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**APPLICATION REF**

A006861516



**SITE BASED STORMWATER  
MANAGEMENT PLAN**

**FOR**

**PROPOSED WAREHOUSE DEVELOPMENT  
15 ULLSWATER STREET, VIRGINIA. QLD 4014**

**JOB NO: 11.0273**

**FEBRUARY 2026**

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## CERTIFICATION

### Site Based Stormwater Management Plan

Job Number: 11.0273  
Issue No: Rev 1  
Report Date: 06/02/2026  
Author: Mary Nguyen

Site Address: 15 Ullswater Street, Virginia. QLD 4014  
RP Description: Lot 49 on RP 26037  
Proposed Development: Warehouse Development  
Brisbane City Council Ref: A006861516



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Mary Nguyen  
Civil Engineer



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Ronald Otto  
RPEQ 27857  
Director  
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DATE: 06/02/2026

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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 to Brisbane City Council for the proposed development at **15 Ullswater Street, Virginia. QLD 4014.**

This Site Based Stormwater Management Plan has been prepared to satisfy the requirements of Brisbane City Council's Water Quality Objectives, *State Planning Policy (SPP): Waters Quality*, the *State Planning Policy (SPP): Guidelines for Waters Quality* and the Urban Stormwater Quality Planning Guidelines 2017.

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

## 2 SITE CHARACTERISTICS

### 2.1 LOCATION

The subject site (Lot 49 on RP 26037) is approximately 10,674m<sup>2</sup> (1.9602ha) in total area of and is currently occupied by an existing house and shed. A site location plan is shown on Figure 1 below. The site is bounded by Ullswater Street to the west, industrial developments to the north and south, Downfall Creek to the east. The development site is currently occupied by a shed and many steel shipping containers.

### 2.2 TOPOGRAPHY AND SITE DRAINAGE

The natural ground levels of the development site generally grade to the eastern boundary at an approximate grade of 1 in 100. Stormwater runoff from the site currently discharges as broad sheet flow over the eastern boundary to Downfall Creek.



**Figure 1 - Site Location Plan**

Refer Appendix A - Site Survey Plan & Existing Services

### 3 DEVELOPMENT PROPOSAL

#### 3.1 PROPOSED DEVELOPMENT

It is to propose a new office building, associated driveway and car parking areas. Vehicle access to the site is proposed via a new concrete crossover to Ullswater Street.

A suspended concrete slab is proposed for the carparking areas between the flood regulation line and the Habitat and Ecological Corridor. The surface level of the slab is to be no less than the 1% AEP (Q100) flood level of RL 5.2m AHD.

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

An internal stormwater drainage network is proposed to collect the site runoff as sheet flows within the internal driveway and carparking areas and convey the flows to the proposed stormwater drainage within the development site. Flows are then piped to the proposed Stormwater Quality Improvement Devices (SQIDs) located within the development site prior to discharge to Downfall Creek.

A roofwater drainage network is proposed to collect the roof runoff and these flows are recommended to connect into an (optional) rainwater tank. Any overflow from the (optional) rainwater tank is to be discharged to the proposed civil stormwater drainage network prior to discharge to Downfall 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 Downfall Creek. 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 Downfall creek is immediate downstream of the site.

Refer Appendix C – Civil Siteworks Plan

## 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 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, washwaters (e.g. from tile works)
pH altering substances	Acid sulphate soils, cement slurry and Washwaters

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 catchments 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	90 <sup>th</sup> %tile <100mg/L for wet weather periods 15mg/L for combined wet and dry periods
pH	6.5 – 8.5
Total Nitrogen (mg/L)	0.65
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 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	Design Target Objective
Fine Sediment (TSS)	≥ 80%
Total Phosphorus (TP)	≥ 60%
Total Nitrogen (TN)	≥ 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	Three (3) Atlan Stormsacks – STS.6060_SQIDEP
B	OCEAN PROTECT	Storm Filter	690 NPSORB Storm Filter_SQIDEP	5	Four (4) 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 <sup>10</sup> values		TP log <sup>10</sup> values		TN log <sup>10</sup> 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	0.100	100
Industrial – Split Road	0.307	100
Industrial – Split Landscape	0	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 4.0m<sup>2</sup>\_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 <sup>2</sup>	m	m <sup>3</sup>	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 Chamber 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 Chamber**

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 <sup>2</sup>	m	m <sup>3</sup>	mm/hr	m	mm	m	hrs
8	0.77	0.0	0.00	0.00	62	2	0.193

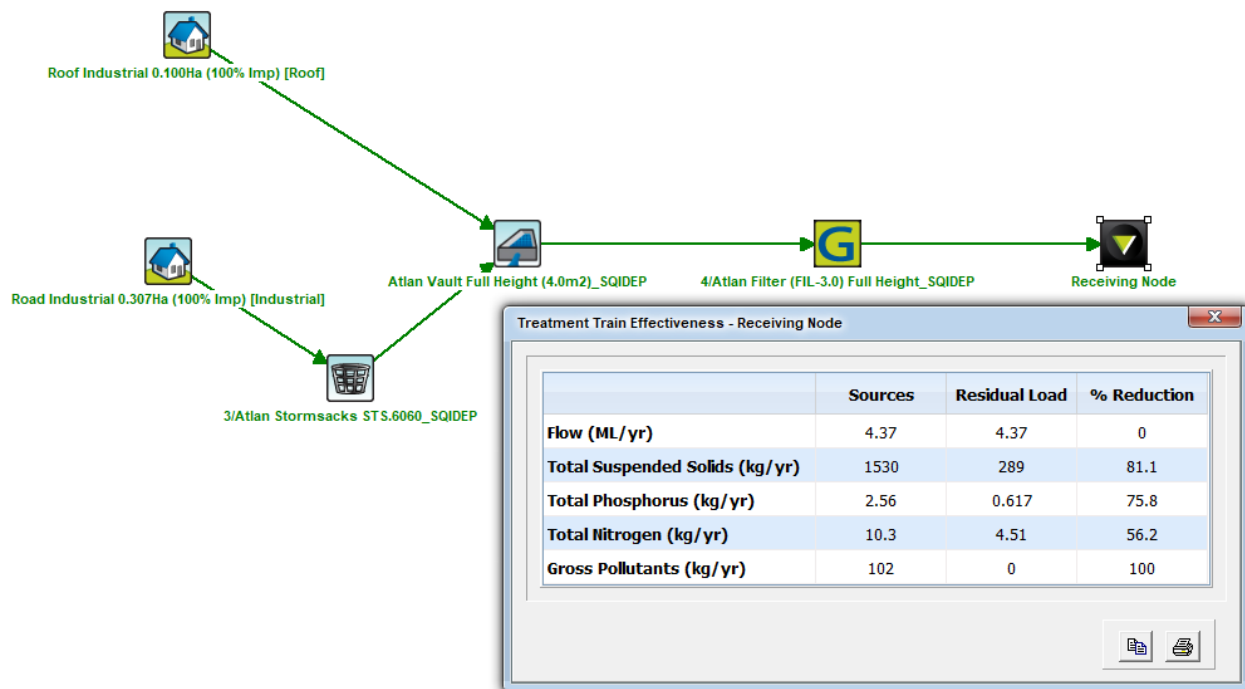
For Storm Filter “5/Storm Filter (690 NP SORB)\_SQIDEP”:

GP	in 1000.0	out 0.0	TP	in 10.0	out 2.29
TSS	in 1000.0	out 114.0	TN	in 100.0	out 38.1

### 5.9 MUSIC MODEL

#### 5.9.1 Option A: ATLAN Treatment Train

The MUSIC model analysed is shown in the figure below.



**Figure 2 – Option A MUSIC Model Layout**

#### 5.9.2 Option B: Ocean Protect Treatment Train

The MUSIC model analysed is shown in the figure below.

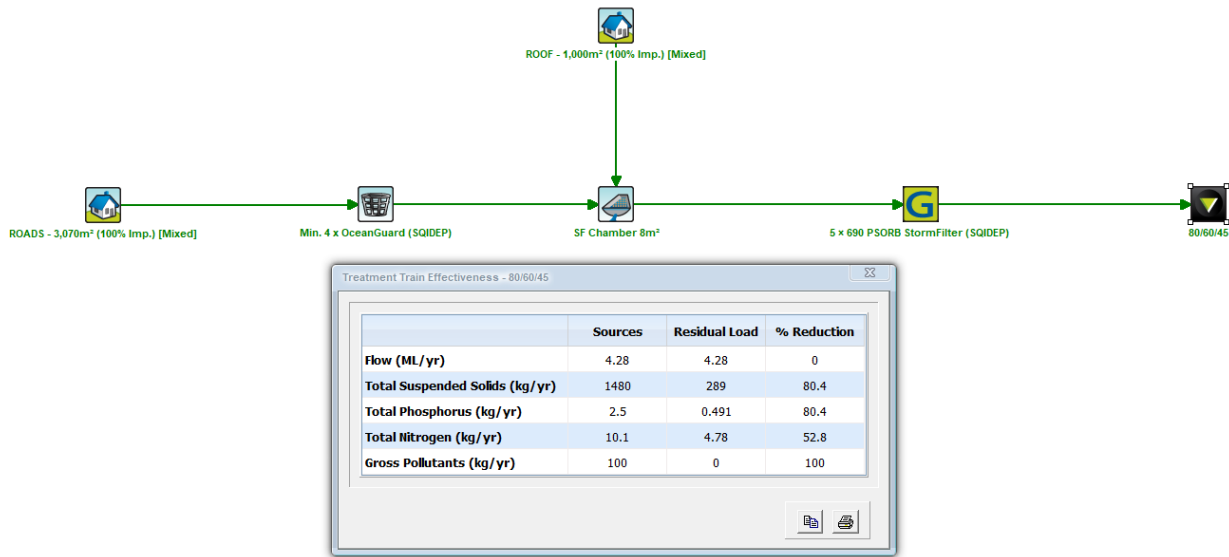


Figure 3 – Option B MUSIC Model Layout

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%	81.1%	80.4%	<input checked="" type="checkbox"/>
Total Phosphorus (TP)	≥ 60.0%	75.8%	80.4%	<input checked="" type="checkbox"/>
Total Nitrogen (TN)	≥ 45.0%	56.2%	52.7%	<input checked="" type="checkbox"/>
Gross Pollutants (> 5mm)	≥ 90.0%	100%	100%	<input checked="" type="checkbox"/>

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 RAINWATER TANKS (RECOMMENDED)

Rainwater tanks with a total capacity of 50,000L are recommended to be installed as part the development site. Rainwater can be utilised for non-potable water uses including flushing and outdoor irrigation.

*Note: The MUSIC model has excluded the tank node in the model however verbal discussions with the developer suggests they may 'opt-in' as this is a practical 'best practise' approach in stormwater management.*

## **5.12 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

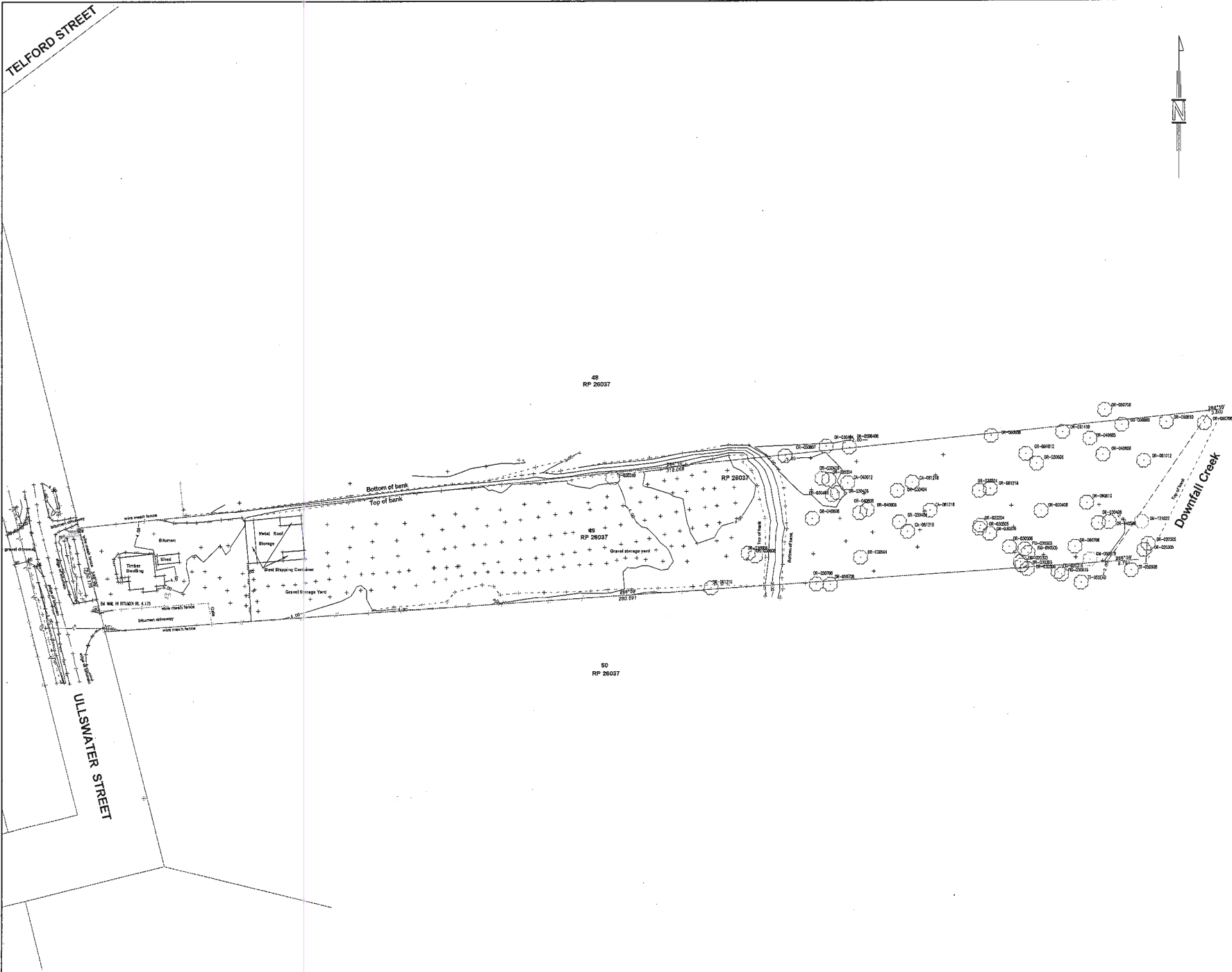
It has been demonstrated that the proposed treatment train to be included in the stormwater drainage system as part of the development proposal satisfies the intents and purposes of Brisbane City Council 's Stormwater Quality Objectives and the requirements of the State Planning Policy 2017 'State Interest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

## 7 REFERENCES

- Brisbane City Council, 2000. *Guideline on Identifying and Applying Water Quality Objectives in Brisbane City (Version 1, 2000)*. Brisbane City Council, Brisbane.
- Brisbane City Council, October 2003. *Guidelines for Pollutant Export Modelling in Brisbane Version 7*.
- Brisbane City Council, 2008. *Subdivision and Development Guidelines*. Brisbane City Council, Brisbane.
- Department of Environment and Resource Management 2010. *Planning Guidelines for Water Supply and Sewerage*. Department of Environment and Resource Management, Brisbane.
- Department of Natural Resources and Water, 2007. *Queensland Urban Drainage Manual Volume 1 Second Edition*. Department of Natural Resources and Water, Brisbane.
- Gold Coast City Council, 2005. *MUSIC Modelling Guidelines (Version 1)*. Gold Coast City Council, Gold Coast.
- *MUSIC – Model for Urban Stormwater Improvement Conceptualisation (Version 6.0, Build 1.547)*. 2005. eWater. Software: Windows 11.
- Water By Design, 2010. *MUSIC Modelling Guidelines Version 1.0*. SEQ Healthy Waterways Partnership, Brisbane.
- State of Queensland, Department of State Development, Infrastructure and Planning, July 2017. *State Planning Policy 2017*. State of Queensland, Department of State Development, Infrastructure and Planning Brisbane.
- State of Queensland, Department of State Development, Infrastructure and Planning, Dec 2013. *State Planning Policy Guidelines, State Interest – Water Quality December 2013*. State of Queensland, Department of State Development, Infrastructure and Planning Brisbane.

## **APPENDIX A**

### **SITE SURVEY PLAN & EXISTING SERVICES**



- NOTES**
1. Due to inaccurate records being maintained by relevant authorities, the underground services have been depicted from a combination of field surveys and the authorities records. While all care has been taken to ensure the location of all underground services, further surveys may exist and some locations are approximate only. The location of service alignments shown on this plan must not be relied upon when carrying out any works or building that will be constructed in close proximity. Fielding should be undertaken to verify the exact position.
  2. All level points of reference located on the job site are only accurate to +/-0.00 meters due to difficulties in accessing the available (height and safety) records.
  3. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for accurate location of all underground services.
  4. Datum for levels - Permanent Mark No 13478 RL2.235410
  5. The Title Boundaries as shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey.
  6. This plan has been prepared to inform the authorities, improvements and services, it should not be used for any other purpose.
  7. These contours and levels should not be used to determine natural surface of line of subdivision. Please contact DTS Group QLD

- LEGEND**
- ELECTRICITY BOX
  - ELECT. LIGHT POLE
  - ELECTRICITY PIT
  - ELECTRICITY POLE
  - FIRE HYDRANT
  - GAZ
  - GULLY PIT
  - INSPECTION OPENING POST
  - SEWERAGE MH
  - BROOKER
  - STORMWATER MH
  - TELECOM PIT
  - TRAFFIC LIGHT
  - VALVE
  - WATER METER
- GAB  
 ELECT  
 SEWERAGE  
 WATER  
 EDGE OF BIT  
 STORMWATER  
 TELECOM  
 OVERHEAD ELECT
- CODING FOR TREES**
- S=SLY GAZ
  - F=FR TREE
  - GM=GM TREE
  - LE=LEAFY TREE
  - LI=LIQUID TREE
  - W=WOODY
  - W=WOODY
  - N=NON-TREE
  - CA=CASCADING SAUREL
  - OR=ORANGE TREE
  - PA=PALE TREE
  - PH=PHOENIX TREE
  - PI=PISTACHIO TREE
  - SI=SILOAM TREE
  - TT=TEA TREE
- TYPE OF TREE  
 DIA. OF TRUNK (CM)  
 TRUNK SPREAD OF CANOPY (3.0M)  
 GROUP OF TREES
- GM-0203085  
**CODING FOR TREES**

**DTS**  
GROUP

**DEVELOPMENT CONSULTANTS  
TOWN PLANNING  
SURVEYING AND DRAFTING**

1st Floor 6 Heussler Tce  
MILTON QLD 4061  
PO BOX 361 PADDINGTON QLD 4064  
Telephone: (07) 3118 0600  
Fax: (07) 3118 0609  
Email: mail@dtsgroup.com.au

F.BOOK1395/007 L.BOOK  
F.WORK PCR DRAWN PCR  
DATE 30/06/09  
JOB No. A09146  
FILE A09146DT300609.ccx

DETAIL AND LEVEL SURVEY  
LOT 49 ON RP 26037  
15 ULLSWATER ST. VIRGINIA  
CLIENT: SPEEDY BINS Pty. Ltd

SCALE 1:500  
DRAWING NUMBER  
A1 S5238

## **APPENDIX B**

# **DEVELOPMENT PROPOSAL**

---

# 15 ULLSWATER ST

VIRGINIA



**1** EXISTING AERIAL PLAN  
1:500 @ A3

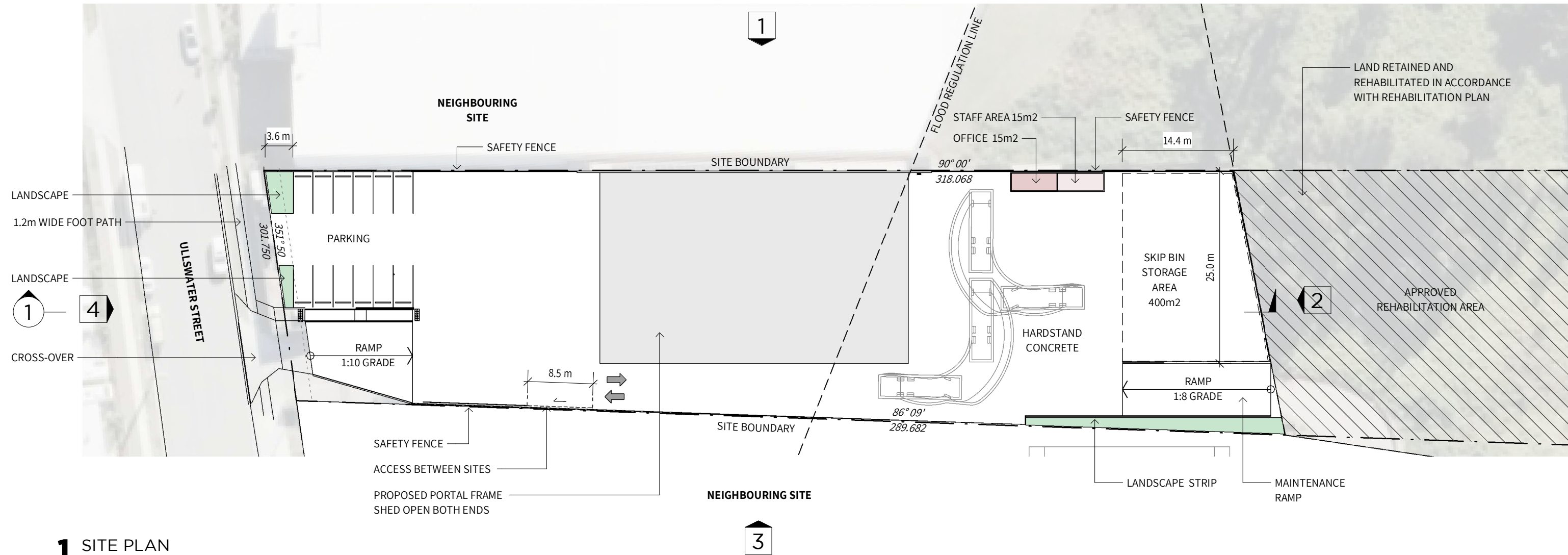
development data

LOT 49 ON RP26037  
15 ULLSWATER STREET  
VIRGINIA, QLD 4014

GFA AREAS	
SHED	990m <sup>2</sup>
OFFICE	15m <sup>2</sup>
TOTAL GFA	1005m <sup>2</sup>

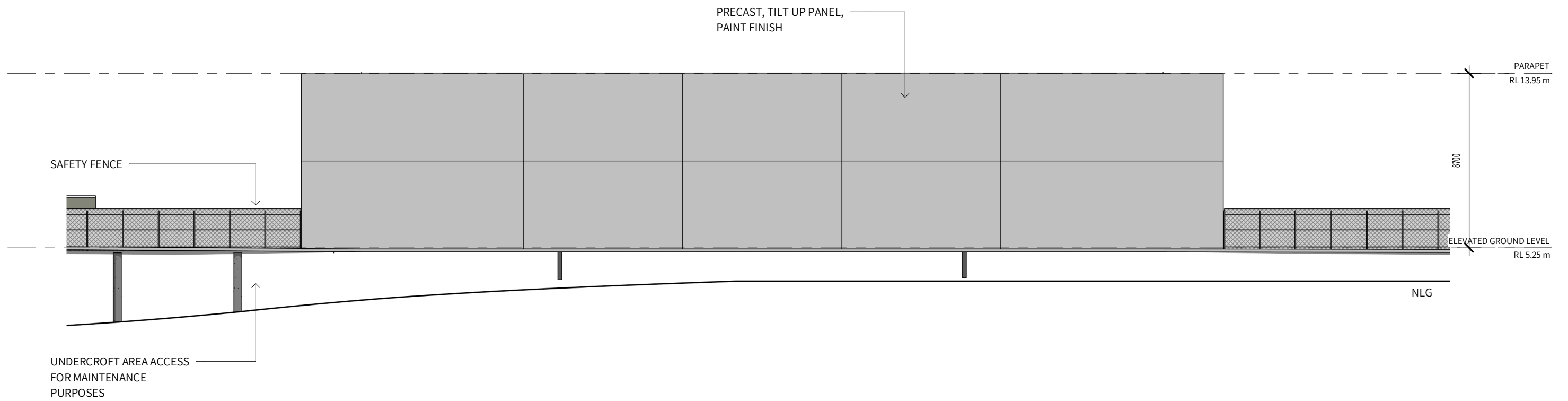
TOTAL SITE AREA 10,468m<sup>2</sup>  
LANDSCAPE AREA 76m<sup>2</sup>

CARPARKS PROVIDED 12

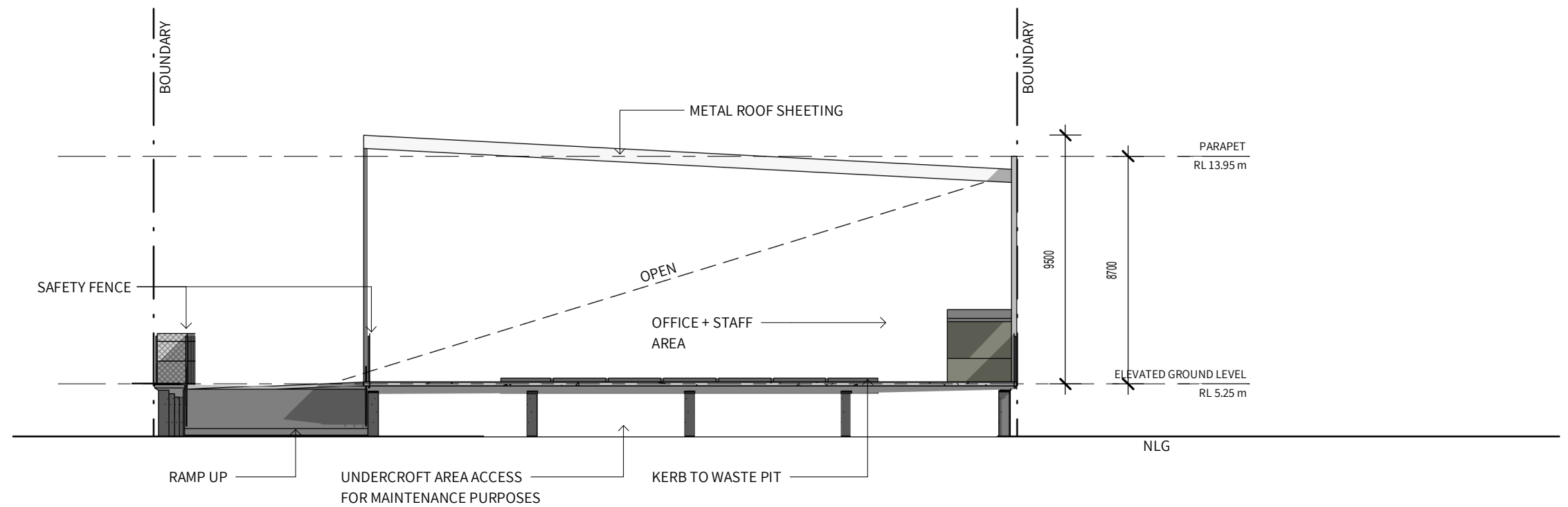


**1** SITE PLAN  
1: 500 @ A3

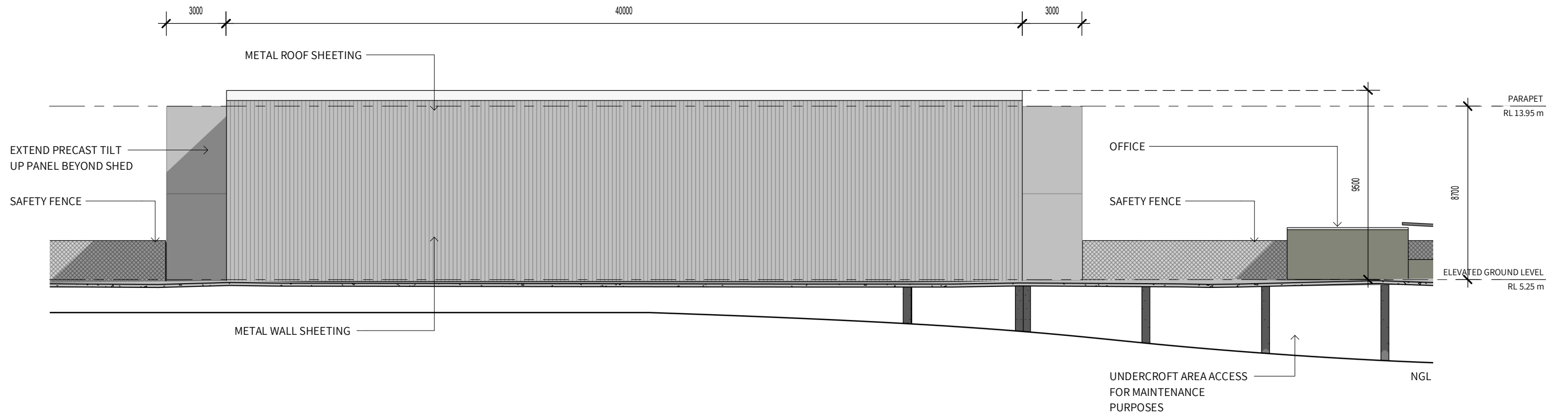




**1** NORTH ELEVATION  
1:200 @ A3

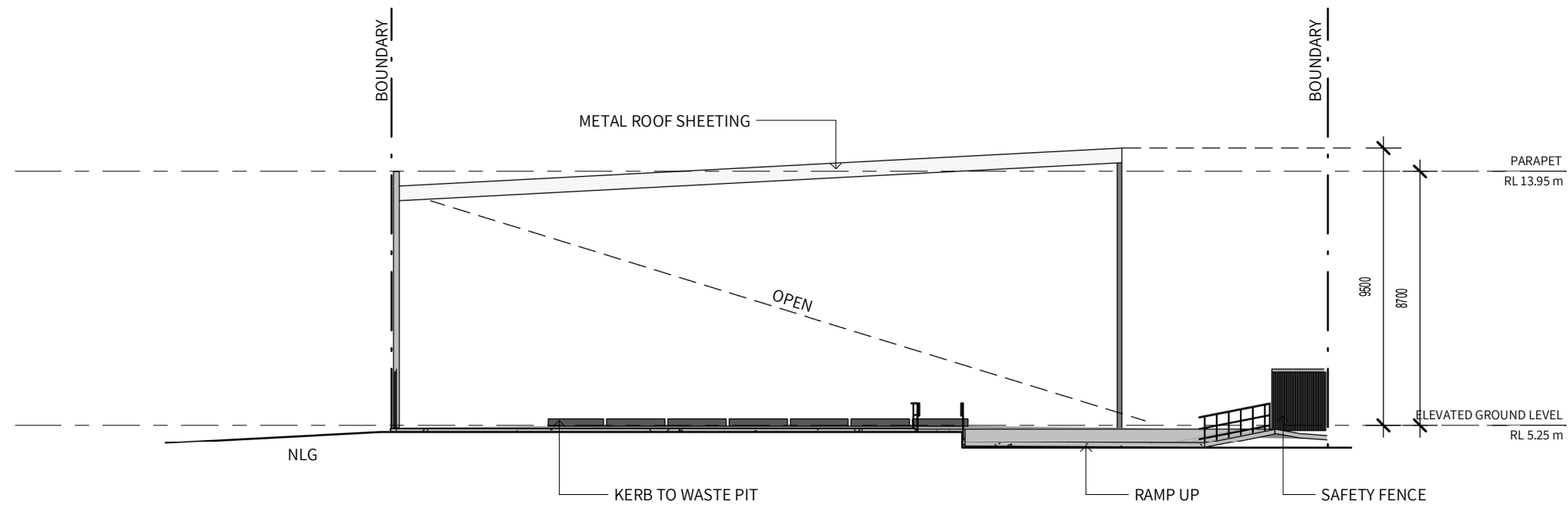


**2** EAST ELEVATION  
1:200 @ A3



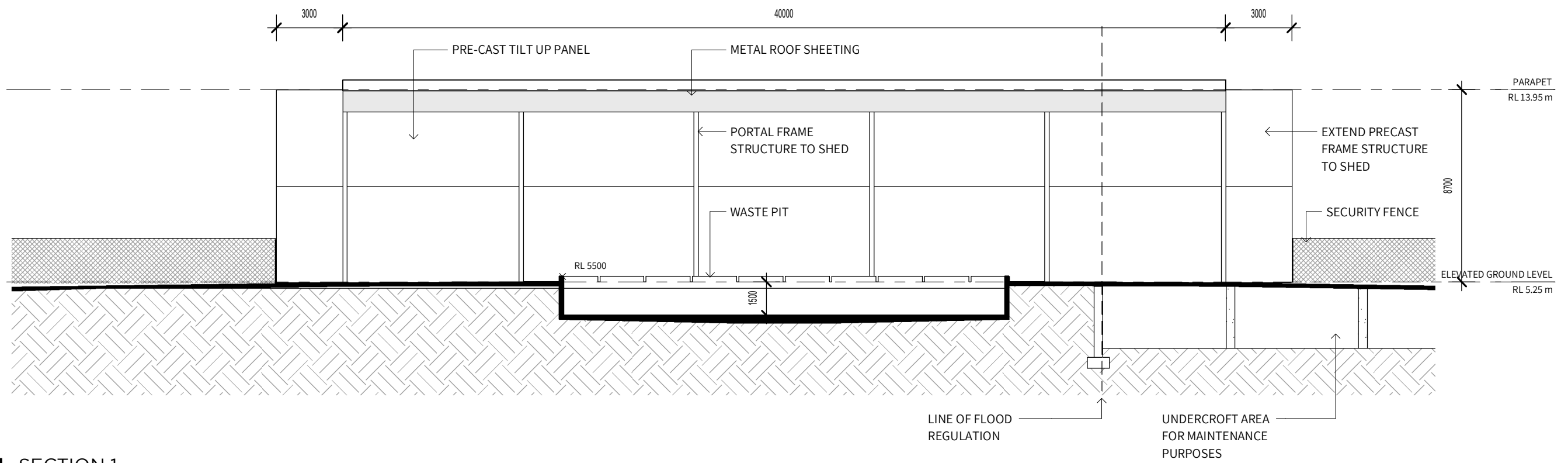
**3 SOUTH ELEVATION**

1:200 @ A3



**4 WEST ELEVATION**

1:200 @ A3



**1** SECTION 1  
1:200 @ A3

## **APPENDIX C**

### **CIVIL CONCEPT PLANS**

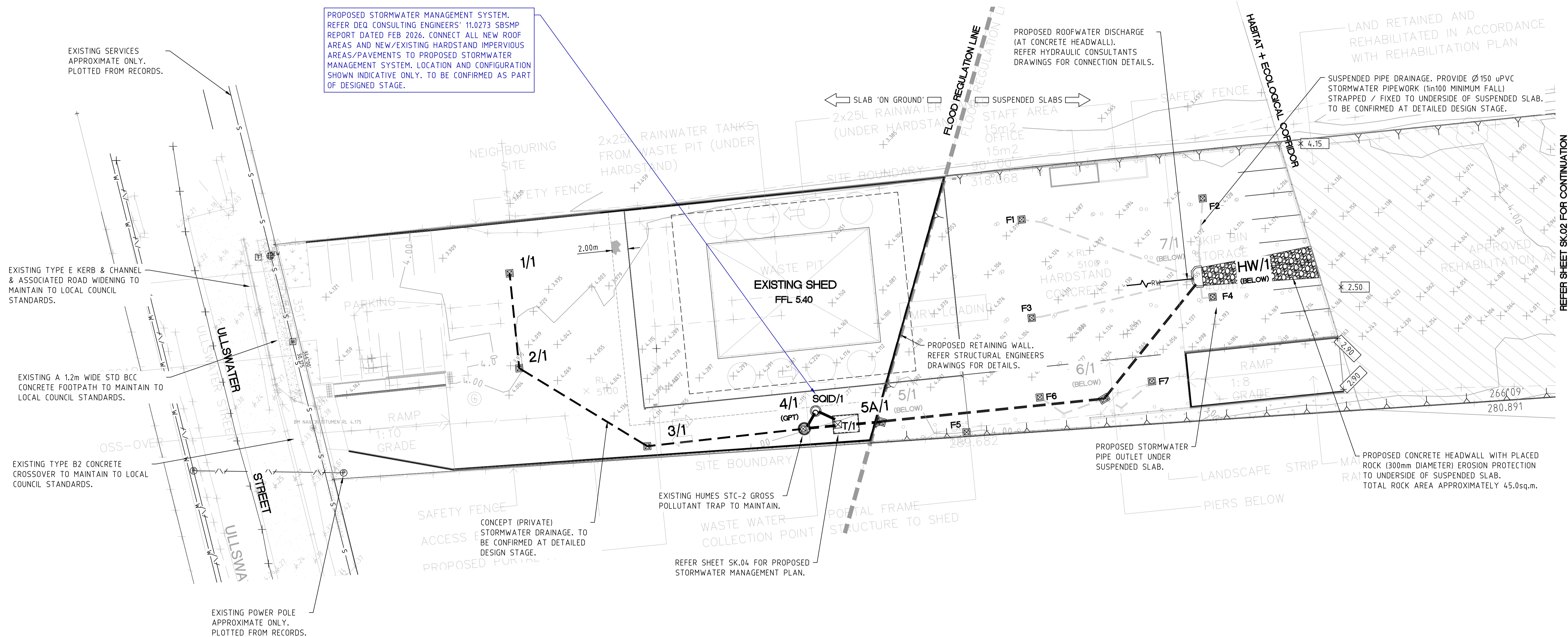
LEGEND - CONCEPT LAYOUT PLAN

PROPOSED	EXISTING

EXISTING SERVICES HAVE BEEN PLOTTED FROM RECORDS. CONTRACTOR TO LOCATE EXISTING SERVICES PRIOR TO STARTING WORKS AND ENSURE THAT THEY HAVE SUFFICIENT COVER TO NEW FINISHED SURFACE. SERVICES SHALL BE RELAID/LOWERED WHERE NECESSARY. REFER SERVICES AUTHORITY REQUIREMENTS.

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

PROPOSED STORMWATER MANAGEMENT SYSTEM. REFER DEQ CONSULTING ENGINEERS' 11.0273 SBSMP REPORT DATED FEB 2026. CONNECT ALL NEW ROOF AREAS AND NEW/EXISTING HARDSTAND IMPERVIOUS AREAS/PAVEMENTS TO PROPOSED STORMWATER MANAGEMENT SYSTEM. LOCATION AND CONFIGURATION SHOWN INDICATIVE ONLY. TO BE CONFIRMED AS PART OF DESIGNED STAGE.



EXISTING SERVICES APPROXIMATE ONLY. PLOTTED FROM RECORDS.

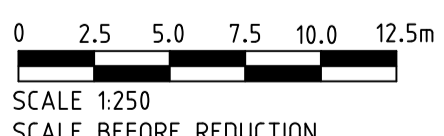
EXISTING TYPE E KERB & CHANNEL & ASSOCIATED ROAD WIDENING TO MAINTAIN TO LOCAL COUNCIL STANDARDS.

EXISTING A 1.2m WIDE STD BCC CONCRETE FOOTPATH TO MAINTAIN TO LOCAL COUNCIL STANDARDS.

EXISTING TYPE B2 CONCRETE CROSSOVER TO MAINTAIN TO LOCAL COUNCIL STANDARDS.

EXISTING POWER POLE APPROXIMATE ONLY. PLOTTED FROM RECORDS.

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DATE	EVENT	DETAIL	INITIAL	DATE	EVENT	DETAIL	INITIAL
16.03.26	P1	DA- MINOR CHANGE APP	MTN				

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

PROPOSED DEVELOPMENT  
 15 ULLSWATER STREET,  
 VIRGINIA  
 CLIENT: MICHAEL HOLLIDAY,  
 TRUSTEE FOR THE COLIANSO PROPERTY GROUP

CIVIL SITEWORKS  
 LAYOUT PLAN  
 SHEET 1 OF 2

SCALE AS SHOWN	DATE MAR 2026
CONTACT: RO	SHEET 1 OF 4
11.0273	SK.01
JOB No.	DRG. No.
CHECKED RO	DATUM : AHD

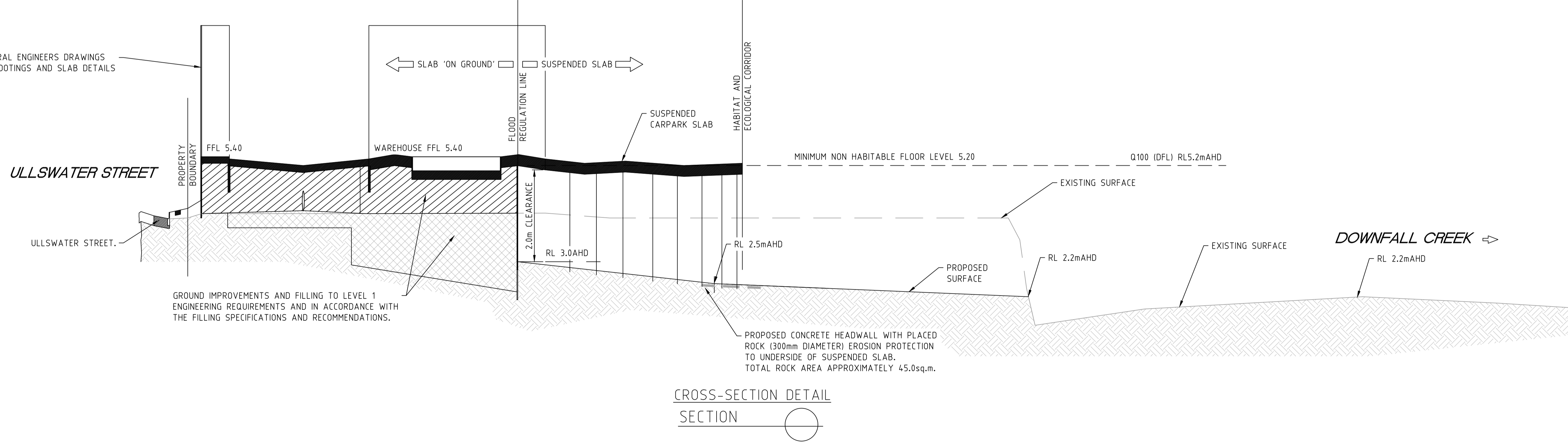
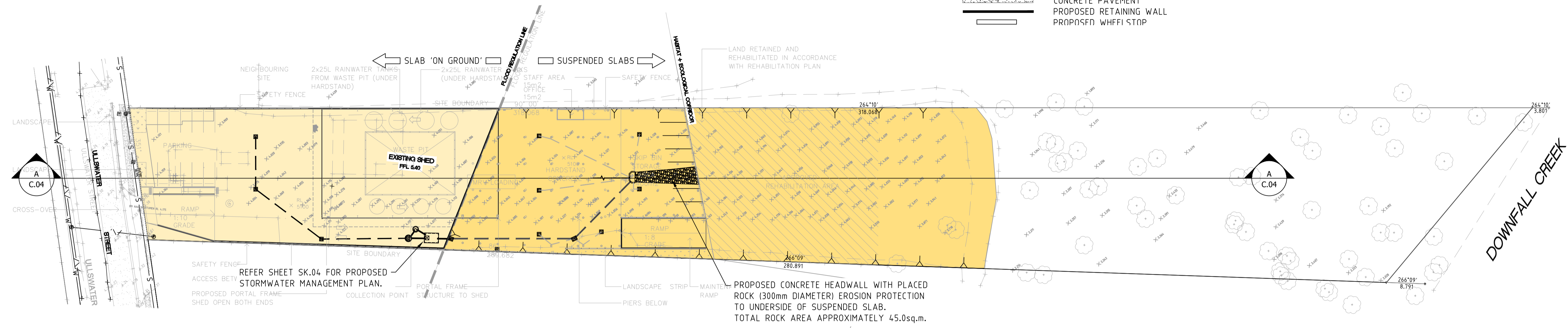
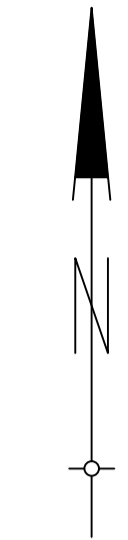
PRELIMINARY DRAWING ONLY NOT FOR CONSTRUCTION

REFER SHEET SK.02 FOR CONTINUATION



LEGEND - CONCEPT LAYOUT PLAN

PROPOSED	EXISTING



CROSS-SECTION DETAIL SECTION

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DATE	EVENT	DETAIL	INITIAL	DATE	EVENT	DETAIL	INITIAL
16.03.26	P1	DA- MINOR CHANGE APP	MTN				

**DEQ** DESIGN ENGINEERS QUEENSLAND  
 Consulting Engineers  
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 DEQ Consulting Pty Ltd t/a ABN 53 065 711 248 E: soiltesting@deq.com.au

PROPOSED DEVELOPMENT  
 15 ULLSWATER STREET,  
 VIRGINIA  
 CLIENT: MICHAEL HOLLIDAY,  
 TRUSTEE FOR THE COLIANSO PROPERTY GROUP

CIVIL SITEWORKS  
 CROSS-SECTION DETAIL

SCALE AS SHOWN	DATE MAR 2026
CONTACT: RO	SHEET 3 OF 4
11.0273	SK.03 P1
JOB No.	DRG. No. AMMT.
CHECKED RO	DATUM : AHD

**PRELIMINARY DRAWING ONLY NOT FOR CONSTRUCTION**



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.

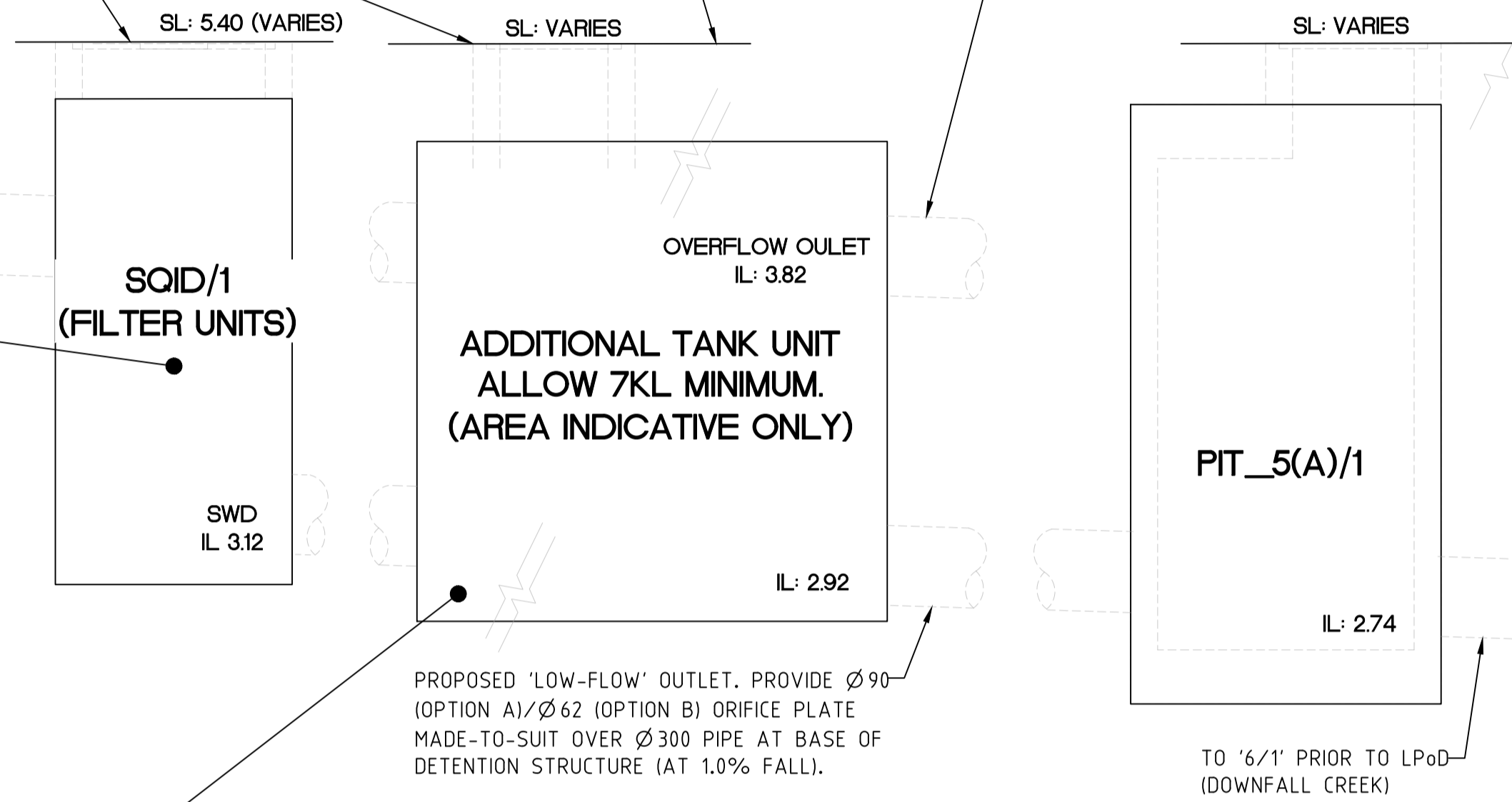
**INTERNAL PROPOSED LEVELS**

REFER ARCHITECT'S DRAWINGS FOR ALL PROPOSED STEPS, LEVELS, RAMP DETAILS, GRADES/FALLS, BUILDING AND CARPARK SETOUT & HYDRAULICS CONSULTANT'S DRAWINGS FOR INTERNAL STORMWATER DRAINAGE.

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 SURFACE (INDICATIVE ONLY)- STORMWATER MANAGEMENT STRUCTURE. LOCATION AND DETAILS INDICATIVE ONLY. REFER DETENTION NOTE THIS PAGE.

PROPOSED Ø300 PIPE HIGH LEVEL 'OVER-FLOW' OUTLET AT TOP OF DETENTION STRUCTURE (AT 1.0% FALL).



**SECTION THROUGH DETENTION TANK**

SCALE 1:20

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

**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.

**PROPOSED QUALITY MANAGEMENT NOTE:**

REFER SITE BASED STORMWATER MANAGEMENT PLAN BY DEQ CONSULTING ENGINEERS, REPORT JOB NUMBER: 11.0273 SBSMP, DATED MAR 2026 WITH THE REVIEW OF THIS PLAN.

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

**OPTION A:**

- 3 ATLAN STORMSACKS - STS.6060\_SQIDEP.
- 4 ATLAN FILTER (FIL-3.0) FULL HEIGHT\_SQIDEP

**OPTION B:**

- MIN. 4 OCEANGUARDS - OG-200\_SQIDEP.
- 5 TALL (690) NP PSORB STORMFILTER\_SQIDEP

\*\*PROPOSED STORMWATER TREATMENT SYSTEM TO BE PROTECTED DURING A FLOOD EVENT OR ELEVATED HIGH FLOWS ALONG WATERWAY CORRIDOR (REFER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS, SUCH AS BACK FLOW DEVICE OR APPROVED EQUIVALENT.)

**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.

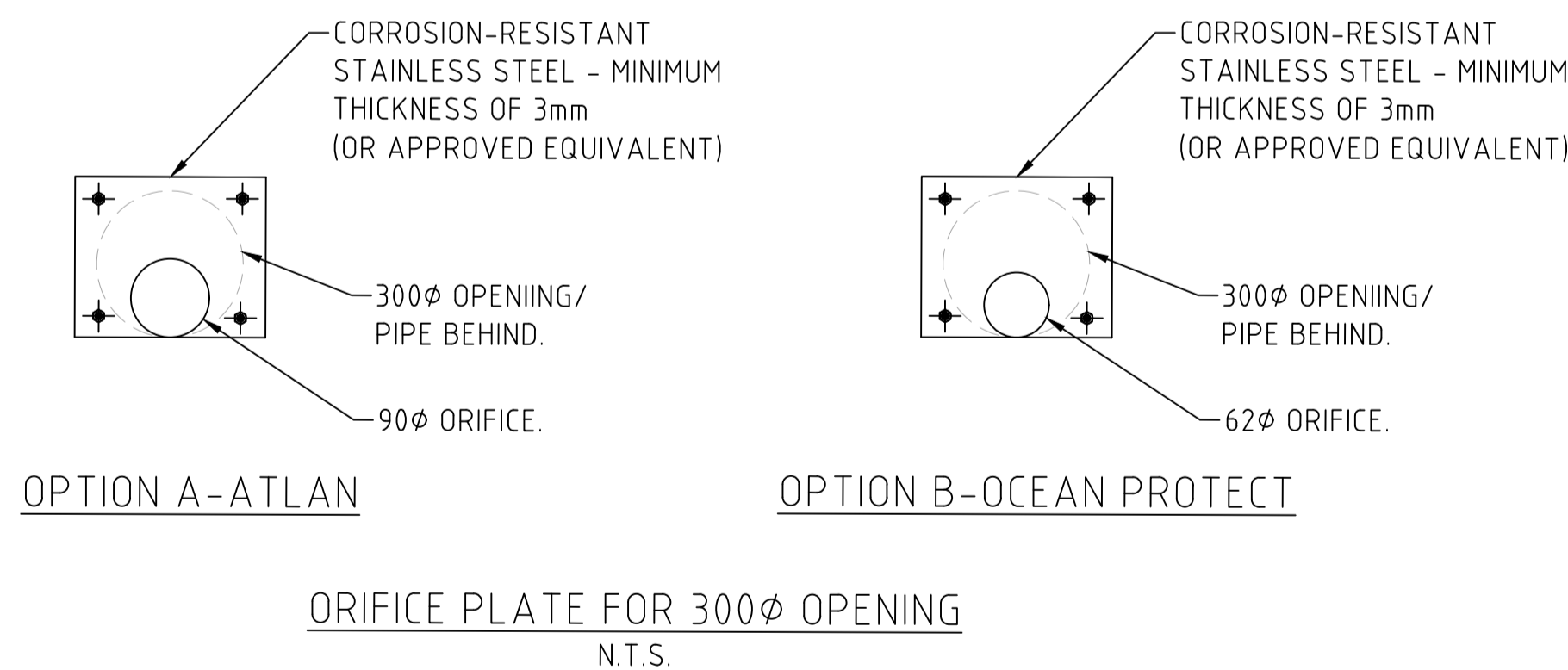
PROPRIETARY DETENTION STRUCTURE/S SHALL ACHIEVE A MINIMUM TOTAL SIZE OF 7.0 CUBIC METERS (7.0kL) AND AND SATISFY THE REQUIREMENTS OF COUNCILS STORMWATER MANAGEMENT REQUIREMENTS.

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

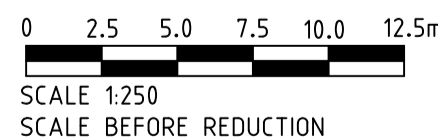
- "AUSTRALIAN TANKS" UNDERGROUND PRE-CAST CONCRETE TANK SYSTEMS
- "CHAMBERMAXX" UNDERGROUND PROPRIETARY UNITS
- CAST INSITU STRUCTURE - STRUCTURAL RPEQ ENGINEERED TANK DESIGN (E.G. CONCRETE BLOCK AND BONDEK SLAB OR APPROVED EQUIVALENT)

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).



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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DATE	EVENT	DETAIL	INITIAL	DATE	EVENT	DETAIL	INITIAL
16.03.26	P1	DA- MINOR CHANGE APP	MTN				

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 Consulting Engineers  
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 F: (07) 3367 0205  
 W: www.deq.com.au  
 E: structural@deq.com.au  
 E: civil@deq.com.au

PROPOSED DEVELOPMENT  
 15 ULLSWATER STREET,  
 VIRGINIA

CLIENT: MICHAEL HOLLIDAY,  
 TRUSTEE FOR THE COLIANSO PROPERTY GROUP

CIVIL SITEWORKS  
 CONCEPT STORMWATER  
 MANAGEMENT PLAN

**PRELIMINARY DRAWING ONLY NOT FOR CONSTRUCTION**

SCALE AS SHOWN	DATE MAR 2026
CONTACT: RO	SHEET 4 OF 4
11.0273	SK.04
JOB No.	DRG. No.
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 F

# STORMWATER QUALITY MANAGEMENT

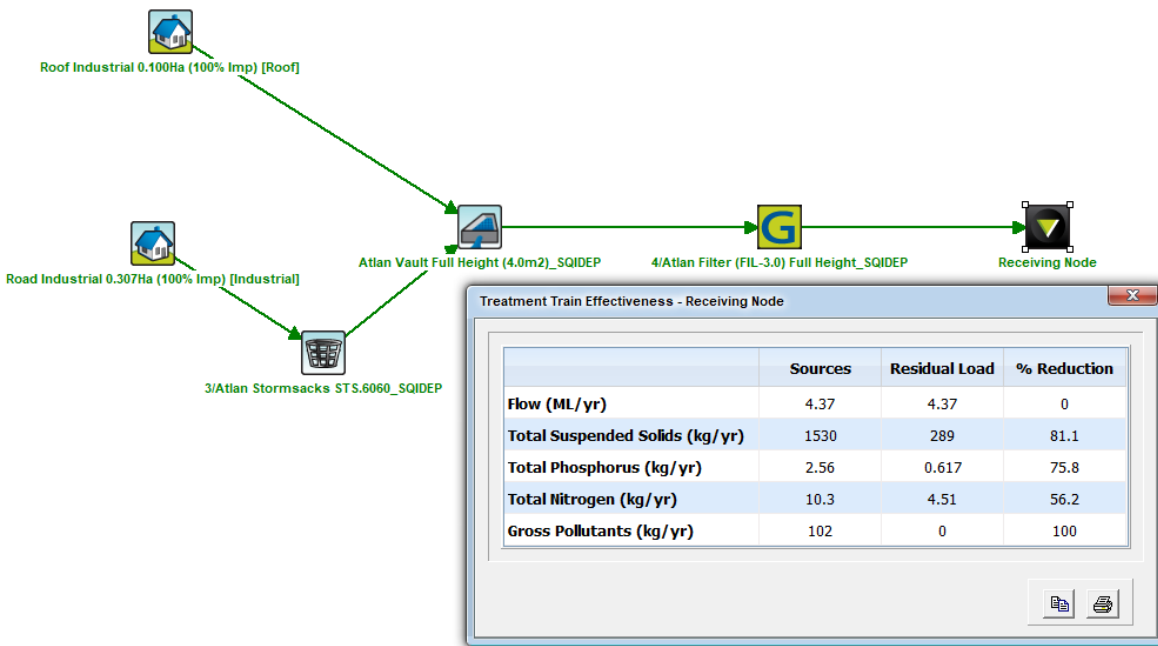
# STORMWATER QUALITY MANAGEMENT MUSIC MODELLING DATA

## 1. Rainfall Parameters

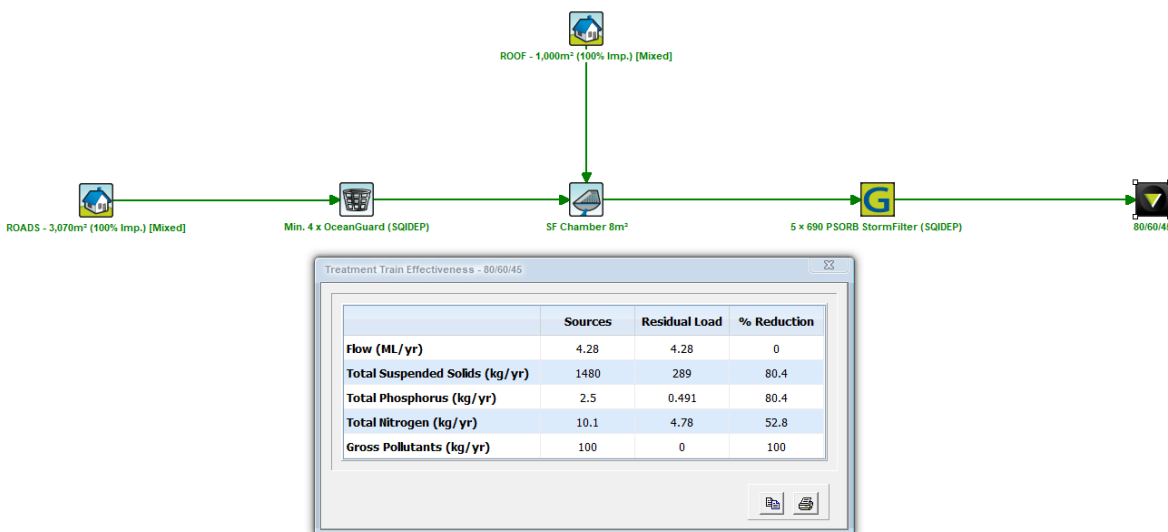
- Meteorological Data – Local Rainfall Station  
1980 To 1989
- Evaporation Data – Monthly PET
- Modelling Step – 6 minutes

## 2. Developed Site

### 2.1. Option A (ATLAN)



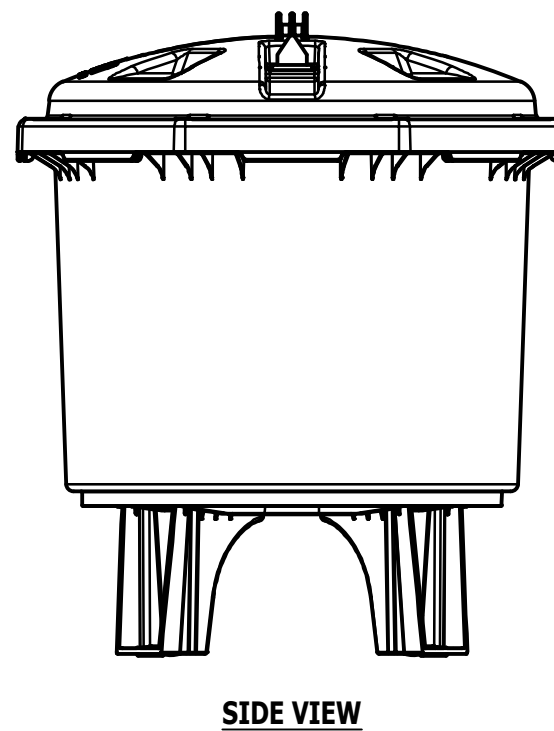
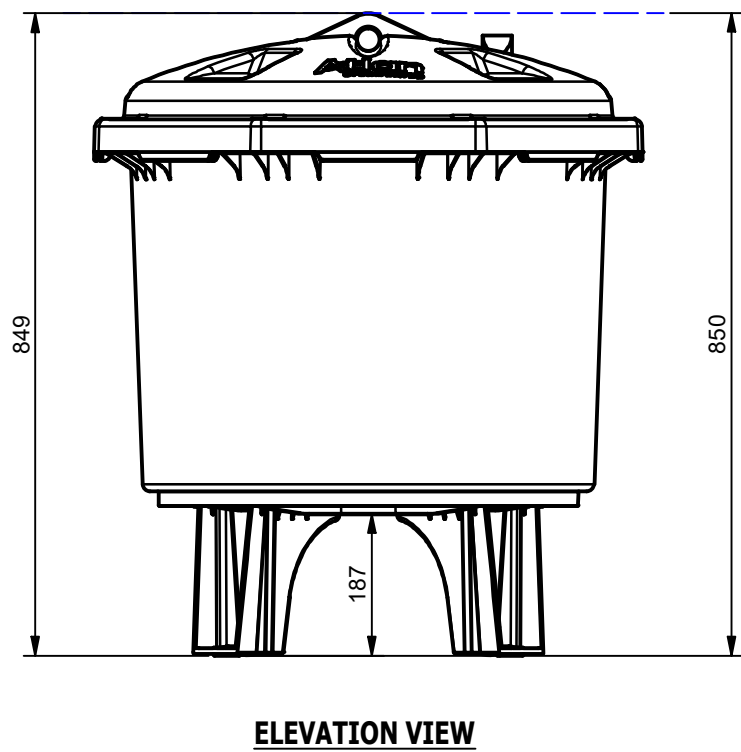
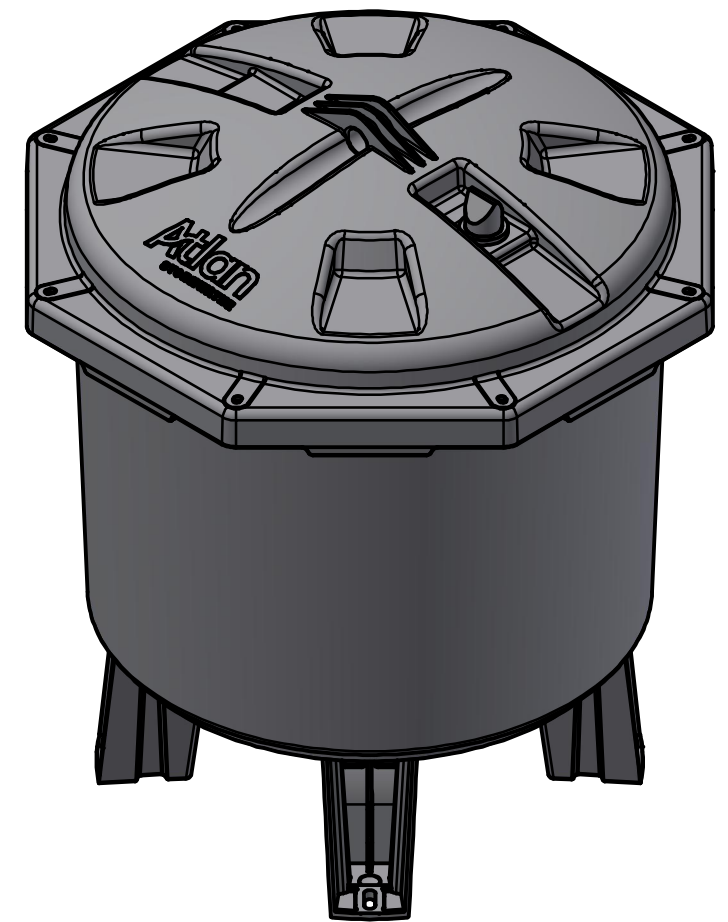
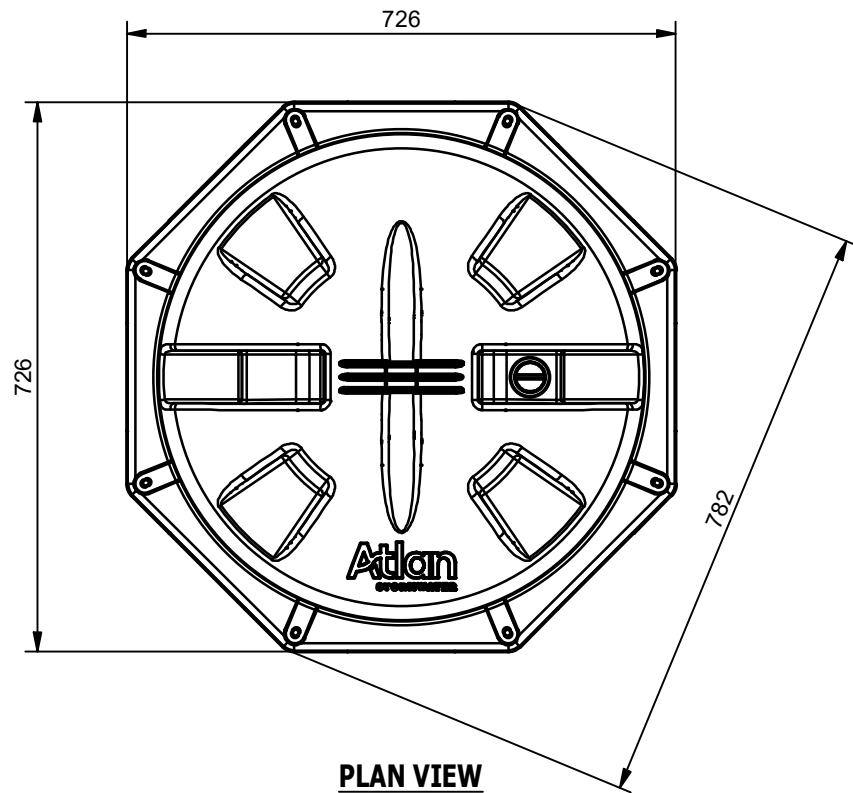
### 2.2. Option B (OCEANPROTECT)



### **3. SUPPORTING DOCUMENTATION**

#### **3.1. Option A - ATLAN**

# ATLAN FILTER - FIL-3.0 STANDARD HEIGHT



**ISSUED FOR CONSTRUCTION**

TOLERANCE: All Dimensions to Closest 10 mm & +/- 30 mm

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

CLIENT:

CONFIDENTIAL - The drawings must not be disclosed to any third parties without written permission from ATLAN STORMWATER. Unauthorized disclosure may result in prosecution.  
 © ATLAN STORMWATER - This drawing is the property of ATLAN STORMWATER ABN: 83 151 832 629 and is subject to return on demand. It is submitted for the use only in connection with the proposal and contracts of ATLAN STORMWATER with the expressed conditions that it is not to be reproduced or copied in any form. This data must only be used in accordance with our standard terms and conditions.  
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Drawn P.Z.	Date 27/01/2025
Check	Date
Verified	Date
Approved	Date
Request No.	



PROJECT :

TITLE  
ATLAN FILTER  
FIL-3.0

SCALE N.T.S	SIZE A3	SHEET 1	REV
CUSTOMER CODE : FIL-3.0		DWG No.	

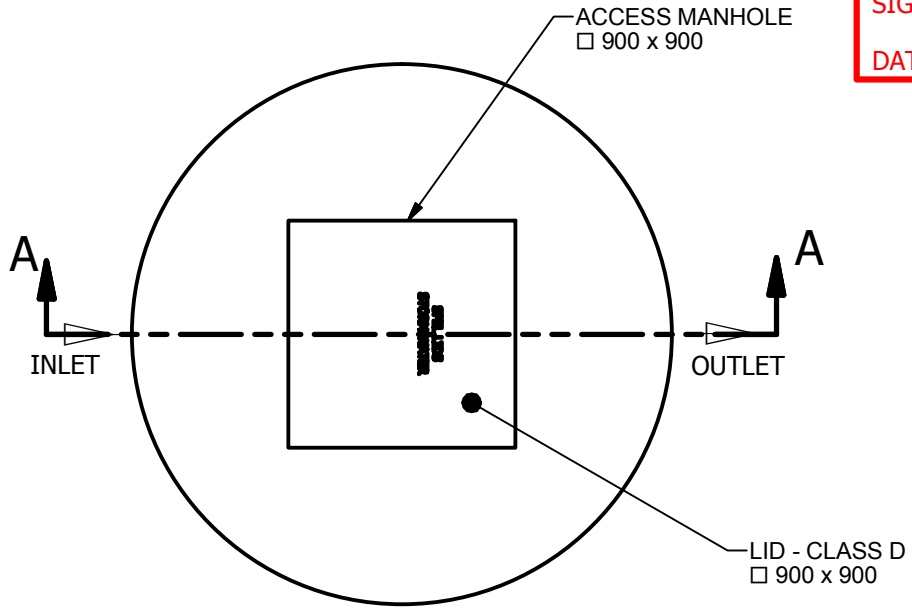
27/01/2025	P.Z.	INITIAL RELEASE	
REV	DATE	BY	DESCRIPTION
		CHK	

**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:	

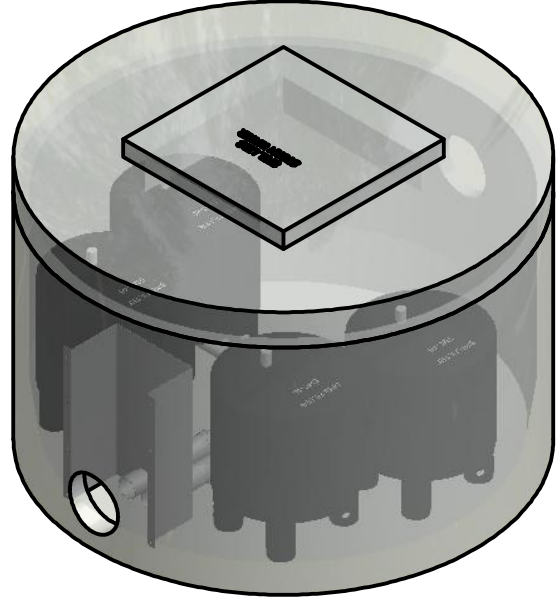
REVISION HISTORY				
REV	DESCRIPTION	BY	DATE	CHECKED BY
1	INITIAL RELEASE	P.Z.	26/03/2018	



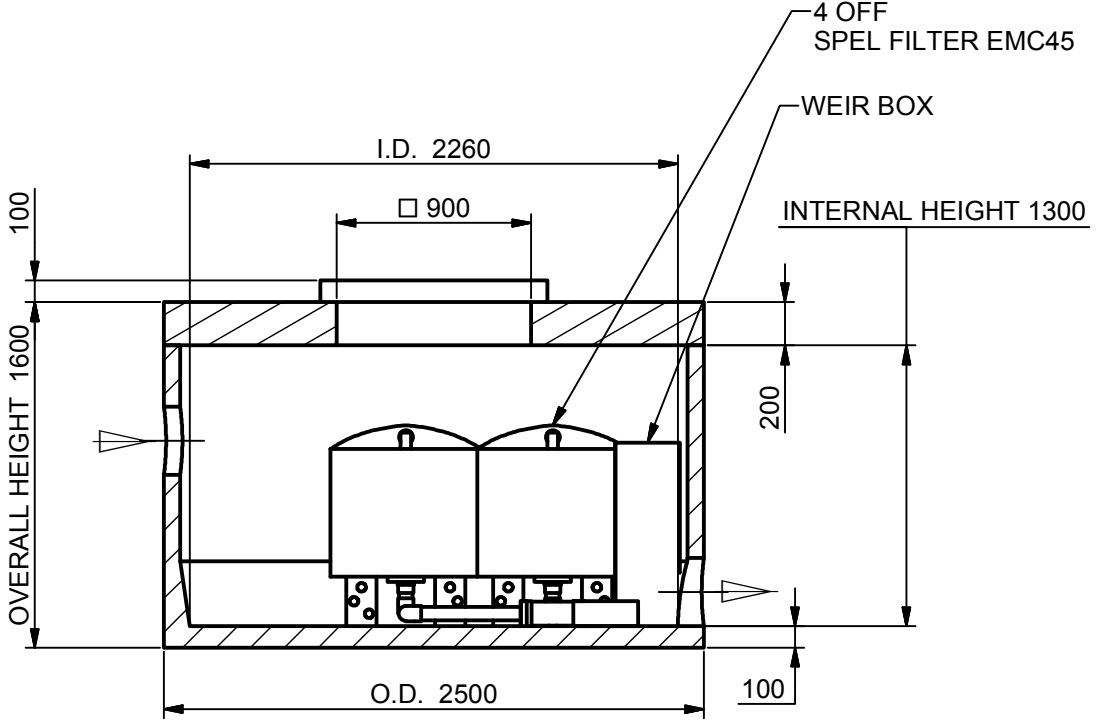
**PLAN VIEW**

TANK WEIGHTS	
TANK	LID
3.5 t	2.4 t

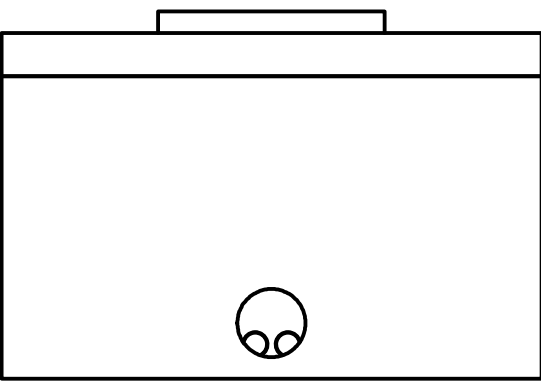
NOTE:  
LIFTING WEIGHTS MAY VARY  
DEPENDING ON CUSTOM DESIGN



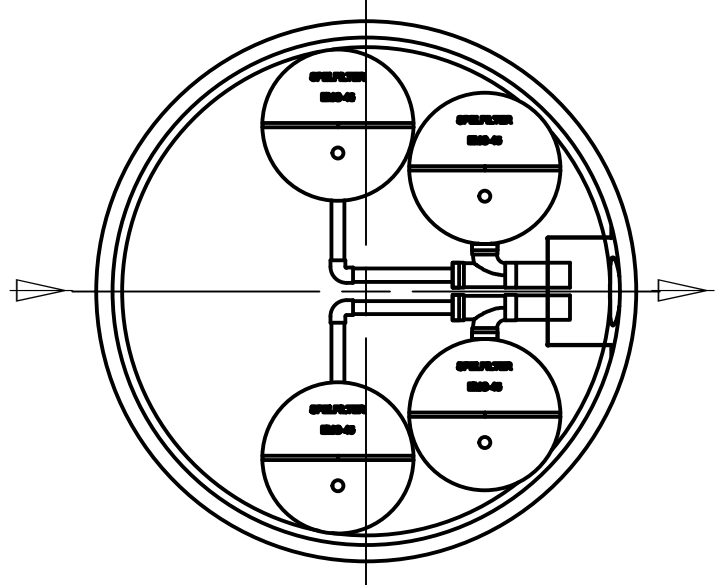
**ISOMETRIC VIEW**



**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

PROJECT:  
TITLE: SPEL PRECAST TANK  
5.2 kL CLASS D  
SF.226D/04-29.CON.300  
4 SPEL FILTER CARTRIDGES

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

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 SF18-SF10750-P.dwg

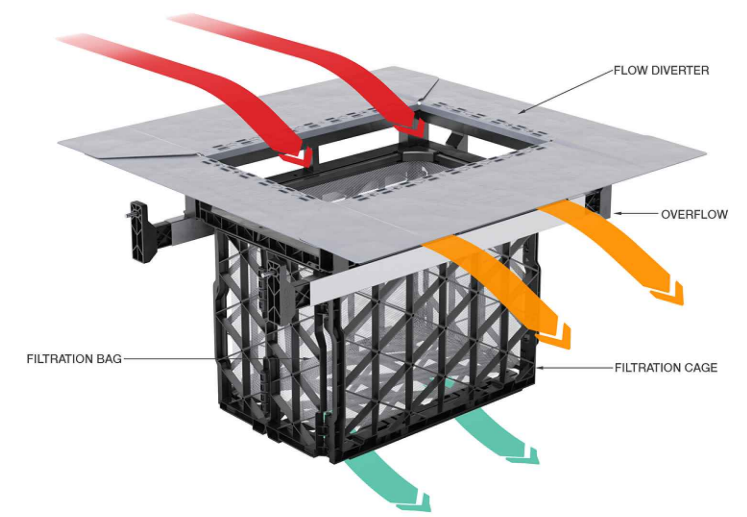
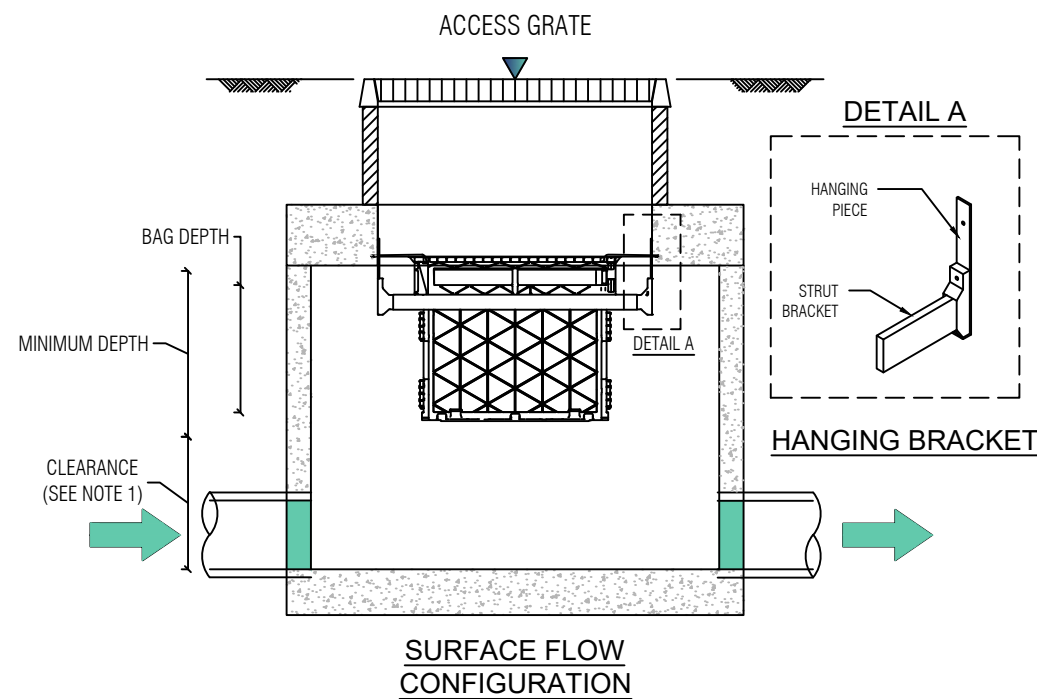
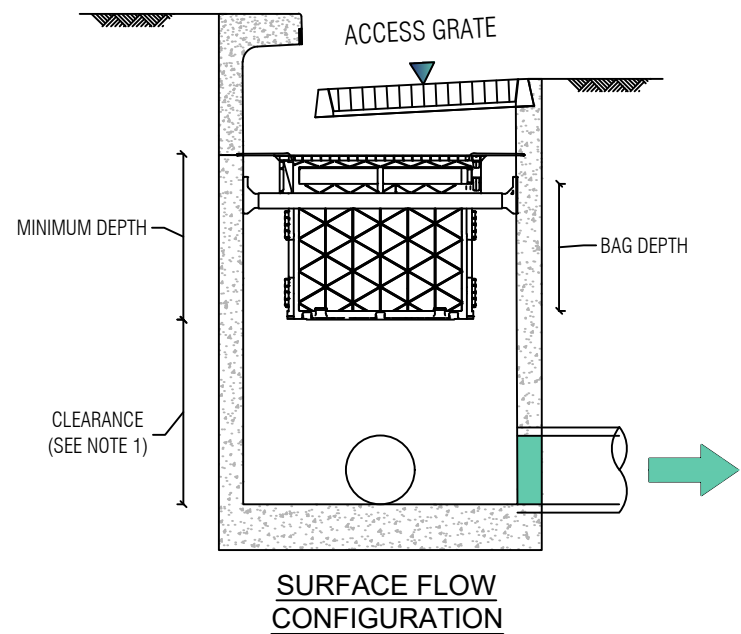
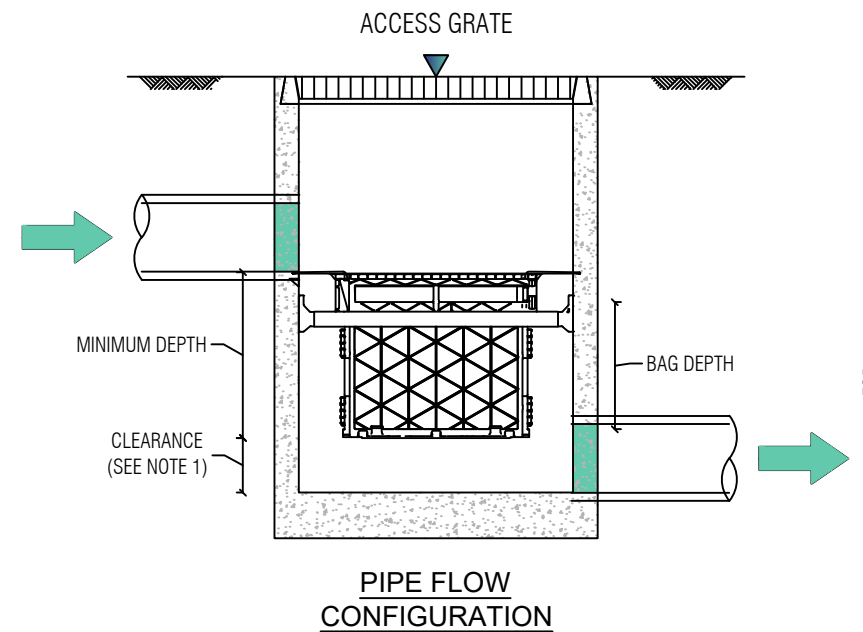
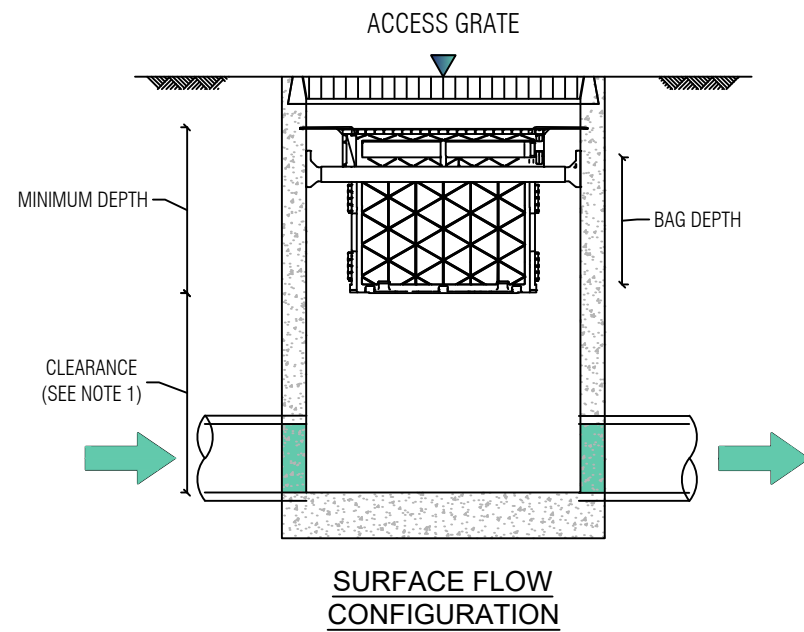
### 3.2. Option B - OCEANPROTECT

## APPENDIX E

# STORMWATER DRAINAGE NETWORK MAINTENANCE CHECKLIST

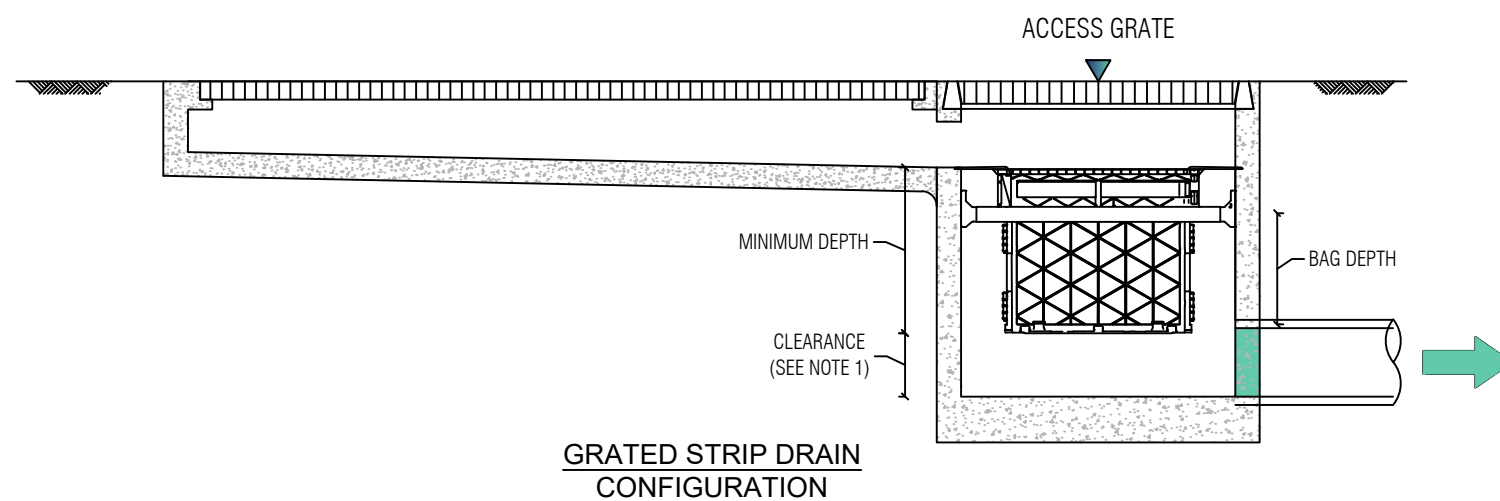
# OCEANGUARD - STANDARD

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

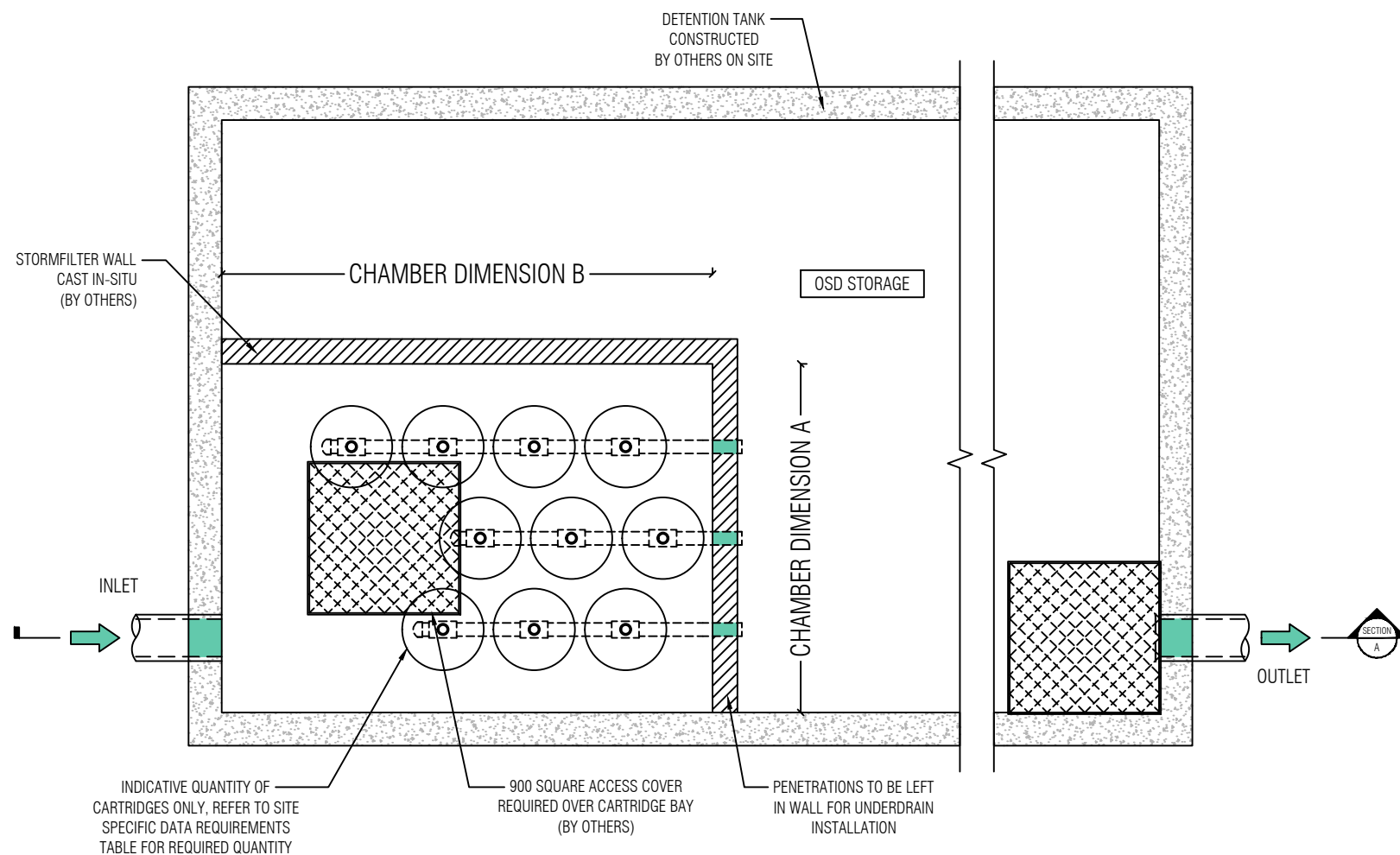
- CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
- OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:
  - 200 MICRON BAGS FOR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



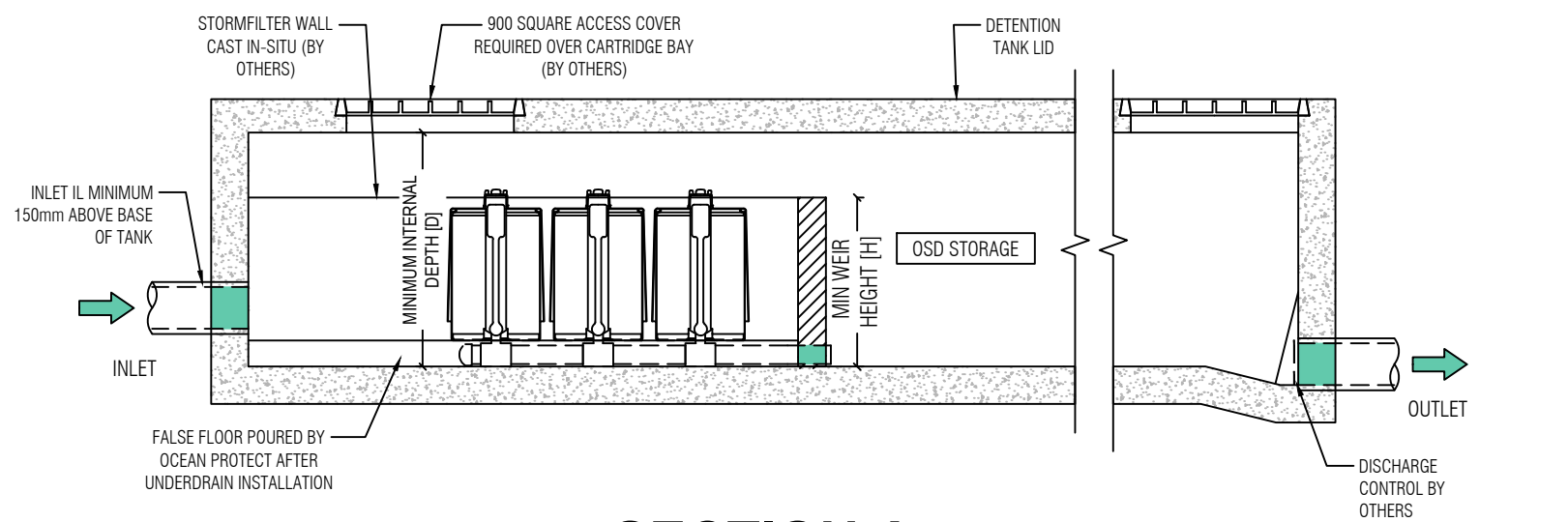
PHONE: 1300 354 722

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OCEAN PROTECT  
OCEANGUARD  
TYPICAL ARRANGEMENTS  
SPECIFICATION DRAWING



**PLAN LAYOUT**



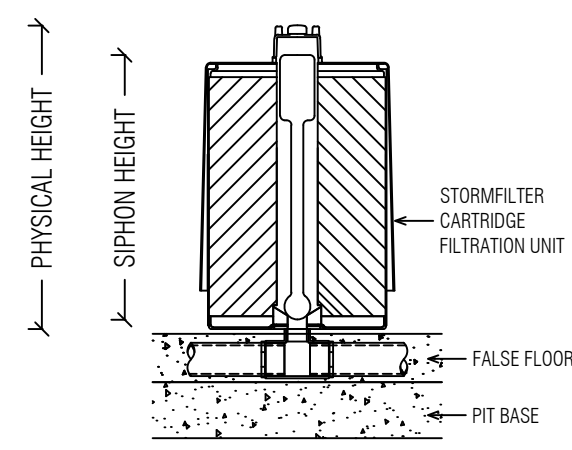
**SECTION A**

**STORMFILTER DESIGN TABLE**

- 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.

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
MINIMUM WEIR HEIGHT* [H] (mm)	910	690	540
MINIMUM INTERNAL DEPTH* [D] (mm)	1050	850	850
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39

\* MINIMUM WEIR HEIGHT MAY BE REDUCED IN CERTAIN CIRCUMSTANCES. CONTACT OCEAN PROTECT FOR MORE INFORMATION.



**STORMFILTER CARTRIDGE DETAIL**

**SITE SPECIFIC DATA REQUIREMENTS**

STRUCTURE ID	
NUMBER OF CARTRIDGES REQ'D	
SIPHON HEIGHT (310 / 460 / 690)	
MEDIA TYPE (ZPG / PSORB)	
WATER QUALITY FLOW RATE (L/S)	
DIMENSION A	
DIMENSION B	
TOTAL CARTRIDGE BAY AREA (A x B) TO MATCH AREA REQUIRED BY MUSIC MODELLING OR COUNCIL SPECIFIC REQUIREMENTS	

**GENERAL NOTES**

1. INLET AND OUTLET PIPES TO BE IN ACCORDANCE WITH APPROVED PLANS.
2. A HIGH FLOW BYPASS ARRANGEMENT OR DISSIPATION STRUCTURE MAY BE REQUIRED TO MINIMISE RE-SUSPENSION OF SOLIDS OR ANY SIGNIFICANT INERTIAL FORCES ON THE CARTRIDGES.
3. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
4. SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
5. THE INVERT LEVEL OF THE INLET PIPE MUST BE GREATER THAN THE RL OF THE FALSE FLOOR WITHIN THE CARTRIDGE CHAMBER.
6. CONCRETE STRUCTURE AND ACCESS COVERS DESIGNED AND PROVIDED BY OTHERS. ACCESS COVERS TO BE A MINIMUM 900 X 900 ABOVE CARTRIDGES. OH&S REGARDING ACCESS COVERS AND TANK ACCESS TO BE ASSESSED BY OTHERS ON SITE.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES.
8. DRAWINGS NOT TO SCALE.

**INSTALLATION NOTES**

1. UNDERDRAIN AND FALSE FLOOR INSTALLED BY OCEAN PROTECT.



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OCEAN PROTECT  
STORMFILTER SYSTEM  
DETENTION TANK ARRANGEMENT  
SPECIFICATION DRAWING

STORMWATER DRAINAGE NETWORK MAINTENANCE CHECKLIST			
<b>INSPECTION FREQUENCY:</b>	1 to 6 monthly		<b>DATE OF VISIT:</b>
<b>LOCATION:</b>		<b>DESCRIPTION:</b>	
<b>SITE VISIT BY:</b>			
<b>INSPECTION ITEMS:</b>	<b>Y</b>	<b>N</b>	<b>ACTION REQUIRED / NOTES:</b>
<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 manufacurers recommendations and specifcations.
<i>Surface free draining?</i>			
<i>Resetting of system required?</i>			
<b>COMMENTS</b>			