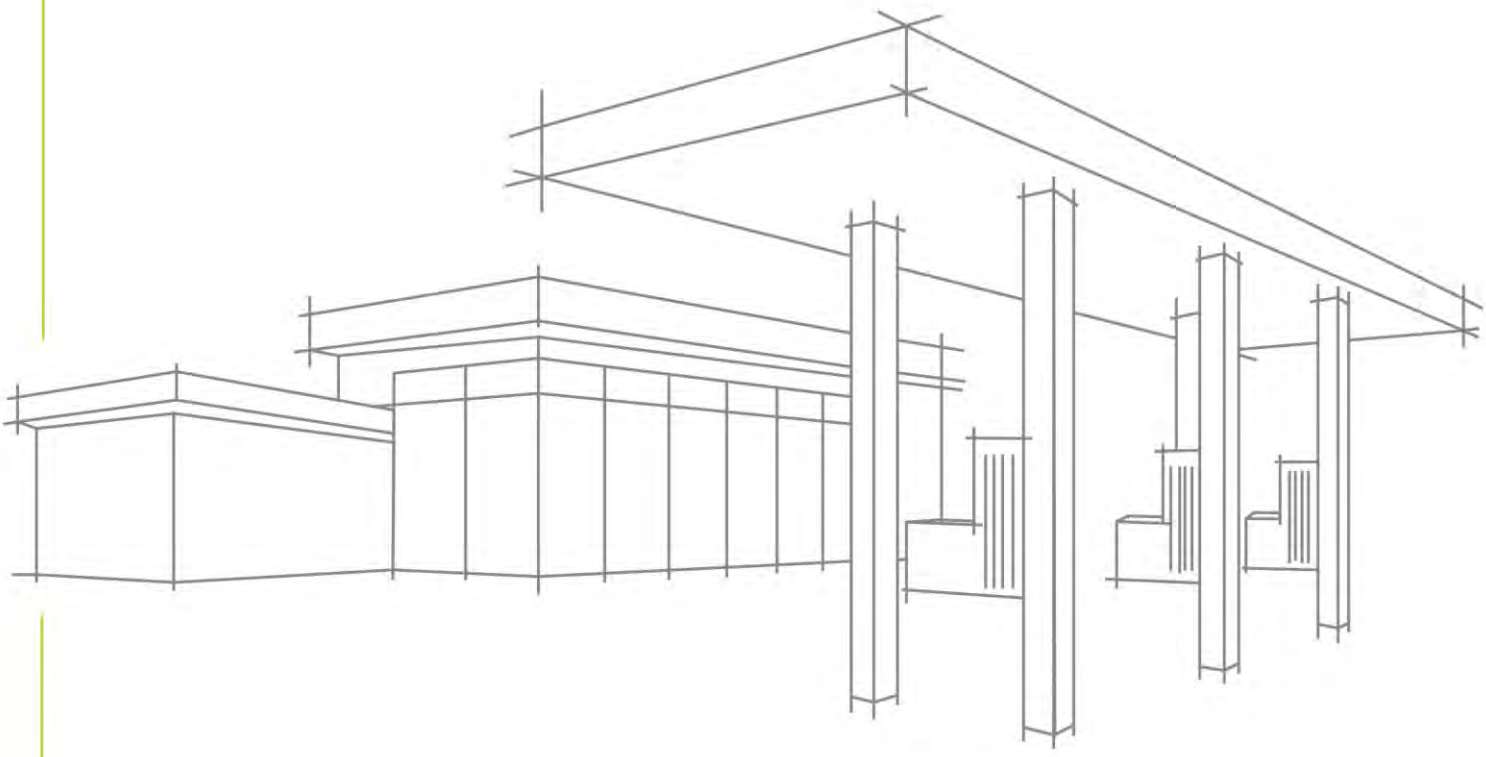
SITE BASED STORMWATER QUALITY MANAGEMENT PLAN

PORT ACCESS - CLEVELAND BAY



TFA Project Group

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SITE BASED STORMWATER QUALITY MANAGEMENT PLAN

Port Access – Cleveland Bay

CLIENT: Port Access Pty Ltd

ADDRESS:

TFA REFERENCE: 23043

TFA CONTACT: Juan Avella

Document Control

REVISION	DATE	PREPARED BY	REVIEWED BY	COMMENTS
A	10 August 2023	P. Manickam	J. Avella	Approval
B	15 November 2023	P. Manickam	J. Avella	Approval
C	04 October 2024	B. Masuku	J. Avella	Approval

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1.0 INTRODUCTION

This Site Based Stormwater Management Plan (SBSMP) report has been prepared by TFA Project Group on behalf of Port Access Pty Ltd (the applicant) for the proposed Port Access Facility at Cleveland Bay Industrial Park, Townsville QLD 4811. The purpose of this document is to verify that stormwater quantity and quality have been considered as part of this development and do not have any adverse impact on the downstream environment as outlined in the State Planning Policy July 2017, the Townsville City Plan and Queensland Urban Drainage Manual 2016.

The proposed development will be constructed in two stages. The first stage will include a truck refuelling facility, an office building and car parking areas. The second stage will feature an oil shed and warehouse, a Dangerous Goods (DG) store, a fabric of fuel tanks/workshop parts store, a truck workshop and washbay along with dedicated truck parking areas and associated driveways, walkways, and landscape areas.

The SBSMP is part of the Development Approval process and addresses both the construction and operational phases of the development. Table 1 below shows additional details of the proposed development. The proposed site layout plan is shown in **Appendix A**.

Table 1: Details of Proposed Development

Developer	Port Access Pty Ltd
Address	1 Colinta Road, Cleveland Bay Industrial Park, Townsville, QLD 4811
Property Description	Lot 21 on SP341874
Area of Development	Total Site Area: 30,000 m² Stage 1 Development Area 9,416 m² Stage 2 Development Area 20,584 m²
Stormwater Risk Classification	High Risk (due to the storage and transfer on site of petroleum products that have the potential to cause harm to the environment, if released)
Existing Land Use	Vacant Land

2.0 THE SITE

2.1 Site Description

The development site is located at 1 Colinta Road, Cleveland Bay Industrial Park, Townsville QLD 4811 within the Townsville City Council area, on Lot 21 SP315832. Currently, the entire site consist of vacant land, characterised by a regular shape containing a total area of approximately 30,000 m^2. The site development is bound by Heleen Downs Road on the southern boundary and Colinta Road on the eastern boundary, both of which provide access points for the site.

A geotechnical investigation will be completed to determine soil type and any specific treatment or management requirements to mitigate erosion or pollution of the environment will be undertaken, if necessary, prior to the commencement of works. The location of the site is shown on Figure 1.

Figure 1: Location of the proposed development site (Source: Queensland Globe)

3.0 SITE TOPOGRAPHY AND EXISTING DRAINAGE

3.1 Description of the Site Current Condition

Refer to **Appendix B** for the lot plans provided by Rowlands Survey dated 23/06/2023, which show the parcels of land in the area, with contour levels of the final surface. The existing site and surrounding future development area were regraded to ensure positive drainage towards roadways and/or drainage reserves and ensure allotments will be built above the defined Q100 flood levels. The proposed development site has surface levels approximately between RL 5.81m AHD to RL 7.18m AHD. The ground generally falls from south to north.

The survey plan indicates that there is a stormwater easement located within the site along the eastern boundary, providing two discharge points connected by a drainage pipe that facilitates drainage from midway along the boundary to the north-east corner of the site. Consequently, it is assumed that runoff generated from the site is captured and conveyed towards the two discharge points.

4.0 FLOODING

4.1 Flooding Information

Based on the Townsville City Council flood mapping, a portion of the development would be subject to flooding. Cleveland Bay Industrial Park Pty Ltd, provided the following works to minimise flooding in the development site:

- Filling works of the development site to be above the defined Q100 flood level
- Channel improvements works to compensate for the loss of floodplain storage (due to filling works) and drain runoff into Stuart Creek more efficiently.

An extract of the overlay map is shown in Figure 2 indicating the extent of flooding events near the site and **Appendix B** demonstrates proposed works to avoid the Q100 flood event.

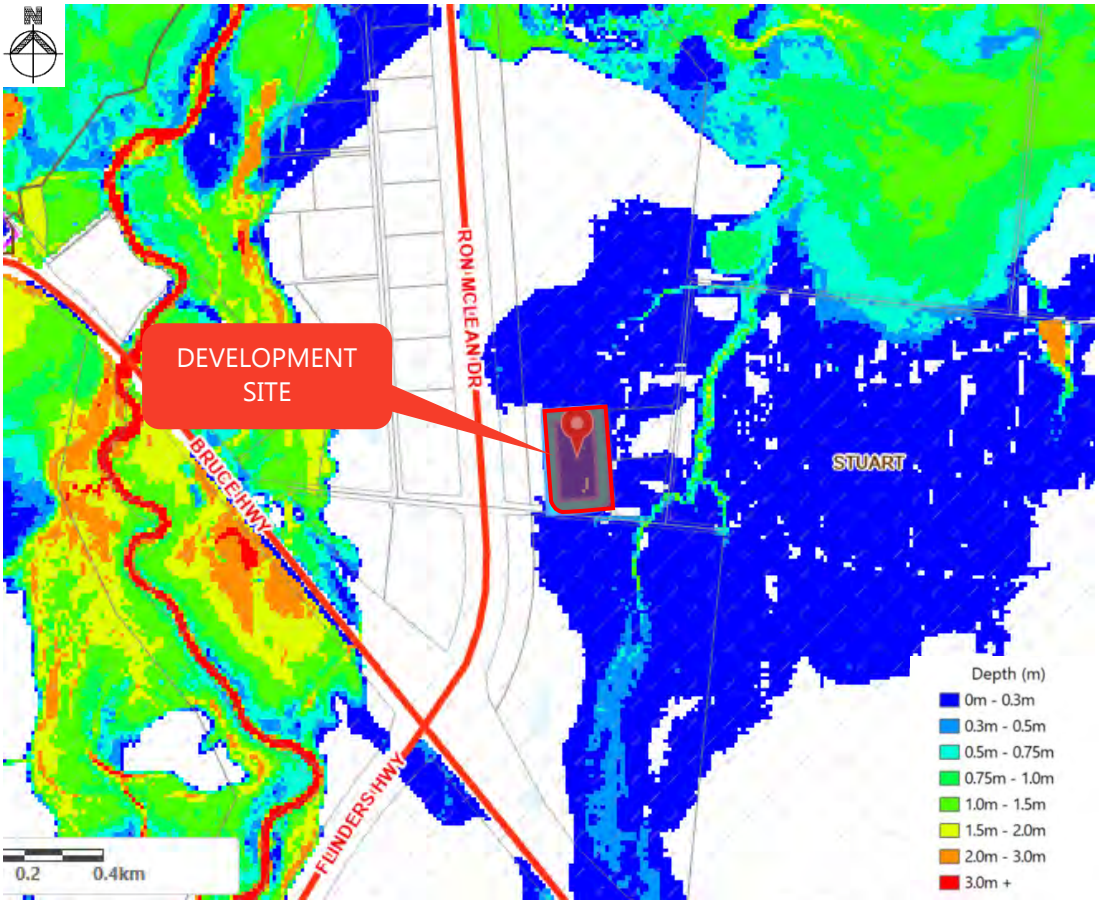


Figure 2: Development Flooding Information - 1% AEP Flood Depths (Source: TownsvilleMAPS)

5.0 PROPOSED DRAINAGE LAYOUT

5.1 Proposed Drainage

The post development stormwater drainage design generally maintains the overall catchment boundaries. The approach to stormwater management is based on isolating high-risk areas (hydrocarbon generating e.g. under the canopies) from low-risk areas (the remainder of the site). The drainage works will be constructed in two stages: Stage 1 and Stage 2.

5.1.1 Stage 1

Stage 1 development encompasses both high-risk and low-risk catchment areas. Considering the high-risk nature of the proposed activities, that is, dispensing and transfer of fuel under the canopy, the fuel dispensing/loading areas will be concreted, bunded and graded towards a collection pit. This pit will capture and direct flows to an Enviro Australis M60 device (Class 1 Separator) for hydrocarbon removal at all times. Furthermore, the Enviro M60 unit will have sufficient capacity to treat a portion of runoff generated from low-risk areas in addition to the high-risk areas. Treated flows from the Enviro Australis Unit will be discharged to the stormwater network and a licensed contractor will remove the contents of the Enviro M60 when required.

It should be noted that the 2x50 kL above ground fuel tanks will be self-bunded. Consequently, any spillage or minor spills will not reach low risk areas (the rest of the site).

Stormwater runoff generated from the remaining low-risk areas (which is most of the site's surface area including roofing) will be captured via gully pits and underground pipes then directed to an Enviro Australis E90 series unit located on the north eastern corner of the site, prior to the proposed lawful point of discharge (LPD). Treated stormwater runoff will result in significantly improved stormwater quality and a licensed contractor will remove the contents of the Enviro E90 devices when required.

5.1.2 Stage 2

Stage 2 development involves a low-risk catchment. Stormwater runoff generated in this catchment will be collected through a network of pipes and gully pits integrated with Stage 1's stormwater drainage infrastructure. This runoff will then be discharged through the site's lawful point discharge. An additional Enviro Australis E90 series unit will be incorporated into the network to treat runoff from the southern portion of the site.

Refer to **Appendix C** for Conceptual Stormwater Management Plans for both Stage 1 and Stage 2.

6.0 WATER QUANTITY ASSESSMENT

The purpose of this part of the assessment is to investigate whether there is a need to attenuate stormwater flows to negate any adverse impacts on upstream or downstream environments.

Following conversations with the Industrial estate Developer, we understand that the provided LPD at each lot, would accommodate for a total flow composed of a 95% impervious area, at each lot accounting for proposed and future development works. This LPD would connect to a large basin north of the proposed development (built as part of the industrial estate), removing the requirement for onsite detention.

7.0 WATER QUALITY ASSESSMENT

7.1 Construction Phase

Impacts on receiving waters and surrounding areas will be minimised during the construction phase with measures as outlined in this SBSMP, and the Erosion and Sediment Control Plan (ESCP) to be developed for the operational works.

7.1.1 Pollutants

Typical pollutants generated during the construction phase of the development are shown below in Table 2.

Table 2: Pollutant 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 equipment
Toxic materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash-waters
pH altering substances	Acid sulphate soils, cement slurry and wash-waters

7.1.2 Performance Objectives

The objectives are:

- Minimise the amount of sediment entering waterways and stormwater drains;
- Minimise or prevent environmental harm to waterways and associated ecosystems;
- Minimise localised flooding caused by sediment runoff;
- Minimise exposure of soils.

Table 3: Construction Phase Performance Criteria

INDICATOR	WATER QUALITY OBJECTIVES
pH	6.5 – 8.5
Suspended Solids	Annual Mean < 10mg/L
Oils and Grease	No visible films or odour
Litter/ Gross pollutants	No anthropogenic (man-made) materials greater than 5mm in any dimension
Dissolved oxygen	80-100% saturation

7.1.3 Monitoring and Maintenance

The general 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 an Erosion and Sediment Control Plan;
- Erosion and sediment control devices are to be constructed/installed in accordance with an Erosion and Sediment Control Plan;
- Inspection of sediment fences, erosion and sediment control structures/devices on a weekly basis as well as after any rain event exceeding 25mm in 24hrs (major storm event);

- 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.

7.1.4 Responsibility and Reporting

- The contractor shall be responsible for monitoring the performance of all drainage control and erosion and sediment control devices;
- Records of any failures to devices should be kept and reported to the Construction Manager;
- Regular inspections of the devices shall be reported to the Construction Manager;
- Inspections of the devices after heavy rainfall shall be reported to the Construction Manager;

7.2 Operational Phase

7.2.1 Pollutants

The key pollutants typically generated during this phase for the entire catchment are shown in Table 4 below.

Table 4: Pollutant Typically Generated During the Operational Phase

POLLUTANT	POTENTIAL SOURCE
Litter / Gross Pollutants	Waste materials, food, food packaging etc.
Hydrocarbons	Fuel and oil spills, dispensing areas, car park
Nutrients (N & P)	Nitrogen, Phosphorus
Sediments	Aggregates bins, wind deposits and car trails
Surfactants	Detergents, cleaning agents

7.2.2 Water Quality Objectives

Based on Townsville City Council for Industrial Developments design objectives for stormwater treatments, the development is required to achieve the TN, TP and TSS pollutant reductions outlined in Table 5 below.

Table 5: Operational Phase Water Quality Objectives

POLLUTANT	REDUCTION*
Total Suspended Solids	80%
Total Phosphorus	65%
Total Nitrogen	40%
Gross Pollutants >5mm	90%

**These values represent the minimum required reductions in the average annual pollutant loads generated from an unmitigated development.*

7.3 Proposed Stormwater Treatment

7.3.1 Stormwater treatment philosophy

Waterways and other aquatic environments are valued by the community for their social, cultural, economic and environmental benefits. Urban runoff, contaminated with nutrients, sediment and other pollutants adversely impacts theses valued resources. Water Sensitive Urban Design (WSUD) is a holistic approach to the planning and design of urban landscapes that minimises theses negative impacts. This approach is used on this project to select the treatment options that considers the civil, landscape and ecological aspects of the site.

7.3.2 Source Controls

Rubbish bins can be an effective source control for litter and are appropriate for most developments. Bins will be placed in appropriate areas (such as buildings and staff amenity) to encourage thoughtful waste disposal.

7.3.3 In Ground Proprietary Treatment Devices

In ground proprietary stormwater treatment devices are useful for treatment of stormwater on sites that are constrained by available area for stormwater treatment. These devices are installed underground and can remove a full range of pollutants from stormwater, including TSS, soluble heavy metals, oil, grease, and nutrients.

7.3.3.1 Stormwater Treatment Device

All the dispensing of fuel areas and remote fill point (high risk areas) will be bunded and runoff generated from these areas will be conveyed by grated pits and will discharge into the proposed Enviro M60 unit for treatment at all times. Additionally, a portion of runoff generated from low-risk areas will also discharge to the Enviro M60 unit which has a treatment capacity of 142 L/s.

Runoff generated from the majority of low-risk areas will discharge into the proposed Enviro E90 units. The Enviro E90 is an in-line multi-chamber device designed to remove the broad spectrum of pollutants transported by run-off water from high impact catchments. Pollutant groups are separated and contained in separate zones for removal with a 419 L/s treatment capacity and achieves reduction of gross pollutants (GP) 100%, suspended solids (TSS) 86%, total phosphorus (TP) 97%, total nitrogen (TN) 85% and total hydrocarbons 90%. Refer to section 7.5 for the proposed development MUSIC modelling assessment.

7.4 Fuel Related Stormwater Treatment

The treatment train shown in Figure 3 uses the Best Management guidelines to treat stormwater runoff from the site.

7.4.1 Fuel Dispensing and Tanker Unloading Areas

The fuel dispensing areas will be concrete surfaced and covered by a canopy. Fuel dispensing areas will be bunded to prevent stormwater runoff from outside the canopy flowing into the dispensing area and to ensure that any spills are contained within these areas. The perimeter of the canopies will overhang the dispensing containment areas by 10 degrees to reduce windblown rain into the area. Any flows/spills in the containment area will drain to gully pits which will discharge to an appropriately sized Enviro M60 unit.

Bulk fuel transfers from a road tanker will take place outside the canopy in a concrete bunded area, and therefore any runoff or spills from the tanker delivery stand will drain to the proposed Enviro M60 unit.

7.4.1.1 Enviro M60 Device

The Enviro M60 device is a fully integrated in-line device capable of removing pollutants including oils from run-off. The device does not require any power, utilising the energy of the water flow to separate and contain pollutants for periodical removal by evacuation equipment. Internal surface can be inspected and washed as required, whilst screens can be removed and cleaned if and as required.

The Enviro M60 unit has a spill containment volume of 18,000 liters, which allows for spills from an 8,000 litres tanker compartment plus allowance for wind-blown rain. The MR60 will remove hydrocarbons, gross pollutants, and total suspended solids.

The device has a design service life of 100 years for fixed parts and 25 years for replacement parts. The Enviro M60 unit claims a performance which can reach reductions of 95% for Gross Pollutants (GP), a 90% of Suspended Solids (TSS), a 97% of Total Phosphorous (TP), an 85% of total Nitrogen (TN), a 99.95% of total hydrocarbons. Hydrocarbon retention occurs in a separate chamber which operates as a best practice oil and grease arrestor. The Enviro M60 will remove hydrocarbons, gross pollutants, total suspended solids, total phosphorous and total nitrogen. Refer to **Appendix D** for the Enviro M60.2 unit details.

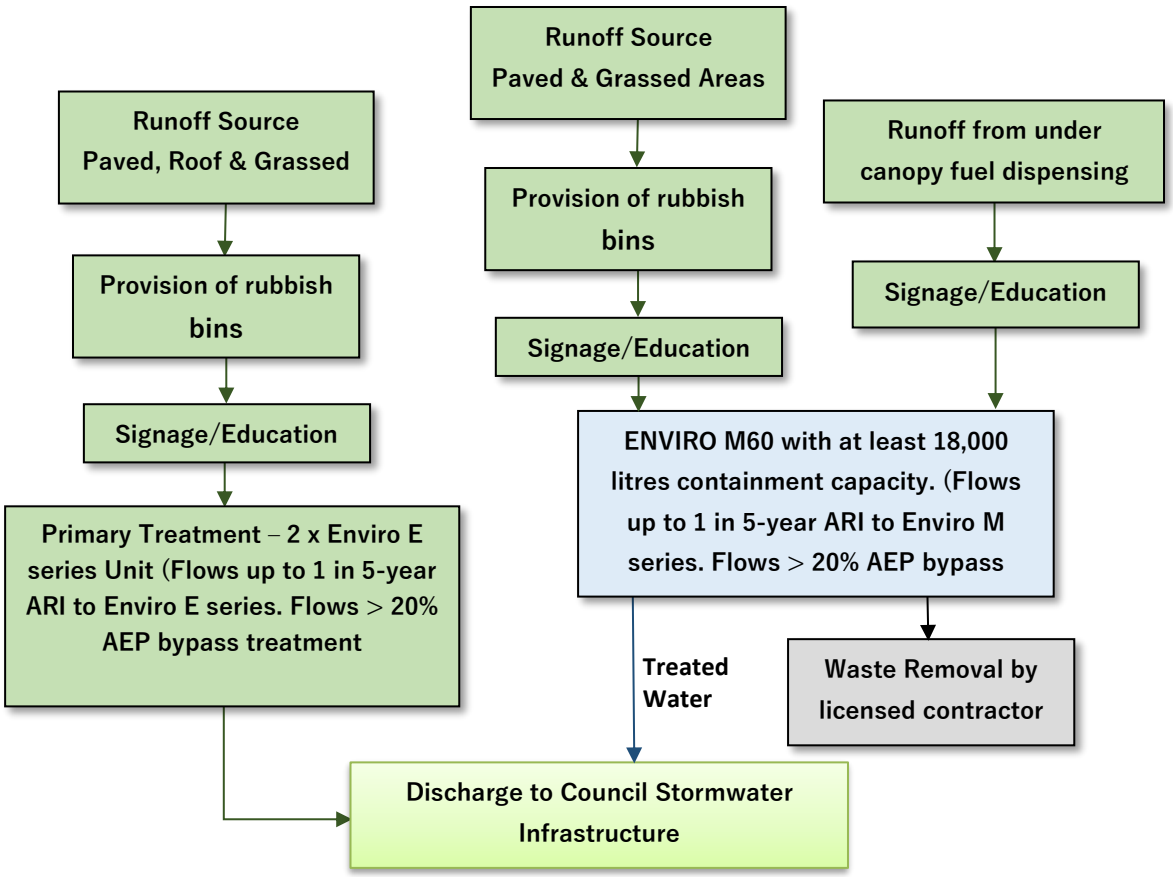


Figure 3: Fuel Related Stormwater Treatment Philosophy for both Stage 1 and Stage 2.

7.4.2 Above Ground Fuel Storage Tanks

The above ground self-bunded fuel storage tanks, piping and fuel dispensers will be installed in accordance with the Australian Institute of Petroleum (AIP) standards.

7.5 MUSIC Modelling

7.5.1 Introduction

The Model for Urban Stormwater Improvement Conceptualisation (MUSIC - Version 6.3) was used to assess the performance of the proposed stormwater treatment measures required to achieve statutory pollutant reduction targets for the operational phase of the project.

7.5.2 Music Model Setup

The input parameters for source node, soil behaviour and pollutant generation characteristics are based on Table A1.2 and 3.9 of MUSIC Modelling Guidelines Version 3.0 - 2018, WaterbyDesign (2018). The following inputs were used:

- MUSIC Modelling Guidelines Version 3.0 - 2018, Waterbydesign
- Queensland Urban Drainage Manual (QUDM), Second Edition 2016

The details of the catchments/source nodes used in the MUSIC model and the proposed treatment train modelled, for stage 1 and stage 2 are shown in Table 6 and 7 respectively.

Table 6: MUSIC catchment parameters (Stage 1)

CATCHMENT	TOTAL AREA (m^2)	SPLIT CATCHMENT AREA (m^2)	LAND USE	% IMPERVIOUS	PROPOSED TREATMENT TRAIN
Proposed Development Stage 1	9,416	918	Roof areas	100	1 x Enviro E90 1 x Enviro M60 Unit
		7,377	Paved areas	100	
		1,121	Landscaped areas	0	
TOTAL	**9,416**	**9,416**			

Table 7: MUSIC catchment parameters (Stage 2)

CATCHMENT	TOTAL AREA (m^2)	SPLIT CATCHMENT AREA (m^2)	LAND USE	% IMPERVIOUS	PROPOSED TREATMENT TRAIN
Proposed Development Stage 2	20,584	2,952	Roof areas	100	2 x Enviro E90 1 x Enviro M60 Unit
		15,919	Paved areas	100	
		1,713	Landscaped areas	0	
TOTAL	**20,584**	**20,584**			

The proposed stormwater treatment train modelled in MUSIC consists of an Enviro M60 for high-risk areas (refuelling and loading/unloading areas) and 2 x Enviro E90* low risk areas. Figure 4 and 5 below shows a schematic representation of the models analysed for both Stage 1 and Stage 2 respectively. Table 9 demonstrates that the pollutant load reduction objectives for the site have been achieved for both stages, i.e. the treatment methods proposed are adequate.

- Stage 1 has 1 x Enviro E90 unit and at the completion of the project (Stage 2) there will be 2 x Enviro E90 units and an Enviro M60 unit.

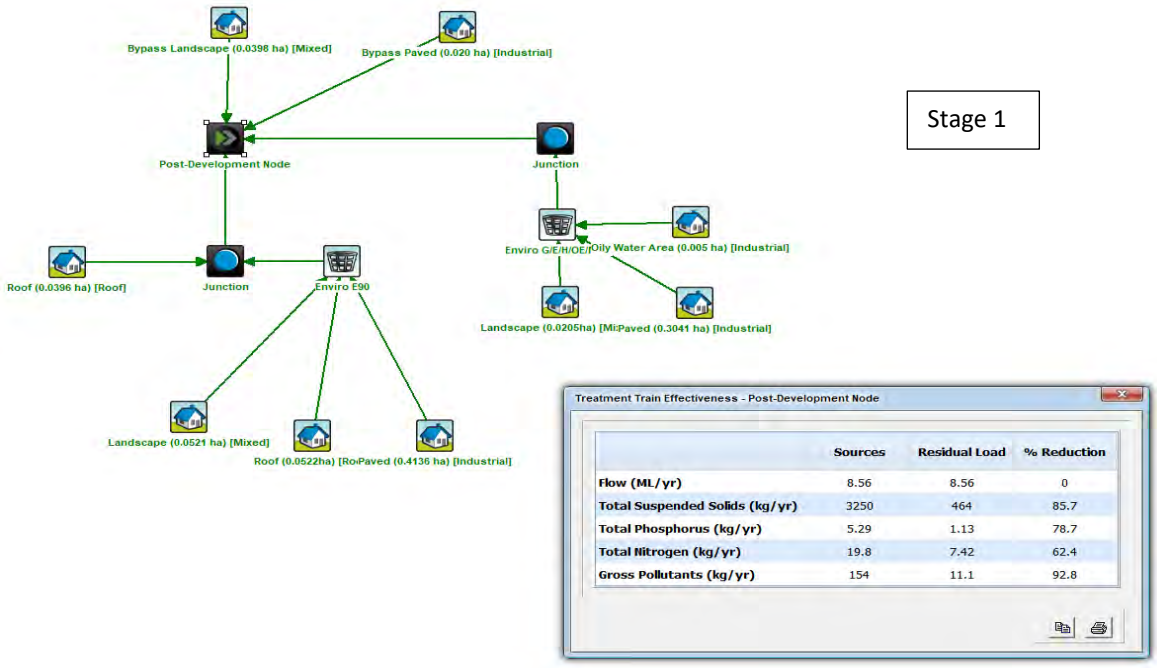


Figure 4: MUSIC Model Schematic – Lot 21 Ron Mclean Drive, Cleveland Bay Industrial Park, Townsville QLD 4811 (Stage 1)

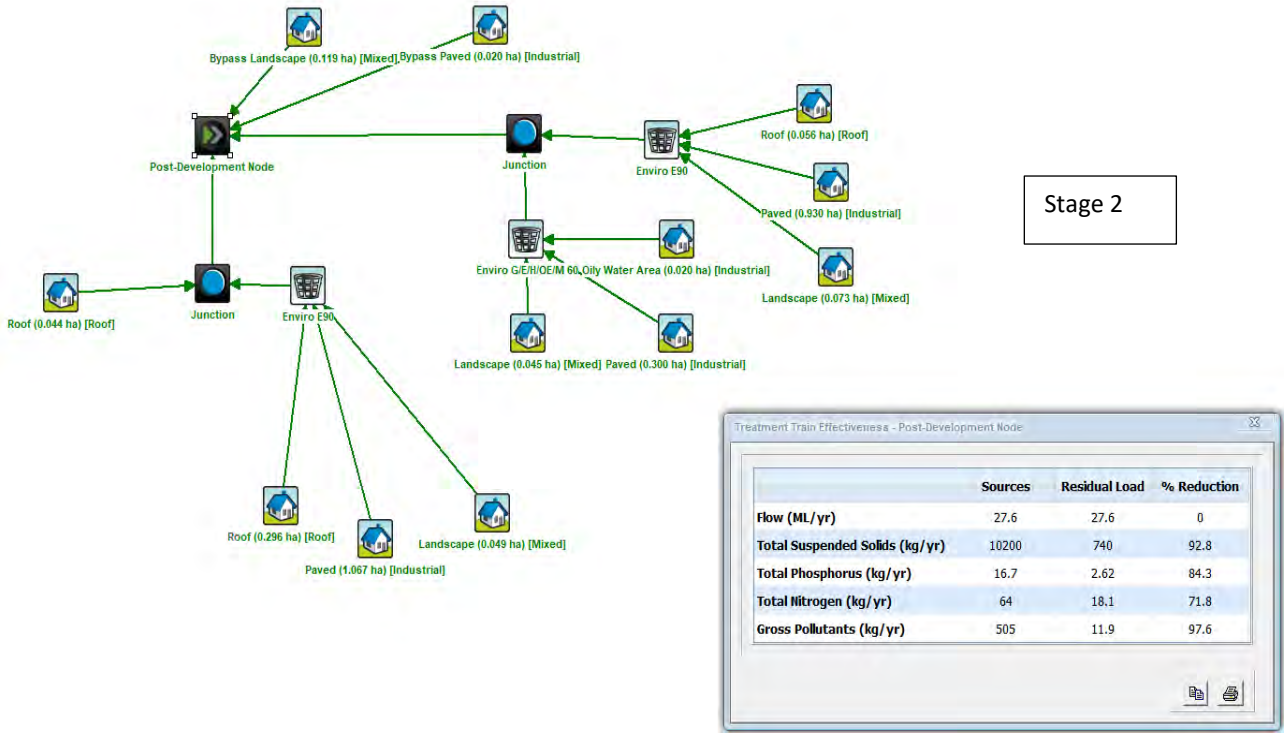


Figure 5: MUSIC Model Schematic – Lot 21 Ron Mclean Drive, Cleveland Bay Industrial Park, Townsville QLD 4811 (Stage 2)

7.5.3 Music Modelling Results

The proposed stormwater treatment measures were modelled in MUSIC as a treatment train. Table 8 below show details of proprietary products modelled in MUSIC.

Table 8: Details of Proprietary Treatment Systems as Modelled in MUSIC

Catchments	System Used	Number of units
Post Development Stage 1	Enviro E90	1
	Enviro Australis M60	1
Post Development Stage 2	Enviro E90	2
	Enviro Australis M60	1

Table 9 below, demonstrates that the pollutant load reduction objectives for the site have been achieved, i.e. the treatment methods proposed are adequate for both Stage 1 and Stage 2.

Table 9: MUSIC Model Treatment Effectiveness

	REQUIRED LOAD REDUCTION	MUSIC RESULTS ACHIEVMED – Stage 1	MUSIC RESULTS ACHIEVMED – Stage 2	OBJECTIVE ACHIEVED
Total Suspended Solids	80.0%	85.7%	92.8	Yes
Total Phosphorus	65.0%	78.7%	84.3	Yes
Total Nitrogen	40.0%	62.4	71.8	Yes
Gross Pollutants	90.0%	92.8	97.6	Yes

8.0 SITE MAINTENANCE AND MANAGEMENT PROCEDURES

8.1 Petrol Station Maintenance and Management Procedure

The service station operator will have a Petrol Handling Manual that will set out all requirements for the safe handling of combustible and flammable materials. This manual will dictate weekly, monthly and annual checking procedures with checklists, which will be completed, and the records stored.

The manual will also set out dry cleaning methods to be employed within the fuel dispensing area in lieu of washing down to reduce possible contaminated runoff. Emergency procedures will be also clearly set out detailing actions to be taken by site personnel in the case of varying possible emergencies such as spills, fire or risk of fire, vehicle accidents, etc.

In addition, a regular cleaning, maintenance program/contract is to be established for emptying of rubbish bins located around the site, removal of general litter from the site, inspection of gully pits and removal of any sediment or captured litter from pit's grates. The Enviro Australis unit will be inspected and maintained in accordance with the manufacturer's instructions. Refer to **Appendix E** for maintenance plans.

The maintenance plan will address the following:

- Inspection frequency;
- Maintenance frequency;
- Data collection/storage requirements;
- Detailed cleanout procedures.

The plan will include inspection procedures covering aspects such as equipment needs, maintenance techniques, occupational health and safety, public safety, environmental management considerations, disposal requirements of pollutants collected and access issues.

8.2 Maintenance Plans for Stormwater treatment devices

All stormwater quality improvement systems require regular maintenance in order to function adequately. Table 10 details the basic maintenance requirements for each type of stormwater quality improvements systems. A detailed maintenance schedule will be developed as part of the detailed design of the site.

Table 10: Maintenance Requirements

Control	Maintenance Requirement	Maintenance Period
Enviro M60	Generally, comprehensive maintenance is performed from the surface via vacuum truck. No personnel access required to enter the device for service and maintenance. All surfaces inside the units are visible from the service covers, negating the need for personnel to enter the device. If required, screens can be removed manually to wash them down if required without entering the device.	Design service intervals are 12 months. Service by evacuation trucks is typically completed in less than one hour.
Enviro E90	Generally, comprehensive maintenance is performed from the surface via vacuum truck. No personnel access required to enter the device for service and maintenance. All surfaces inside the units are visible from the service covers, negating the need for personnel to enter the device. If required, screens can be removed manually to wash them down if required without entering the device.	Design service intervals are 12 months. Service by evacuation trucks is typically completed in less than one hour.

For operational and maintenance guidelines refer to **Appendix E** and relevant manufacturer's documentation.

9.0 LIFECYCLE COSTS

A lifecycle cost analysis is not part of the scope of this report. All the recommended water quality treatment infrastructure lies within the development site, and it shall be maintained and serviced by the owners of the development at no cost to Council.

10.0 CONCLUSION

A Site Based Stormwater Management Plan has been prepared with respect to the proposed Cleveland Industrial Park Main Facility. The location of the site is shown on Figure 1 and the proposed staged development site layout is shown in **Appendix A**.

- Stormwater Quality- Construction Phase

  An Erosion and Sediment Control Plan aimed at minimising unacceptable impacts during the construction phase will be developed at the Operational Works stage, in accordance with Council Guidelines and Standards aiming to minimise unacceptable impacts to occur during the construction phase.

- Stormwater Quality- Operational Phase

  Conceptual MUSIC models for the site's catchment indicated that the proposed treatment measures will achieve the statutory water quality objectives for the site. Refer section 7.5 of this report for details. The proposed treatment is shown in **Appendix C**.

This Site Based Stormwater Management Plan has demonstrated that adequate stormwater quantity and quality management principles and techniques will be employed during the construction and operational of this development to comply with the Queensland State Planning Policy 2017, the Townsville City Plan and Queensland Urban Drainage Manual 2016. The methods proposed are considered current best management practice for a development of this type, on this site.

Yours faithfully

Butholezwe Masuku
BEng (Hons), MIEAust
Civil Engineer

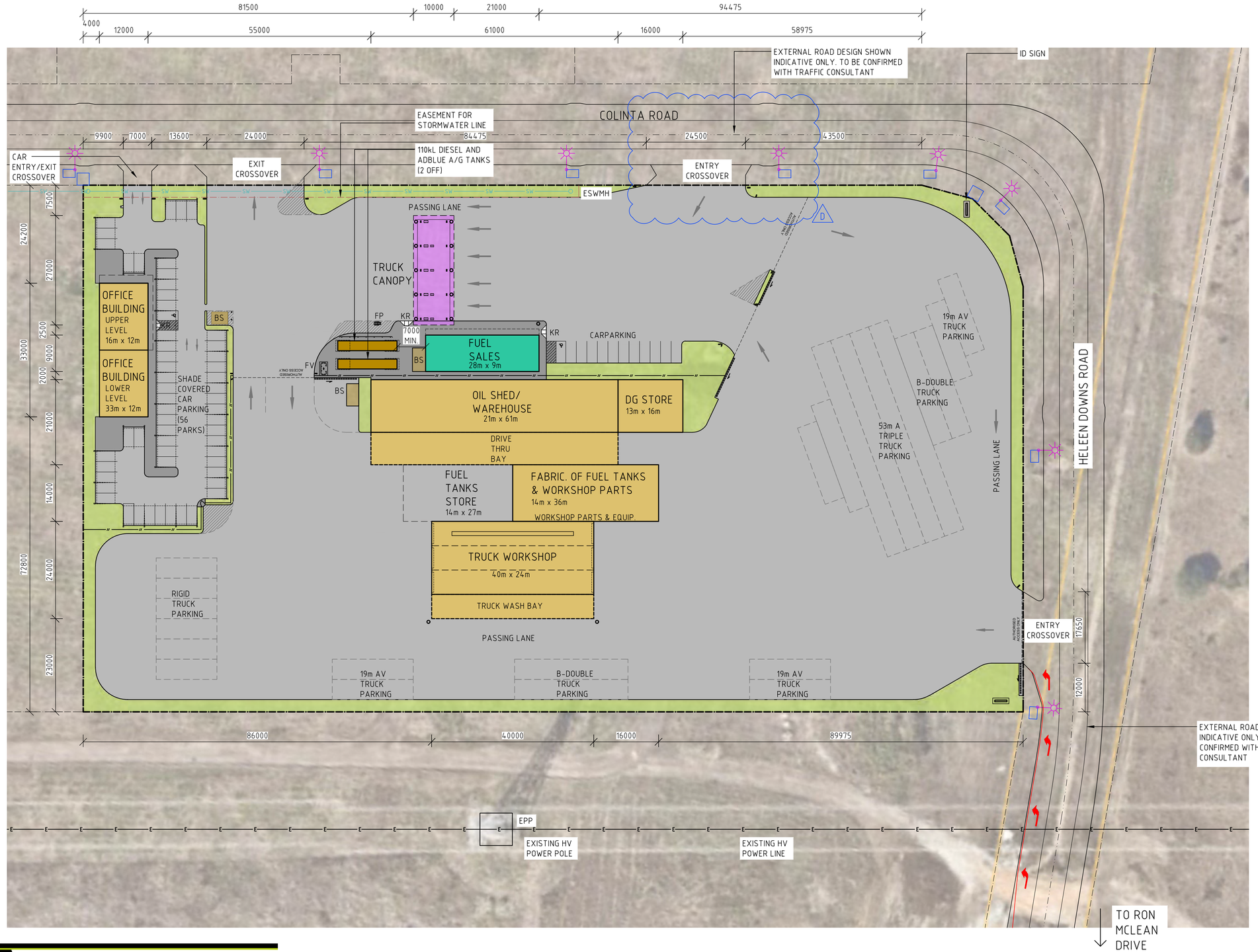
For and on behalf of TfA Group

Reviewed by

Juan Avella (RPEQ 11899)
BEng, MIEAust, CPEng, RPEQ, NER
Director Civil/Structural Engineering

For and on behalf of TfA Group

APPENDIX A – PROPOSED SITE LAYOUT PLAN



RPD

PROPOSED LOT 21 ON SP273456
CNR HELEEN DOWNS ROAD
& NEW ROAD

LGA: TOWNSVILLE CITY COUNCIL

PROP LOT AREAS: 3.0ha

NOTES

1. SITE LAYOUT HAS BEEN BASED ON A BOUNDARY SITE SURVEY FROM ROWLANDS SURVEYS 43942/21 REV 'B' DATED 23/06/2023.
2. FINAL EXISTING SERVICES TO BE CONFIRMED AT DETAIL DESIGN STAGE.
3. SITE LAYOUT TO BE ADVISED BY TRAFFIC CONSULTANT AND TOWN PLANNING.

LEGEND

BS	BIN STORE - REFER DETAIL DWGS.
EPP	EXISTING POWER POLE - REFER SURVEY PLAN
ESWMH	EXISTING STORMWATER MAN HOLE
FL	FLOODLIGHT - REFER TO ELECTRICAL CONSULTANTS DWGS.
FP	REMOTE FUEL FILL POINT - REFER FUEL DWGS.
FV	FUEL VENT STACK - REFER FUEL DWGS.
KR	KERB RAMP - REFER TYPICAL DETAILS
	EXISTING ELECTRICAL PILLAR/PITS APPROXIMATELY
	EXISTING LIGHT POLES APPROXIMATELY

DEVELOPMENT ASSESSMENT

LANDSCAPE AREA: 3147m² (10%) APPROX.

BUILDING AREAS

FUEL SALES:	252m²
TRUCK CANOPY:	270m²
OFFICE LOWER:	396m²
OFFICE UPPER:	192m²
OIL SHED/ WAREHOUSE:	1280m²
DG STORE:	208m²
FABRIC. FUEL TANKS & WORKSHOP:	504m²
FUEL TANKS STORAGE:	378m²
TRUCK WORKSHOP & TRUCK WASH:	960m²
TOTAL AREA:	4,440m²

CARPARKING ASSESSMENT

FUEL SALES CAR PARKING PROVIDED: = 43 CARS

OFFICE CAR PARKING PROVIDED: = 56 CARS

0 10 20 30 40 50m

SCALE 1:500

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PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS

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DRAWING ISSUE APPROVAL

NAME: DATE:

PROFESSIONAL QUALIFICATION:

SIGNATURE:

REV	DATE	BY	DESCRIPTION	CHK	APP
A	27.10.23	AW	ISSUED FOR INFORMATION	DGC	
B	13.11.23	AW	ISSUED FOR INFORMATION	PS	
C	27.11.23	DGC	ISSUED FOR INFORMATION	PS	
D	26.09.24	MAF	DA ISSUE - ENTRY CROSSOVER AMENDED	PDS	

PROJECT DETAILS

PROPOSED MAIN FACILITY
PORT ACCESS PTY LTD.
LOT 21
CLEVELAND BAY INDUSTRIAL PARK
TOWNSVILLE, QLD, 4811

DRAWING TITLE

PROPOSED SITE PLAN

STATUS

DA ISSUE

DATE CREATED	ORIGINAL SCALE	SHEET
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DO NOT SCALE THIS DRAWING. CONFIRM ALL DIMENSIONS ON SITE.

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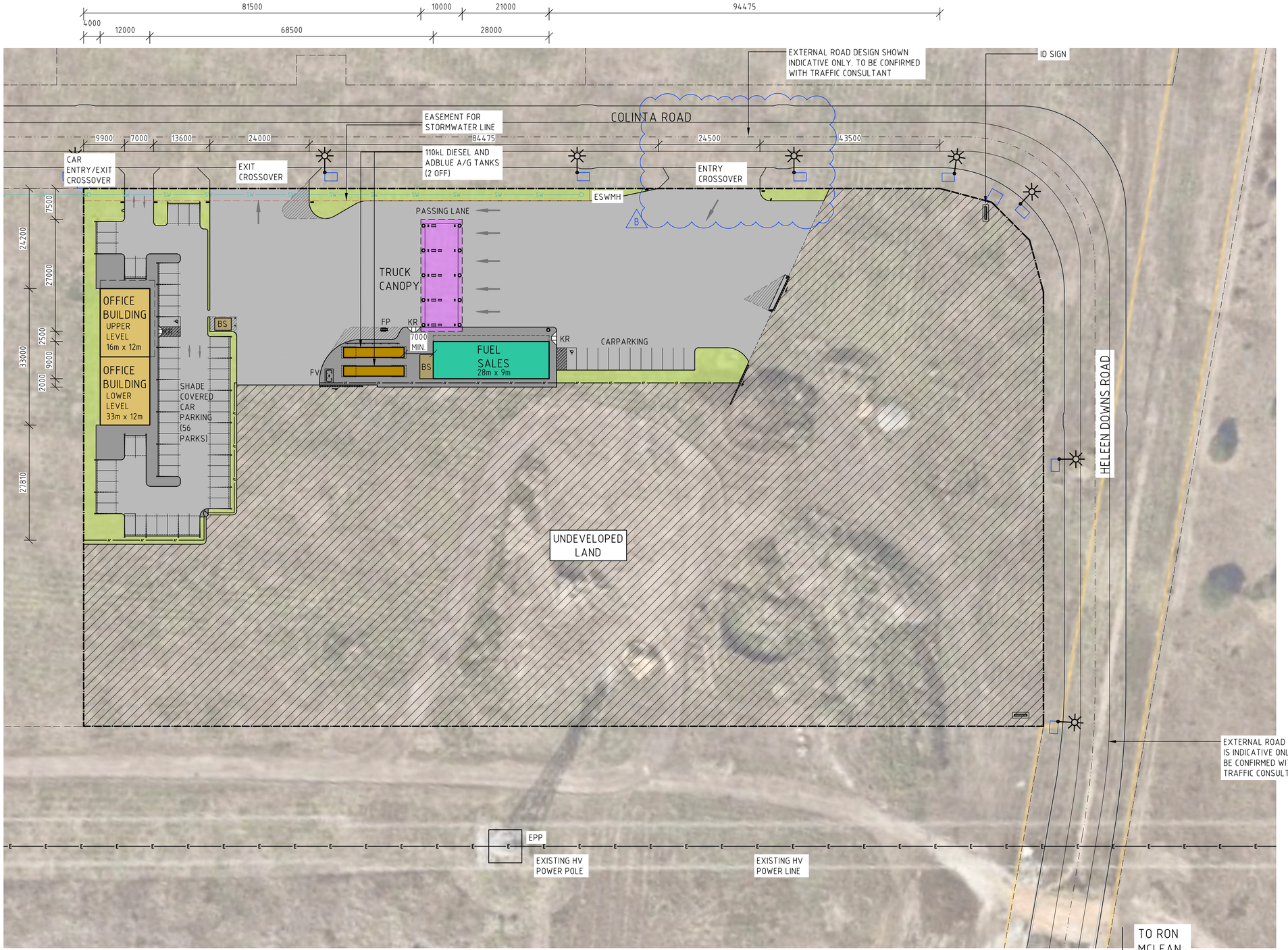


RPD
PROPOSED LOT 21 ON SP273456
CNR HELEEN DOWNS ROAD
& NEW ROAD

LGA: TOWNSVILLE CITY COUNCIL

PROP LOT AREAS: 3.0ha

NOTES

1. SITE LAYOUT HAS BEEN BASED ON A BOUNDARY SITE SURVEY FROM ROWLANDS SURVEYS 43942/21 REV 'B' DATED 23/06/2023.
2. FINAL EXISTING SERVICES TO BE CONFIRMED AT DETAIL DESIGN STAGE.
3. SITE LAYOUT TO BE ADVISED BY TRAFFIC CONSULTANT AND TOWN PLANNING.

LEGEND

BS	BIN STORE - REFER DETAIL DWGS.
EPP	EXISTING POWER POLE - REFER SURVEY PLAN
ESWMH	EXISTING STORMWATER MAN HOLE
FL	FLOODLIGHT - REFER TO ELECTRICAL CONSULTANTS DWGS.
FP	REMOTE FUEL FILL POINT - REFER FUEL DWGS.
FV	FUEL VENT STACK - REFER FUEL DWGS.
KR	KERB RAMP - REFER TYPICAL DETAILS
	EXISTING ELECTRICAL PILLAR/PITS APPROXIMATELY
	EXISTING LIGHT POLES APPROXIMATELY
—//—	SECURITY FENCE

BUILDING AREAS

FUEL SALES:	252m²
TRUCK CANOPY:	270m²
OFFICE LOWER:	396m²
OFFICE UPPER:	192m²
TOTAL AREA:	1,110m²

CARPARKING ASSESSMENT

FUEL SALES CAR PARKING PROVIDED: = 43 CARS

OFFICE CAR PARKING PROVIDED: = 56 CARS

0 10 20 30 40 50m

SCALE 1:500

Member Australian Institute of Architects

BOARD OF ARCHITECTS OF QUEENSLAND : 4650

NSW ARCHITECTS REGISTRATION BOARD : 10787

ARCHITECTS REGISTRATION BOARD OF VICTORIA : 800738

PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS

TfA Project Group

DRAWING ISSUE APPROVAL

NAME: DATE:

PROFESSIONAL QUALIFICATION:

SIGNATURE:

Head office - Brisbane Ph: 61 7 3854 2900
166 Knapp Street, Fortitude Valley QLD 4006 Australia
Email: enquiry@tfa.com.au Aust Wide: 1300 794 300

REV	DATE	BY	DESCRIPTION	CHK	APP
A	06.09.24	CTD	ISSUED FOR INFORMATION	DGC	PDS
B	26.09.24	MAF	DA ISSUE - ENTRY CROSSOVER AMENDED	PDS	

PROJECT DETAILS

PROPOSED MAIN FACILITY
PORT ACCESS PTY LTD.
LOT 21
CLEVELAND BAY INDUSTRIAL PARK
TOWNSVILLE, QLD, 4811

DRAWING TITLE

PROPOSED SITE PLAN STAGE 1

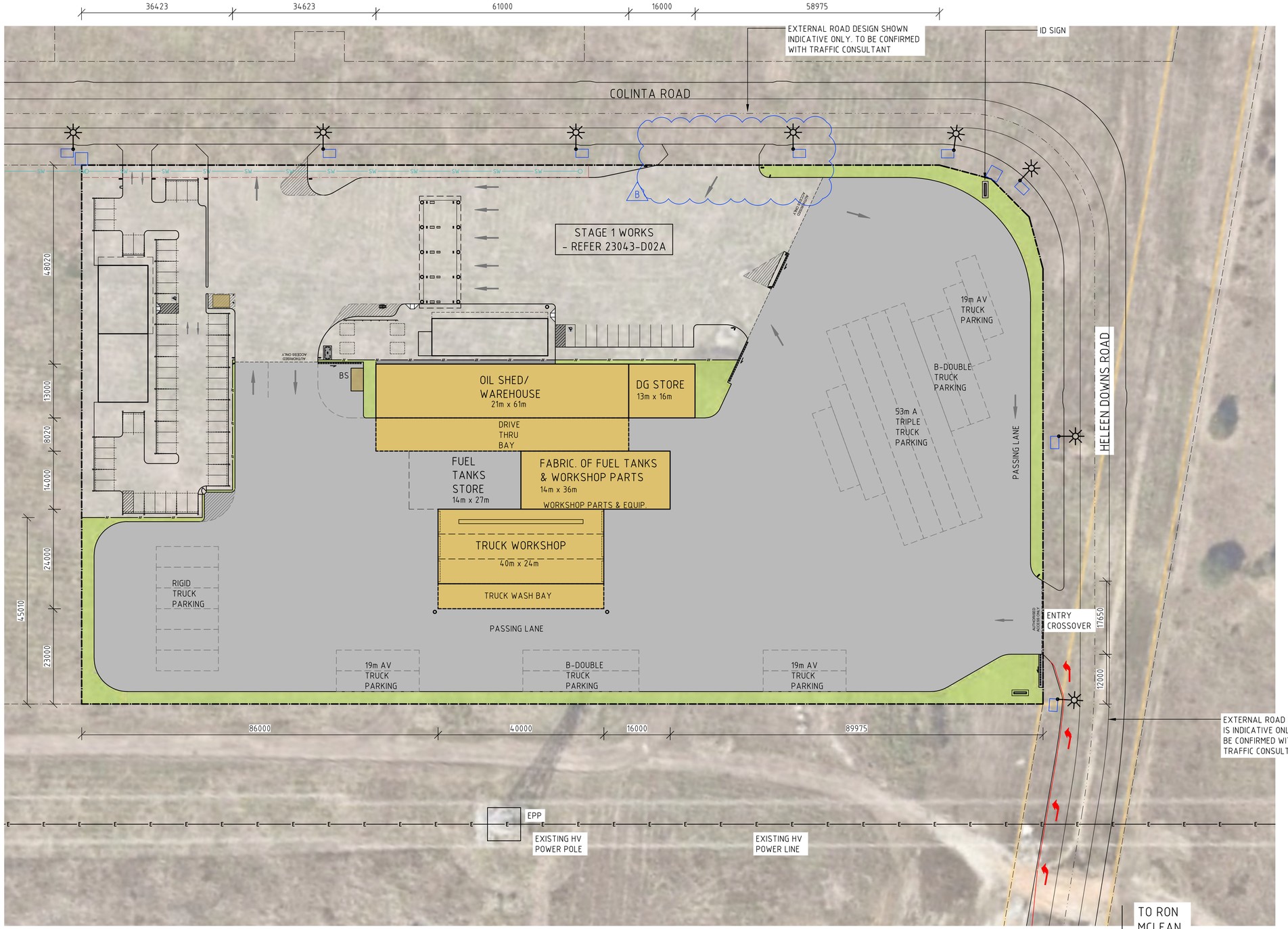
STATUS

DA ISSUE

DATE CREATED	ORIGINAL SCALE	SHEET
05.09.24	1:500	A1

DO NOT SCALE THIS DRAWING. CONFIRM ALL DIMENSIONS ON SITE.

DRAWING NO	REV
23043-D02A	B



RPD
PROPOSED LOT 21 ON SP273456
CNR HELEEN DOWNS ROAD
& NEW ROAD

LGA: TOWNSVILLE CITY COUNCIL

PROP LOT AREAS: 3.0ha

NOTES

1. SITE LAYOUT HAS BEEN BASED ON A BOUNDARY SITE SURVEY FROM ROWLANDS SURVEYS 43942/21 REV 'B' DATED 23/06/2023.
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LEGEND

BS	BIN STORE - REFER DETAIL DWGS.
EPP	EXISTING POWER POLE - REFER SURVEY PLAN
ESWMH	EXISTING STORMWATER MAN HOLE
FL	FLOODLIGHT - REFER TO ELECTRICAL CONSULTANTS DWGS.
FP	REMOTE FUEL FILL POINT - REFER FUEL DWGS.
FV	FUEL VENT STACK - REFER FUEL DWGS.
KR	KERB RAMP - REFER TYPICAL DETAILS
	EXISTING ELECTRICAL PILLAR/PITS APPROXIMATELY
	EXISTING LIGHT POLES APPROXIMATELY
—"—	SECURITY FENCE

DEVELOPMENT ASSESSMENT

TOTAL LANDSCAPE AREA: 3147m² (10%) APPROX.

BUILDING AREAS

STAGE 1:

FUEL SALES:	252m²
TRUCK CANOPY:	270m²
OFFICE LOWER:	396m²
OFFICE UPPER:	192m²
STAGE 1 AREA:	1,110m²

STAGE 2:

OIL SHED/ WAREHOUSE:	1280m²
DG STORE:	208m²
FABRIC. FUEL TANKS & WORKSHOP:	504m²
FUEL TANKS STORAGE:	378m²
TRUCK WORKSHOP & TRUCK WASH:	960m²
STAGE 2 AREA:	3,330m²
TOTAL AREA:	4,440m²

CARPARKING ASSESSMENT

FUEL SALES CAR PARKING PROVIDED: = 43 CARS

OFFICE CAR PARKING PROVIDED: = 56 CARS

0 10 20 30 40 50m

SCALE 1:500

Member Australian Institute of Architects

BOARD OF ARCHITECTS OF QUEENSLAND : 4650
NSW ARCHITECTS REGISTRATION BOARD : 10787
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PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS

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DRAWING ISSUE APPROVAL
NAME: DATE:
PROFESSIONAL QUALIFICATION:
SIGNATURE:

REV	DATE	BY	DESCRIPTION	CHK	APP
A	06.09.24	CTD	ISSUED FOR INFORMATION	DGC	PDS
B	26.09.24	MAF	DA ISSUE - ENTRY CROSSOVER AMENDED	PDS	

PROJECT DETAILS
PROPOSED MAIN FACILITY
PORT ACCESS PTY LTD.
LOT 21
CLEVELAND BAY INDUSTRIAL PARK
TOWNSVILLE, QLD, 4811

DRAWING TITLE
PROPOSED SITE PLAN
STAGE 2

STATUS
DA ISSUE

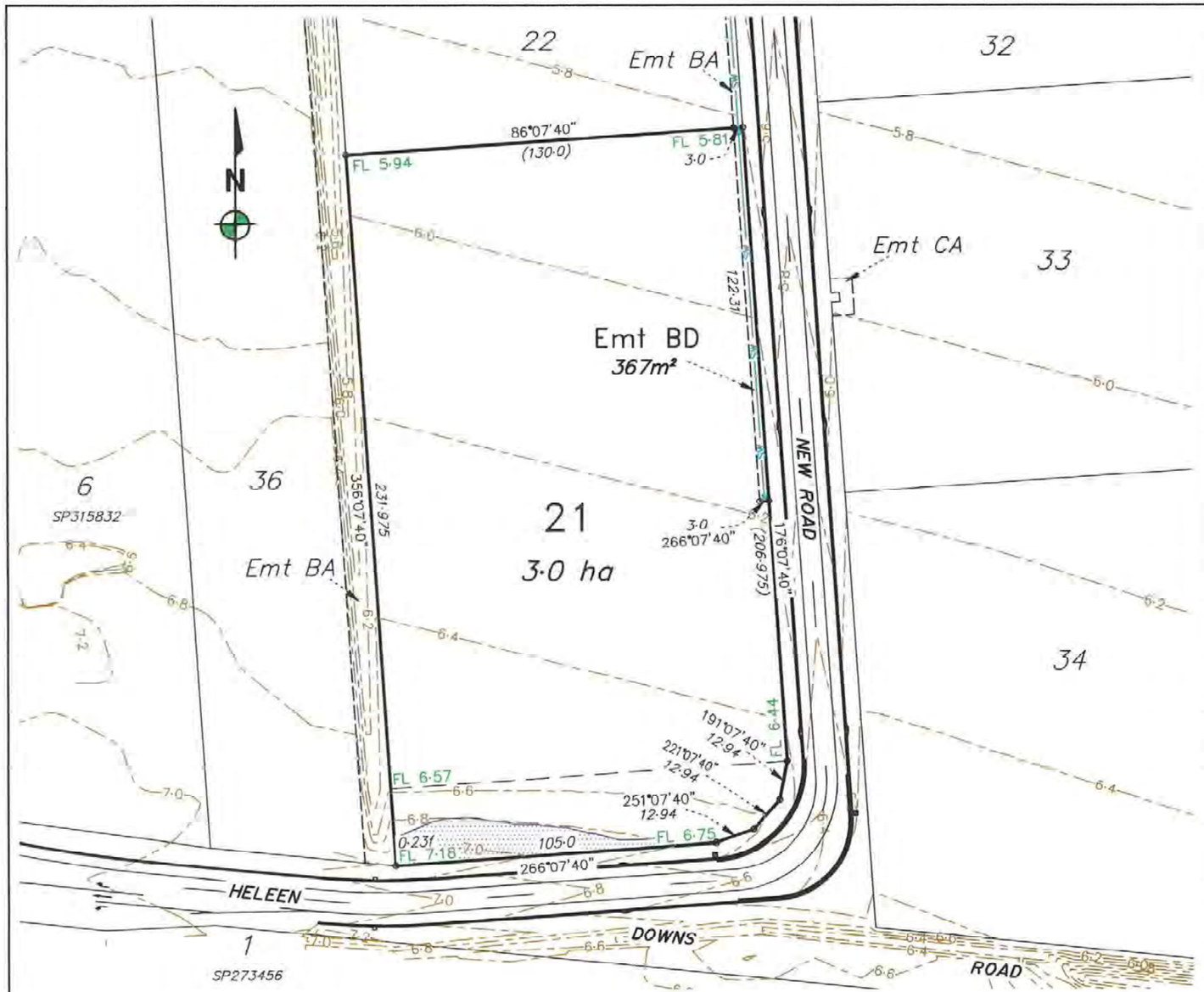
DATE CREATED	ORIGINAL SCALE	SHEET
05.09.24	1:500	A1

DO NOT SCALE THIS DRAWING. CONFIRM ALL DIMENSIONS ON SITE.

DRAWING NO	REV
23043-D02B	B

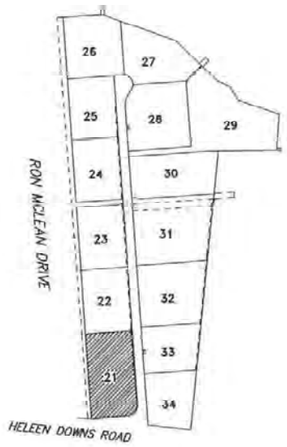
APPENDIX B – SITE SURVEY PLAN

REV	BY	DATE	DESCRIPTION
B	RG	23/06/2023	Emt BD added.
A	RG	22/02/2022	Road name amended.
0	RG	18/02/2022	Original Issue.



Notes:

- Fill shall be placed in accordance with Townsville City Council Town Plan, policy for earthworks (construction) SC6.4.6.10.8, to provide a relative compaction determined by AS1289.5.11 using AS1289.5.4.1 or AS1289.5.7.1 for standard compactive effort, of not less than 98% of standard maximum dry density
- Inspection and testing shall be carried out in compliance with SC6.4.6.10.8.



Design Surface Level (0·2m Contours) — Area of fill

FL 7.14 Finished Design Level — 0·17f Depth of fill (± 50mm)

SW Drainage pipe

Batter line

LOCAL AUTHORITY

TOWNSVILLE CITY COUNCIL

LEVEL DATUM: AHD(Der)
REF BM No: 53476
REDUCED LEVEL: 7·945
LOCATION: LOT 5 on SP273456

AZIMUTH: MGA'94 vide SP315832

SURVEYOR: RSPL
DRAWN: Romy Ghebosu
SIGNED BY: Laurie Nolan

ROWLANDS SURVEYS
22 Gorden Street Garbutt, Townsville.
Ph:(07) 47755077 surveyors@rowlands.net.au

cleveland bay industrial park TOWNSVILLE

CLEVELAND BAY INDUSTRIAL PARK PTY LTD

– DISCLOSURE PLAN –

Proposed Lot 21

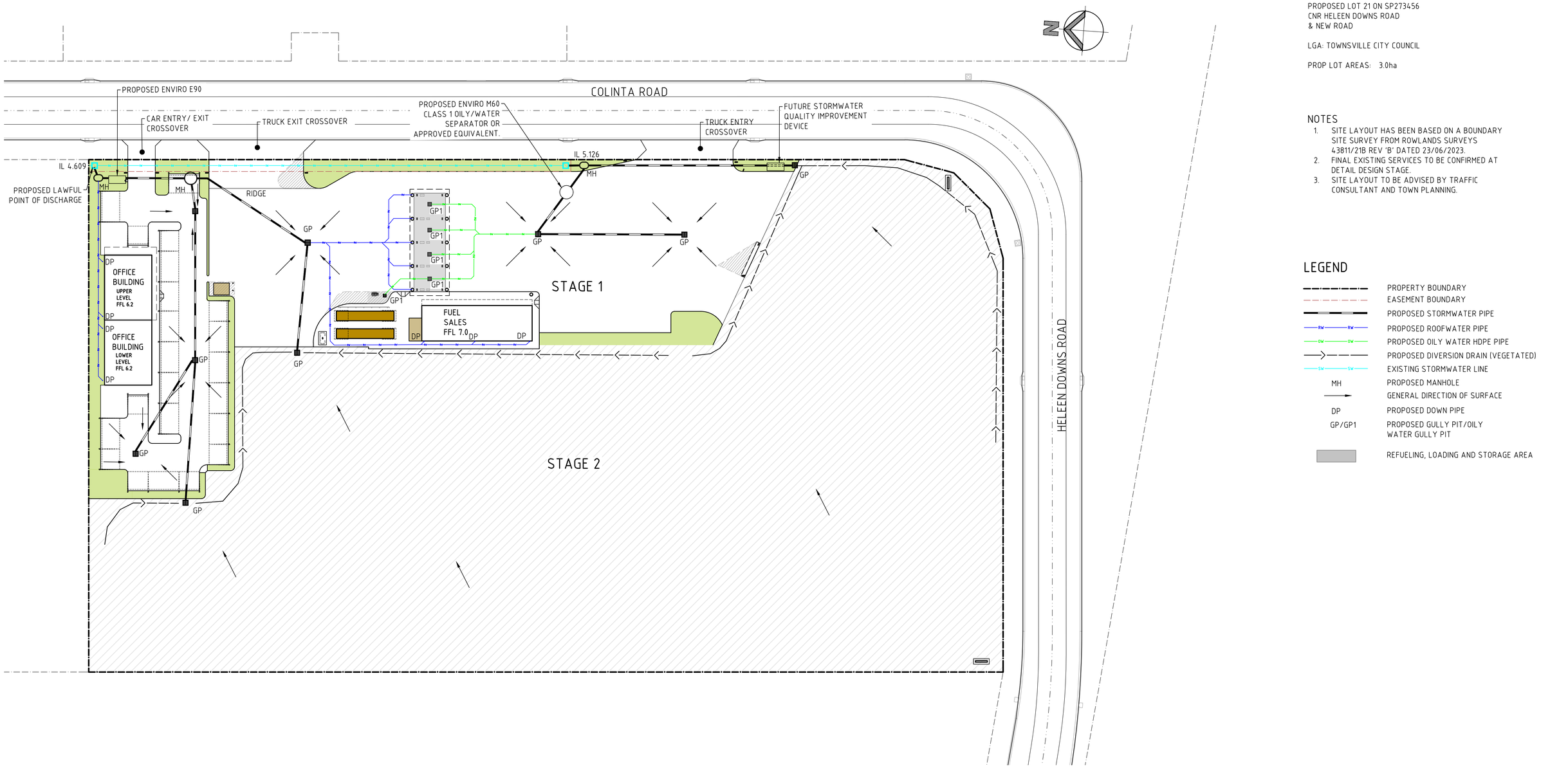
SCALE 1:1500@A3

PASSED

DATE 23/06/2023

43942/21B

APPENDIX C – CONCEPTUAL STORMWATER MANAGEMENT PLAN



RPD
PROPOSED LOT 21 ON SP273456
CNR HELEEN DOWNS ROAD
& NEW ROAD

LGA: TOWNSVILLE CITY COUNCIL

PROP LOT AREAS: 3.0ha

NOTES

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2. FINAL EXISTING SERVICES TO BE CONFIRMED AT DETAIL DESIGN STAGE.
3. SITE LAYOUT TO BE ADVISED BY TRAFFIC CONSULTANT AND TOWN PLANNING.

LEGEND

- PROPERTY BOUNDARY
- EASEMENT BOUNDARY
- PROPOSED STORMWATER PIPE
- RW — PROPOSED ROOFWATER PIPE
- OW — PROPOSED OILY WATER HDPE PIPE
- PROPOSED DIVERSION DRAIN (VEGETATED)
- SW — EXISTING STORMWATER LINE
- MH — PROPOSED MANHOLE
- GENERAL DIRECTION OF SURFACE
- DP — PROPOSED DOWN PIPE
- GP/GP1 — PROPOSED GULLY PIT/OILY WATER GULLY PIT
- REFUELING, LOADING AND STORAGE AREA

0 10 20 30 40 50m

SCALE 1:500

PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS

TfA Project Group

DRAWING ISSUE APPROVAL

NAME: DATE:

PROFESSIONAL QUALIFICATION:

SIGNATURE:

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166 Knapp Street, Fortitude Valley QLD 4006 Australia
Email: enquiry@tfa.com.au Aust Wide: 1300 794 300

REV	DATE	BY	DESCRIPTION	CHK	APP
A	23.09.24	BM	ISSUED FOR APPROVAL	JA	

PROJECT DETAILS
PROPOSED MAIN FACILITY
PORT ACCESS PTY LTD
LOT 21
CLEVELAND BAY INDUSTRIAL PARK
TOWNSVILLE, QLD, 4811

DRAWING TITLE
CONCEPT STORMWATER MANAGEMENT PLAN - STAGE 1

STATUS
APPROVAL

DATE CREATED	ORIGINAL SCALE	SHEET
28.07.2023	1:500	A1

DO NOT SCALE THIS DRAWING. CONFIRM ALL DIMENSIONS ON SITE.

DRAWING NO	REV
23043-D19A	A

RPD
PROPOSED LOT 21 ON SP273456
CNR HELEEN DOWNS ROAD
& NEW ROAD

LGA: TOWNSVILLE CITY COUNCIL

PROP LOT AREAS: 3.0ha

NOTES

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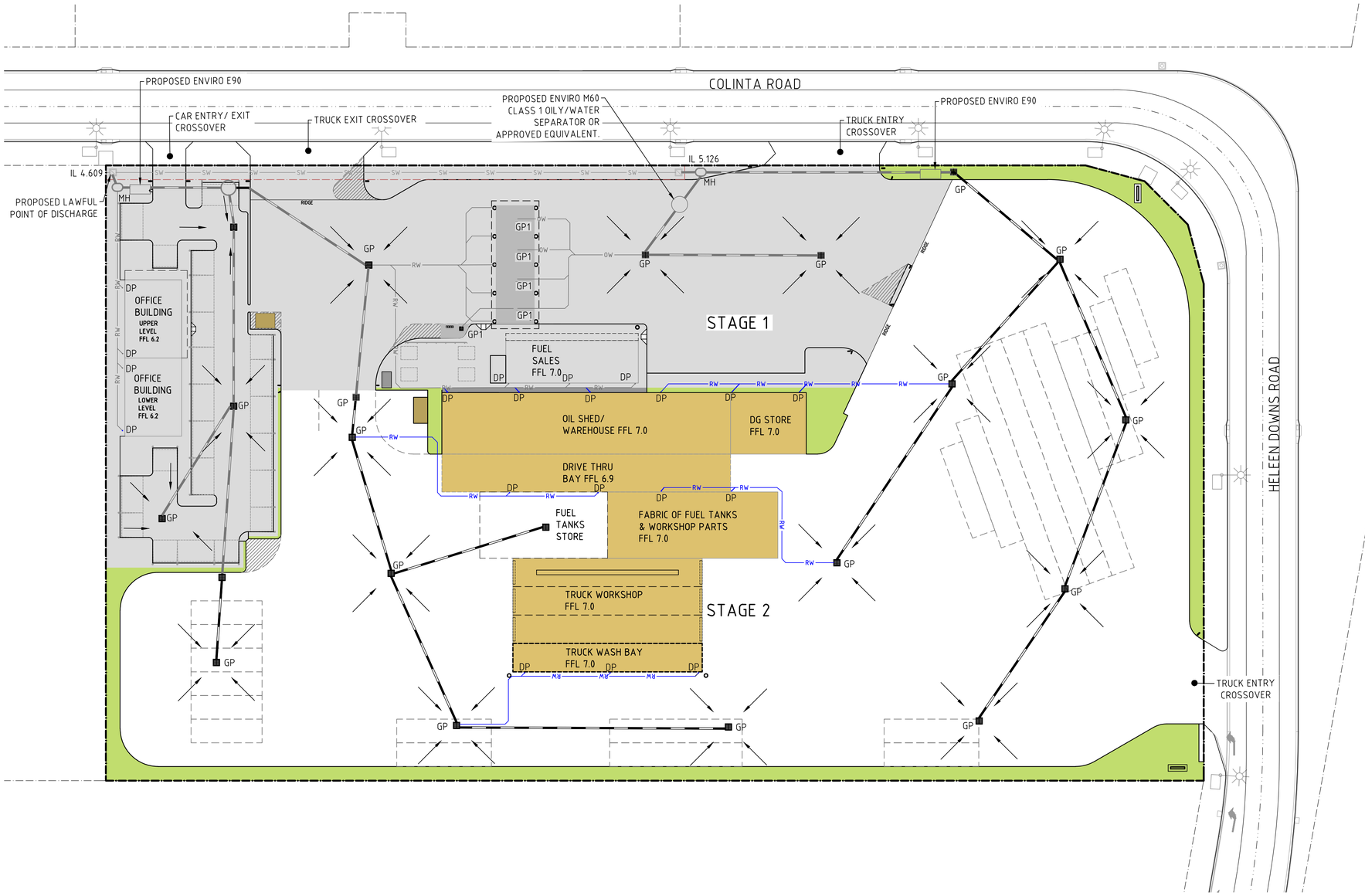
LEGEND

- PROPERTY BOUNDARY
- EASEMENT BOUNDARY
- PROPOSED STORMWATER PIPE
- RW — PROPOSED ROOFWATER PIPE
- OW — PROPOSED OILY WATER HDPE PIPE
- SW — EXISTING STORMWATER LINE
- MH — PROPOSED MANHOLE
- GENERAL DIRECTION OF SURFACE
- DP — PROPOSED DOWN PIPE
- GP/GP1 — PROPOSED GULLY PIT/OILY WATER GULLY PIT
- STAGE 1 DEVELOPMENT



0 10 20 30 40 50m

SCALE 1:500

PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS

TfA Project Group

DRAWING ISSUE APPROVAL

NAME: DATE:

PROFESSIONAL QUALIFICATION:

SIGNATURE:

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166 Knapp Street, Fortitude Valley QLD 4006 Australia
Email: enquiry@tfa.com.au Aust Wide: 1300 794 300

REV	DATE	BY	DESCRIPTION	CHK	APP
A	23.09.24	BM	ISSUED FOR APPROVAL	JA	

PROJECT DETAILS
PROPOSED MAIN FACILITY
PORT ACCESS PTY LTD
LOT 21
CLEVELAND BAY INDUSTRIAL PARK
TOWNSVILLE, QLD, 4811

DRAWING TITLE
CONCEPT STORMWATER MANAGEMENT PLAN - STAGE 2

STATUS: APPROVAL

DATE CREATED	ORIGINAL SCALE	SHEET
28.07.2023	1:500	A1

DO NOT SCALE THIS DRAWING. CONFIRM ALL DIMENSIONS ON SITE.

DRAWING NO	REV
23043-D19B	A

APPENDIX D – STORMWATER & OILY WATER TREATMENT SYSTEMS

Flow rates based at 1% pipe gradient:-
Treated Flow.....142 L/sec

Enviro 'M60.20' is a oily water separator compliant with EN 858-1 and includes emergency spill protection to 18,000 litres

MASS:
(Based on "D" Class Covers)

Total mass for delivery based on minimum invert is 13.1 **tonnes**

Enviro M60

General Notes

The Enviro 'M60' is an Australia Designed and Manufactured Device for the removal of pollutants including oils from run-off water. The Enviro 'M60' is normally installed in-line within new or existing drainage pipes and can be adapted to be installed in an open channel if required. The device does not require any power, utilising the energy in the water flow to separate and contain pollutants for periodical removal by evacuation equipment. Internal surface can be inspected and washed as required, whilst screens can be removed and also cleaned if and as required.

The Enviro 'M60' are a unique oil/water Separator as well as a Stormwater Quality Improvement Devices (SQID's) which has undergone extensive performance stress testing by independent authorities. These tests indicate compliance with Environmental Protection Authority (EPA) Legislation and Guidelines which prohibit the discharge of pollutants into stormwater. The aim of the Enviro 'M60' is to restore water quality to a safe and environmentally sustainable state, which pre-existed urbanisation. The application is aimed at any catchment, where an oil spill risk may exist.

Recommendations made in the Australian Run-Off Quality Guideline 2007 (ARQ) are adhered to. The 'M' models also comply with EN-858-1, Class 1 oil/water separators.

Specifications: -

1. Design service life 100 years for fixed parts and 25 years for replacement parts
2. Hydraulic Resistance k factor = 0.425
3. Inlet to outlet differential = 25mm
4. Concrete chamber, risers and cover slabs are designed and manufactured in accordance with AS3600-2009 and under Quality Assurance 9001.
5. Covers are designed and tested in accordance with AS3996 – 2006 Access Covers and Grates
6. Internal components are manufactured from high grade, stainless steel to comply with International Corrosion Standards. There is no welding used. This complies with advice from both the American and Australian Institute of Engineers warning that welded stainless steel exposed to bacterial charged water can result in early corrosion and failure
7. 'M60' performance testing verifies the following pollutant removal rates. The testing was performed across a range of concentrations and flow rates which replicated various run-off water conditions and confirmed: -
   7.1. gross pollutants, reduction exceeds 95%
   7.2. suspended solids, reduction exceeds.....90%
   7.3. total phosphorous, (TP) retention 97%
   7.4. total nitrogen, (TN) retention.....85%
   7.5. total hydrocarbons.....99.95%
   7.6. Oil Containment.....18,000 litres
8. The lower storage chamber has the capacity to hold the annual load discharged from a catchment based on the ARQ Section 3.7 recommended allowance of 1m3/ha/ann.
9. An important feature of the Enviro 'M60' is that all in flow is treated in accordance with EPA requirements that fuel-dispensing zones cannot discharge oil contaminants particularly as a result of emergency oil spills into environmental flows. Provision has been allowed for the installation of alarms and automatic evacuation systems.
10. Particle size capture is set to retain all particles greater than 500µ and to then retain a majority of particles to less than 100µ.
11. Hydrocarbon retention occurs in a separate chamber which operates as a best practice oil and grease arrestor
12. Re-suspension of hydrocarbons and all retained materials is prevented by including separate chambers for separation from flow and retention.

REV.	DESCRIPTION	DATE	APPROVED
0	Technical Specification Created	20-Nov-21	LC
REVISIONS			

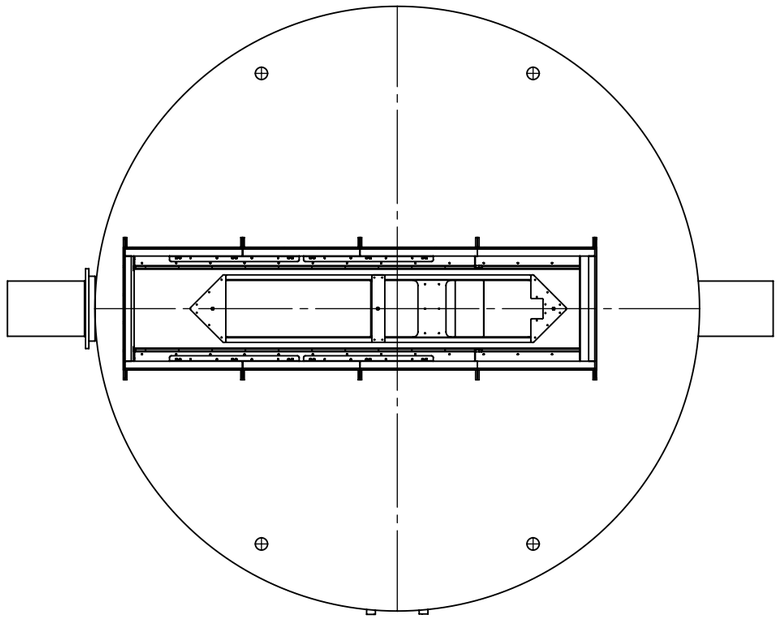
For further assistance: -
Technical Support Ph: .....+61 8 8564 2347
Email: info@enviroaustralis.com.au

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	02-02-2022

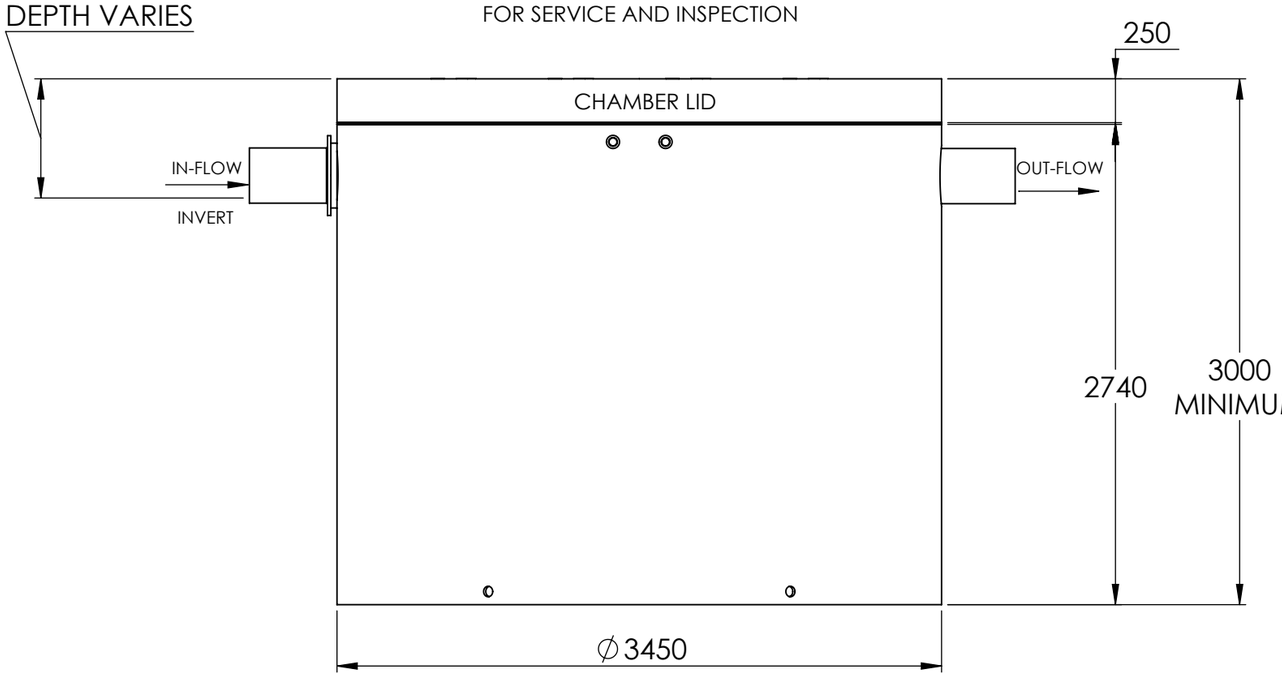
ENVIRO

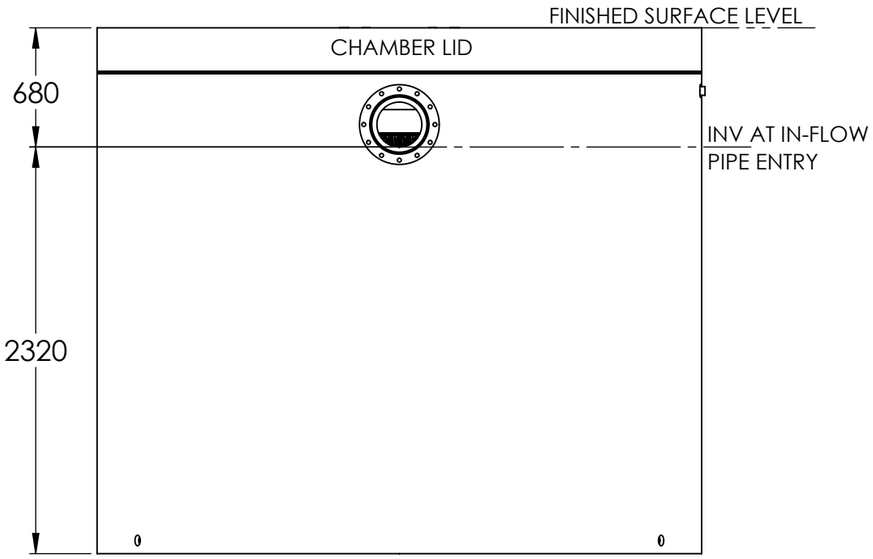
TITLE:
ENVIRO M60.20
SPECIFICATIONS AND TECHNICAL DATA

MATERIAL:	ASSEMBLY:	
CONCRETE & S/STEEL	M60.20	A3
WEIGHT:	SCALE: NTS	REV: 0
		SHEET 1 OF 5



VIEW AS SEEN THROUGH COVERS OPENING
FOR SERVICE AND INSPECTION





General Table		
CLASS	OVERALL HEIGHT	MIN. DEPTH TO INVERT
'D' CLASS	3000 mm	680 mm

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

BENDING RADIUS	K - FACTOR

PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	02-02-2022

ENVIRO

TITLE:
ENVIRO M60.20
GENERAL ARRANGEMENT

MATERIAL: CONCRETE & STEEL

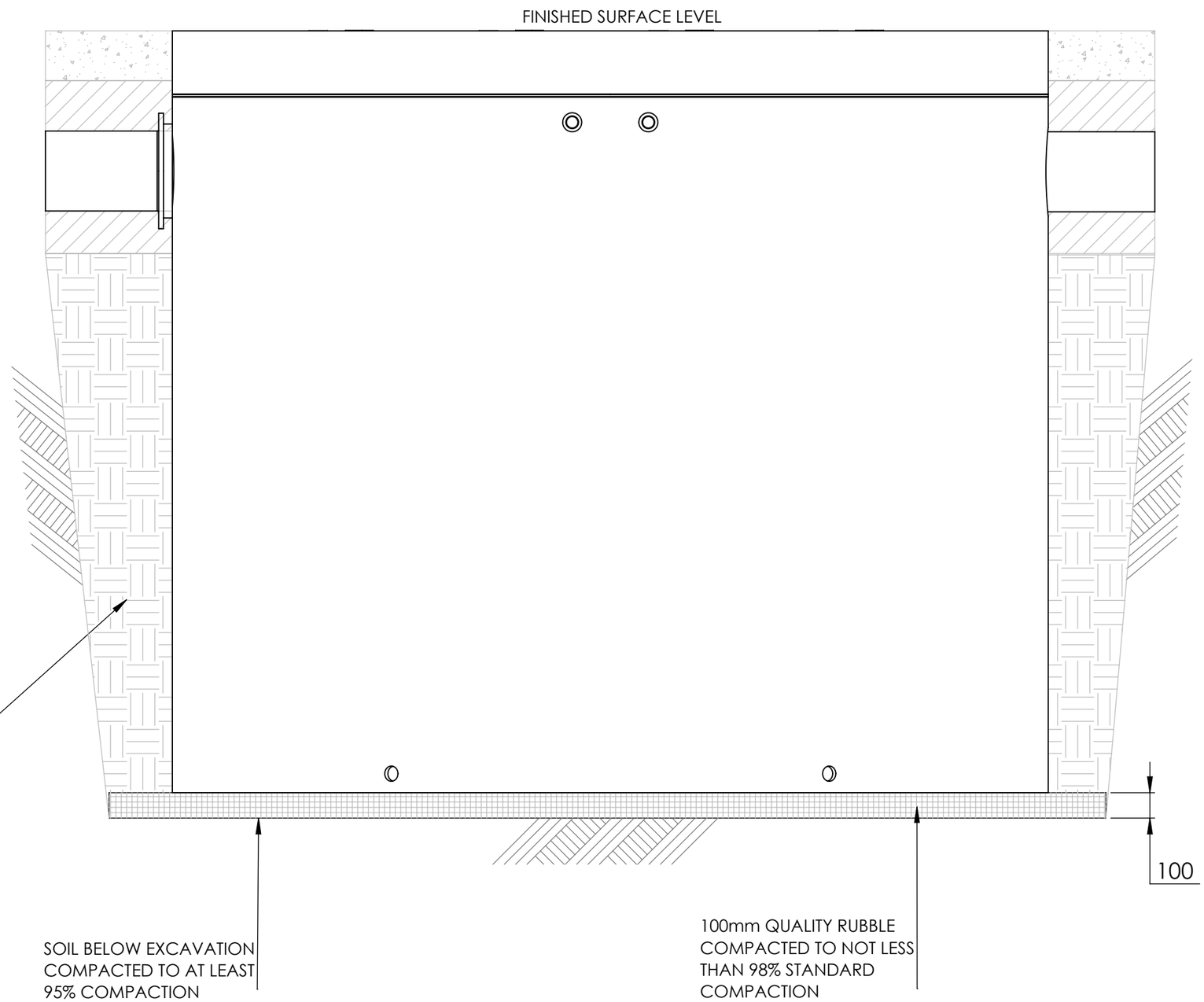
ASSEMBLY: M60.20

A3

REV: 0

SCALE: NTS

SHEET 2 OF 5



EXCAVATION VOLUME:

TOTAL EXCAVATION VOLUME - 67 m^3

BACKFILL VOLUME FROM CHAMBER BOTTOM
TO PIPE INVERT = 23 m^3

BACKFILL VOLUME FROM PIPE INVERT
TO SURFACE LEVEL = 15 m^3

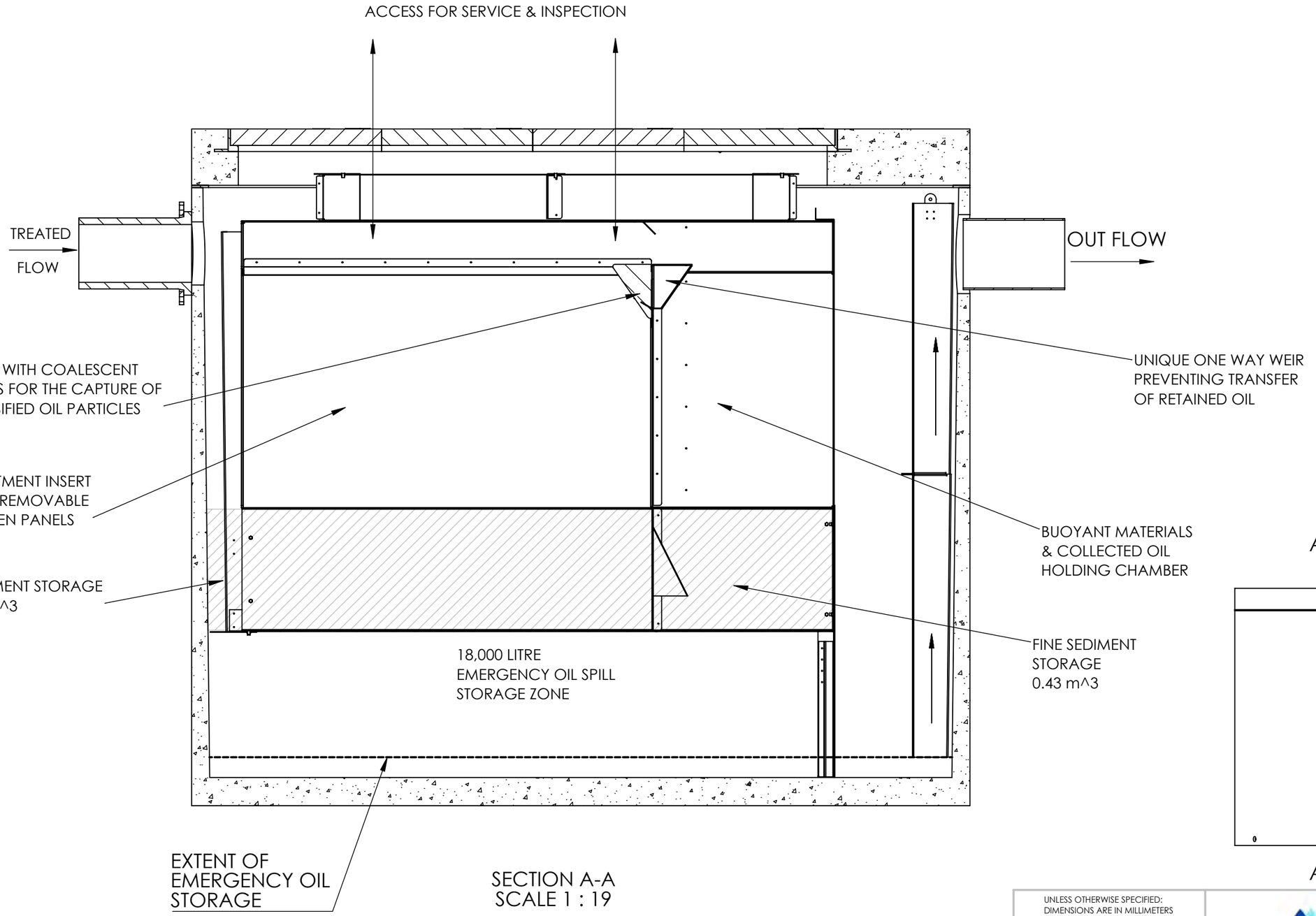
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	02-02-2022

ENVIRO

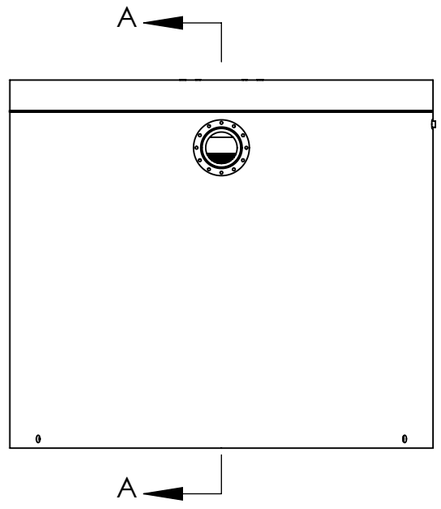
TITLE:

ENVIRO M60.20
SITE INSTALLATION

MATERIAL:	ASSEMBLY:	
CONCRETE & STEEL	M60.20	A3
		REV: 0
	SCALE: NTS	SHEET 3 OF 5



SECTION A-A
SCALE 1 : 19



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	02-02-2022

ENVIRO

TITLE:

ENVIRO M60.20
GENERAL OPERATION

MATERIAL: CONCRETE & STEEL

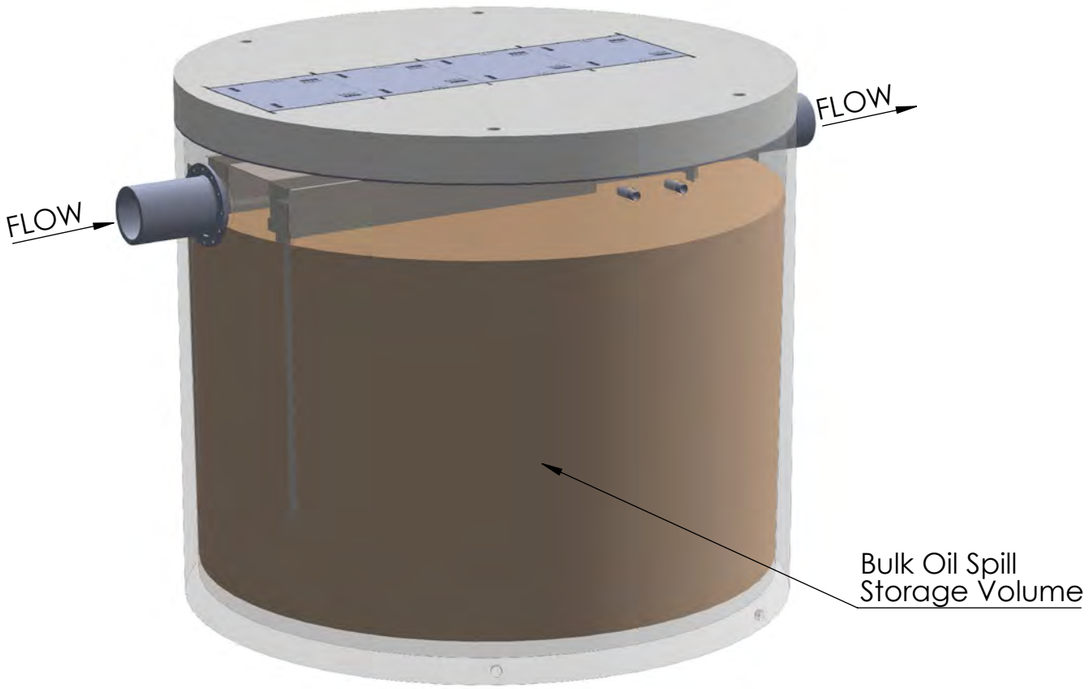
ASSEMBLY: M60.20

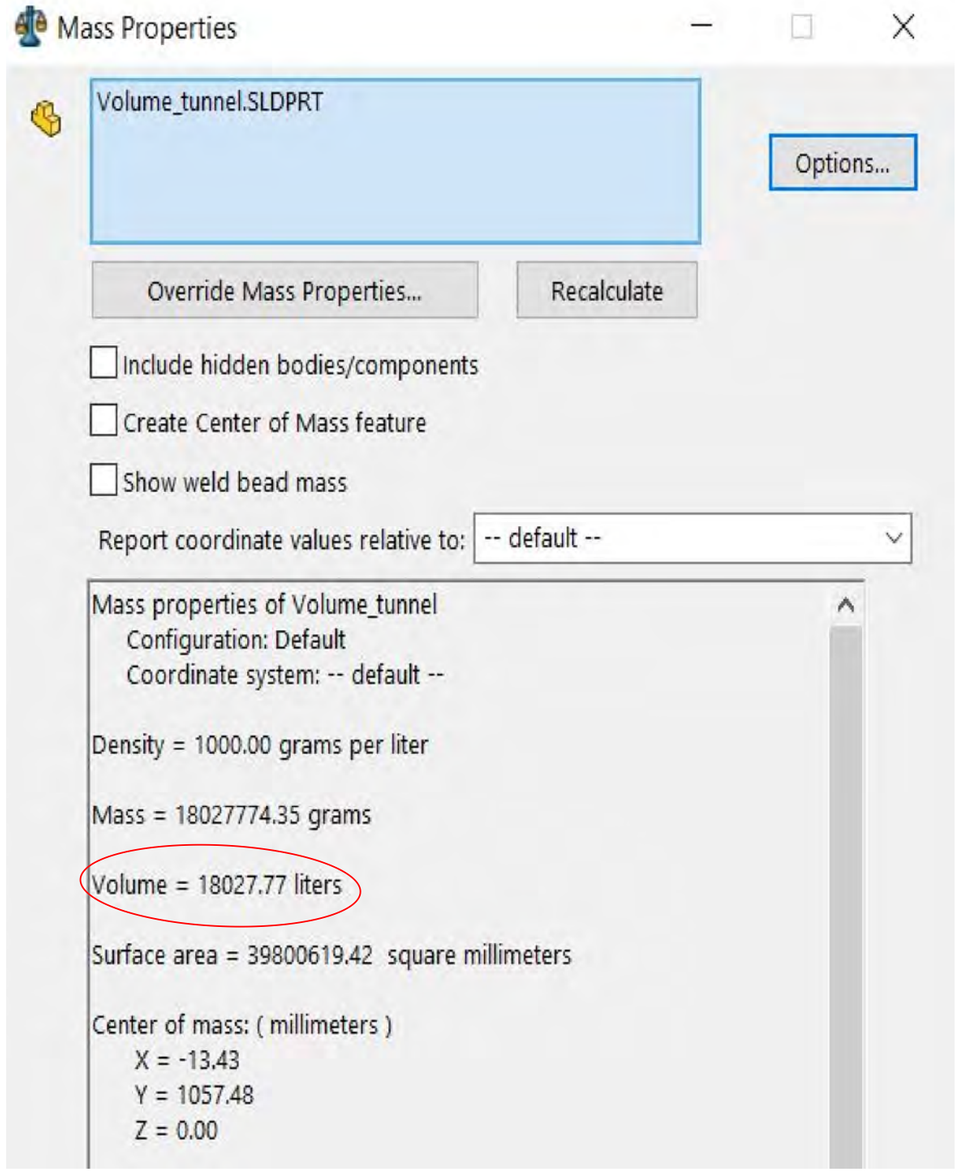
A3

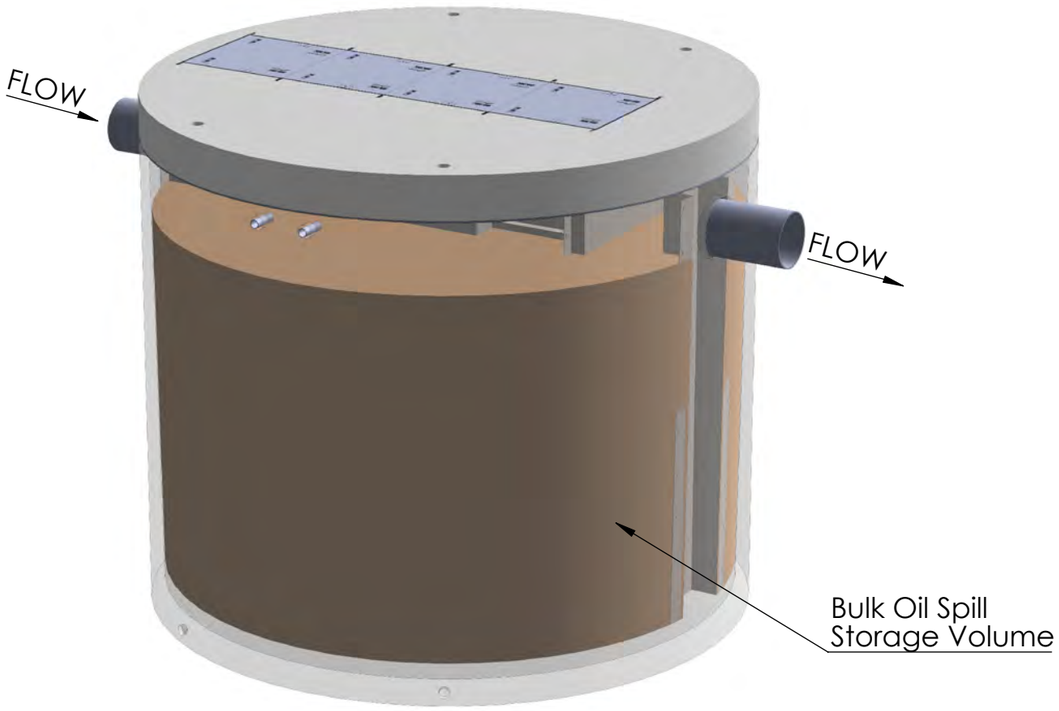
REV: 0

SCALE: NTS

SHEET 4 OF 5







UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

BENDING RADIUS	K - FACTOR

PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	02-02-2022

ENVIRO

TITLE:

ENVIRO M60.20
STORAGE VOLUME

MATERIAL: CONCRETE & STEEL

ASSEMBLY: M60.20

A3

REV: 0

SCALE: NTS

SHEET 5 OF 5

Enviro E Series

An in-line multi-chamber device with integrated separation zones for removal of broad spectrum pollutants generated by high impact catchments

The Enviro E series is an in-line multi-chamber device designed to remove the broad spectrum of pollutants transported by run-off water from high impact catchments. Pollutant groups are separated and contained in separate zone for removal.

All Enviro models are designed to match pipe size, treated flow and flow velocity.

All models offer the same performance. This has been established and certified by independent parties. The following removal rates were exceeded in full scale controlled testing and/or were verified by university analysis.

- Gross Pollutants 100%
- Suspended Solids 86%
- Total Nitrogen 85%
- Total Phosphorous 97%
- Hydrocarbon Removal 90%

Other factors include:

- Treated flow of pipe diameter[1] 30%
- Hydraulic Resistance, k factor.....0.425
- Nominal service intervals[2,3] .....1 year
- Max particle size by-pass .....500 μ
- Nominal particle size capture .....100 μ
- Design service life .....100 years
- Fully removable internal screens

Installation instructions are included with each unit at the time of delivery. Site supervision is also available if required.

Physical parameters:

- Enviro's models are designed so that the combined mass and size enable units to be legally transported without special conditions.
- Cover slab removable for ease of installation.
- Riser increments supplied to match invert and surface levels.
- Covers available for B and D duty applications
- Locked down covers supplied.
- More products are available - subject to custom design.

Note 1: Treatment continues after this level is exceeded enabling capture of higher density materials transported by increased energy in flow resulting from higher rainfall intensity.

Note 2: Additional storage of a further 1.4 m^3 is available before unit performance is compromised.

Note 3: Load volume allowance of 1m^3/ann based on ARQ section 3.7.

Enviro systems include:

- **H series oil/water separator**
- **E series for medium/high impact catchments**
- **G series for low impact applications**

Visit our website and use the selection guide, or contact our design engineers for advice.

Similar to all Enviro systems, the E series system arrives complete and is ready for easy installation.

Simply, lift and place directly into final position. The E90 shown below.

Standard model features are as follows. Custom design features, such as dry sump, G cover duty and telemetry systems are available.

	Model	Pipe Size	Treated Flow and Storage Capacity	Plan Dimensions (external length x width)	Depth Below Invert	Mass	Excavation Volume
Enviro E30		Nominally 300 ID. Can be used for 375mm ID subject to gradient and velocity	22 litres/sec 0.23 m^3	1.5m x 0.9m	1.2m	3.2 tonnes	2.2 m^3
Enviro E45		450mm ID	66 litres/sec 0.45 m^3	2.2m x 1.2m	1.4m	6.1tonnes	4.9 m^3
Enviro E60		600mm ID	142 litres/sec 0.85 m^3	2.8m x 1.2m	1.8m	9.3 tonnes	7.9 m^3
Enviro E75		750mm ID	258 litres/sec 3.1 m^3	3.6m x 1.95m	2.2m	16.1 tonnes	20.1 m^3
Enviro E90		Nominally 900 ID. Can be used for 1,050mm pipe size subject to gradient and velocity	419 litres/sec 3.2 m^3	4.35m x 1.95m	2.0m	18.6 tonnes	22.1 m^3

Enviro E120		1200mm ID	902 litres/sec 5.2 m^3	4.35m x 2.1m	1.8m	19.2 tonnes	22.0 m^3
Enviro E130		1300 mm ID	1285 litres/sec 6.7 m^3	5.1m x 2.4m	1.7m	23.9 tonnes	25.0 m^3
Enviro E180		1800 mm ID	2570 litres/sec 13.4 m^3	9.5m x 5.1m	1.65m	87.3 tonnes	56.0 m^3

Notes: Mass excludes additional riser increments. Excavation volume is a guide with 30% over allowance. Storage volume includes floatable holding chamber.

Enviro H, E and G Range - Typical Service and Maintenance

All Enviro treatment devices are designed to minimise service and maintenance costs as a result of the following features:

1. The storage chamber located below the processing chamber is designed to be easily inspected and serviced. Based on the ARQ extrapolation of 1m^3/ann/ha from a typical urban catchment, the large storage volume provides for extended service intervals of at least 1 year, with 2 year intervals subject to site usage.
2. Service is by evacuation. (Refer Fig 1) The volume of water contained in the process chamber is minimised to reduce evacuation costs. Furthermore, this water can be pumped out as the first stage of service avoiding evacuation and the cost of disposal. A dry sump option is available on request.
3. All surfaces inside the Enviro EPS are visible from the service covers, negating the need for personnel to enter the device and perform longer term wash downs. (Refer Fig 2)
4. If required, screens can be removed manually without entering the device. This facilitates inspection, cleaning or replacement, without additional labour or equipment. (Refer Fig 3)
5. During the construction phase ie before hand over, screens can be removed enabling the device to act as a sediment trap. This enables the constructor to clean out the device and handover to the client an unused, clean unit eliminating disputes over condition of the device.

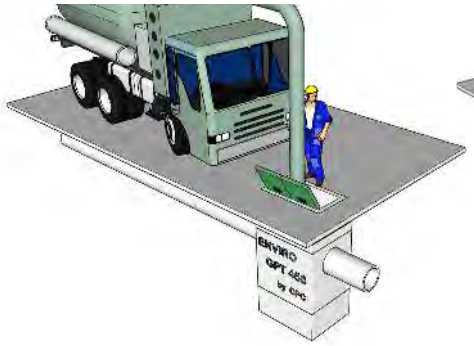


Fig 1 evacuation service

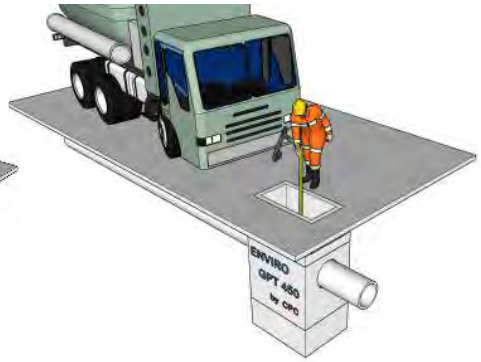


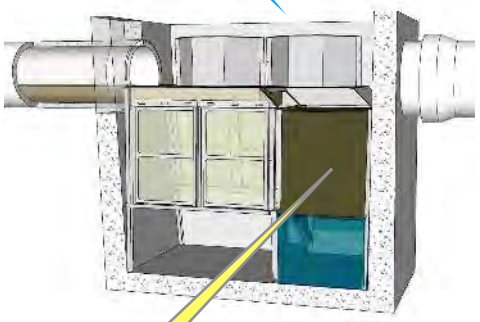
Fig 2 wash down as required

Fig 3 screen removal as required

Options available

for E & H-Series: oil level sensor

- Pump out, manual or auto



Technical: 08 8 564 2347

After Hours : 0419 555 514

www.enviroaustralis.com.au

info@enviroaustralis.com.au

APPENDIX E – STORMWATER & OILY WATER TREATMENT SYSTEMS MANAGEMENT PLAN

TRAFFIC MANAGEMENT:

PRIOR TO REMOVING COVERS, APPROPRIATE TRAFFIC MANAGEMENT MEASURES MUST BE IMPLEMENTED TO PREVENT UNAUTHORISED PERSONAL ENTRY TO THE WORK AREA.

STEP-1

REMOVE SECURITY BOLT

STEP-2

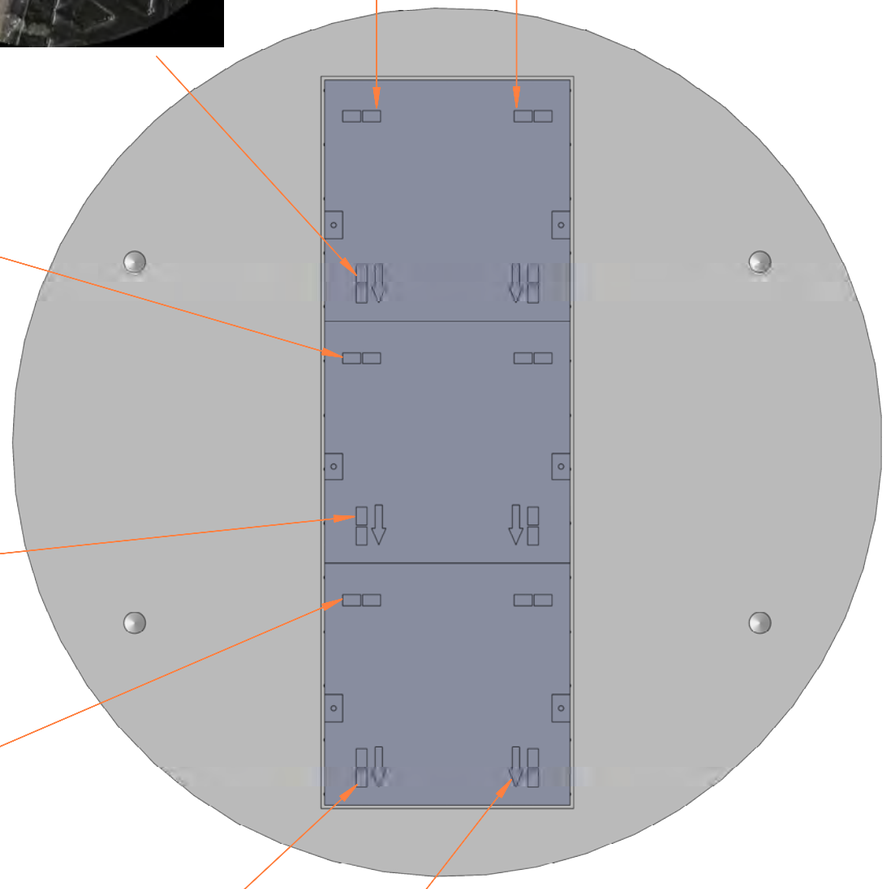
REMOVE LIFTING POINT COVERS

STEP-3

REMOVE DEBRIS FROM ALL LIFTING POINTS

STEP-4

USE AN APPROVED LIFTING ATTACHMENT



STEP-5

FIT LIFTING ATTACHMENT

TYPICAL CAST IRON COVER

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

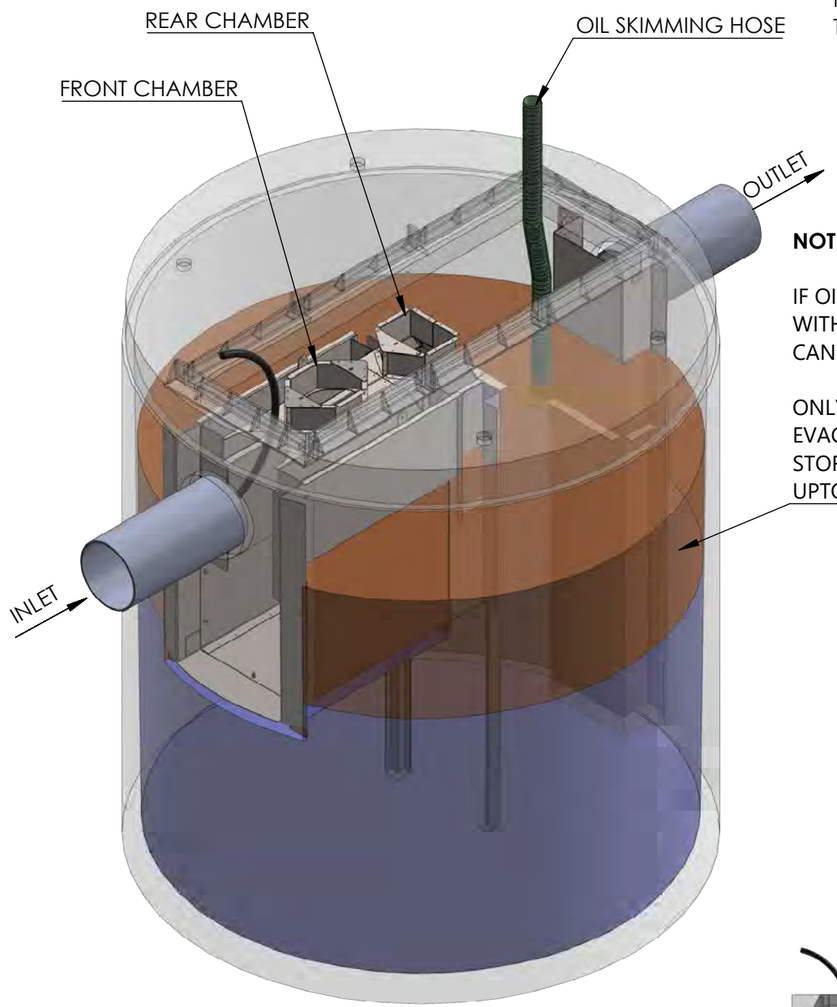
ENVIRO

TITLE:

SERVICE MANUAL - ENVIRO OWS SERIES (OE30, OE45, OE60, M30,M45,M60)

MATERIAL:	ASSEMBLY:	A3
		REV:
WEIGHT: Kg	SCALE: NTS	SHEET 1 OF 6

VIEW OF INSERT WITH COVERS REMOVED FOR SERVICE



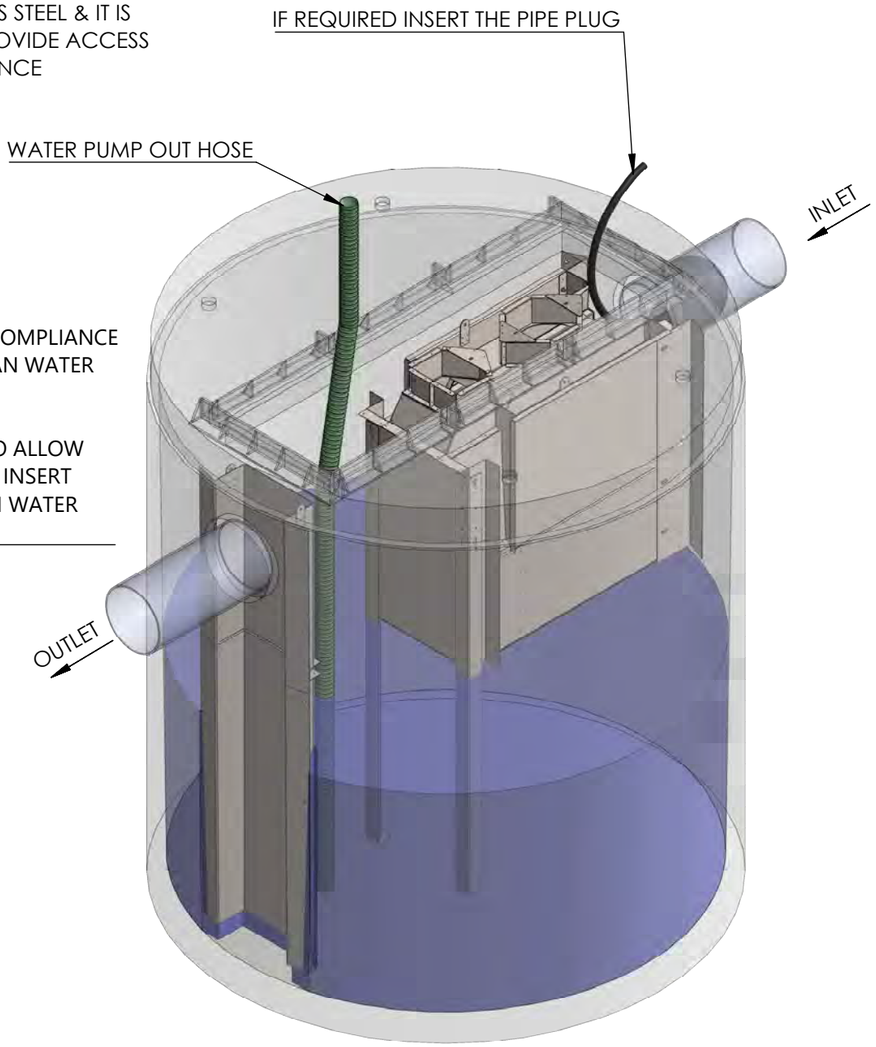
NOTE:

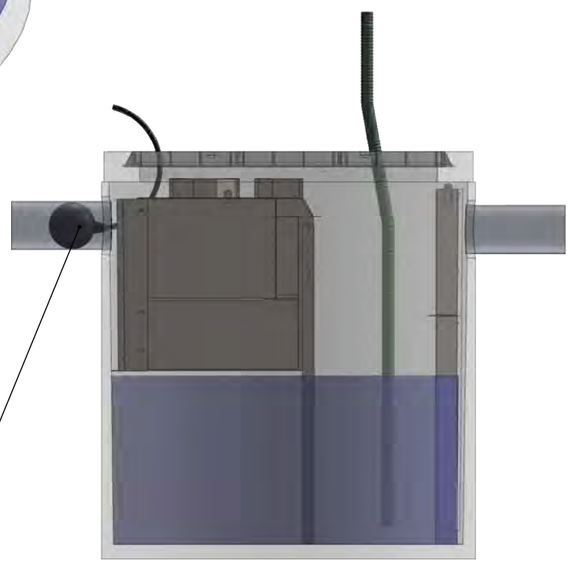
THE INSERT IS MANUFACTURED FROM STAINLESS STEEL & IT IS FITTED WITH REMOVABLE SCREENS.TURRETS PROVIDE ACCESS TO THE INSERT STORAGE ZONE FOR MAINTENANCE

NOTE:

IF OIL IS PRESENT, REMOVE BY SUITABLE MEANS IN COMPLIANCE WITH APPROPRIATE REGULATIONS. REMAINING CLEAN WATER CAN BE PUMPED TO DISCHARGE.

ONLY REMOVE SUFFICIENT WATER TO DISCHARGE TO ALLOW EVACUATION OF CAPTURED MATERIALS WITHIN THE INSERT STORAGE ZONE. AFTER SERVICE, FILL CHAMBER WITH WATER UPTO DISCHARGE PIPE INVERT.





INFLATTABLE PIPE PLUG
ONLY IF REQUIRED

MAX. SIZE OF THE INFLATTABLE BALLOON OD FOR OWS SERIES IS 300mm

SIDE VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

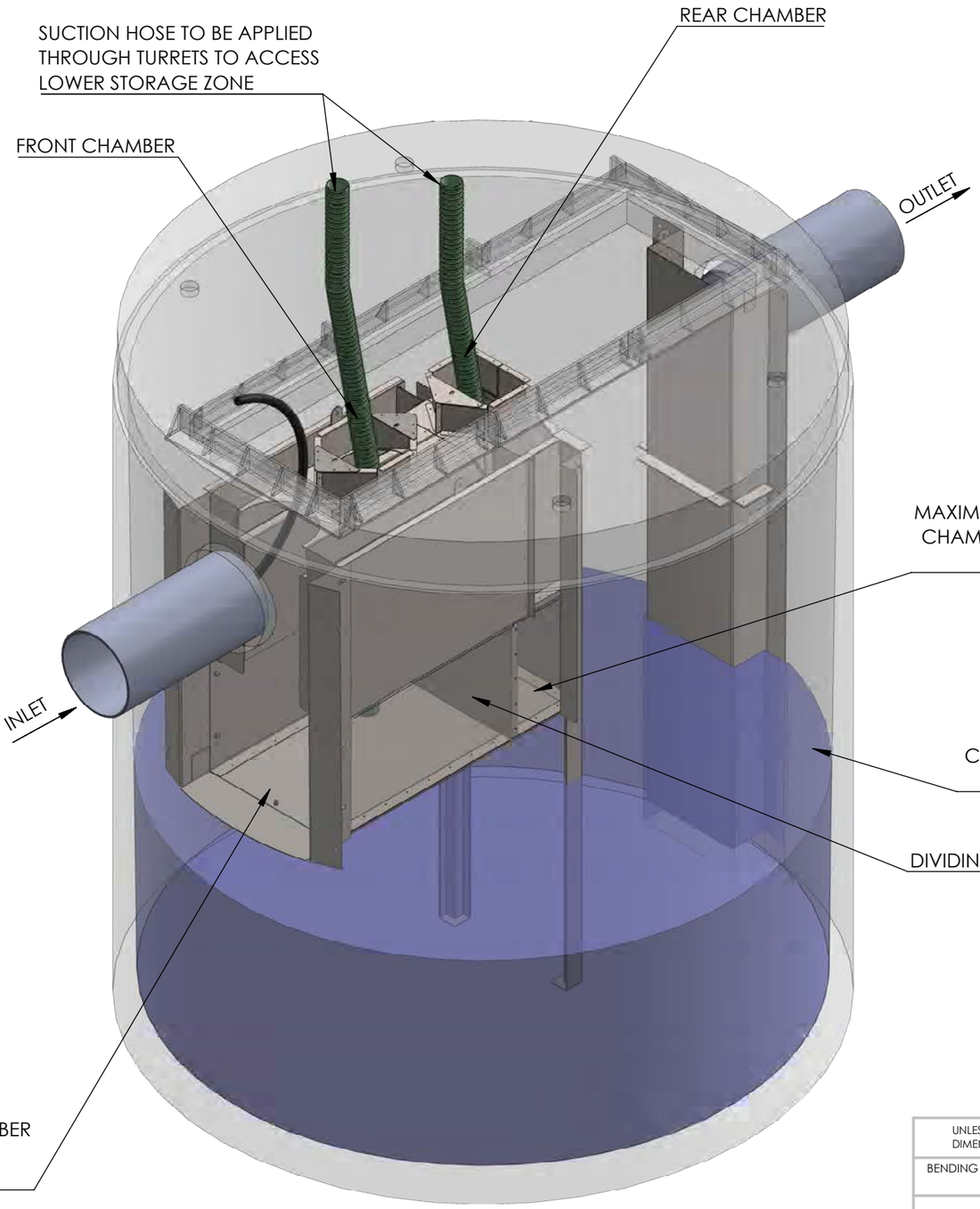
ENVIRO

TITLE:

SERVICE MANUAL - ENVIRO OWS SERIES (OE30, OE45, OE60, M30,M45,M60)

MATERIAL:	ASSEMBLY:	A3
		REV:
WEIGHT: Kg	SCALE: NTS	SHEET 2 OF 6

SERIES	VOLUME-1 (LITRES)	VOLUME-2 (LITRES)	VOLUME-3 (LITRES)
OE30	250	110	7,300
OE45	530	360	7,300
OE60	900	430	10,000
M30	250	110	19,000
M45	530	360	19,000
M60	1,200	575	19,000



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

BENDING RADIUS	K - FACTOR

PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

TITLE:

SERVICE MANUAL - ENVIRO OWS SERIES (OE30, OE45, OE60, M30,M45,M60)

MATERIAL:

ASSEMBLY:

A3

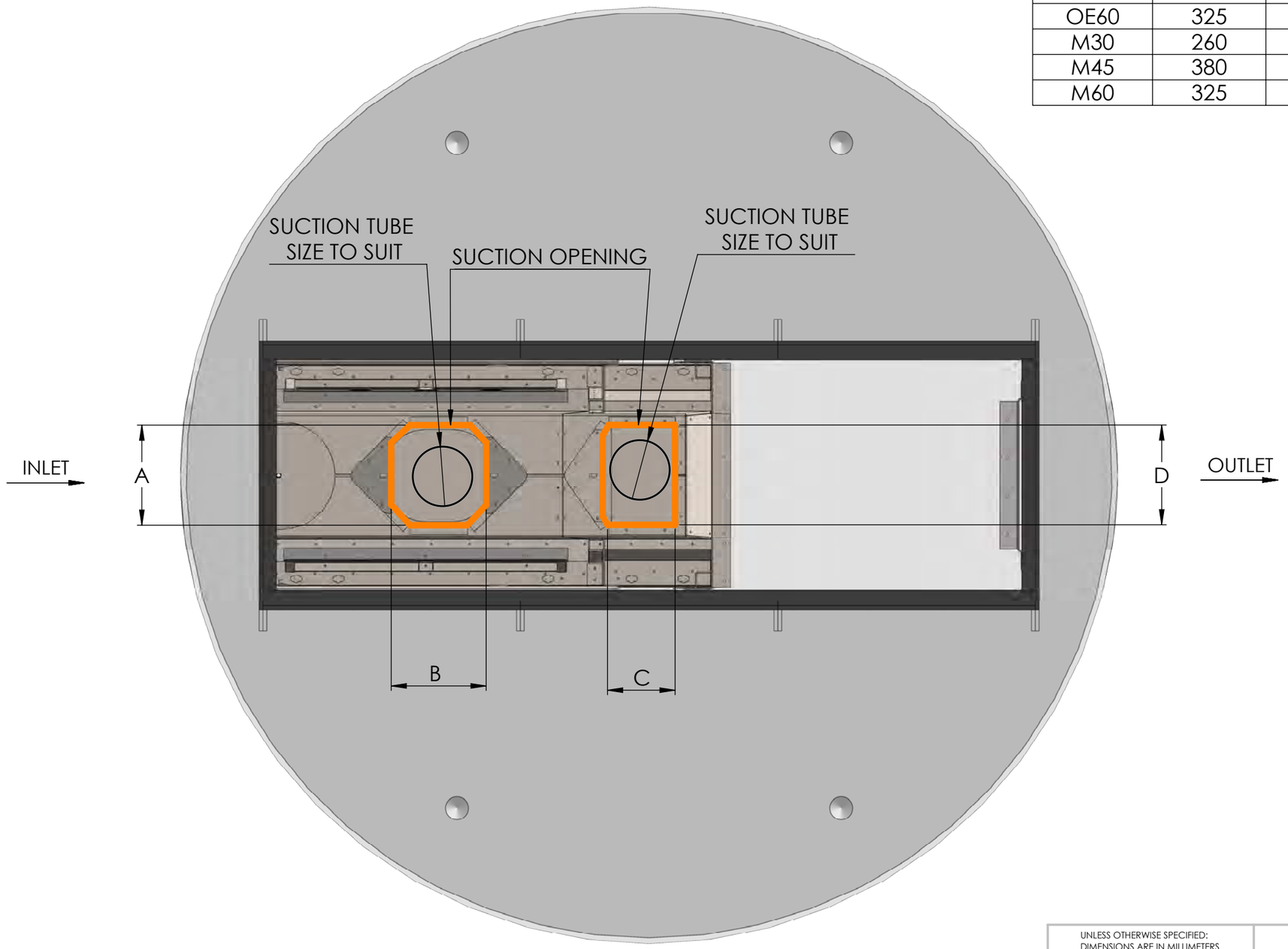
REV:

WEIGHT: Kg

SCALE: NTS

SHEET 3 OF 6

SERIES	A (mm)	B (mm)	C (mm)	D (mm)
OE30	260	250	175	260
OE45	380	520	390	380
OE60	325	850	425	325
M30	260	250	175	260
M45	380	520	390	380
M60	325	850	420	325



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS

BENDING RADIUS	K - FACTOR

PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

TITLE:

SERVICE MANUAL - ENVIRO OWS SERIES
(OE30, OE45, OE60, M30,M45,M60)

MATERIAL:

ASSEMBLY:

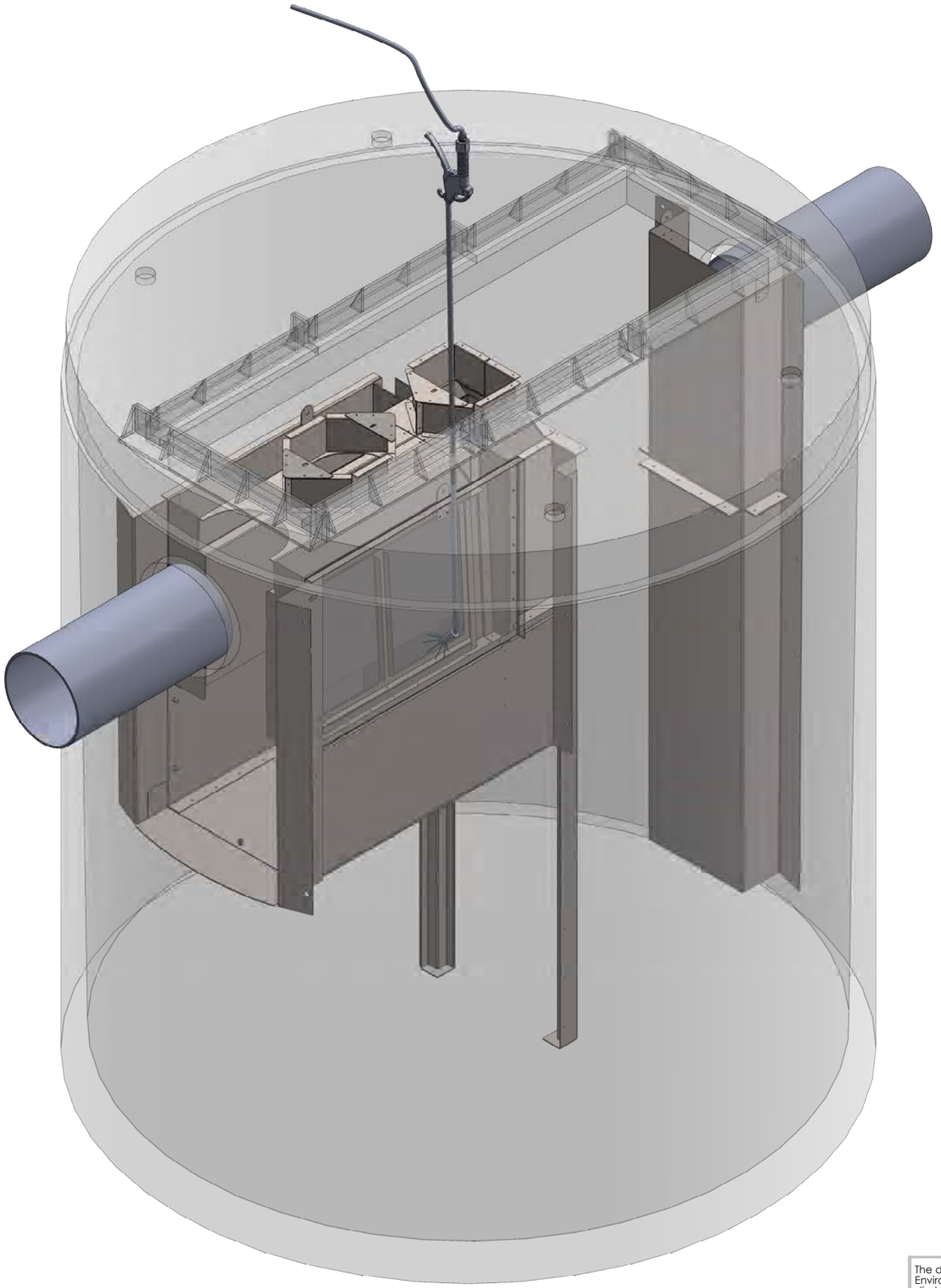
A3

REV:

WEIGHT: Kg

SCALE: NTS

SHEET 4 OF 6



NOTES:

SCREENS ARE LOCATED ON BOTH THE SIDES AND CLEAN DOWN IS ADVISABLE.

MAXIMUM PRESSURE SHOULD NOT EXCEED 4 BAR

IF SUBSTANTIAL AMOUNT OF WATER IS USED WHILE CLEANING THE SCREEN, THEN REMOVE BEFORE REFILLING.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

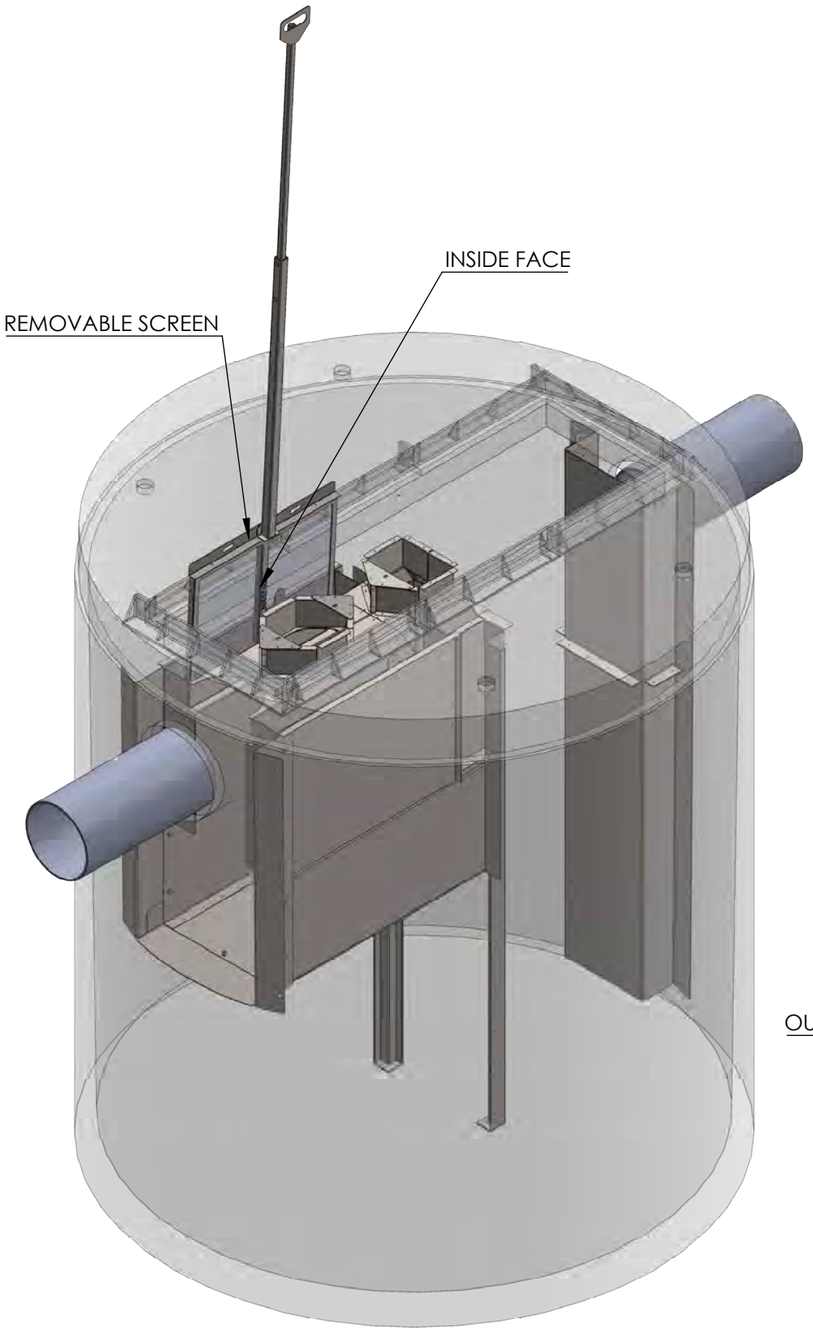
TITLE:

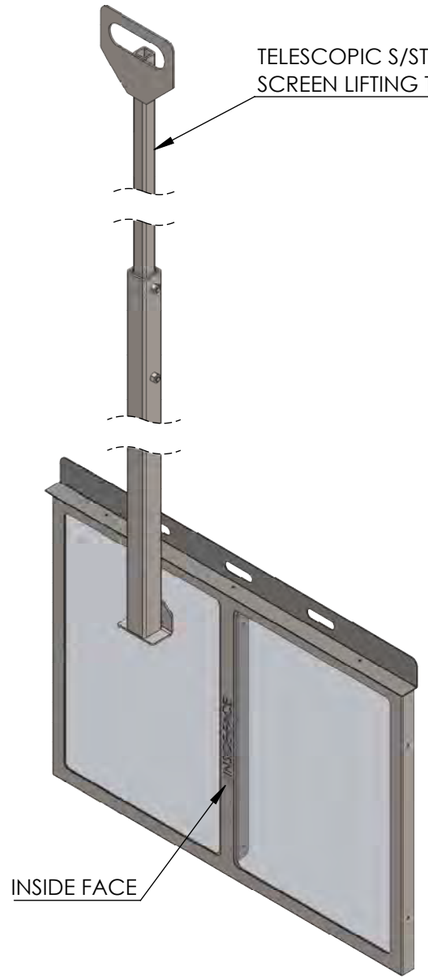
SERVICE MANUAL - ENVIRO OWS SERIES (OE30, OE45, OE60, M30,M45,M60)

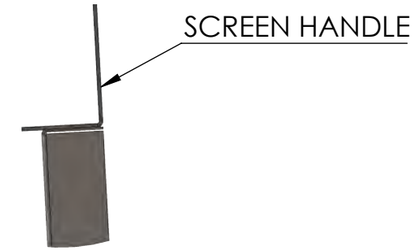
MATERIAL:	ASSEMBLY:	A3
		REV:
WEIGHT: Kg	SCALE: NTS	SHEET 5 OF 6

A SPECIAL TOOL TO REMOVE SCREENS CAN BE SUPPLIED

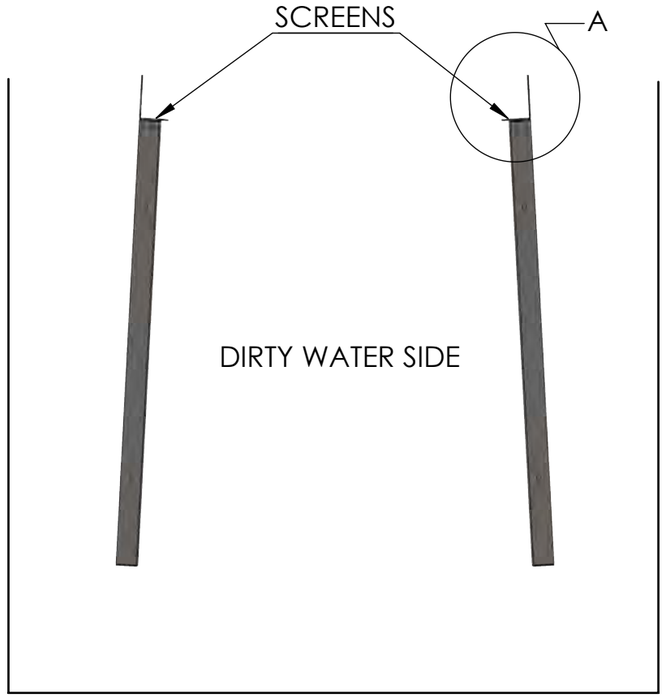
SMOOTH SCREEN FACE ORIENTED TOWARDS DIRTY WATER SIDE.
REFER ETCHING ON SCREEN FACE. SCREENS CAN BE REMOVED FOR SERVICING OR REPLACEMENT WITH SPECIAL TOOL.

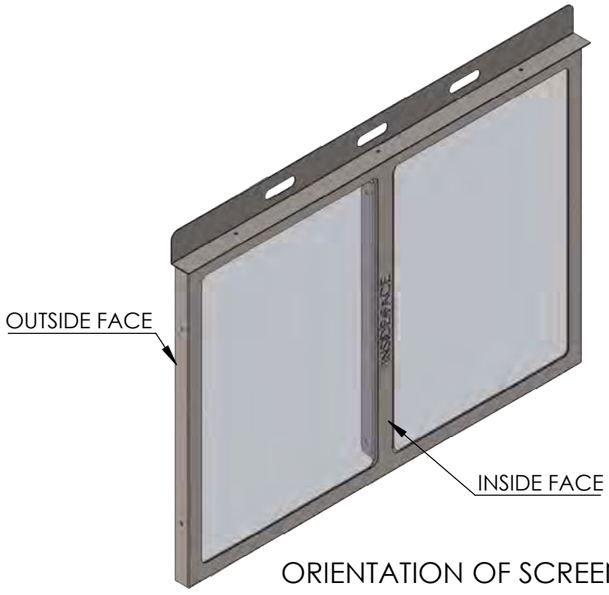






DETAIL A
SCALE 2 : 5





ORIENTATION OF SCREENS

MASS:

SCREEN WEIGHT: 3.60 Kg (EACH)

SCREEN REMOVAL TOOL WEIGHT: 7.5 Kg

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

TITLE:

SERVICE MANUAL - ENVIRO OWS SERIES (OE30, OE45, OE60, M30,M45,M60)

MATERIAL:	ASSEMBLY:	A3
		REV:
WEIGHT: Kg	SCALE: NTS	SHEET 6 OF 6

NOTE:

PRIOR TO REMOVING THE COVERS, APPROPRIATE TRAFFIC MANAGEMENT MEASURES MUST BE USED TO PREVENT UNAUTHORISED PERSONAL ENTRY.

STEP-1

REMOVE SECURITY BOLT

STEP-2

REMOVE LIFTING POINT COVERS

STEP-3

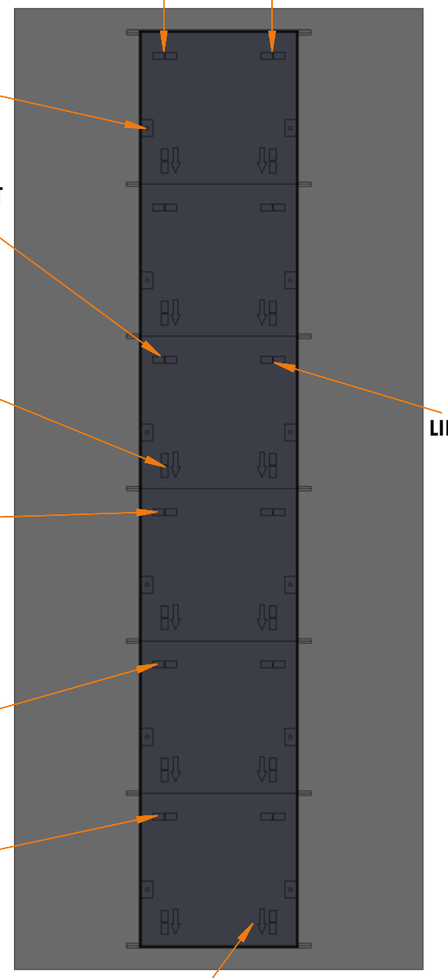
REMOVE DEBRIS FROM ALL LIFTING POINTS

STEP-4

USE AN APPROVED LIFTING ATTACHMENT

STEP-5

FIT LIFTING ATTACHMENT



LIFT IN ARROW DIRECTION

TYPICAL CAST IRON COVER

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

TITLE: SERVICE MANUAL

MATERIAL:

ASSEMBLY: E90

A3

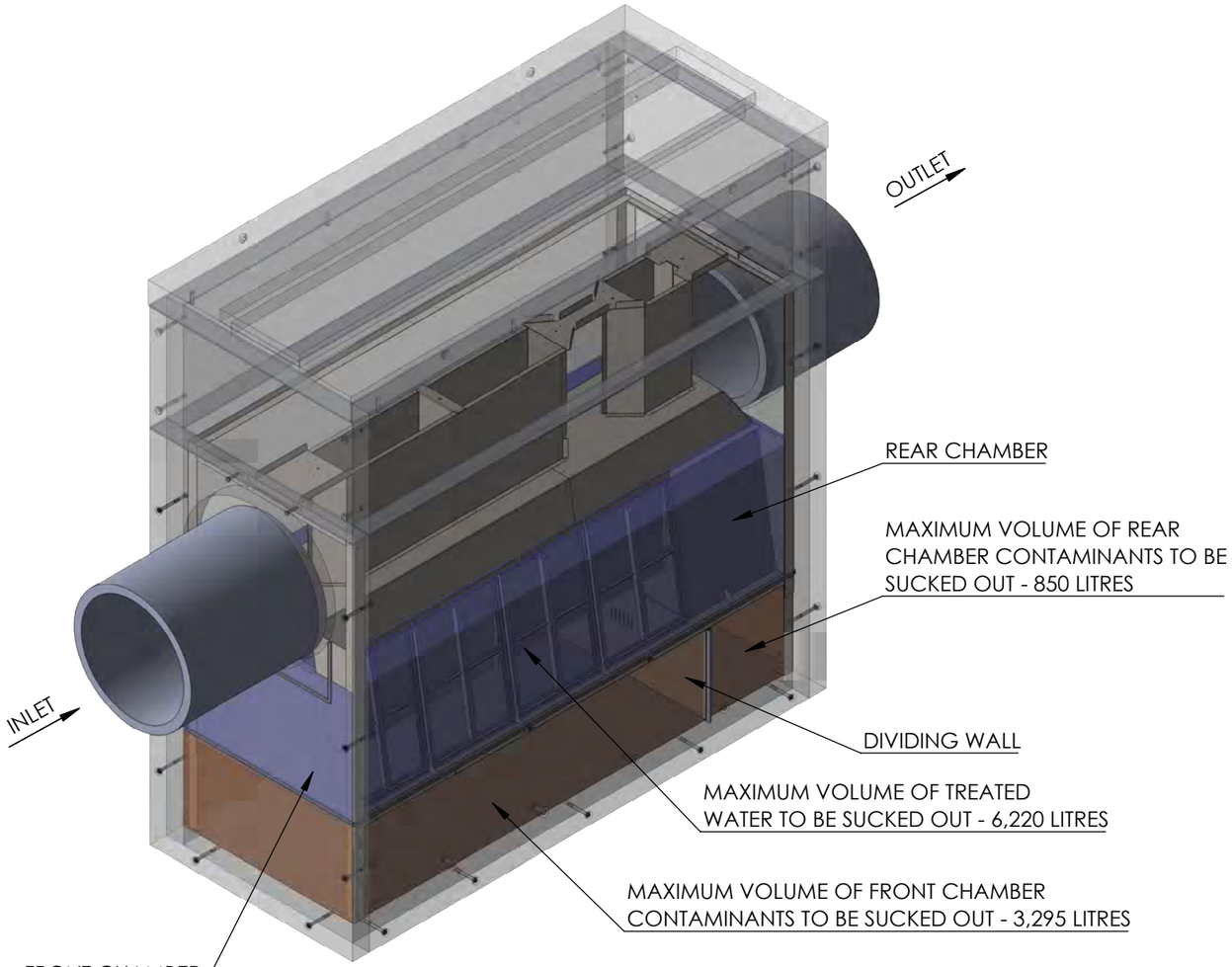
REV:

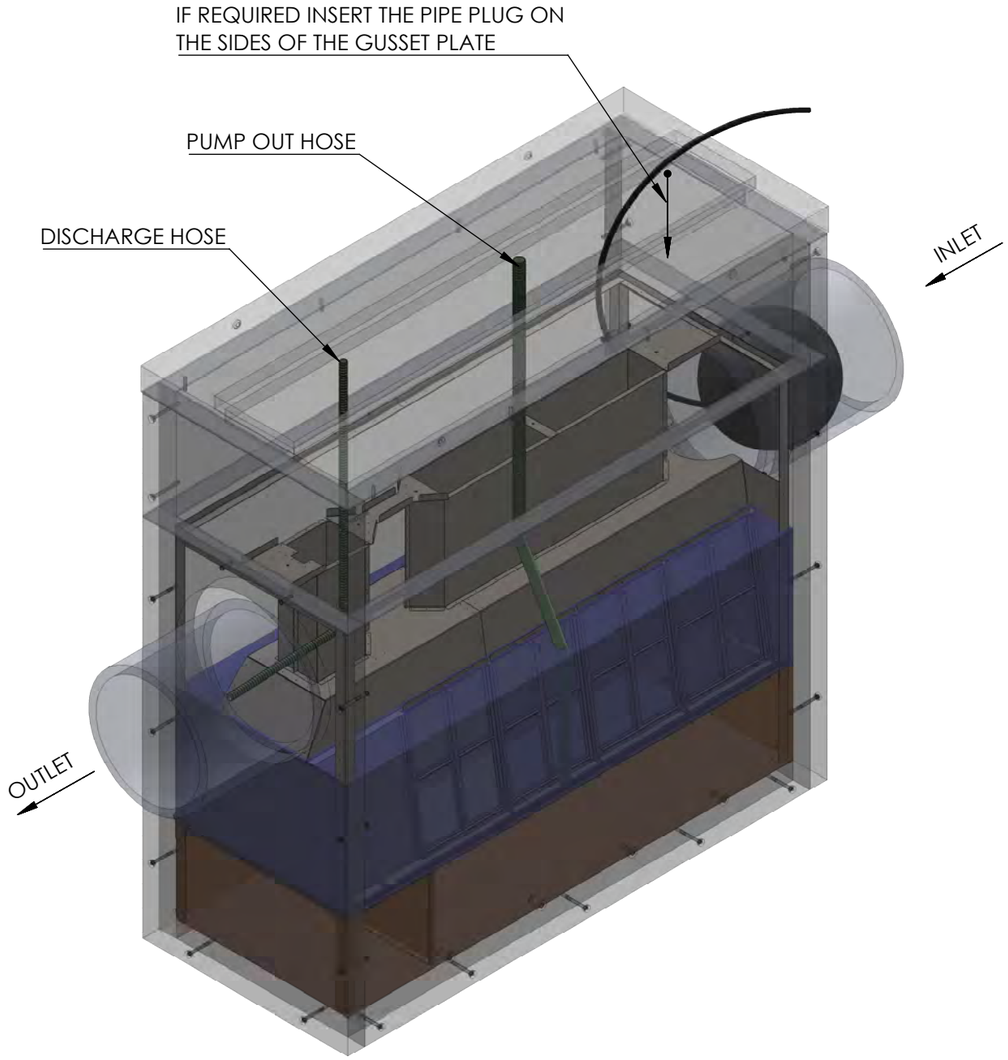
WEIGHT: Kg

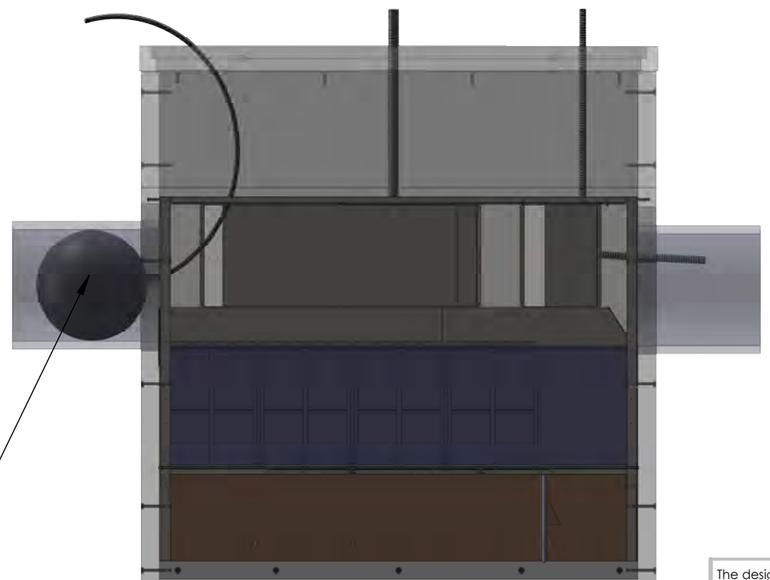
SCALE: NTS

SHEET 1 OF 5

VIEW OF INSERT WITH COVERS REMOVED FOR SERVICE







SIDE VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

TITLE: SERVICE MANUAL

MATERIAL:

ASSEMBLY: E90

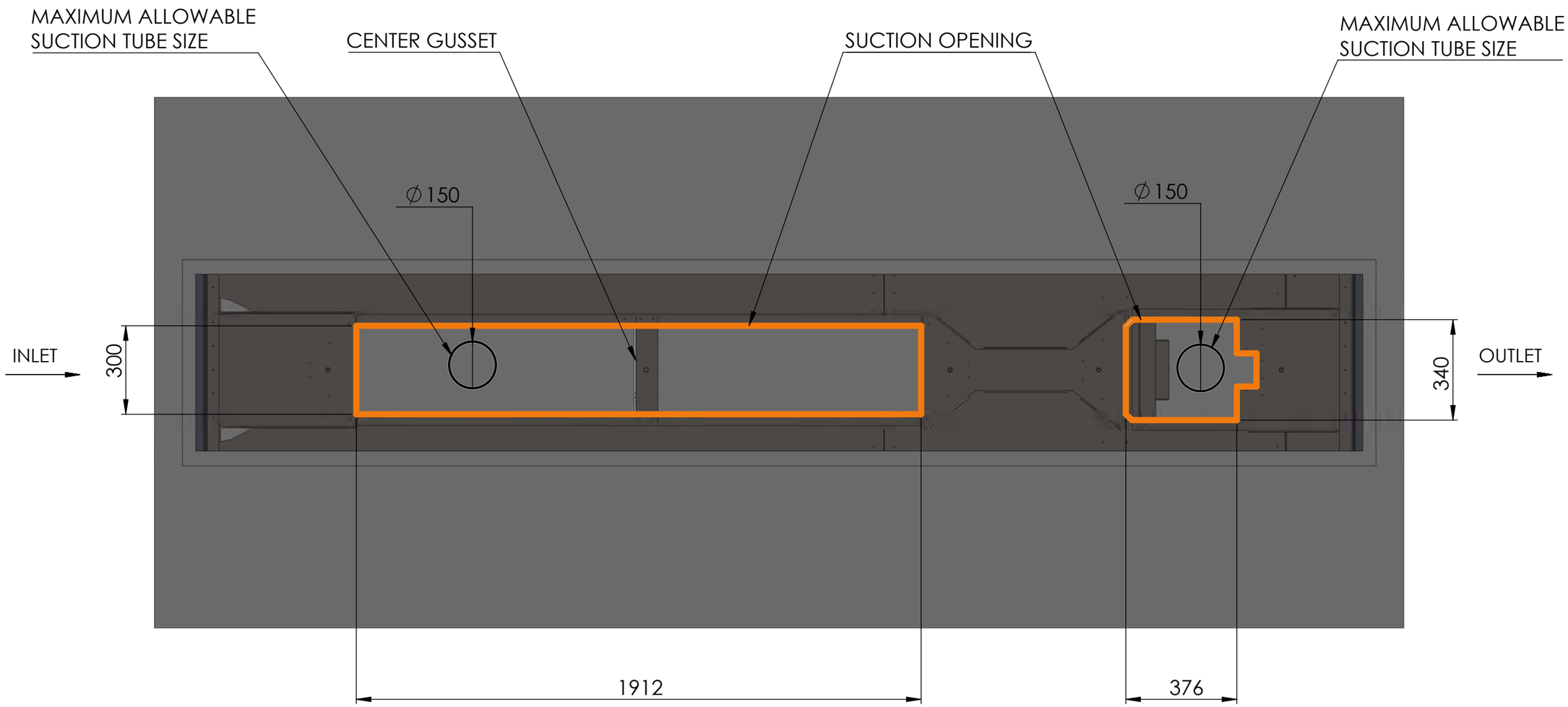
A3

REV:

WEIGHT: Kg

SCALE: NTS

SHEET 2 OF 5



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21
MATERIAL:	
WEIGHT: Kg	

ENVIRO

TITLE:

SERVICE MANUAL

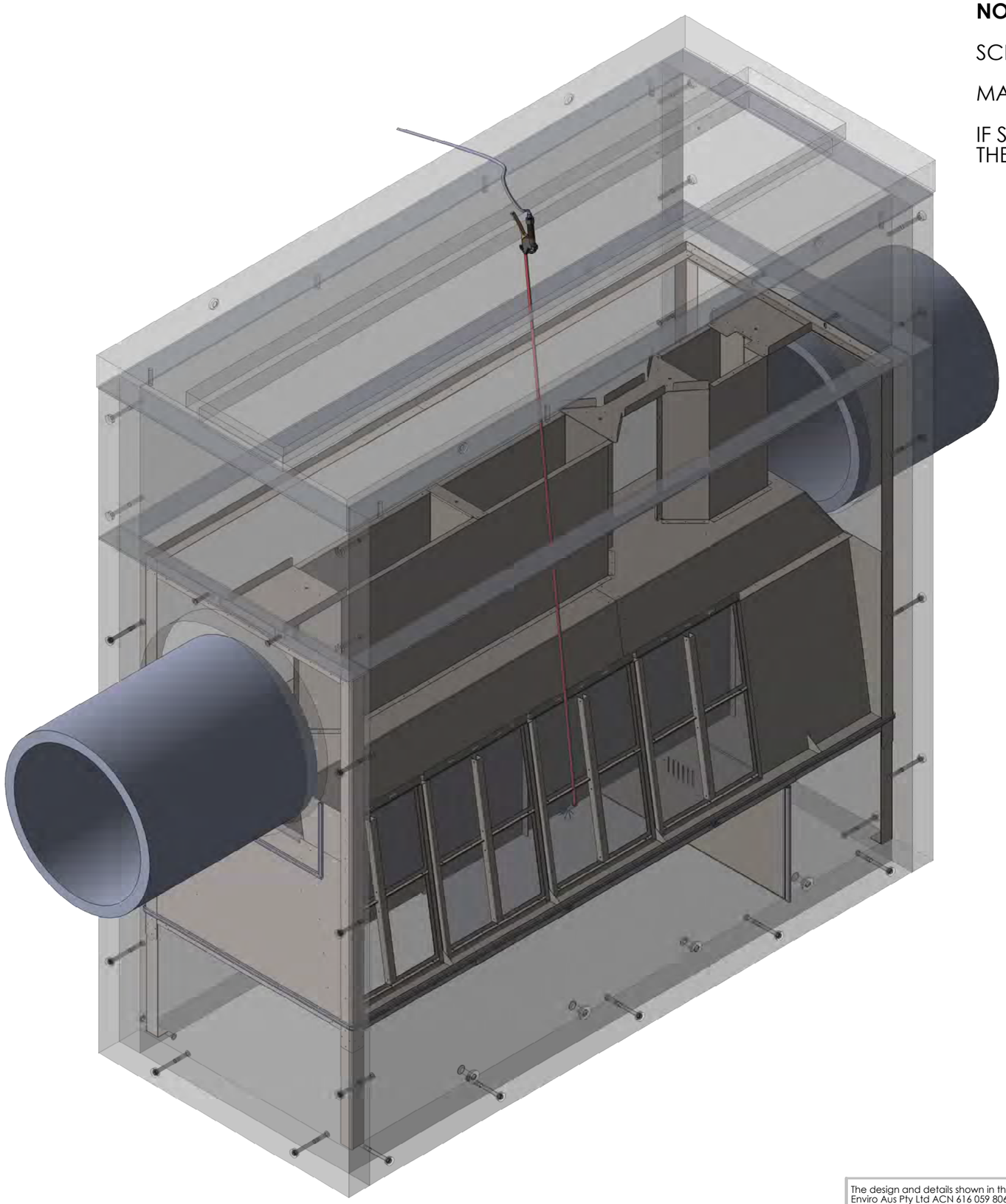
ASSEMBLY: E90

A3

REV:

SCALE: NTS

SHEET 3 OF 5



NOTES:

SCREENS ON BOTH THE SIDES NEEDS TO BE CLEANED THIS WAY.

MAXIMUM PRESSURE DOES NOT EXCEED 4 BAR

IF SUBSTANTIAL AMOUNT OF WATER IS USED WHILE CLEANING THE SCREEN, THEN THAT HAS TO BE SUCKED OUT.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

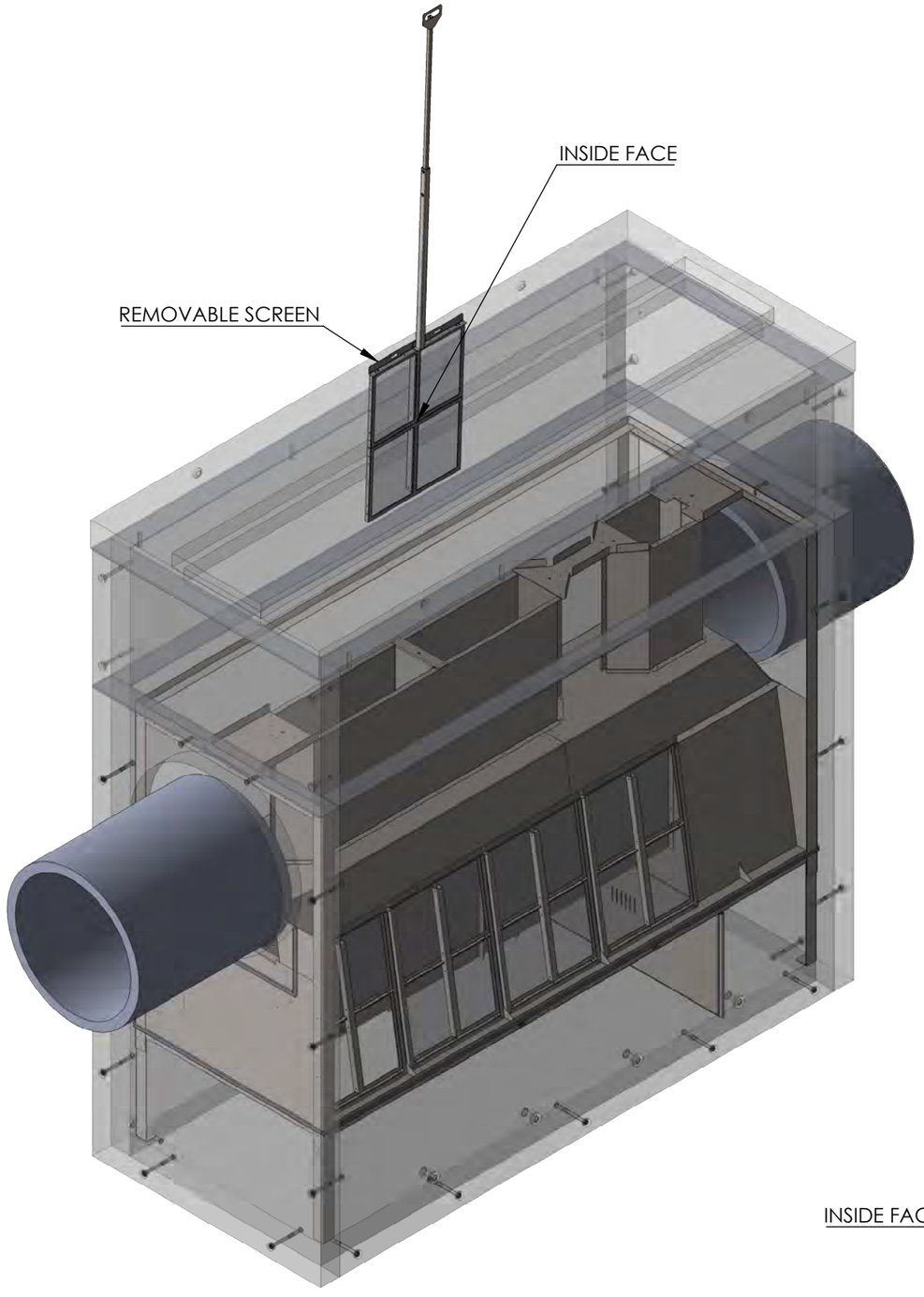
ENVIRO

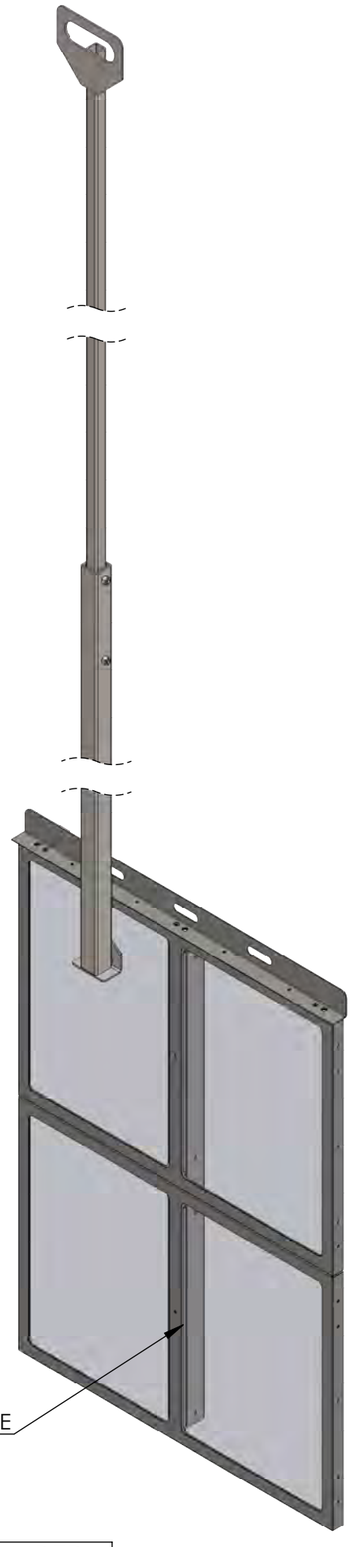
TITLE: SERVICE MANUAL

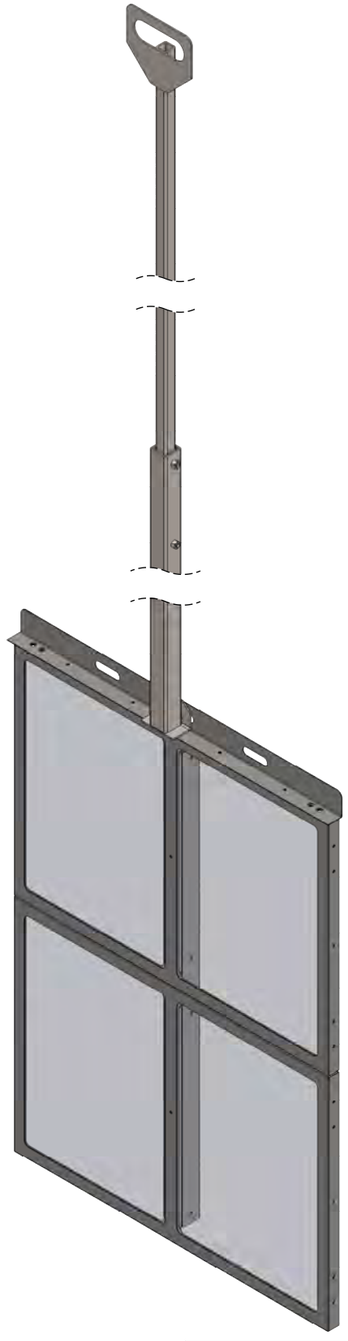
MATERIAL:	ASSEMBLY: E90	A3
		REV:
WEIGHT: Kg	SCALE: NTS	SHEET 4 OF 5

NOTE:

SMOOTH SCREEN FACE ORIENTED TOWARDS DIRTY WATER SIDE. SCREENS CAN BE REMOVED FOR SERVICING OR REPLACEMENT WITH SPECIAL TOOL.







ORIENTATION OF SCREENS

MASS:

SCREEN WEIGHT: 8.20 Kg (EACH)

SCREEN REMOVAL TOOL WEIGHT: 7.5 Kg

S.NO	'E' SERIES	TREATED WATER VOLUME (LITRES)	FRONT CHAMBER CONTAMINANTS VOLUME (LITRES)	REAR CHAMBER CONTAMINANTS VOLUME (LITRES)
1	E90	6,220	3,295	850

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS	
BENDING RADIUS	K - FACTOR
PREPARED BY	Logesh S
APPROVED BY	L Crasti
DATE	28-Dec-21

ENVIRO

TITLE: SERVICE MANUAL

MATERIAL:

ASSEMBLY: E90

A3

REV:

WEIGHT: Kg

SCALE: NTS

SHEET 5 OF 5