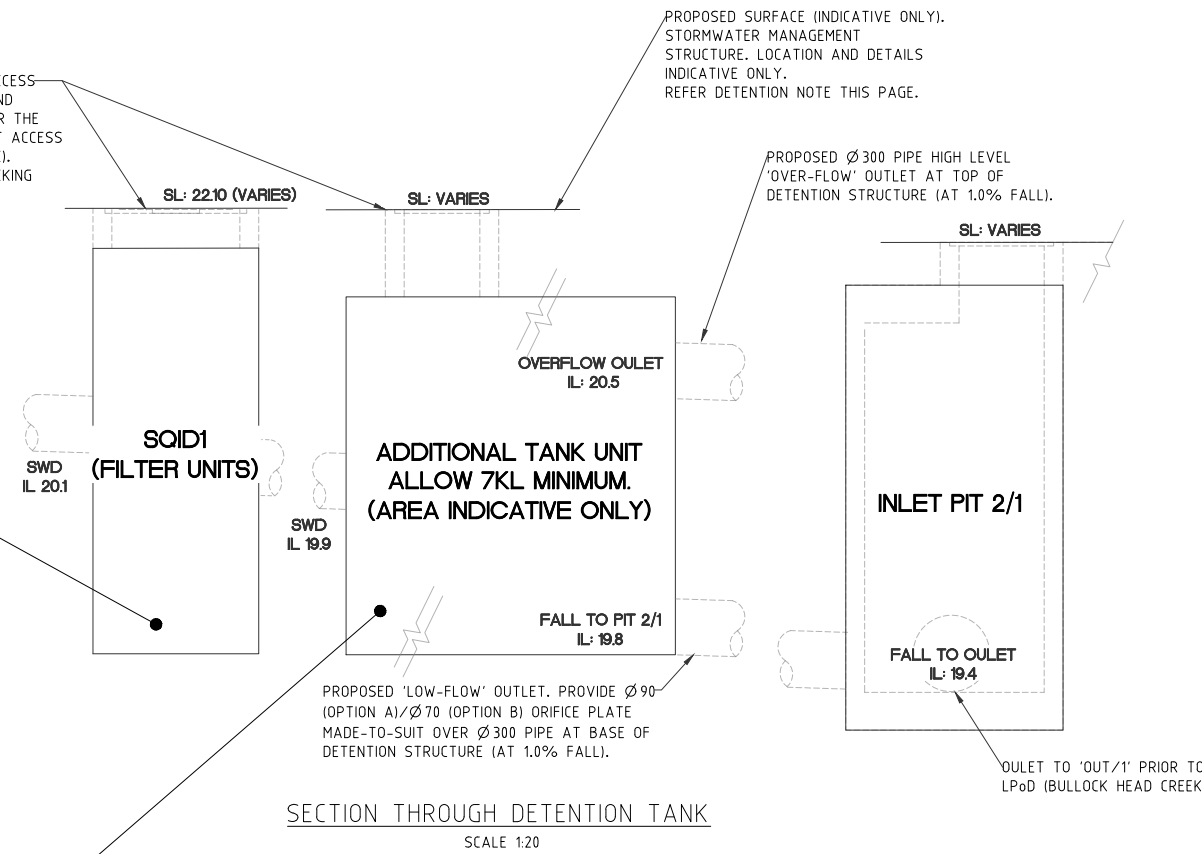
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PROPOSED DEVELOPMENT
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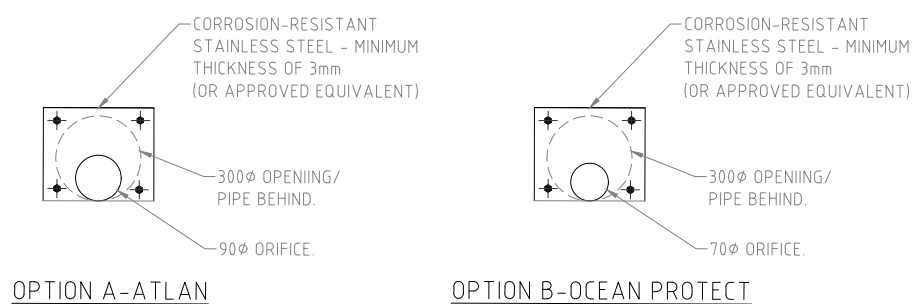
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UNDERGROUND STORMWATER STRUCTURE NOTES:

1. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR IS TO CHECK THAT THE PROPOSED PIPE WORKS DO NOT CLASH WITH THE IDENTIFIED EXISTING SERVICES PRIOR TO ANY TRENCH EXCAVATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CLASHES ARE FOUND FOR ADVICE OF ANY REDESIGN REQUIREMENTS.
2. MINIMUM TANK VOLUME SHALL BE PROVIDED IN ACCORDANCE WITH THE APPROVED SBSMP.
3. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH CURRENT COUNCILS APPROVAL DRAWINGS, CONDITIONS, STANDARDS AND SPECIFICATIONS, UNLESS NOTED OTHERWISE.
4. ALL uPVC STORMWATER PIPES SHALL BE CLASS SN8, RCP PIPES SHALL BE CLASS 2, FRC PIPES SHALL BE CLASS 1 UNLESS NOTED OTHERWISE.
5. ROOFWATER DRAINAGE TO CONNECT INTO UPSTREAM PITS AS REQUIRED. FOR ROOFWATER DRAINAGE DETAILS REFER HYDRAULICS CONSULTANT'S DRAWINGS.
6. ORIFICE PLATES:
- MUST BE MANUFACTURED FROM CORROSION-RESISTANT STAINLESS STEEL PLATES WITH A MINIMUM THICKNESS OF 3mm (5mm WHERE ORIFICE DIAMETER EXCEEDS 150mm), WITH A CENTRAL HOLE MACHINED TO 0.5mm ACCURACY.
- MACHINED HOLE MUST RETAIN A SHARP EDGE
- MUST BE PERMANENTLY FIXED TO THE PIT WALL AND EPOXY SEALED TO PREVENT THE ENTRANCE OF WATER AROUND THE EDGES
- MUST BE ENGRAVED WITH THE ORIFICE DIAMETER AND AN IDENTIFYING MARK, AND THE ORIFICE DIAMETERS CERTIFIED BY THE MANUFACTURER
7. PROPOSED UNDERGROUND TANK DESIGN / SPECIFICATION BY OTHERS. REFER STRUCTURAL ENGINEERS DRAWINGS FOR ASSOCIATED DETAILS (SLAB, PAVEMENT DETAILS, ETC).
8. REFER APPROVED HYDRAULIC CONSULTANTS DRAWINGS FOR ADDITIONAL CONNECTION DETAILS TO UPSTREAM DRAINAGE NETWORK.
9. THE PROPERTY OWNER IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH INSTALLATION, OPERATION AND MAINTENANCE AND IS LIABLE FOR ALL DAMAGES AS A RESULT OF SYSTEM MALFUNCTION.
10. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
11. PROVIDE 'AS CONSTRUCTED' SURVEY OF ALL STORMWATER DRAINAGE INFRASTRUCTURE.



CONCEPT STORMWATER MANAGEMENT CONFIGURATION SHOWN INDICATIVE ONLY. TO BE CONFIRMED AS PART OF DESIGNED STAGE.



ORIFICE PLATE FOR 300Ø OPENING
N.T.S.

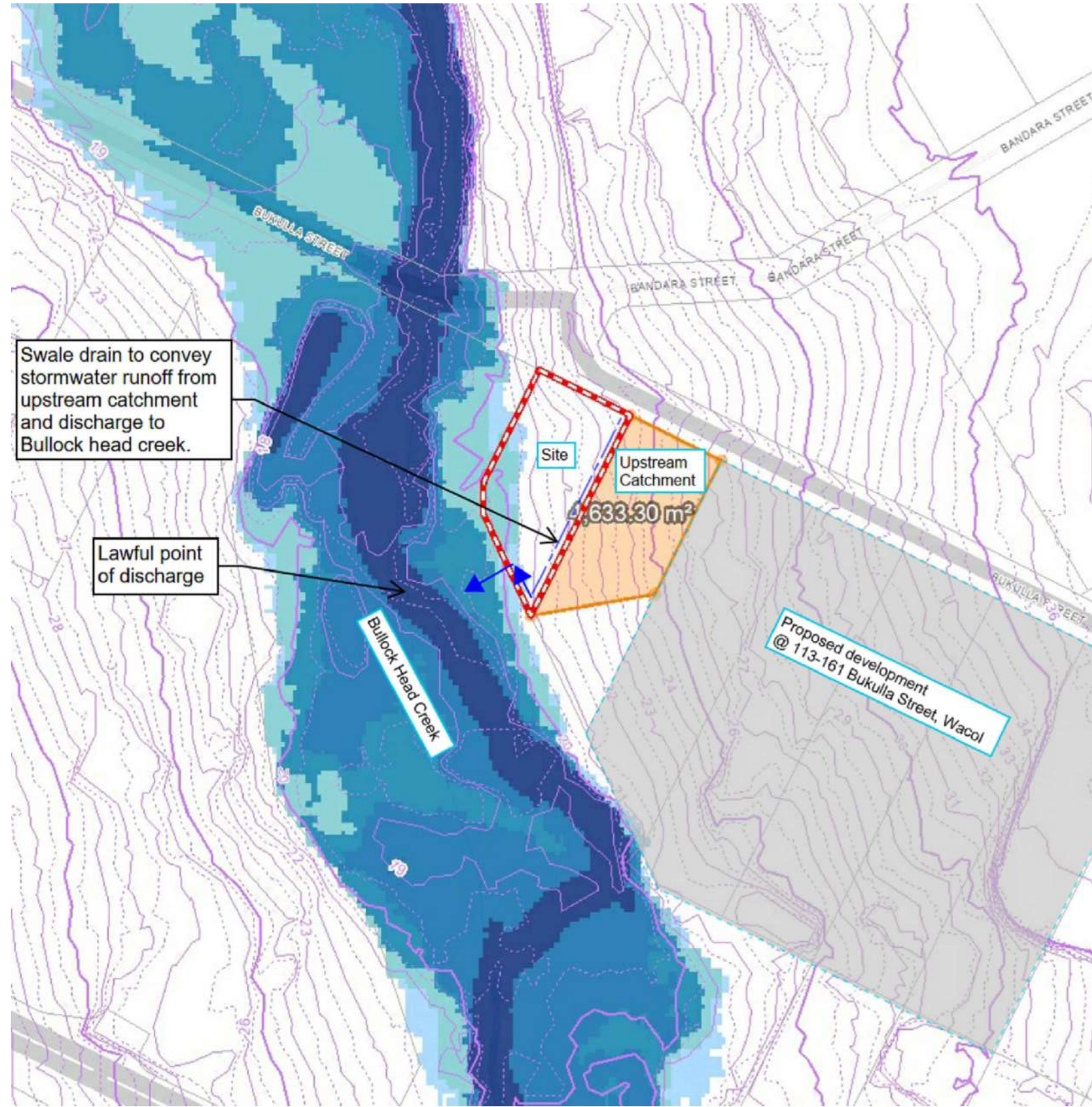
CIVIL DA CONCEPT

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CONCEPT CERTIFICATION ONLY
RONALD OTTO
RPEQ No. 27857
FOR AND ON BEHALF OF
DEQ CONSULTING ENGINEERS

CIVIL SITEWORKS
CONCEPT PLAN
SHEET 2 OF 3

SCALE AS SHOWN @ A1	DATE APRIL 2026
CONTACT: RO	SHEET 3 OF 6
25.1595	SK.03 P3
JOB No.	DRG. No. AMMT.
CHECKED RO	DATUM : AHD



REFER CONCEPT CIVIL ENGINEERING REPORT AND CIVIL SECONDARY CODES PREPARED BY DEQ CONSULTING ENGINEERS, REPORT REF. NUMBER 25.1595 DA REPORT WITH THE REVIEW OF THIS CONCEPT PLAN.

PROPOSED STORMWATER MANAGEMENT NOTE:
 PROPOSED STORMWATER MANAGEMENT SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE SITE BASED STORMWATER MANAGEMENT PLAN (SBSMP) REPORT PREPARED BY DEQ CONSULTING ENGINEERS REF 25.1595.DA.SBSMP REV.A DATED APRIL 2026.

ALL LEVELS AND DETAILS SHOWN ARE CONCEPT ONLY AND SUBJECT TO DETAIL DESIGN AMENDMENTS (IF/WHERE REQUIRED).

THIS SBSMP DESIGN SHALL BE CONFIRMED AS PART OF THE DETAILED DESIGN / OPERATIONAL WORKS DESIGN PHASE TO ENSURE COMPLIANCE WITH THE WATER SENSITIVE URBAN DESIGN (WSUD) PRINCIPLES, LOCAL COUNCIL APPROVAL CONDITIONS/STANDARDS AND STATE PLANNING POLICY (SPP) WATER QUALITY REQUIREMENTS.

WHERE APPLICABLE, PROPOSED RETAINING WALLS AND ASSOCIATED EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BCC FILLING AND EXCAVATION CODE.

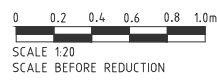
- EARTHWORKS NOTES:**
- E1 - TEMPORARY 1m1 BULK EARTHWORKS BATTER SHALL BE PROVIDED FOR ANY EXCAVATIONS WITHIN VICINITY OF PROPERTY BOUNDARY (OR FOR STEP-DOWNS) EXCEEDING 0.5m IN HEIGHT.
 - E2 - DETAIL DESIGN OF EARTHWORKS SHALL BE UNDERTAKEN AS PART OF OPERATIONAL WORKS/DETAILED DESIGN PHASE.
 - E3 - COVER EXCAVATION FACE WITH PLASTIC EACH DAY.
 - E4 - ALL BATTERS TO BE EXPOSED FOR MINIMUM PERIOD. DETAIL EXCAVATION REQUIRED PRIOR TO RETAINING WALL CONSTRUCTION.
 - E5 - RETAINING WALL DESIGN BY OTHERS.
 - E6 - RETAINING WALLS IN EXCESS OF 1.0m IN HEIGHT TO BE DESIGNED AND CERTIFIED BY RPEQ.

ALL ROOF WATER TO BE COLLECTED AND DISCHARGED TO NEARBY CIVIL STORMWATER INLET PITS ACCORDING TO PLUMBING AND DRAINAGE CODE - AS3500.3. SUBJECT TO DETAIL DESIGN BY HYDRAULIC CONSULTANT (IF/WHERE REQUIRED).

NOTE: LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A DIAL BEFORE YOU DIG SEARCH PRIOR TO COMMENCEMENT OF WORKS. ANY POTENTIAL CONFLICT OF EXISTING SERVICES SHALL BE REPORTED TO THE SUPERINTENDENT.

NOTE: EXISTING SERVICES AND CONNECTIONS TO EXISTING SERVICES ARE TO BE LOCATED AND CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO ANY EXCAVATION. ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES FOR POSSIBLE REVISIONS.

CONTRACTOR TO REPAIR ANY DAMAGE TO KERB AND CHANNEL, FOOTWAY, FOOTPATH, ROAD PAVEMENT OR SERVICES CAUSED DURING CONSTRUCTION TO THE SATISFACTION OF COUNCIL.



EXTERNAL UPSTREAM STORMWATER CATCHMENT PLAN
 N.T.S

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PROPOSED DEVELOPMENT
 93 BUKULLA STREET
 WACOL, QLD 4077
 DUNDRUM CIVIL PTY LTD

CIVIL SITEWORKS
 CONCEPT PLAN
 SHEET 3 OF 3

SUBJECT FURTHER DETAIL DESIGN + COUNCIL DA CONDITIONAL REQUIREMENTS

CONCEPT CERTIFICATION ONLY
 RONALD OTTO
 RPEQ No. 27857
 FOR AND ON BEHALF OF
 DEQ CONSULTING ENGINEERS

SCALE	AS SHOWN @ A1	DATE	APRIL 2026
CONTACT:	RO	SHEET	4 OF 6
JOB No.	25.1595	DRG. No.	SK.04
CHECKED	RO	DATUM	: AHD

CIVIL DA CONCEPT



NOTE: LOCATION & LEVELS OF ALL EXISTING SERVICES TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A DIAL BEFORE YOU DIG SEARCH PRIOR TO COMMENCEMENT OF WORKS. ANY POTENTIAL CONFLICT OF EXISTING SERVICES SHALL BE REPORTED TO THE SUPERINTENDENT.

PROPOSED TEMPORARY 1in1 BULK EARTHWORKS BATTER. WORKS SHALL BE CARRIED OUT AS PART OF FUTURE BUILDING WORKS. CONFIRM WITH PROJECT MANAGER PRIOR TO CONSTRUCTION. PROPOSED EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BCC FILLING AND EXCAVATION CODE.

- EARTHWORKS NOTE:**
- E1 - TEMPORARY 1in1 BULK EARTHWORKS BATTER SHALL BE PROVIDED FOR ANY EXCAVATIONS WITHIN VICINITY OF PROPERTY BOUNDARY (OR FOR STEP-DOWNS) EXCEEDING 0.5m IN HEIGHT.
 - E2 - TEMPORARY EARTHWORKS BATTER SHALL TERMINATE WITHIN 0.3m OF ADJACENT PROPERTY BOUNDARIES.
 - E3 - COVER EXCAVATION FACE WITH PLASTIC EACH DAY.
 - E4 - ALL BATTERS TO BE EXPOSED FOR MINIMUM PERIOD. DETAIL EXCAVATION REQUIRED PRIOR TO RETAINING WALL CONSTRUCTION.
 - E5 - RETAINING WALL DESIGN BY OTHERS.
 - E6 - WHERE APPLICABLE, RETAINING WALLS IN EXCESS OF 1.0m IN HEIGHT TO BE DESIGNED AND CERTIFIED BY RPEQ.

BULK EARTHWORKS LEVELS CONCEPT ONLY. EXACT LEVELS TO BE CONFIRMED PRIOR TO CONSTRUCTION.

LEGEND - CONCEPT EARTHWORKS PLAN

- 24.500 PROPOSED BULK EARTHWORKS LEVEL
- 24.0 EXISTING CONTOURS
- 24.20 EXISTING SPOT LEVEL
- PROPOSED CUT AREA CUT VOLUME: 60m³
- PROPOSED FILL AREA FILL VOLUME: 4800m³
- PROPOSED DIVERSION DRAIN
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER

REDUNDANT INTERNAL STRUCTURES NOTE:

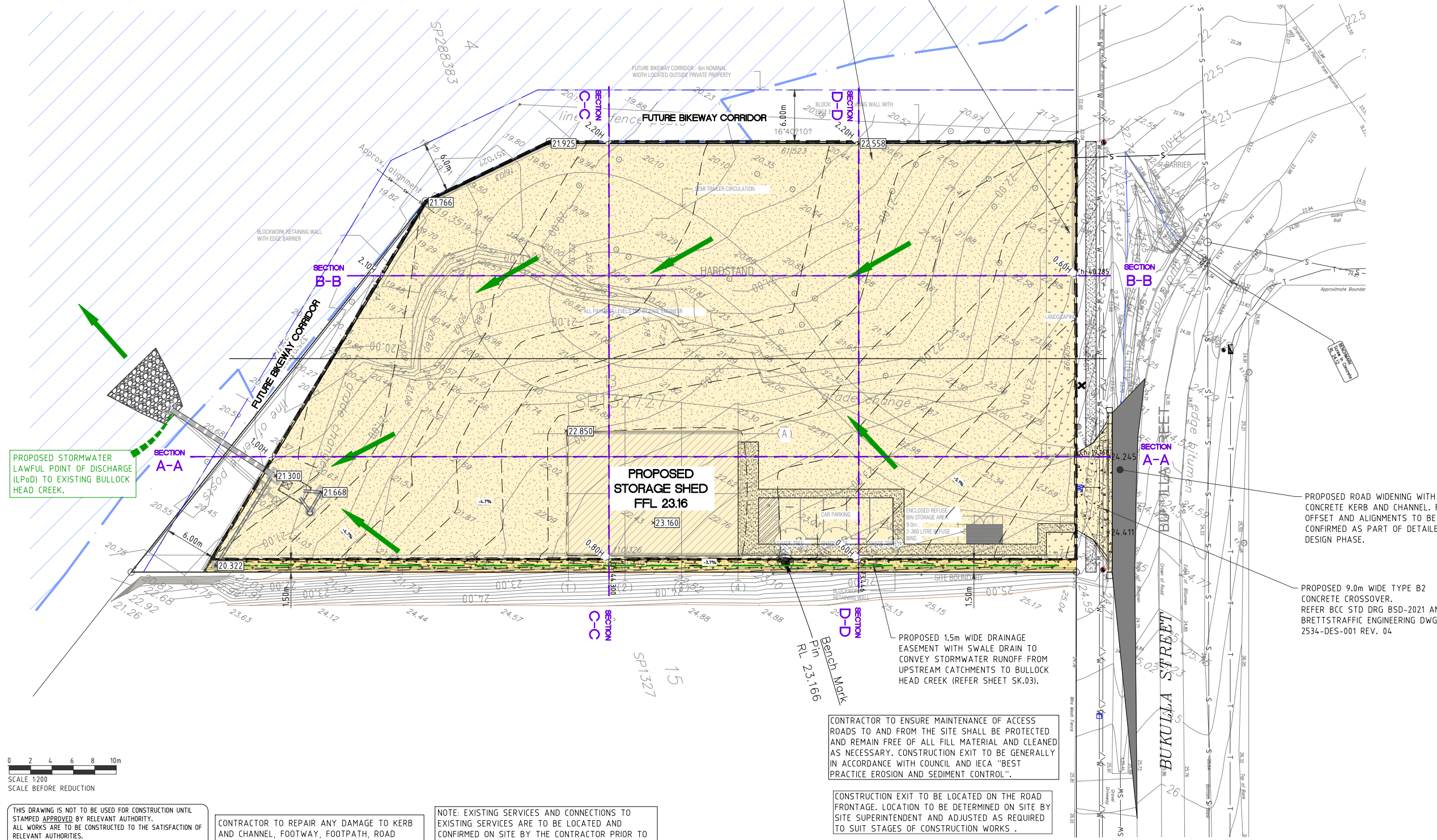
REDUNDANT DRAINAGE PIPEWORK, EXISTING SLABS, FOOTINGS, BUILDERS RUBBLE, AND OTHER DELETERIOUS MATERIAL TO BE TAKEN UP AND REMOVED FROM SITE.

AS DIRECTED BY THE SUPERINTENDENT, THE CONTRACTOR SHALL REMOVE ALL EXISTING FOOTINGS, PIPES AND UNDESIRABLE MATTER AND REPLACE WITH AN APPROVED SUITABLE MATERIAL COMPACTED TO 98% DRY DENSITY RATIO.

ELECTRICAL / TELECOMMUNICATIONS NOTE:

INDICATIVE SERVICING LOCATIONS FOR PROPOSED CIVIL CONNECTIONS ARE CONCEPTUAL ONLY. FURTHER DETAIL DESIGN SHALL BE CARRIED OUT AND COORDINATED WITH ELECTRICAL ENGINEER TO CONFIRM (WHERE APPLICABLE):

1. PROPOSED ROOFWATER PIPED DRAINAGE SHALL BE 600mm (MIN.) CLEAR OF ELECTRICAL SERVICE PILLAR, U.N.O.** WATER METERS SHALL BE RELOCATED (E.G. 1.5m FROM BOUNDARY PEG OR TO OPPOSITE SIDE BOUNDARY) WHERE A SHARED COMMON BOUNDARY CLASH OCCURS WITH AN ELECTRICAL SERVICE PILLAR, U.N.O.**
2. PROPOSED DRIVEWAY/S (WHERE APPLICABLE) SHALL MAINTAIN A 1.0m (MIN.) CLEARANCE FROM PROPOSED ELECTRICAL PILLARS UNLESS AN APPROVED PROTECTIVE MEASURE IS PROVIDED (E.G. BOLLARD, ETC). U.N.O.**
3. ** UNLESS NOTED OTHERWISE BY ELECTRICAL ENGINEER, LOCAL AUTHORITY AND/OR COUNCIL.



0 2 4 6 8 10m
SCALE 1:200
SCALE BEFORE REDUCTION

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL STAMPED APPROVED BY RELEVANT AUTHORITY. ALL WORKS ARE TO BE CONSTRUCTED TO THE SATISFACTION OF RELEVANT AUTHORITIES. THE CONTRACTOR IS RESPONSIBLE FOR ORGANISING NECESSARY PERMITS, AUTHORISATION AND SUBSEQUENT INSPECTIONS AS REQUIRED BY RELEVANT AUTHORITIES.

CONTRACTOR TO REPAIR ANY DAMAGE TO KERB AND CHANNEL, FOOTWAY, FOOTPATH, ROAD PAVEMENT OR SERVICES CAUSED DURING CONSTRUCTION TO THE SATISFACTION OF COUNCIL.

NOTE: EXISTING SERVICES AND CONNECTIONS TO EXISTING SERVICES ARE TO BE LOCATED AND CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO ANY EXCAVATION. ENGINEER TO BE NOTIFIED OF ANY DISCREPANCIES FOR POSSIBLE REVISIONS.

CONTRACTOR TO ENSURE MAINTENANCE OF ACCESS ROADS TO AND FROM THE SITE SHALL BE PROTECTED AND REMAIN FREE OF ALL FILL MATERIAL AND CLEANED AS NECESSARY. CONSTRUCTION EXIT TO BE GENERALLY IN ACCORDANCE WITH COUNCIL AND IECA "BEST PRACTICE EROSION AND SEDIMENT CONTROL".

CONSTRUCTION EXIT TO BE LOCATED ON THE ROAD FRONTAGE. LOCATION TO BE DETERMINED ON SITE BY SITE SUPERINTENDENT AND ADJUSTED AS REQUIRED TO SUIT STAGES OF CONSTRUCTION WORKS.

DATE	EVENT	DETAIL	INITIAL	DATE	EVENT	DETAIL	INITIAL
27.04.26	P3	PRELIMINARY ISSUE 3	MTN				
10.12.25	P2	PRELIMINARY ISSUE 2	MTN				
27.10.25	P1	PRELIMINARY ISSUE 1	MTN				

DEQ DESIGN ENGINEERS QUEENSLAND
Consulting Engineers
Civil, Structural and Soil Testing
DEQ Consulting Pty Ltd 1/6 ABN 53 065 711 248 E: soiltesting@deq.com.au

PROPOSED DEVELOPMENT
93 BUKULLA STREET
WACOL, QLD 4077
DUNDRUM CIVIL PTY LTD

CIVIL SITEWORKS
CONCEPT EARTHWORKS PLAN
SHEET 1 OF 2

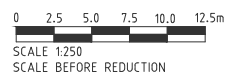
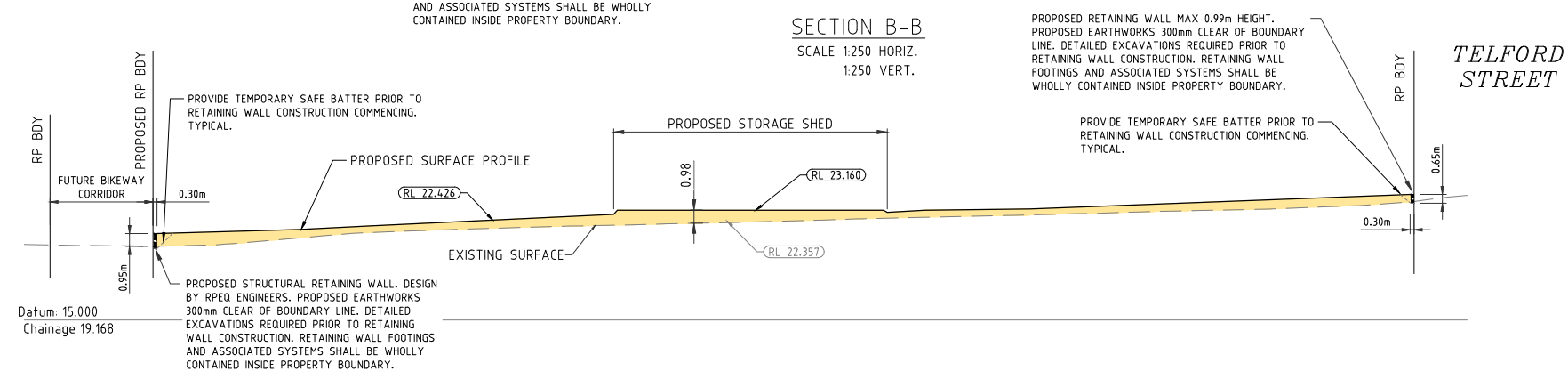
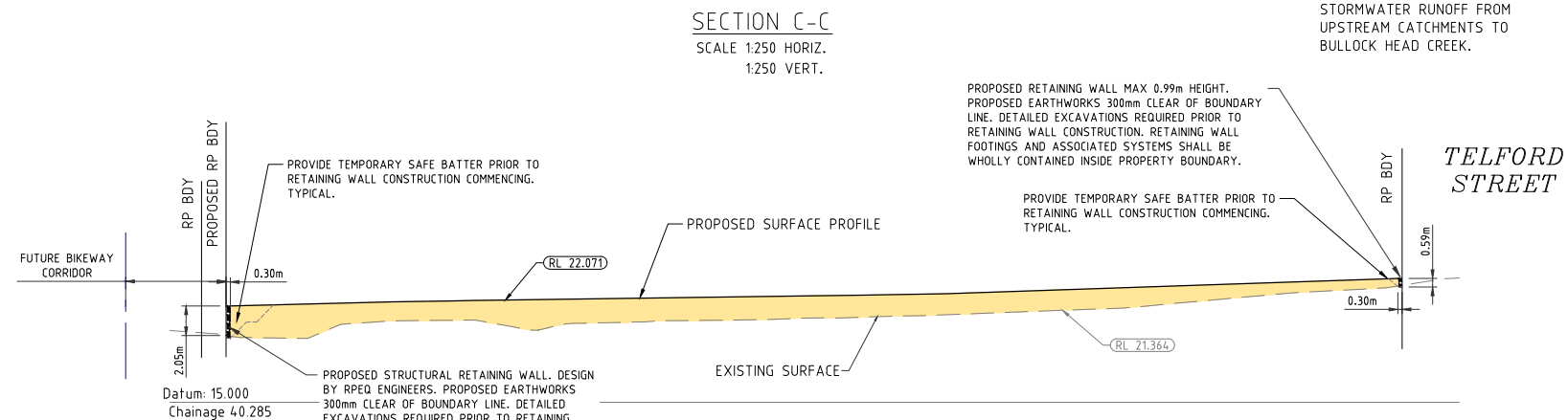
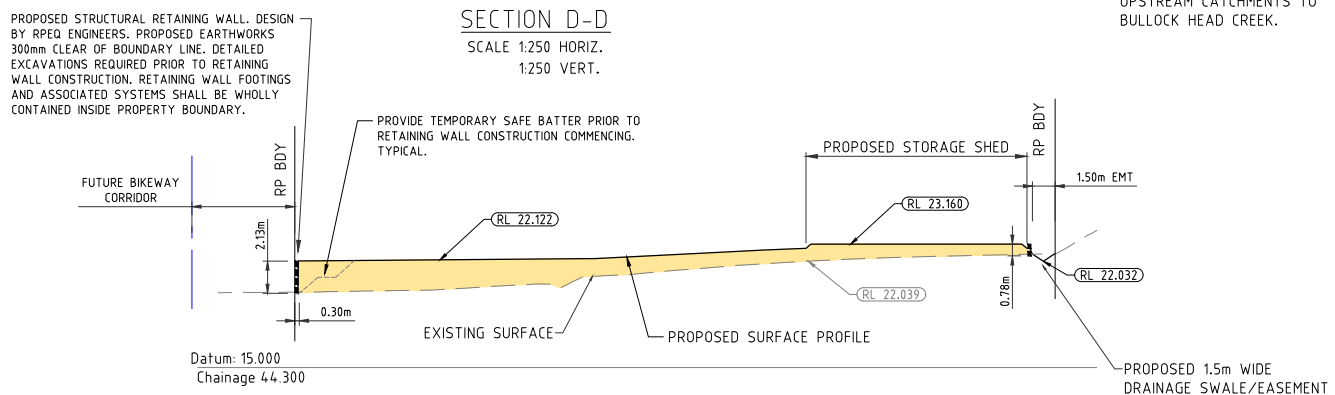
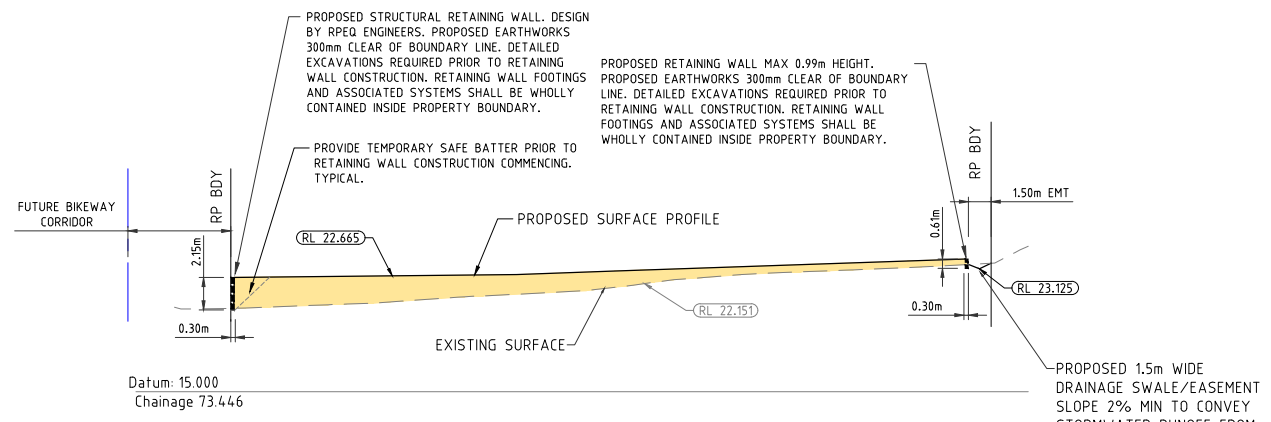
CIVIL DA CONCEPT

SUBJECT FURTHER DETAIL DESIGN + COUNCIL DA CONDITIONAL REQUIREMENTS

CONCEPT CERTIFICATION ONLY
RONALD OTTO
RPEQ No. 27857
FOR AND ON BEHALF OF
DEQ CONSULTING ENGINEERS

SCALE AS SHOWN @ A1	DATE APRIL 2026
CONTACT: RO	SHEET 5 OF 6
25.1595	SK.05
JOB No.	DRG. No.
CHECKED RO	DATUM : AHD

RL 22.550	EXISTING LEVELS
RL 23.500	PROPOSED SURFACE LEVELS
---	EXISTING SURFACE PROFILE
---	PROPOSED SURFACE PROFILE



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DATE	EVENT	DETAIL	INITIAL	DATE	EVENT	DETAIL	INITIAL
27.04.26	P3	PRELIMINARY ISSUE 3	MTN				
10.12.25	P2	PRELIMINARY ISSUE 2	MTN				
27.10.25	P1	PRELIMINARY ISSUE 1	MTN				

DEQ DESIGN ENGINEERS QUEENSLAND
Consulting Engineers
Civil, Structural and Soil Testing
DEQ Consulting Pty Ltd 1/6 ABN 53 065 711 248 E: soiltesting@deq.com.au

5 Parkview Street
Milton Qld. 4064
P: (07) 3367 0211
F: (07) 3367 0205
W: www.deq.com.au
E: structural@deq.com.au
E: civil@deq.com.au

PROPOSED DEVELOPMENT
93 BUKULLA STREET
WACOL, QLD 4077

DUNDRUM CIVIL PTY LTD

CIVIL SITEWORKS
CONCEPT EARTHWORKS PLAN
SHEET 2 OF 2

SUBJECT FURTHER DETAIL DESIGN + COUNCIL DA CONDITIONAL REQUIREMENTS

CONCEPT CERTIFICATION ONLY
RONALD OTTO
RPEQ No. 27857
FOR AND ON BEHALF OF
DEQ CONSULTING ENGINEERS

SCALE AS SHOWN @ A1	DATE APRIL 2026
CONTACT: RO	SHEET 6 OF 6
25.1595	SK.06 P3
JOB No.	DRG. No. AMMT.
CHECKED RO	DATUM : AHD

APPENDIX D

EROSION AND SEDIMENT CONTROL INSPECTION CHECKLISTS

DAILY SITE INSPECTION

LOCATION

SITE SUPERVISOR **DATE**

SIGNATURE

Legend: OK Not OK N/A Not applicable

Item	Consideration	Assessment
1	All tradespeople working on the site have been informed of the erosion and sediment control requirements of the site.	.....
2	All required builder identification, safety notices, and pollution (e.g. litter and sediment control) management signs are visible.	.....
3	The work site and all erosion and sediment control measures do not represent a safety risk to tradespeople or the public.	.....
4	Public roadways are clear of sediment.	.....
5	Turfing on the footpath area is clear of sediment, sand and mud.	.....
6	Entry/exit pads are clear of excessive sediment deposition.	.....
7	Entry/exit pads have adequate available void spacing to trap sediment.	.....
8	The construction site is clear of litter and unconfined rubbish.	.....
9	Long-term (> 24 hours) soil/sand stockpiles are protected from wind, rain, and stormwater flow.	.....
10	At end of day, all short-term soil/sand stockpiles located outside the sediment control zone have been removed and cleaned.	.....

- 11 No dust problems exist on the site.
- 12 Up-slope “clean” water is being appropriately diverted through the site in a non-erosive manner.
- 13 Drainage lines are free of soil scour and sediment deposition.
- 14 Stormwater flow down exposed earth batters does not cause erosion.
- 15 Appropriate erosion controls of all finished soil disturbances have been discussed with the client.
- 16 Sediment fences have been correctly installed (e.g. fabric buried and standing up-slope of stakes) and are free of damage.
- 17 Sediment fences have been installed in a manner that will allow sediment-laden stormwater to temporarily pond and settle behind the fence rather than flow around the fence.
- 18 Appropriate sediment controls have been placed adjacent to, or around, stormwater inlets—as appropriate for the type of inlet.
- 19 All sediment traps are free of excessive sediment deposition.
- 20 Finished service trenches have been appropriately backfilled, compacted and stabilised.
- 21 All reasonable and practicable measures are being taken to control sediment runoff from the site.
- 22 The site is adequately prepared for potential storms.
- 23 Adequate stockpiles exist of ESC materials, such as extra sediment fence fabric.
- 24 Temporary downpipes have been correctly connected to any installed roof gutters.

WEEKLY SITE INSPECTION

LOCATION

INSPECTION OFFICER **DATE**

SIGNATURE

Legend: OK Not OK N/A Not applicable

Item	Consideration	Assessment
1	Public roadways clear of sediment.	.....
2	Entry/exit pads clear of excessive sediment deposition.	.....
3	Entry/exit pads have adequate void spacing to trap sediment.	.....
4	The construction site is clear of litter and unconfined rubbish.	.....
5	Adequate stockpiles of emergency ESC materials exist on site.	.....
6	Site dust is being adequately controlled.	.....
7	Appropriate drainage and sediment controls have been installed prior to new areas being cleared or disturbed.	.....
8	Up-slope “clean” water is being appropriately diverted around/through the site.	.....
9	Drainage lines are free of soil scour and sediment deposition.	.....
10	No areas of exposed soil are in need of erosion control.	.....
11	Earth batters are free of “rill” erosion.	.....
12	Erosion control mulch is not being displaced by wind or water.	.....
13	Long-term soil stockpiles are protected from wind, rain and stormwater flow with appropriate drainage and erosion controls.	.....
14	Sediment fences are free from damage.	.....

- 15 Sediment-laden stormwater is not simply flowing “around” the sediment fences or other sediment traps.
- 16 Sediment controls placed up-slope/around stormwater inlets are appropriate for the type of inlet structure.
- 17 All sediment traps are free of excessive sediment deposition.
- 18 The settled sediment layer within a sediment basin is clearly visible through the supernatant prior to discharge such water.
- 19 All reasonable and practicable measures are being taken to control sediment runoff from the site.
- 20 All soil surfaces are being appropriately prepared (i.e. pH, nutrients, roughness and density) prior to revegetation.
- 21 Stabilised surfaces have a minimum 70% soil coverage.
- 22 The site is adequately prepared for imminent storms.
- 23 All ESC measures are in proper working order.

APPENDIX E

STORMWATER QUALITY MANAGEMENT

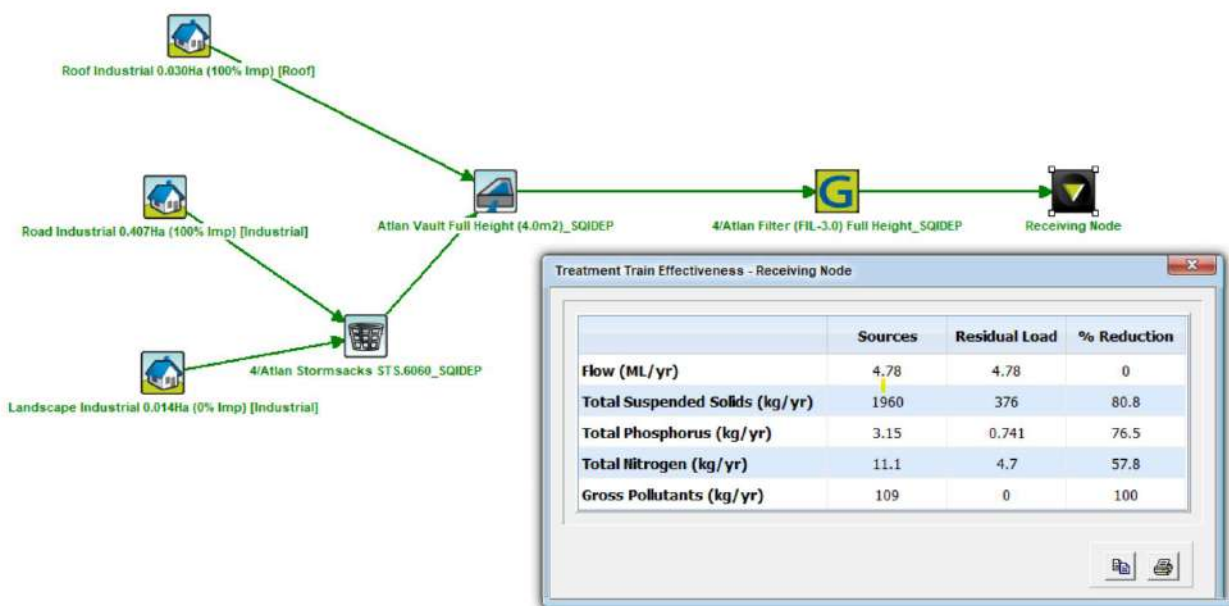
STORMWATER QUALITY MANAGEMENT MUSIC MODELLING DATA

1. Rainfall Parameters

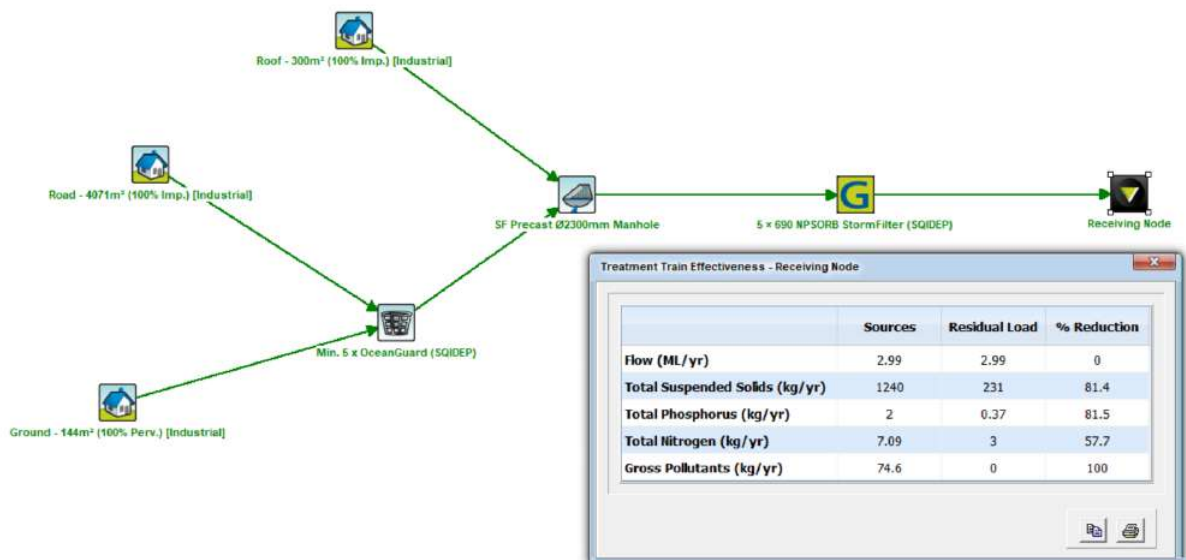
- Meteorological Data – Local Rainfall Station
1980 To 1989
- Evaporation Data – Monthly PET
- Modelling Step – 6 minutes

2. Developed Site

2.1. Option A (ATLAN)



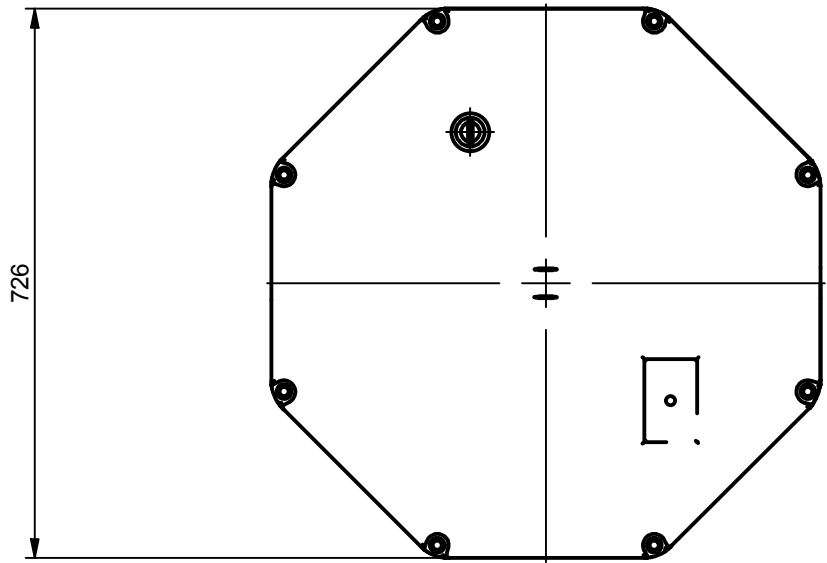
2.2. Option B (OCEANPROTECT)



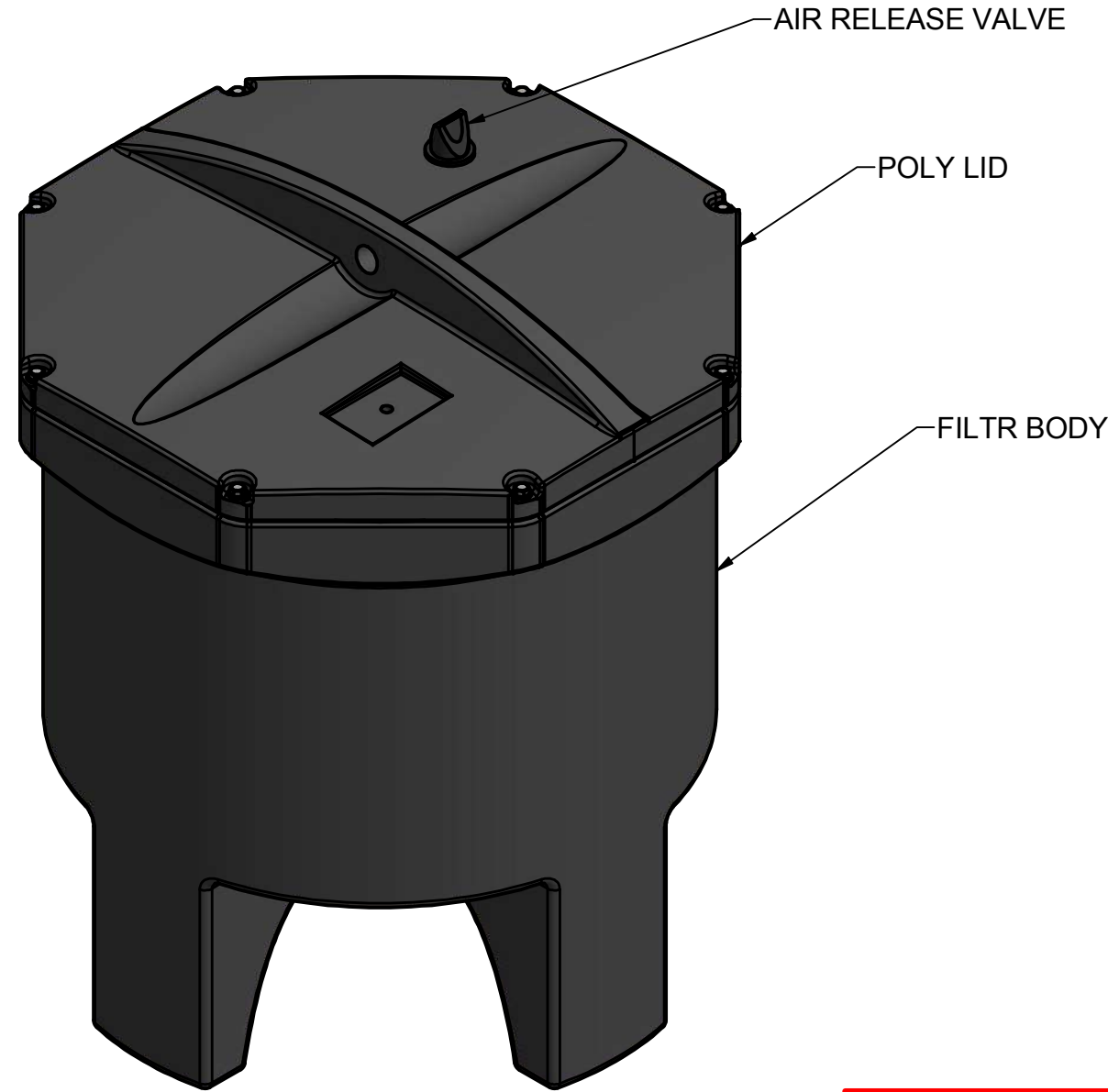
3. SUPPORTING DOCUMENTATION

3.1. Option A - ATLAN

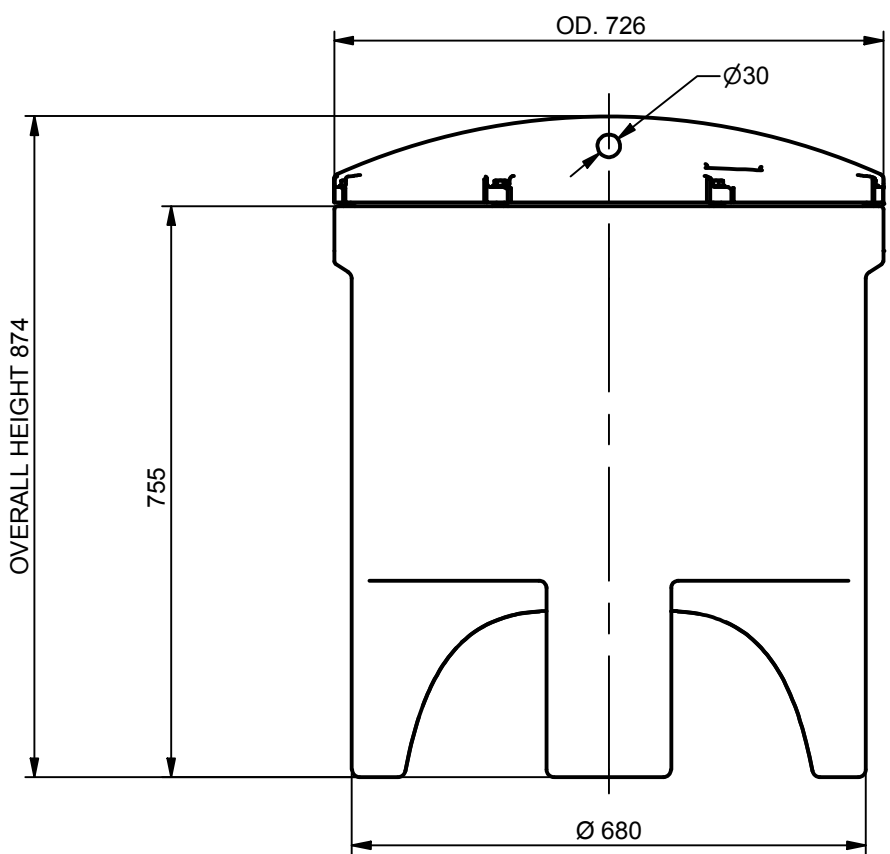
REVISION HISTORY				
REV	DESCRIPTION	DESIGNER	CREATION DATE	CHECKED BY
1	INITIAL RELEASE	M.MAKIN	7/08/2018	



PLAN VIEW



ISOMETRIC VIEW



ELEVATION VIEW

APPROVED.....	<input type="checkbox"/>
NAME.....	
SIGNED.....	
DATE...../...../.....	

ISSUED FOR CONSTRUCTION

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

CLIENT:

DISTRIBUTOR :

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Drawn	Date
M.MAKIN	7/08/2018
Check	Date
Verified	Date
Approved	Date
Request No.	

100 Silverwater Road Silverwater NSW 2128
 PH: 1300 773 500 | E: sales@spel.com.au
 www.spel.com.au

PROJECT :			
TITLE SPEL FILTER MODEL : SF-3.0-EMC-M GENERAL ARRANGEMENT			
SCALE N.T.S	SIZE A3	SHEET 1	REV 1
CUSTOMER CODE :		DWG No. SP18-SF21760-S	

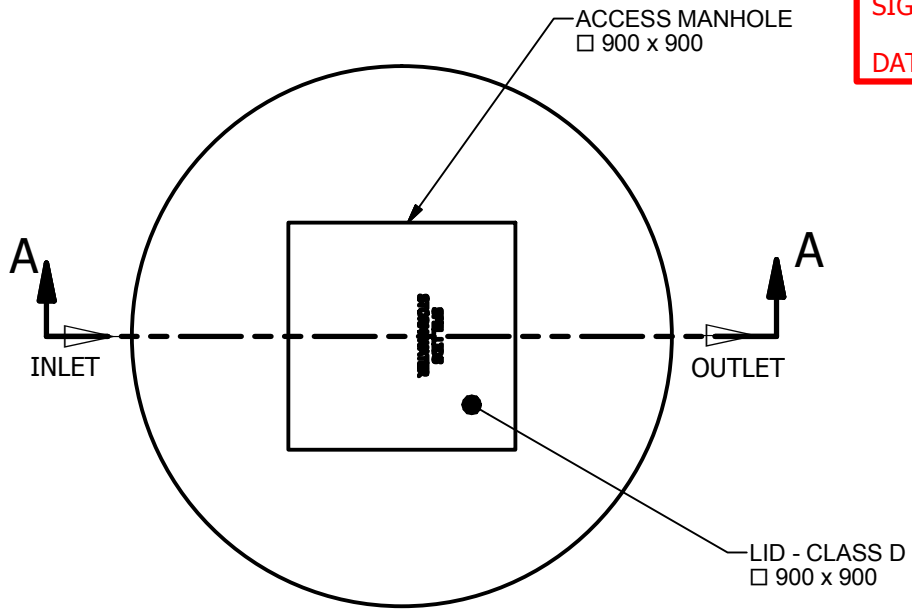
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ISSUE FOR APPROVAL
NOT FOR CONSTRUCTION

APPROVED.....
NAME.....
SIGNED.....
DATE...../...../.....

Site Level Confirmation	
Finished Surface Level (FSL) RL:	
Access Cover Thickness	mm
Inlet Invert Level RL:	
Outlet Invert Level RL:	
Company:	
Name:	
Date:	

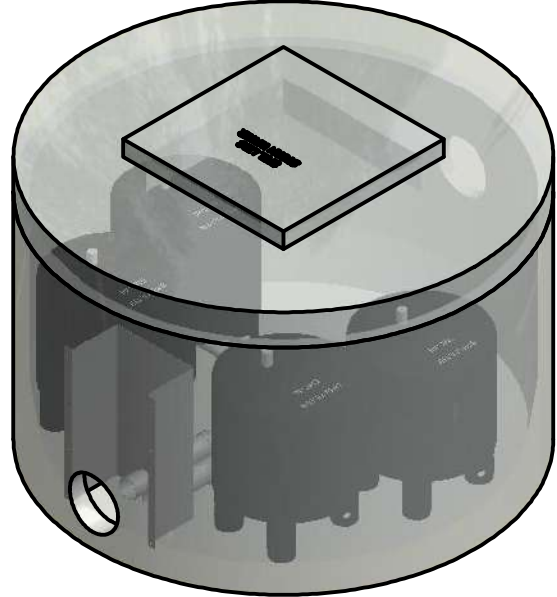
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REV	DESCRIPTION	BY	DATE	CHECKED BY
1	INITIAL RELEASE	P.Z.	26/03/2018	



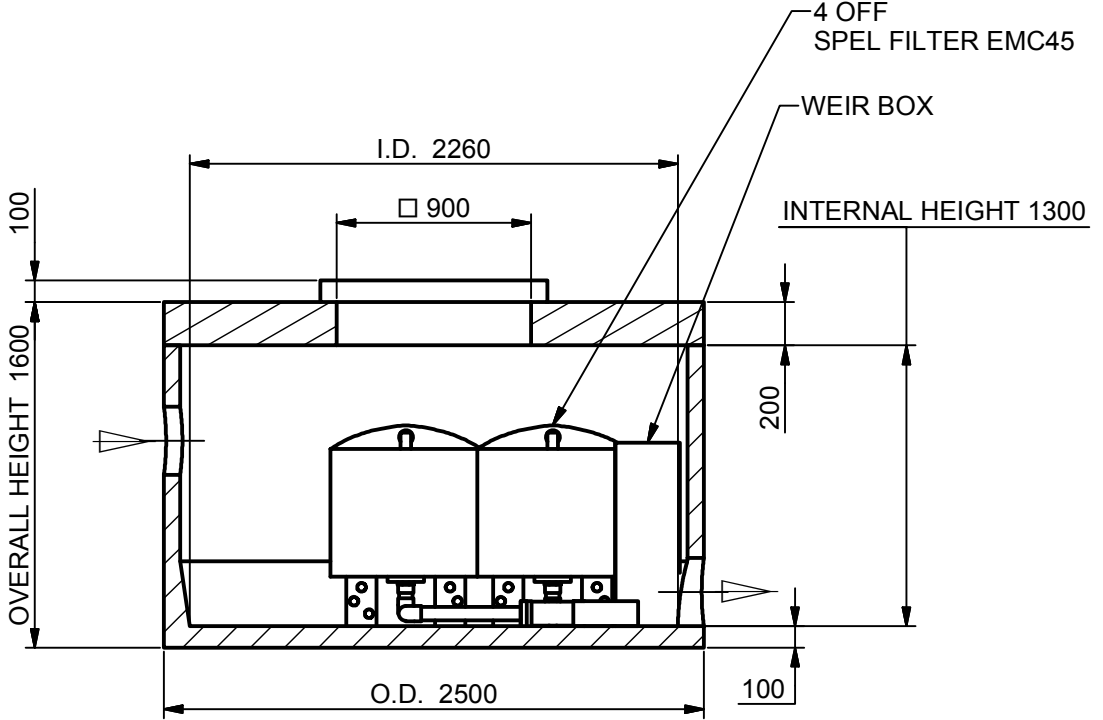
PLAN VIEW

TANK WEIGHTS	
TANK	LID
3.5 t	2.4 t

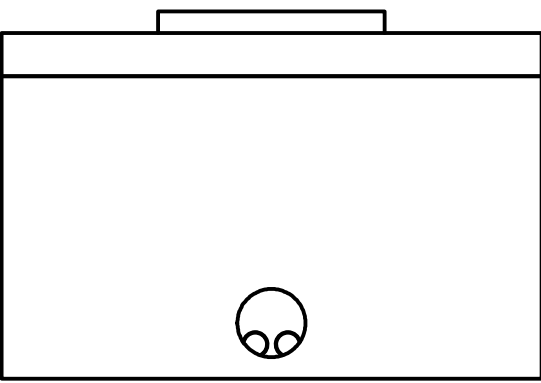
NOTE:
LIFTING WEIGHTS MAY VARY
DEPENDING ON CUSTOM DESIGN



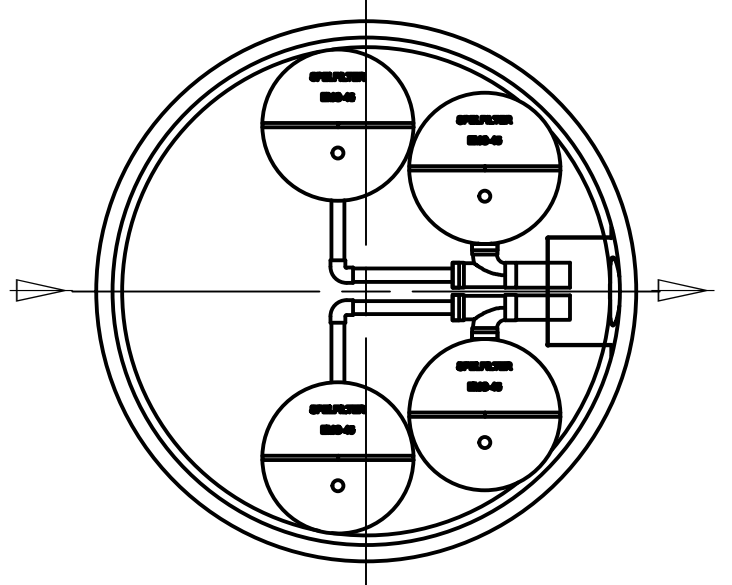
ISOMETRIC VIEW



SECTION A-A



SIDE VIEW



PLAN VIEW
COVER & LID REMOVED FOR CLARITY

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

CLIENT: _____
DISTRIBUTOR: _____

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Drawn P.Z. Date 26-03-18
Check Date
Verified Date
Approved Date
Request No. RN1817

Drawn P.Z. Date 26-03-18
Check Date
Verified Date
Approved Date
Request No. RN1817

100 Silverwater Road Silverwater NSW 2128
PH: 1300 773 500 | E: sales@spel.com.au
www.spel.com.au

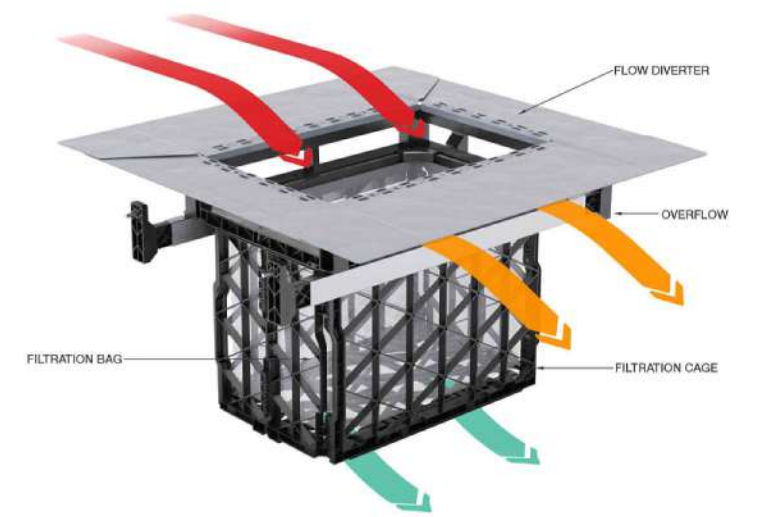
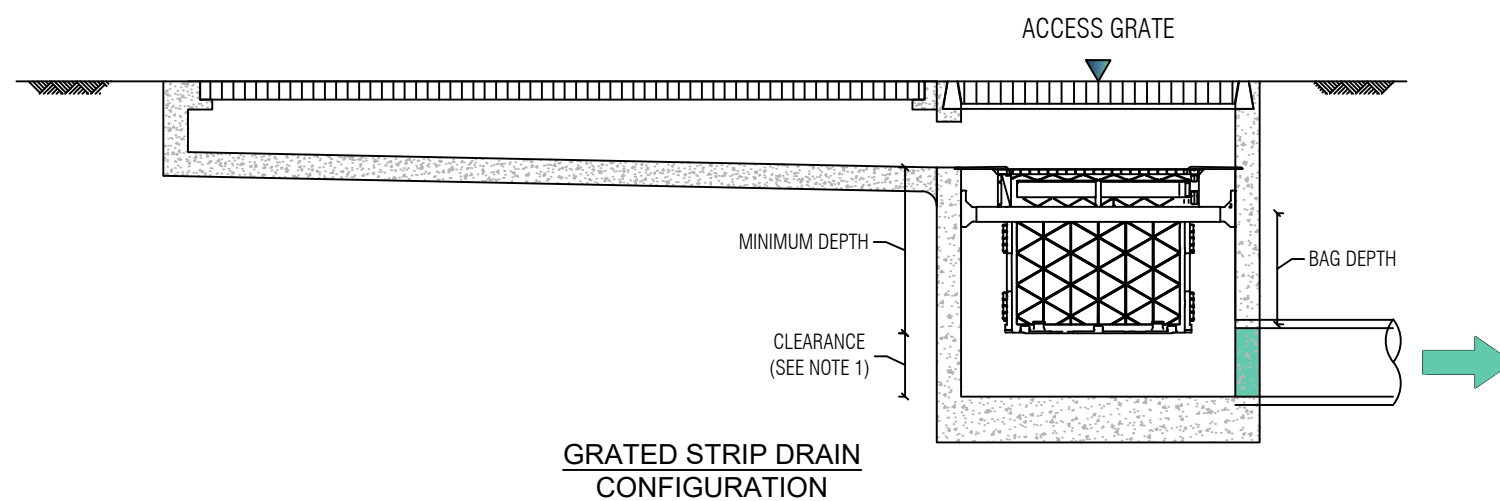
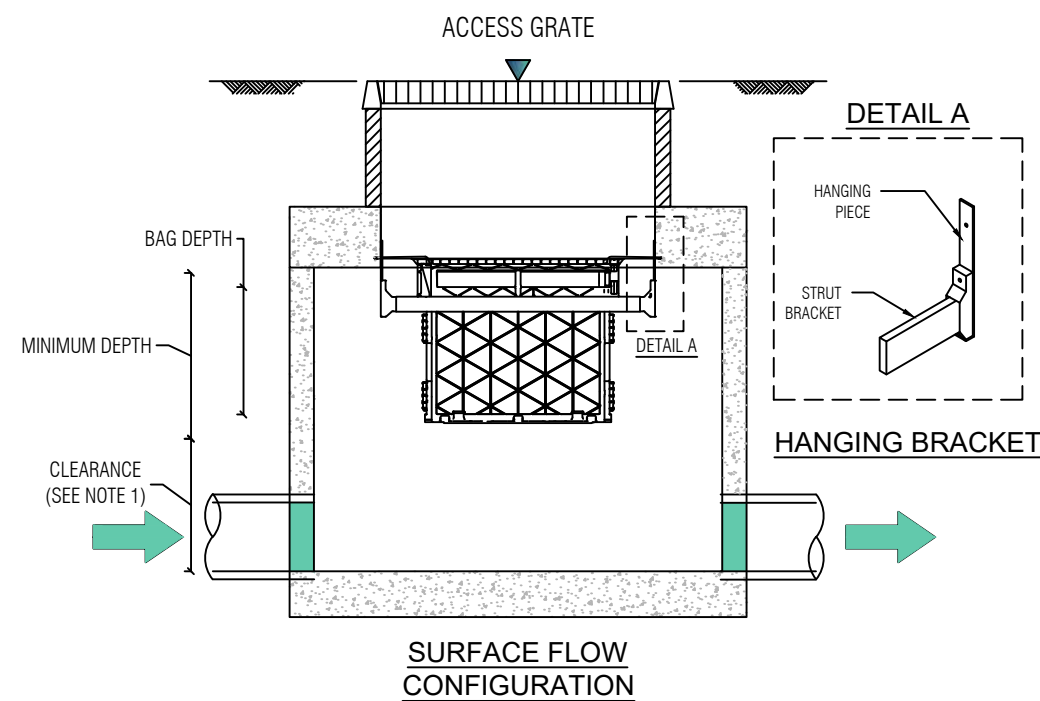
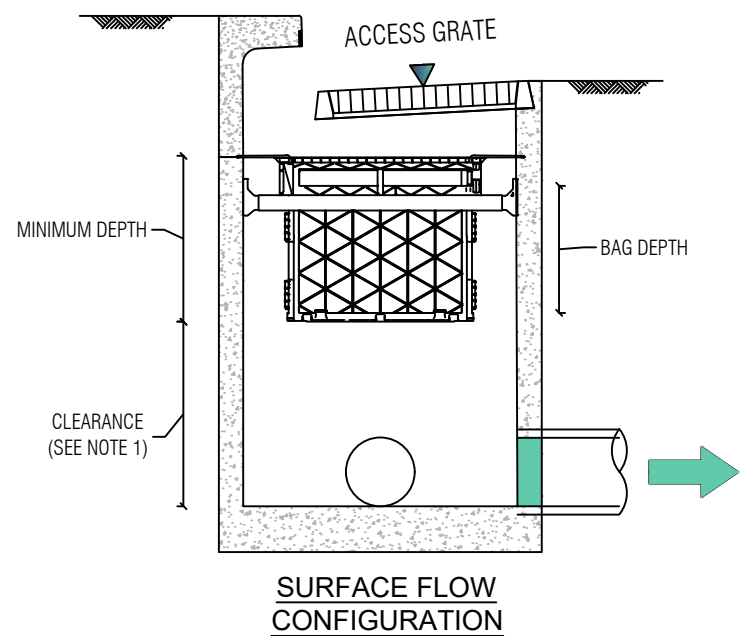
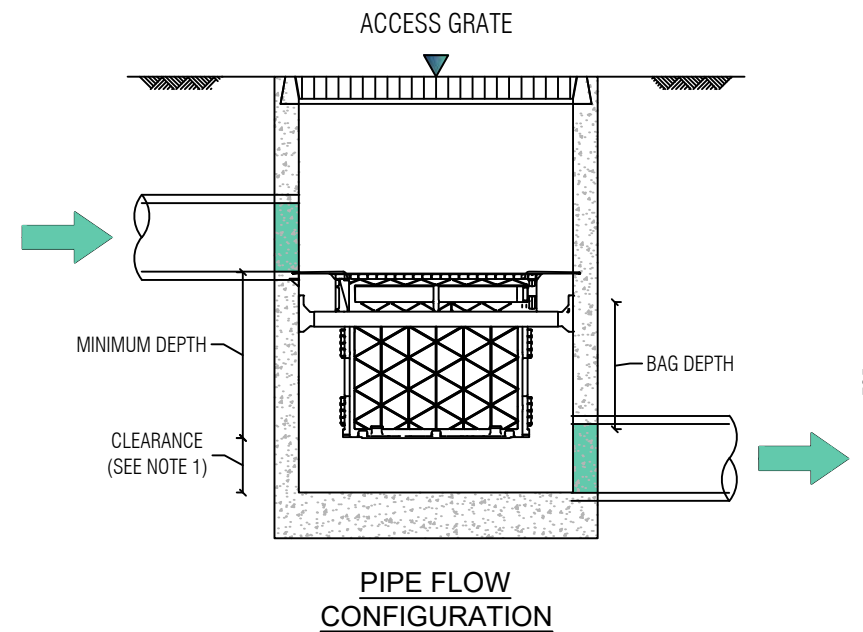
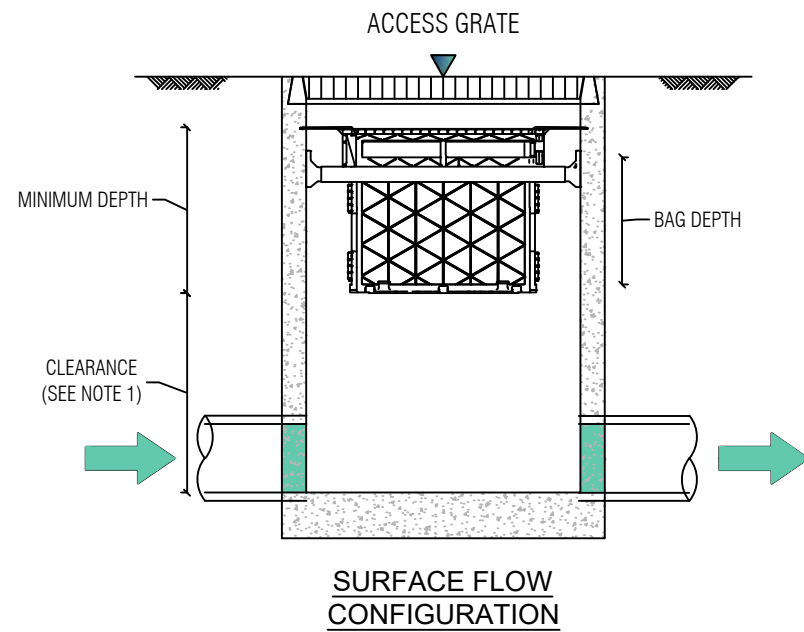
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TITLE SPEL PRECAST TANK 5.2 KL CLASS D SF.226D/04-29.CON.300 4 SPEL FILTER CARTRIDGES			
SCALE N.T.S	SIZE A3	SHEET 1	REV 1
CUSTOMER CODE :		DWG No. SP18-SF10750-P	

C:\Vault Working Folder\Designs\SPEL PRODUCTS\FILTER\EMC-45(STANDARD)\04 FILTERS\CONCRETE PROJECTS\SPEL PRECAST T44 TANK 5.2 KL SF 18 SF 10750-P.dwg

3.2. Option B - OCEANPROTECT

OCEANGUARD - STANDARD

PRODUCT ID	PIT DIMENSIONS (MAXIMUM) (mm)	MINIMUM DEPTH (mm)	BAG DEPTH (mm)
OG4/6S	450 × 450	350	250
	600 × 600		
OG6D	600 × 600	475	375
OG9S	600 × 900	400	300
	900 × 900		
OG9D	600 × 900	600	500
	900 × 900		
OG12S	900 × 1200	400	300
	1200 × 1200		
OG12D	900 × 1200	600	500
	1200 × 1200		



GENERAL NOTES

- CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
- OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:
 - 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING
 - COARSE BAG FOR TARGETING GROSS POLLUTANTS.
- DRAWINGS NOT TO SCALE.
- FOR SPECIAL DESIGNS PLEASE CONTACT OCEAN PROTECT

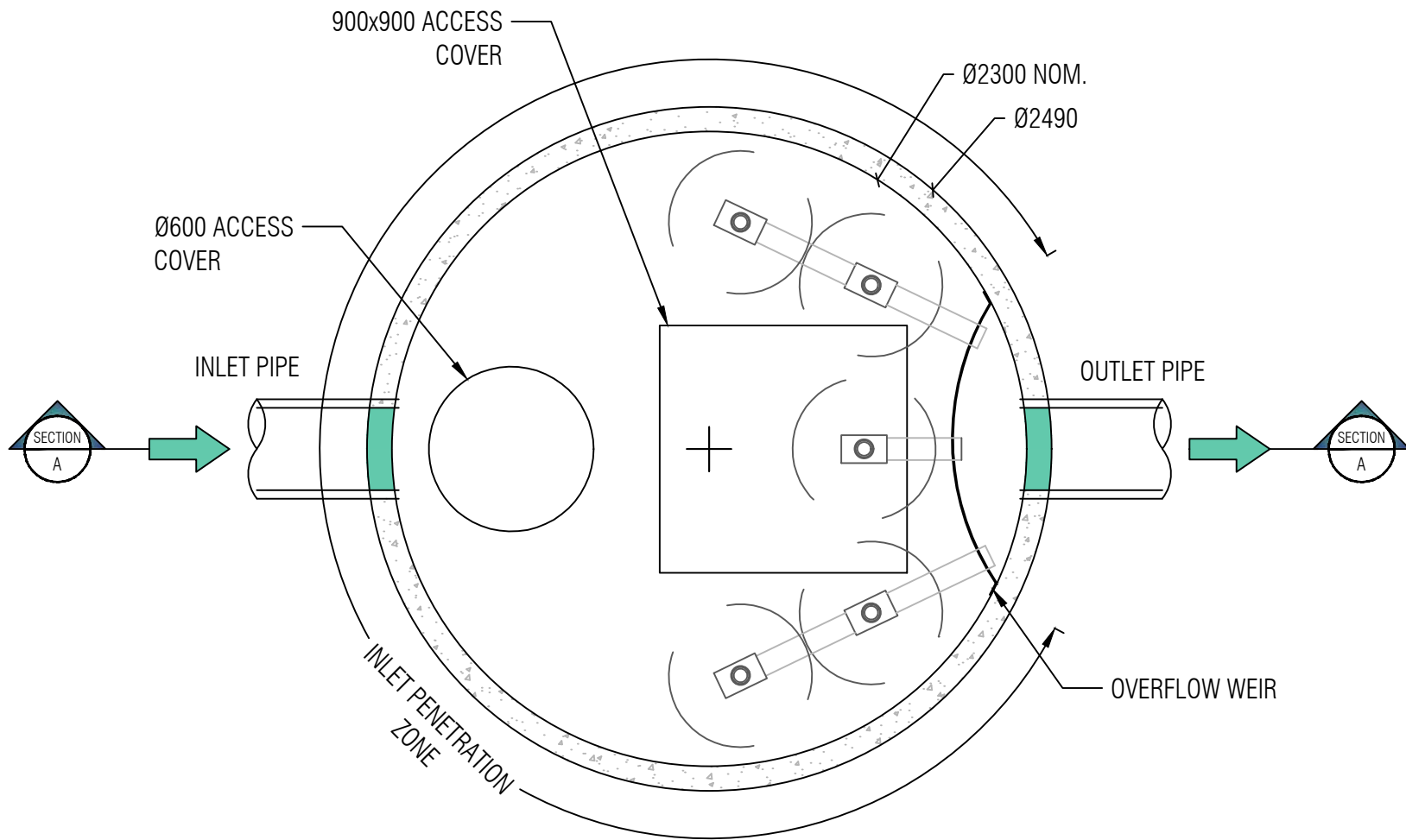


PHONE: 1300 354 722

www.oceanprotect.com.au

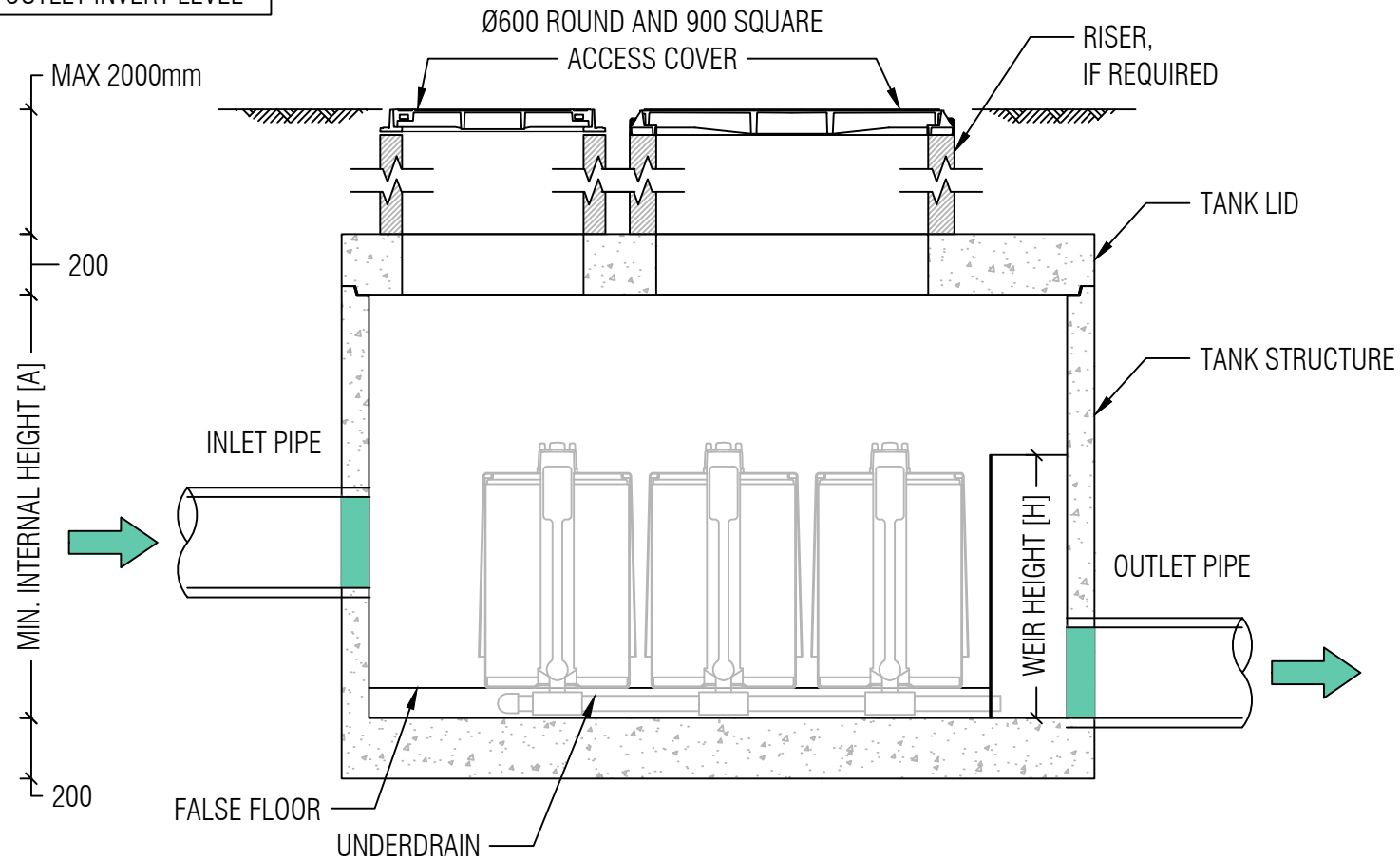
OCEAN PROTECT
OCEANGUARD
TYPICAL ARRANGEMENTS
SPECIFICATION DRAWING

NOT FOR CONSTRUCTION



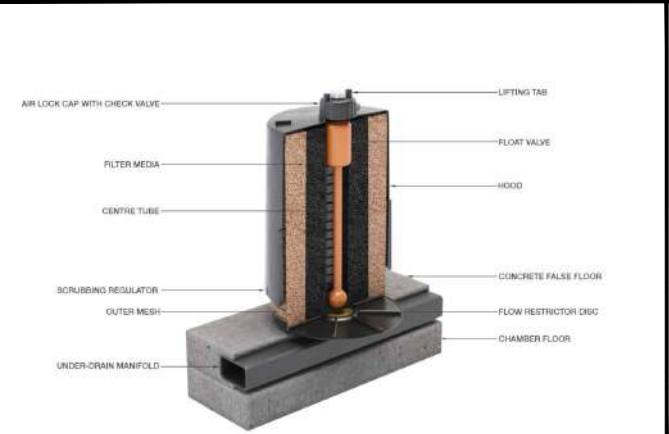
PLAN LAYOUT

INLET INVERT LEVEL
 MINIMUM 100mm ABOVE
 OUTLET INVERT LEVEL



SECTION A

STORMFILTER DESIGN PARAMETERS



- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CERTIFYING ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 178mm.

NUMBER OF CARTRIDGES	5 (UP TO 12)
HYDRAULIC CAPACITY (L/S)	90
MAX. COMPONENT WEIGHT (kg) <small>*MASS VARIABLE</small>	7,000
TANK LID WEIGHT (kg)	1,900

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [H] (mm)	910	640	490
MINIMUM INTERNAL HEIGHT [A] (mm)	1,200	800	800
CARTRIDGE FLOW RATE FOR NPSORB MEDIA (L/s)	1.60	1.10	0.70
CARTRIDGE FLOW RATE FOR PSORB (MCC) MEDIA (L/s)	0.90	0.46	0.39
CARTRIDGE FLOW RATE FOR PSORB (SQIDEP) MEDIA (L/s)	1.26	0.86	0.60
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.60	1.10	0.70

GENERAL NOTES/ STRUCTURAL DESIGN CRITERIA

1. PRECAST STRUCTURE SUPPLIED WITH PENETRATIONS TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL.
2. PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m AND A GROUND WATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH AS3600.
3. PRECAST STRUCTURE SHALL BE PLACED ON A STABLE GROUND WITH A MINIMUM SOIL BEARING CAPACITY OF 125kPa UNDER NORMAL SERVICE CONDITION.
4. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CERTIFYING ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE SYSTEM, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.
5. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO THE OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
6. SITE-SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED UPON PLACEMENT OF ORDER.
7. DRAWING NOT TO SCALE.

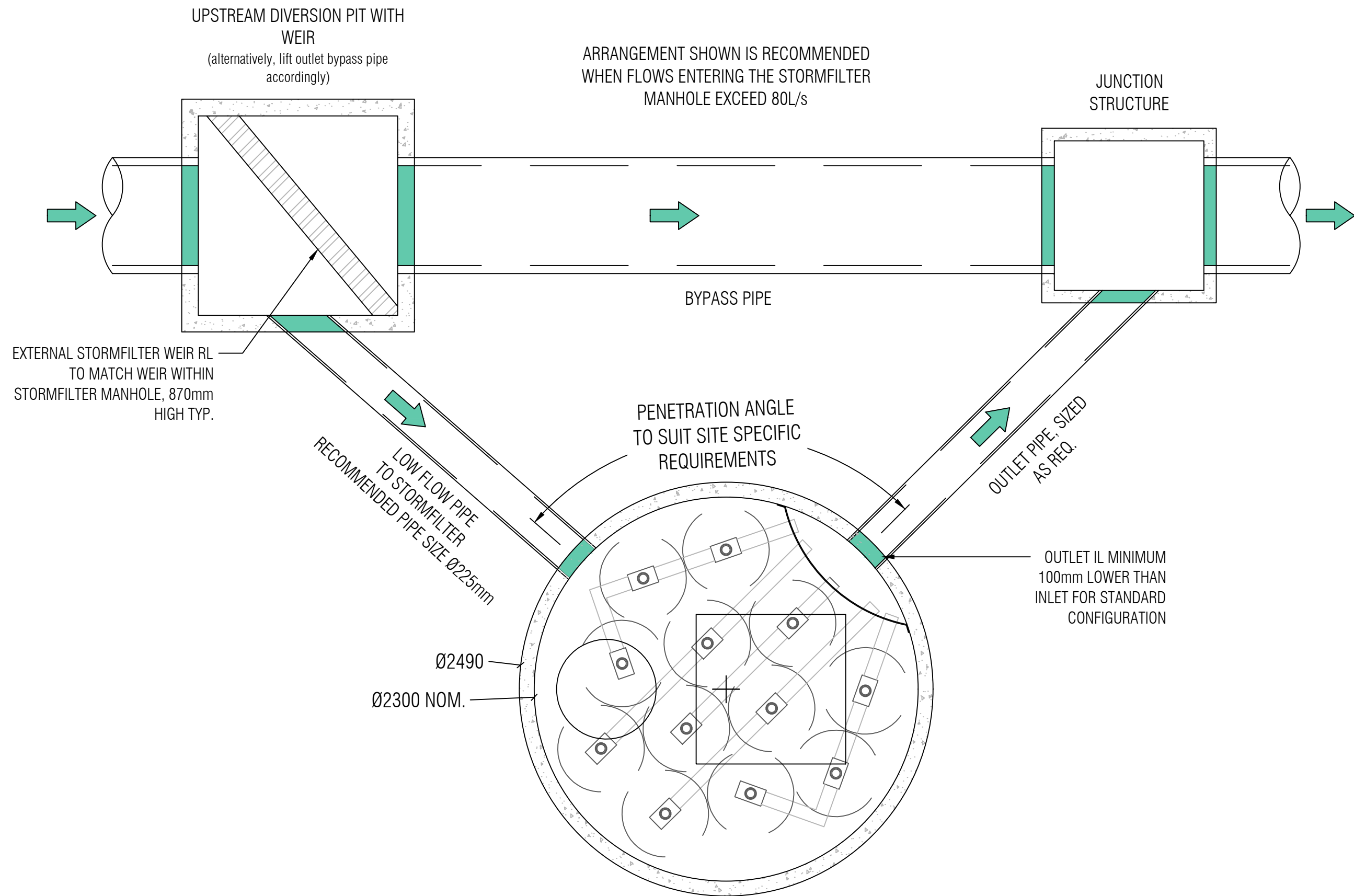
INSTALLATION NOTES

1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY CERTIFYING ENGINEER.
2. CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING DETAIL PROVIDED SEPARATELY).
3. CONTRACTOR TO APPLY SEALANT TO ALL JOINTS AND TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPES.



OCEAN PROTECT
 5 CARTRIDGE STORMFILTER SYSTEM
 DN2300 MANHOLE
 SPECIFICATION DRAWING

PHONE: 1300 354 722 www.oceanprotect.com.au



PLAN LAYOUT

NOT FOR CONSTRUCTION



PHONE: 1300 354 722

www.oceanprotect.com.au

OCEAN PROTECT
TYPICAL DN2300 OFFLINE LAYOUT
HIGH FLOW BYPASS
WITH PRECAST MANHOLE STORMFILTER SYSTEM

DATE: 19-05-2025

DRAWN: N.R.

CHECKED: J.G.

DRAWING

1

A

APPENDIX F

STORMWATER DRAINAGE NETWORK MAINTENANCE CHECKLIST

STORMWATER DRAINAGE NETWORK MAINTENANCE CHECKLIST			
INSPECTION FREQUENCY:	1 to 6 monthly		DATE OF VISIT:
LOCATION:		DESCRIPTION:	
SITE VISIT BY:			
INSPECTION ITEMS:	Y	N	ACTION REQUIRED / NOTES:
<i>Safety measures and procedures in place to undertake a safe inspection?</i>			If 'NO' – immediately terminate inspection and re-scheduled. Ensure safety cones and caution tape are in place where required. Redirect vehicle traffic if necessary.
<i>Traffic Damage Present?</i>			
<i>Damage / vandalising to drainage structures?</i>			
<i>Evidence of ponding?</i>			
<i>Clogging of drainage points?</i>			
<i>Areas of obvious increased sediment deposition?</i>			
<i>Stormwater Quality improvement devices require attention?</i>			If 'YES' works shall be carried out in accordance with manafacurers recommendations and specifcations.
<i>Surface free draining?</i>			
<i>Resetting of system required?</i>			
COMMENTS			