Matthews Contracting
C/- Barnett & May

Stormwater Management Report:
Lot 1831, DP 812302
11 Addison Road, Ingleside, NSW

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

P2108550JR01V02
January 2022

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to prepare a water management report in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Matthews Contracting C/- Barnett & May (hereafter known as the Client). That scope of works and services were defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

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Head Office
Suite 201, 20 George St
Hornsby, NSW 2077, Australia
ACN 070 240 890 ABN 85 070 240 890
Phone: +61-2-9476-9999
Fax: +61-2-9476-8767
Email: mail@martens.com.au
Web: www.martens.com.au

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Author(s)	Reviewer(s)	Project Manager	Signature
Sayana Sorourian	Alex van Gogh	Gray Taylor	

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1	Client review	Draft	17/01/2022	1E, 1P, 1H	1P		
2	For submission	Final	21/01/2022	1E, 1P	1P		

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All enquiries regarding this project are to be directed to the Project Manager.

Contents

1 Background

1.1 Scope

This report has been prepared to support a development application (DA2021/1359) for a proposed landscaping storage yard at 11 Addison Road, Ingleside.

This document provides an assessment of the effects of the proposed development upon the site in relation to stormwater quality and quantity and a proposal to mitigate any identified adverse impacts.

This report takes into account and seeks to address the comments provided by Northern Beaches Council (NBC) on the 21/09/2021 in regard to an earlier iteration of the development application. NBC comments are summarised as providing:

- Stormwater plans showing existing and proposed stormwater infrastructure and flow paths.
- Catchment plans.
- Details of stormwater quality improvement devices.
- Assessment of any changes to stormwater runoff flows.
- Plans to reduce and mitigate any increased erosion.
- Maintenance plans for the stormwater infrastructure.

1.2 Proposed Development

The development proposal includes:

- Replacement of an existing store shed with a larger shed (approximately 30 m²).
- Earthworks to allow construction of four stockpile areas.
- Installation of stormwater infrastructure for drainage.
- Installation of devices to improve stormwater quality.

1.3 Relevant Guidelines

This report has been prepared in accordance with the following standards / guidelines:

- NSW MUSIC Modelling Guidelines (August 2015), compiled by BMT WBM.
- Northern Beaches Council (2016), WSUD & MUSIC Modelling Guidelines.
- Northern Beaches Council (February 2021), Water Management for Development Policy.

2 Stormwater Quality Assessment

2.1 Stormwater Quality Objectives

The following stormwater treatment targets, required by NBC's Water Management for Development Policy (2021) and WSUD & MUSIC Modelling Guidelines (2016), have been adopted to ensure that the modelling treatment train is suitable:

- 85% reduction in total suspended solids (TSS).
- 65% reduction in total phosphorus (TP).
- 45% reduction in total nitrogen (TN).
- 90% reduction in gross pollutants (GP).

2.2 Modelling Methodology

2.2.1 Overview

The Model for Urban Stormwater Improvement Conceptualisation (*MUSIC*, Version 6.3) developed by the Cooperative Research Centre (CRC) for Catchment Hydrology was used to evaluate treatment train effectiveness (TTE) and post development pollutant generation from the site.

Modelling has been undertaken in accordance with NBC's WSUD & MUSIC Modelling Guidelines (2016) with the developed site based on the proposed layout with water quality treatment devices included to achieve adopted objectives.

The MUSIC model layout is provided in MA planset P2108550PS01 drawing PS01-E700 provided in Attachment B.

2.2.2 Approach

An iterative approach was used for post development modelling to determine appropriate types, sizes and locations of stormwater treatment devices for modelling scenarios to achieve water quality objectives.

Individual treatment devices were assessed to determine the most effective treatment option.

2.2.3 Rainfall Data

MUSIC was run on a 6-minute time step from 01/01/1981 – 31/12/1985 using the Sydney Observatory pluviography. Average monthly evapotranspiration data for Sydney was obtained from NBC's WSUD & MUSIC Modelling Guidelines (2016).

2.2.4 Input Parameters

Input parameters for source and treatment nodes are consistent with NBC's WSUD & MUSIC Modelling Guidelines (2016) any the manufacturer's specifications for proprietary devices.

All MUSIC modelling inputs and treatment node parameters are provided in Attachment A.

2.2.5 Catchment Areas

Areas of the site that are not considered part of the development have been excluded from the model. Any land that is proposed to be altered, have a change of land use or that drains towards a modelled water quality device is considered to be part of the development and has been included in the MUSIC model.

Post-development pervious and impervious catchment areas are provided in MA planset P2108550PS01 drawing PS01-E700.

2.3 Treatment Train Philosophy

The stormwater treatment strategy for the site uses roof water capture and reuse in combination with end of line controls to ensure objectives are satisfied. Individual treatment devices are described below:

2.3.1 Rainwater Tank

A 10 kL rainwater tank will be provided to collect water for reuse from the roof of the proposed metal store shed.

2.3.2 Sedimentation Basin

A sedimentation basin is proposed as an end of line treatment structure for the site. Sedimentation basins remove fine and coarse sediment from stormwater runoff by allowing these materials to settle out. A 25 m^2 sedimentation basin is proposed for the development. The location and details of the sedimentation basin are provided in MA planset P2108550PS01 drawing PS01-E100 and drawing PS01-E200.

2.3.3 SPEL Ecoceptor

An SPEL Ecoceptor (or approved equivalent device) is a gross pollutant trap (GPT). The SPEL Ecoceptor functions by hydrodynamically filtering the water as it passes through the device. The SPEL Ecoceptor was modelled, with the modelled treatment efficiency of the device based on manufacturer's specifications, to provide treatment from outflows from the sedimentation basin.

The location and product specification are presented in MA planset P2108550PS01 drawing PS01-E100 and drawing PS01-E200.

2.4 MUSIC Results

The results of the MUSIC modelling were compared against NBC's reduction targets to measure the treatment train effectiveness (TTE) of the proposed system. This configuration uses the proposed development with no treatment as the base case and compares it against the post development with treatment devices. MUSIC results demonstrate that the TTE criteria are achievable and are shown in Table 1.

Table 1: MUSIC TTE results.

Parameter	Source	Residual Load	Achieved Reduction	Required Reduction	Complies (Y/N)
TSS (kg/year)	3370	466	86.2%	85%	Y
TP (kg/year)	1.66	0.36	78.2%	65%	Y
TN (kg/year)	7.31	3.70	49.4%	45%	Y
GP (kg/year)	72.5	3.68	94.9%	90%	Y

2.5 Conclusions

The results indicate that post development water quality objectives will be met by the proposed stormwater treatment train which includes:

- A rainwater tank.
- A sedimentation basin.
- SPEL Ecoceptor.

Further refinement of the model at detailed design stage may alter the sizes and locations of proposed treatment structures, however, performance outcomes of the final design are to achieve specification provided in this report.

3 Stormwater Quantity Assessment

3.1 Onsite Detention (OSD)

The site is located in Region 1 – Northern Catchments based on Map 2 of NBC's Water Management for Development Policy (2021). For developments in this area OSD is only required where the development results in additional impervious area greater than 50 m².

The development across the site is proposed on land that is compacted road base which is impervious. As such, the development does not result in any additional impervious area and no OSD is required.

3.2 Conveyance

The site generally grades to the centre of the compacted road base, approximating a V-shaped drain. A pit and pipe network has been proposed along the invert to collect stormwater flows and to limit the length of flow paths. A kerb is proposed to be constructed along the western edge of the development to prevent runoff bypassing treatment. To the east a cut-off drain is proposed along the base of the existing rock wall to collect any seepage and to prevent any flows through the stockpile areas. Flows from the development site are discharged via the existing ø625 outlet pipe.

Upstream flows are collected by a swale to ensure that uncontrolled flows down the driveways are not discharged across the development.

An existing shed is being replaced with a larger shed (approximately 30 m²). Any increase in concentrated flows from this larger shed is mitigated by the proposed 10 kL rainwater tank which is proposed to collect all roof water. As a result of this, despite OSD not being a requirement for this development, runoff from the development site is likely to be less than from the existing site.

Refer to MA planset P2108550PS01 drawing PS01-E100 for all proposed stormwater features.

4 Maintenance Plan

The inspection and maintenance works summarised in Table 2 are recommended to maintain serviceability of stormwater drainage infrastructure across the site. Inspection and maintenance works are to be carried out when rainfall is neither forecast nor expected. Rainfall can cause drainage systems to quickly become inundated and hazardous. If rainfall occurs it is recommended inspection and maintenance works be ceased.

Table 2: Maintenance Guidelines

Action	Frequency	Procedure
Sedimentation Basin		
Inspect inlets/outlets.	3 monthly/after heavy rainfall.	Inspect all piped inlets/outlets. Ensure they drain freely, remove any blockages or impediments as required.
Check emergency overflow structures.	3 monthly/after heavy rainfall.	Check all grates/weirs and outlets are clear of litter and debris. Replace or repair any damages as required.
Inspect basin.	3 monthly/after heavy rainfall.	Inspect for damage. Check to ensure the basin is in good working order. If damage has occurred, make the necessary repairs. Check the volume of stored sediment. If stored sediment makes up greater than half the permanent pool clean out accumulated sediment.
Clean out accumulated sediment.	As required per inspection.	Clean out accumulated sediment and restore the original storage volume. Allow removed sediments to de-water away from drainage lines/watercourses.
Conveyance Structures		
Inspect all pits/cut off drains.	3 monthly/after heavy rainfall.	Remove grates, inspect pits/drains. Remove any accumulated sediment. Flush pits as required.
Inspect pipes.	3 monthly/after heavy rainfall.	Visually inspect pipes and associated headwalls. Remove any build-up of vegetation and blockages found.
Rainwater Tank:		
Inspect tank	3 monthly/after heavy rainfall.	Check gutter, screens and downpipes. Ensure the tank and any accessories are clean, secured and unbroken. Ensure there are no leakages and remove any blockages.
Inspect tank fittings and pump.	3 monthly.	Check devices are plugged in and on, check water is inside the tank. Use an outlet connected to the pump and ensure the pump starts as required.
Clean out accumulated sediment.	Every 2-3 years.	Clean out accumulated sediment and sludge.
Ecoceptor:		

Action	Frequency	Procedure
		Refer to manufacturer's specification for all maintenance (see Attachment C).

5 References

BMT WBM (2015) *NSW MUSIC Modelling Guidelines,* August 2015.

Northern Beaches Council (2016). WSUD & MUSIC Modelling Guidelines.

Northern Beaches Council (February 2021), Water Management for Development Policy.

6 Attachment A – Summary of MUSIC Input Parameters

Element	Factor	Input	Source
Setup	Climate File	Climate file, mlb file from Sydney Observatory pluviography (66062)	eWater
Source Nodes	Node Type	Site modelled as roof, unsealed road and industrial land uses	BMT WBM (2015)
	Rainfall Threshold	Based on surface type specified in Table 5-4 of NSW MUSIC Modelling Guidelines	BMT WBM (2015)
	Pervious Area Properties	Soil identified as sandy clay, based on examined soils up to 0.5 m deep	eSpade
	Base & Storm flow Parameter	As per Table 5-6 & 5-7 of NSW MUSIC Modelling Guidelines	BMT WBM (2015)
	Estimation Method	Stochastically generated	BMT WBM (2015)
Rainwater Tank	Low Flow By-Pass	0 m^3/s	BMT WBM (2015)
	High Flow By-Pass	100 m^3/s	BMT WBM (2015
	Number of Tanks	1	By design
	Volume below Overflow Pipe	10 kL	By design
	Depth above Overflow	0.2 m	By design
	Surface Area	5 m	By design
	Initial Volume	10 kL	By design
	Overflow Pipe Diameter	50 mm	By design
Sedimentation Basin	Low Flow By-Pass	0 m^3/s	BMT WBM (2015)
	High Flow By-Pass	100 m^3/s	Set to ensure all flows drain to basin
	Extended Detention Depth	1.00 m	By design
	Surface Area	25 m^2	By design
	Permanent Pool	25 m^3	By design
	Initial Volume	25 m^3	By design
	Exfiltration rate	0 mm/hr	BMT WBM (2015) default
	Evaporation Loss as % of PET	75	BMT WBM (2015) default
	Equivalent Pipe Diameter	625 mm	By design
	Overflow Weir Width	2 m	By design

7 Attachment B – Stormwater Management Plan

PROJECT: PROPOSED LANDSCAPING STORAGE YARD

PLANSET: STORMWATER MANAGEMENT PLAN

CLIENT: MATTHEWS CONTRACTING

DRAWING LIST		
DWG NO.	REV	DWG TITLE
GENERAL		
PS01-A000	B	COVER SHEET
PS01-A050	A	DEVELOPMENT OVERVIEW PLAN
CONSTRUCTION MANAGEMENT WORKS		
PS01-B300	A	SEDIMENT & EROSION CONTROL PLAN
PS01-B310	A	SEDIMENT & EROSION CONTROL DETAILS
DRAINAGE		
PS01-E100	A	DRAINAGE PLAN
PS01-E200	A	DRAINAGE DETAILS
PS01-E700	A	WATER QUALITY CATCHMENT PLAN, MODEL AND RESULTS

LOCALITY PLAN
NOT TO SCALE

LGA: NORTHERN BEACHES COUNCIL

11 ADDISON ROAD, INGLESIDE, NSW 2101
LOT 1831 DP 812302

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	FOR SUBMISSION	21/01/2022	JS	SS	AVG	GT
A	INITIAL RELEASE	17/01/2022	JS	SS	AVG	GT

SCALE

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

CLIENT: MATTHEWS CONTRACTING

PROJECT NAME/PLANSET TITLE
PROPOSED LANDSCAPING STORAGE YARD
STORMWATER MANAGEMENT PLAN
11 ADDISON ROAD, INGLESIDE, NSW 2101

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: COVER SHEET

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-A000	B

DRAWING ID: P2108550-PS01-R02-A000

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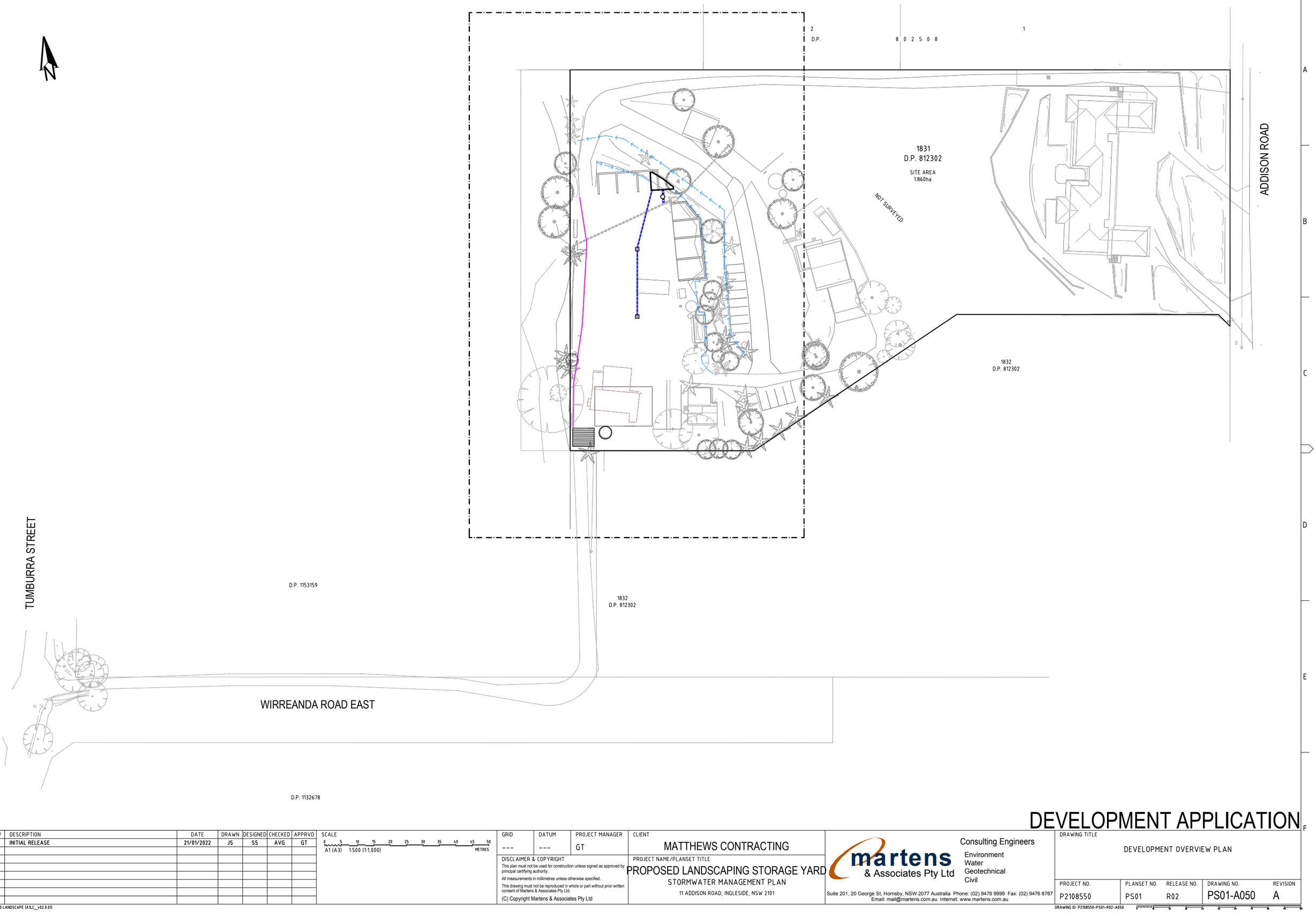

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	21/01/2022	JS	SS	AVG	GT

SCALE
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A1 (A3) 1:500 (1:1,000)

GRID	DATUM	PROJECT MANAGER
---	---	GT

CLIENT
MATTHEWS CONTRACTING

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All measurements in millimetres unless otherwise specified.
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PROJECT NAME/PLANSET TITLE
PROPOSED LANDSCAPING STORAGE YARD
STORMWATER MANAGEMENT PLAN
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martens & Associates Pty Ltd
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Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
DEVELOPMENT OVERVIEW PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-A050	A

DRAWING ID: P2108550-PS01-R02-A050

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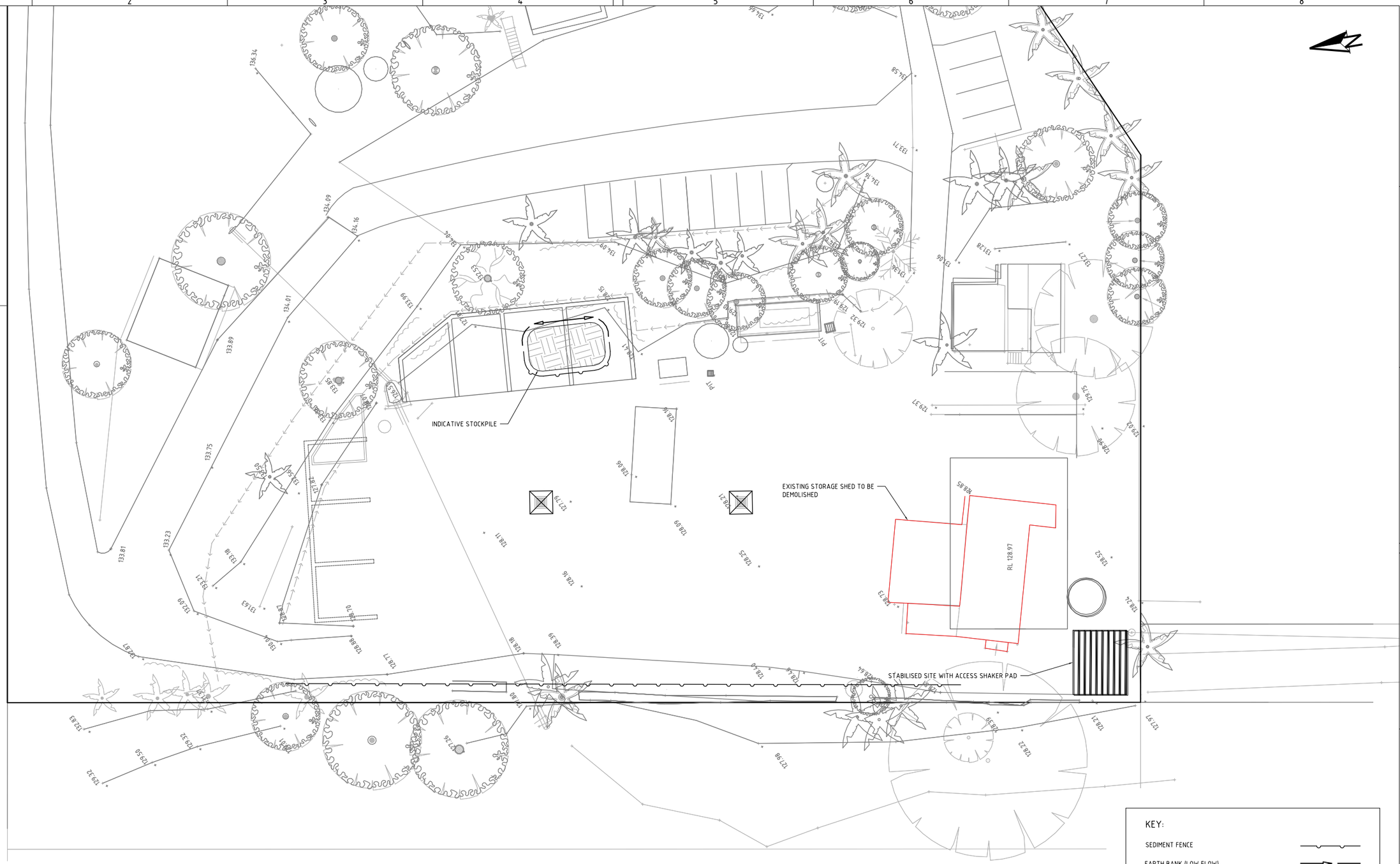

KEY:

- SEDIMENT FENCE
- EARTH BANK (LOW FLOW)
- MESH AND GRAVEL INLET FILTER
- INDICATIVE STOCKPILE
- STABILISED SITE ACCESS

NOTES:
- TO BE READ IN CONJUNCTION WITH SEDIMENT AND EROSION CONTROL DETAILS. REFER TO PS01-B310.

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	17/01/2022	RK	RK	AVG	GT

SCALE: A1 (A3) 1:250 (1:500) — 0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

CLIENT: MATTHEWS CONTRACTING

PROJECT NAME/PLANSET TITLE: PROPOSED LANDSCAPING STORAGE YARD
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martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: SEDIMENT & EROSION PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-B300	A

DRAWING ID: P2108550-PS01-R02-B300

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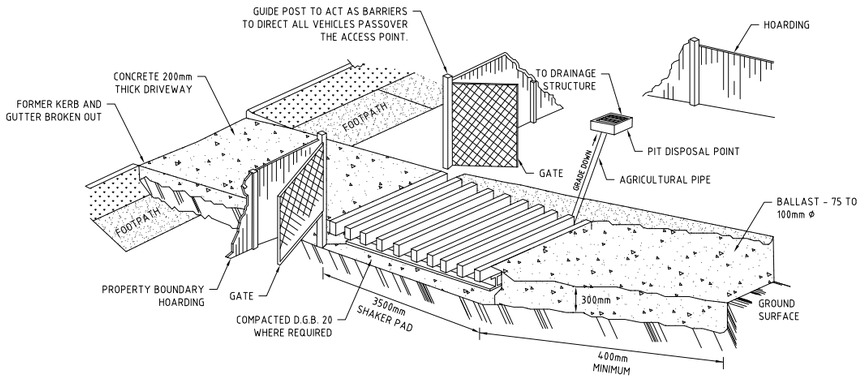
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

STABILISED ACCESS POINT

TYPE II SAP

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

STABILISED ACCESS POINT - TYPE 2



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

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

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

SHAKER PAD (CATTLE GRID)

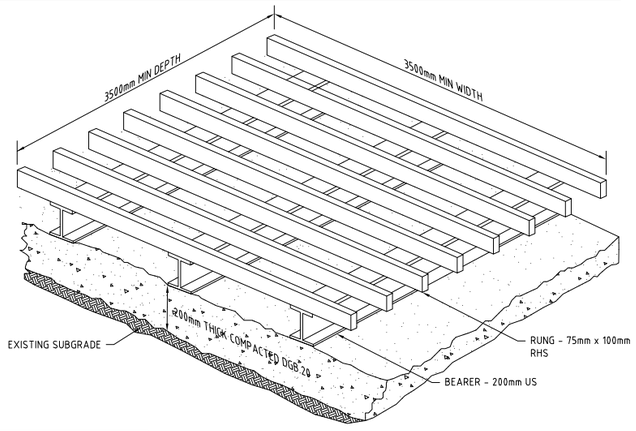
A CORRECTLY DESIGNED AND INSTALLED SHAKER PAD WILL ASSIST IN PREVENTING SEDIMENT TRANSFERE FROM A SITE. ANY STABILISED ACCESS POINT (SAP) CAN BE DESIGNED WITH A SHAKER PAD (COMPULSOPRY IN TYPE II SAP'S)

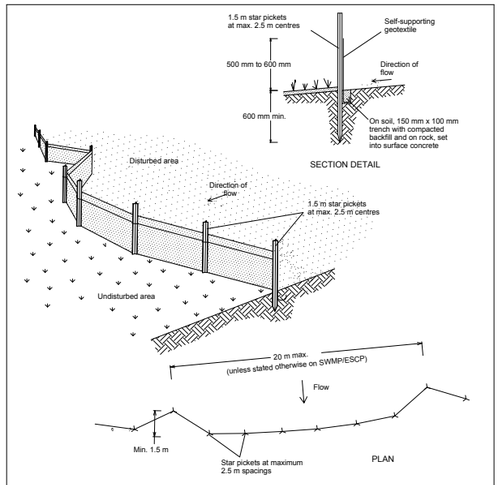
SHAKER PADS CAN BE DESIGNED AND CONSTRUCTED TO ENABLE RE-USE ON FUTURE PROJECTS.

THE SHAKER PAD:

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

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

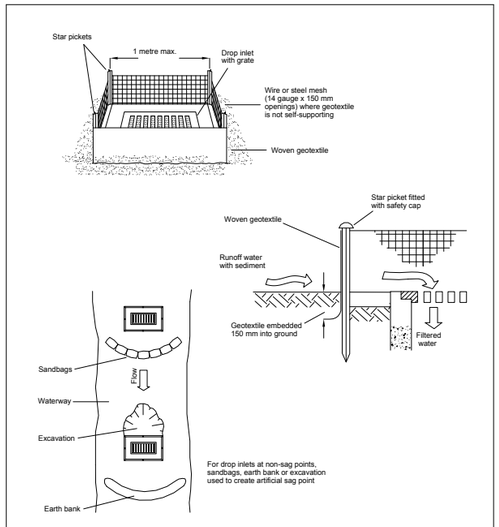




Construction Notes

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

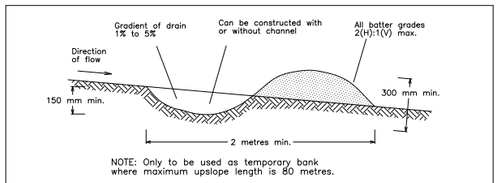
SEDIMENT FENCE — SD 6-8



Construction Notes

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

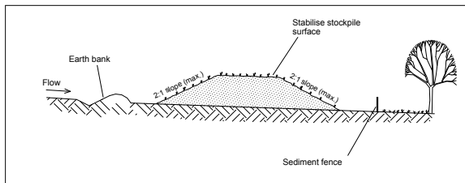
GEOTEXTILE INLET FILTER — SD 6-12



Construction Notes

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

EARTH BANK (LOW FLOW) — SD 5-5



Construction Notes

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

STOCKPILES — SD 4-1

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	17/01/2022	RK	RK	AVG	GT

SCALE

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

CLIENT: MATTHEWS CONTRACTING

PROJECT NAME/PLANSET TITLE: PROPOSED LANDSCAPING STORAGE YARD
STORMWATER MANAGEMENT PLAN
11 ADDISON ROAD, INGLESIDE, NSW 2101

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Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

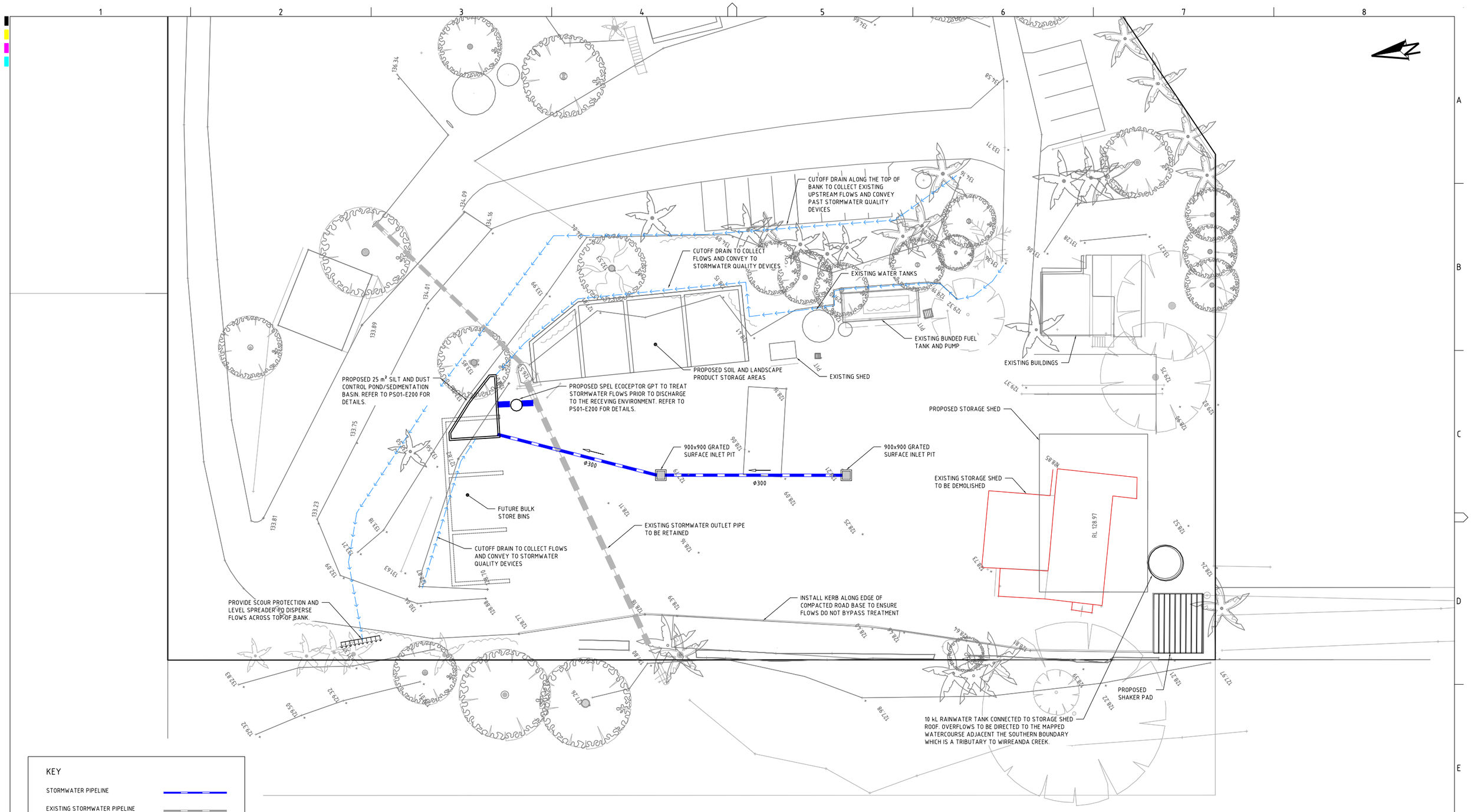
DRAWING TITLE: SEDIMENT & EROSION DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-B310	A

DRAWING ID: P2108550-PS01-R02-B310

PRINTED: ---- - USER: JSUAREZ

A1 / A3 LANDSCAPE (ATLC_v02.0.01)



KEY

- STORMWATER PIPELINE
- EXISTING STORMWATER PIPELINE
- SURFACE INLET PIT
- SWALE/BUND
- FLOW DIRECTION
- OVERLAND FLOW DIRECTION
- SITE BOUNDARY

NOTES:

1. SURVEY FROM BEE & LETHBRIDGE DATED 13/12/2021 NO 6384 J.
2. ARCHITECTURAL PLAN FROM ZIAS BUILDING DESIGN AND DOCUMENTATION DATED 22/03/2021.
3. ALL PIT AND PIPE LOCATIONS AND SIZES ARE INDICATIVE ONLY AND SUBJECT TO CHANGE AT CC STAGE.
4. ALL SURFACE AND INVERT LEVELS ARE TO CONFIRMED AT CC STAGE.
5. ALL ROOF GUTTERS, DOWNPIPES AND SUBSOIL DRAINAGE TO BE DESIGNED IN ACCORDANCE WITH AS3500 AND FINALISED AT CC STAGE.

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	17/01/2022	JS	SS	AVG	GT

SCALE: A1 (A3) 1:250 (1:500) — 0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0 22.5 25.0 METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

CLIENT: MATTHEWS CONTRACTING

PROJECT NAME/PLANSET TITLE: PROPOSED LANDSCAPING STORAGE YARD
STORMWATER MANAGEMENT PLAN
11 ADDISON ROAD, INGLESIDE, NSW 2101

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE: DRAINAGE PLAN

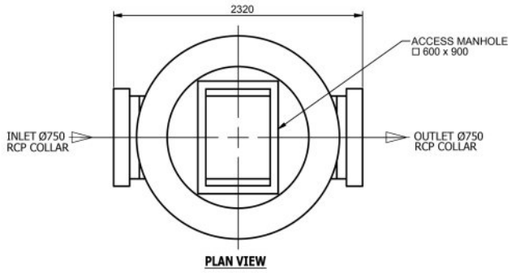
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-E100	A

DRAWING ID: P2108550-PS01-R02-E100

PRINTED ---- - USER: JSUAREZ

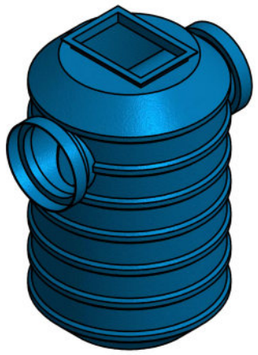
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

REVISION HISTORY				
REV	DESCRIPTION	DESIGNER	CREATION DATE	CHECKED BY
1	INITIAL RELEASE	P.Z.	07-01-16	

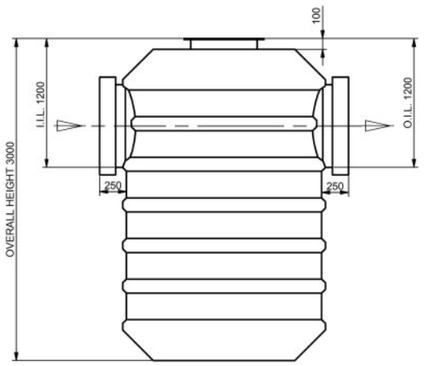


PLAN VIEW

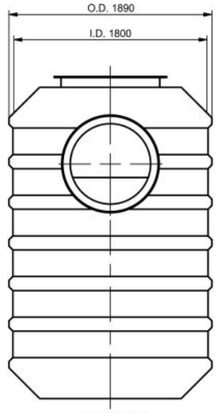
Site Level Confirmation		
Finished Surface Level (FSL)	RL:	
Access Cover Thickness		mm
Inlet Invert Level	RL:	
Outlet Invert Level	RL:	
Company:		
Name:		
Date:		



ISOMETRIC VIEW



ELEVATION VIEW



SIDE VIEW

ISSUE FOR APPROVAL
NOT FOR CONSTRUCTION

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

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

CLIENT:

DISTRIBUTOR :

Drawn	Date 07-01-16
P.Z.	
Check	Date
Verified	Date
Approved	Date
Request No.	RN2226

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS
100 Silverwater Road Silverwater NSW 2128
PH: 1300 773 500 | E: sales@spel.com.au
www.spel.com.au

PROJECT :

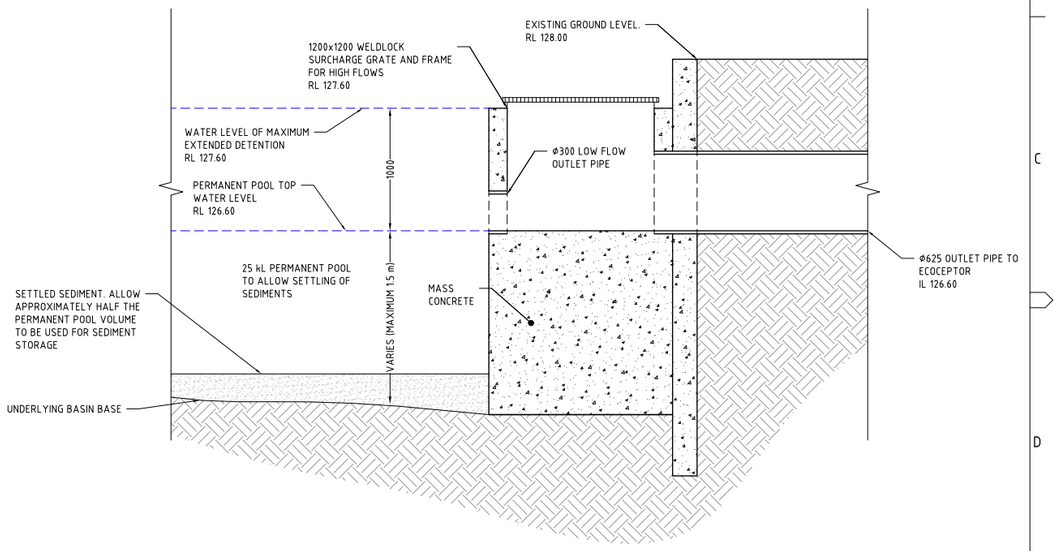
TITLE: SPEL ECOCEPTOR
4000 SERIES - E600/407575.RCP
GENERAL ARRANGEMENT

SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

CUSTOMER CODE :

DWG No. SP16-EC12920-S

ECOCEPTOR DETAILS



SEDIMENTATION BASIN OUTLET SECTION

NOT TO SCALE

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	17/01/2022	JS	SS	AVG	GT

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

GRID	DATUM	PROJECT MANAGER
---	---	GT

CLIENT: MATTHEWS CONTRACTING

PROJECT NAME/PLANSET TITLE
PROPOSED LANDSCAPING STORAGE YARD
STORMWATER MANAGEMENT PLAN
11 ADDISON ROAD, INGLESIDE, NSW 2101

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

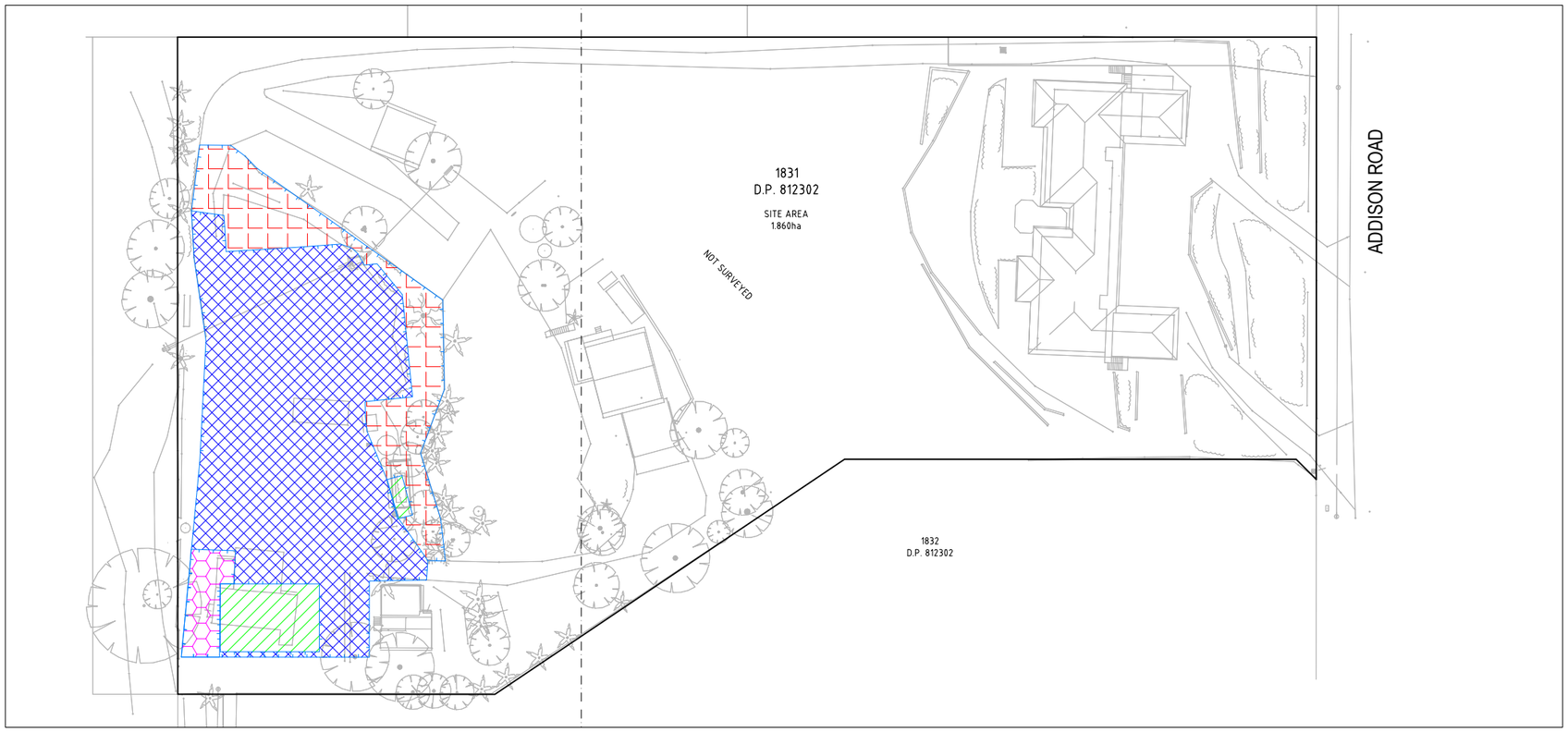
DRAWING TITLE: DRAINAGE DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-E200	A

DRAWING ID: P2108550-PS01-R02-E200

PRINTED: ---- - USER ISUAREZ

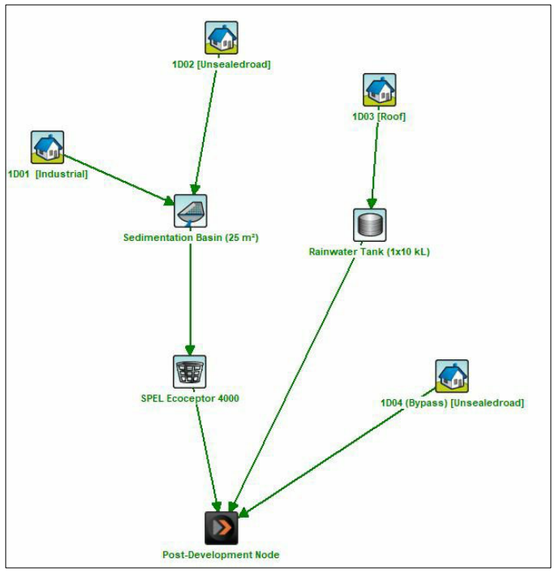
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



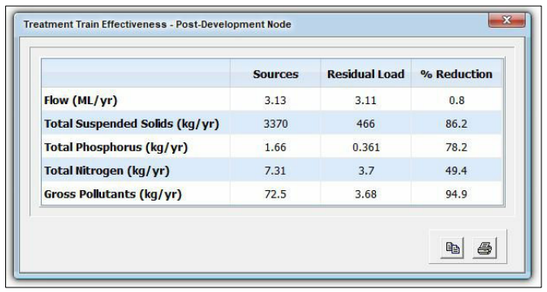
POST DEVELOPMENT CATCHMENT

SCALE 1:1000

MUSIC CATCHMENTS POST (P2108550MUS01V03)				
KEY	MUSIC NODE	DESCRIBTION	AREA (ha)	% PAVED
	1D_01	Industerial	0.066	0%
	1D_02	Unsealed Road	0.218	100%
	1D_03	Roof	0.023	100%
	1D_04	Bypass	0.0128	100%
		TOTAL AREA	0.319	= 100% OF TOTAL AREA
		TOTAL IMPERVIOUS AREA	0.253	= %79 OF TOTAL AREA
		TOTAL PERVIOUS AREA	0.066	= %21 OF TOTAL AREA



MUSIC LAYOUT (P2108550MUS01V03)



	Sources	Residual Load	% Reduction
Flow (ML/yr)	3.13	3.11	0.8
Total Suspended Solids (kg/yr)	3370	466	86.2
Total Phosphorus (kg/yr)	1.66	0.361	78.2
Total Nitrogen (kg/yr)	7.31	3.7	49.4
Gross Pollutants (kg/yr)	72.5	3.68	94.9

MUSIC RESULTS (P2108550MUS01V03)

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	17/01/2022	JS	SS	AVG	GT

SCALE 0 10 20 30 40 50 60 70 80 90 100 METRES
A1 (A3) 1:1,000 (1:2,000)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

CLIENT: MATTHEWS CONTRACTING

PROJECT NAME/PLANSET TITLE
PROPOSED LANDSCAPING STORAGE YARD
STORMWATER MANAGEMENT PLAN
11 ADDISON ROAD, INGLESIDE, NSW 2101

martens & Associates Pty Ltd
Consulting Engineers
Environment
Water
Geotechnical
Civil
Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
WATER QUALITY CATCHMENT PLANS, MODELS & RESULTS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108550	PS01	R02	PS01-E700	A

DRAWING ID: P2108550-PS01-R02-E700

PRINTED: ---- - USER: JSUAREZ

A1 / A3 LANDSCAPE (ATLC_v02.0.01)

8 Attachment C - Ecoceptor Operation and Maintenance Manual

spelstormwater

Operation & Maintenance Manual

Spel Ecoceptor®

In-line Gross Pollutant Trap

spel.com.au

Introduction

The SPEL Ecoceptor is a hydrodynamic in-line Gross Pollutant Trap (GPT) that has a unique treatment action producing low velocity conditions producing discharge water quality outcomes complying to statutory guidelines across Australia.

It separates and captures sediments, silt, total suspended solids, and oil and grease. Oil & grease rise to the "oil-capture" zone of the treatment chamber and are contained in all flow events.

Areas with a high fraction of impervious surfaces,including car parks, ports, streeetscapes, roads, subdivisions and industrial estates that require stormwater treatment are ideal for the SPEL Ecoceptor. MUSIC node is available on request.

The one-piece, self-contained fibreglass construction , is lightweight and yet robust in strength making it simple and cost-effective when performing installations.

The SPEL Ecoceptor is delivered to site fully assembled saving on installation time and crane costs. The SPEL Ecoceptor fibreglass GPT can be installed in all types of trafficable zones, including vehicular truck (Class D).

The cylindrical shape of the SPEL Ecoceptor with its sloped cone-configured base ensures sediment accretes at the centre of the Ecoceptor's base facilitating easy and simple cleaning.

The poly/fibreglass construction ensures that oil and grease are removed without sticking to the sides of the internal walls.

Flow rates on standard units of up to 1400 LPS and can fit pipe sizes from 225mm to 1200mm (other sizes available on request.)

Maintenance

INSPECTION AND CLEANING

The regularity of inspections of the SPEL Ecoceptor is contingent on the features and properties of the catchment area.

SPEL recommends inspection of the Ecoceptor one month after installation to determine the volume of trapped silt and pollutants.

Information sourced can be useful in factoring the frequency of on-going inspections or cleaning operations.

In the event of excessive rain or an oil spill, an inspection is recommended immediately.

Ascertain silt depth and if build-up is evident, then a vacuum-loader truck should be engaged for the cleaning of the tank.

SPEL Ecoceptor cleaning procedure is simple, by simply lifting the external lid (two persons may be required), resting it securely in a safe manner and then inserting suction hose into the chamber.

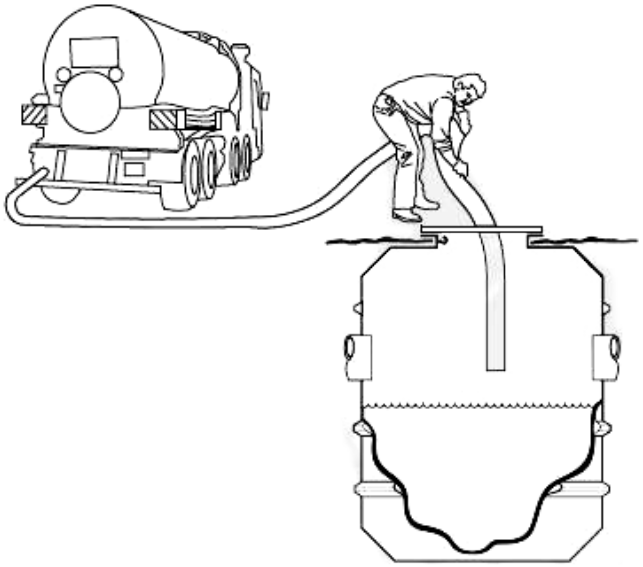
Ensure that the chamber is thoroughly cleaned of all refuse and debris before accessing the chamber - if required.

The chamber is cleaned by inserting the suction hose through the manhole at ground level.

Always commence cleaning from the inlet side of the chamber and ensure on completion of the cleaning operation that the lid is secured to its normal position (and locked if necessary) before departing the site.

IMPORTANT

SPEL Environmental takes safety seriously and recommends that prior to the entry of any of its devices, that maintenance personnel undertake relevant safety checks and use appropriate safety equipment. SPEL devices are considered confined spaces and should only be entered by appropriately trained and certified personnel with the necessary safety equipment.



Spel ECOCEPTOR 1500 SERIES

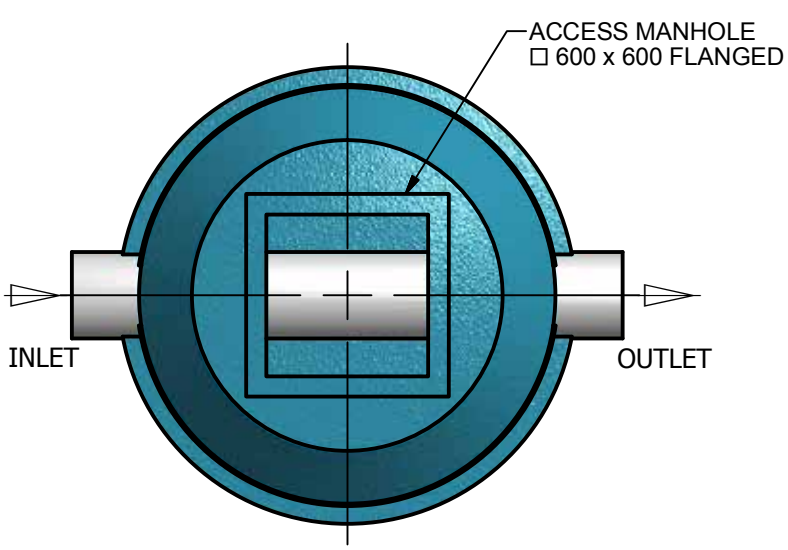
1500

SELECTION CHART

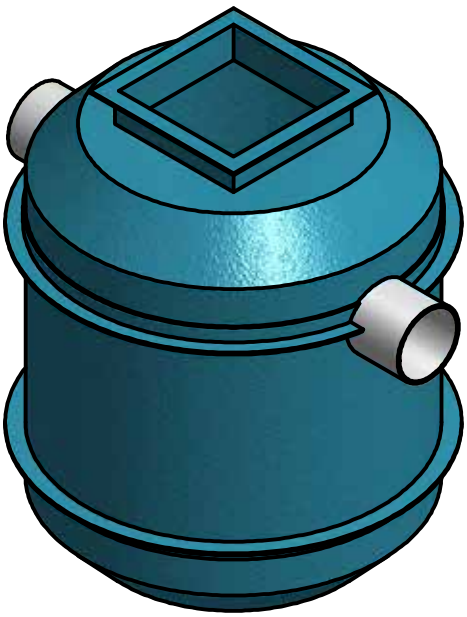
Weight approximately 300kg each

Model	E/151515	E/152222	E/153030	E/153737	E/154545
Inlet (mm)	150	225	300	375	450
Outlet (mm)	150	225	300	375	450
Invert* Level (mm)	700	700	700	800	800
Overall* Height (mm)	1950	1950	1950	1950	1950
Internal Diameter (mm)	1520	1520	1520	1520	1520
Manhole Opening (mm)	600 x 600	600 x 600	600 x 600	600 x 600	600 x 600
Manhole Quantity	1	1	1	1	1
Max Silt Capacity (Litre)	1200	1200	1200	1200	1200
Max Hydrocarbon Capacity (Litre)	1200	1200	1200	1200	1200
Max Capacity (Litre)	3000	3000	3000	3000	3000

SPEL Environmental accepts no responsibility for any loss or damage resulting from any person acting on this information. The details and dimensions contained in this document may change, please check with SPEL Environmental for confirmation of current specifications. *Height does not include lid.

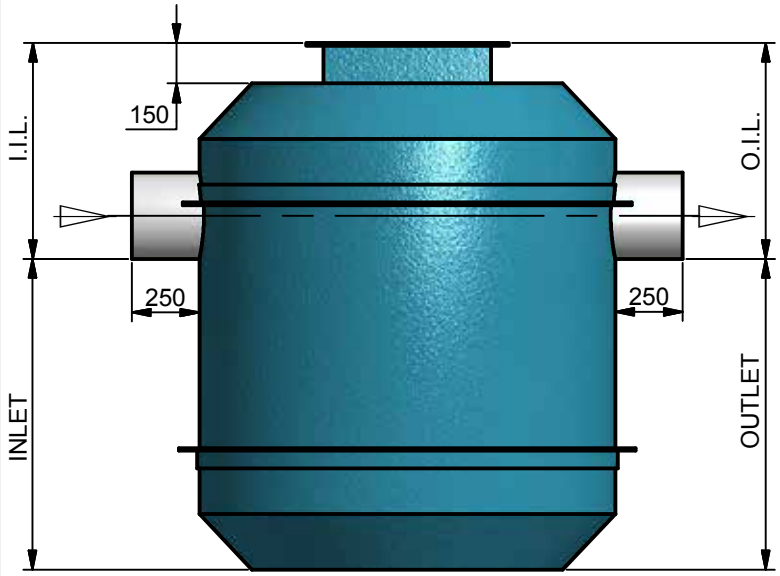


PLAN VIEW

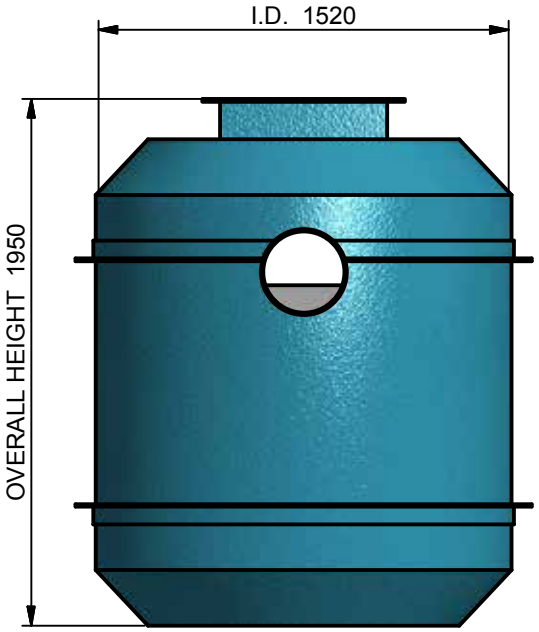


ISOMETRIC VIEW

NOTE:
RCP TYPE COLLARS AVAILABLE



ELEVATION VIEW



SIDE VIEW

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TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

Drawn P.Z.	Date 09-10-17
Check	Date
Verified	Date
Approved	Date
Request No. RN4643	

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

PRODUCT : SPEL ECOCEPTOR 1500 SERIES

TITLE

SCALE	SIZE	SHEET	REV
N.T.S	1	1	1

CUSTOMER CODE :

DWG No. SP17-EC39160-P

Spel ECOCEPTOR 2000 SERIES

2000

SELECTION CHART

Weight approximately 350kg each

Model	E/202222	E/203030	E/203737	E/204545
Inlet (mm)	225	300	375	450
Outlet (mm)	225	300	375	450
Invert* Level (mm)	800	800	800	800
Overall* Height (mm)	2200	2200	2200	2200
Diameter (mm)	1520	1520	1520	1520
Manhole Opening (mm)	600 x 600	600 x 600	600 x 600	600 x 600
Manhole Quantity	1	1	1	1
Max Silt Capacity (Litre)	1200	1200	1200	1200
Max Hydrocarbon Capacity (Litre)	1200	1200	1200	1200
Max Capacity (Litre)	3500	3500	3500	3500

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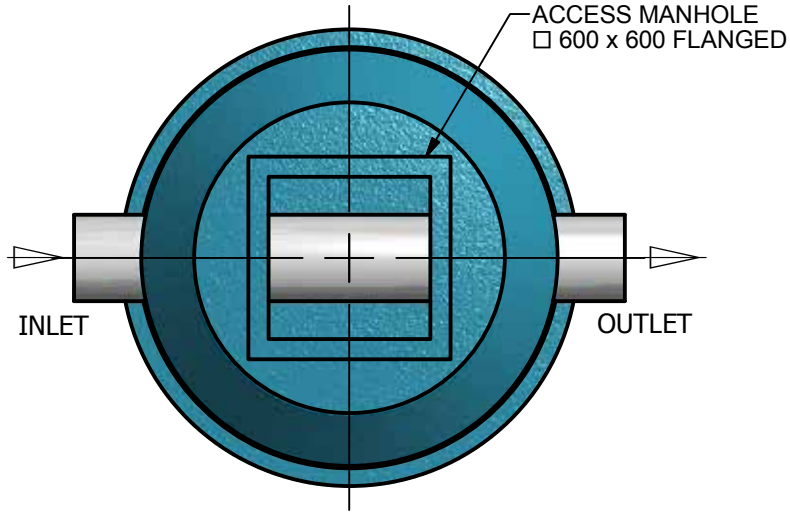
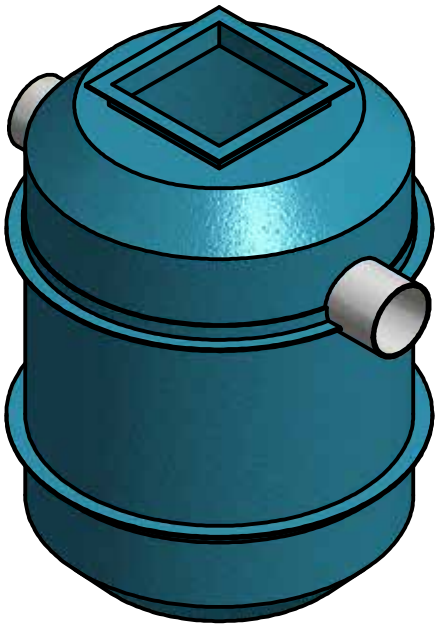
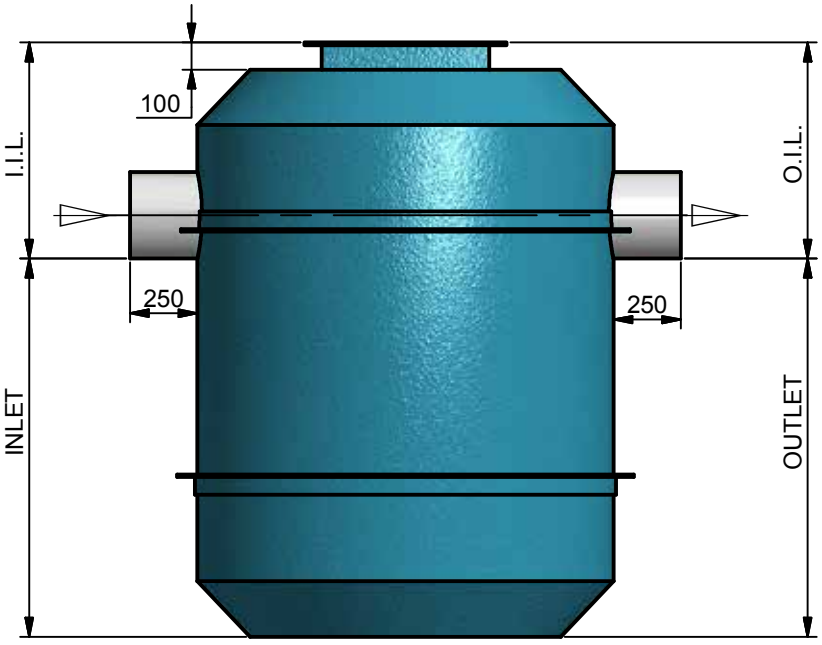


PLAN VIEW

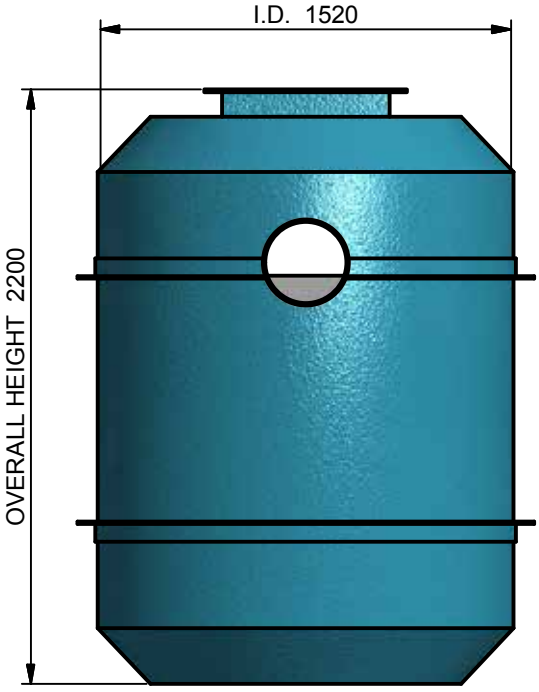


ISOMETRIC VIEW

NOTE:
RCP TYPE COLLARS AVAILABLE



ELEVATION VIEW



SIDE VIEW

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TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

Drawn P.Z.	Date 09-10-17
Check	Date
Verified	Date
Approved	Date
Request No. RN4643	

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

PRODUCT : SPEL ECOCEPTOR 2000 SERIES

TITLE

SCALE	SIZE	SHEET	REV
N.T.S	1	1	1

CUSTOMER CODE :

DWG No. SP17-EC39160-P

Spel ECOCEPTOR 4000 SERIES

4000

SELECTION CHART

Weight approximately 500kg each

Model	E/403737	E/404545	E/405252	E/406060
Inlet (mm)	375	450	520	600
Outlet (mm)	375	450	520	600
Invert* Level (mm)	1200	1200	1200	1200
Overall* Height (mm)	3000	3000	3000	3000
Diameter (mm)	1800	1800	1800	1800
Manhole Opening (mm)	600 x 900	600 x 900	600 x 900	600 x 900
Manhole Quantity	1	1	1	1
Max Silt Capacity (Litre)	2500	2500	2500	2500
Max Hydrocarbon Capacity (Litre)	1500	1500	1500	1500
Max Capacity (Litre)	7000	7000	7000	7000

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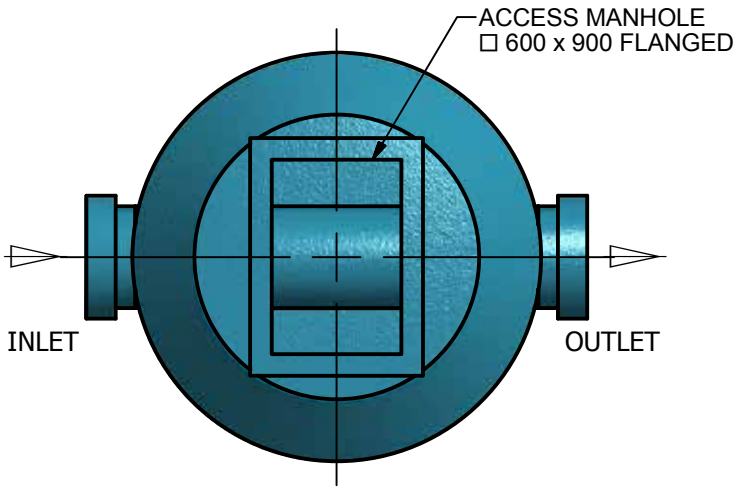
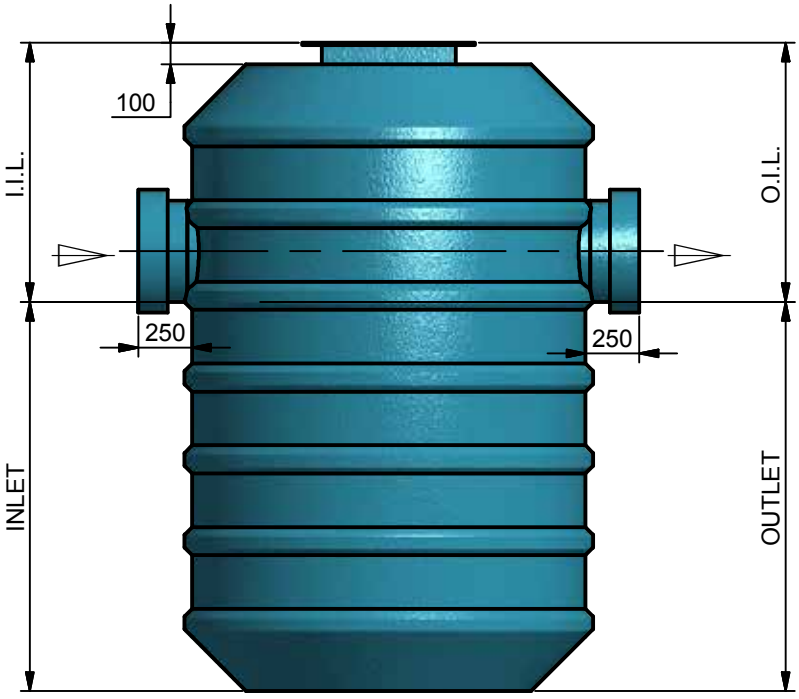
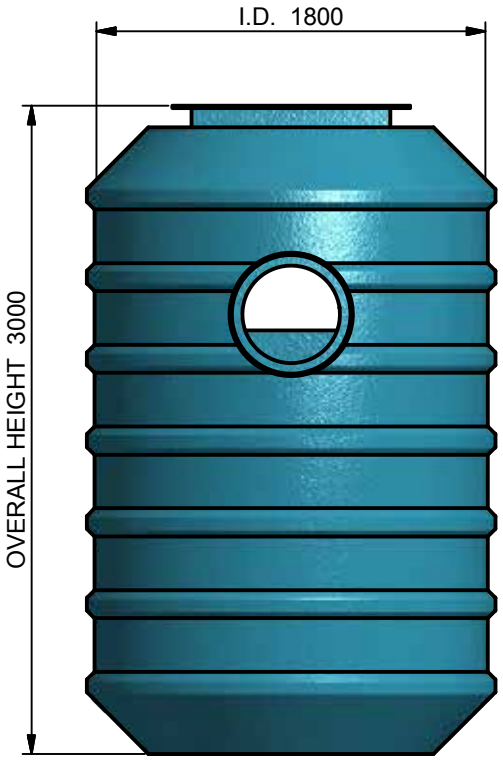


PLAN VIEW

ISOMETRIC VIEW



ELEVATION VIEW



SIDE VIEW

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TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

Drawn P.Z.	Date 10-10-17
Check	Date
Verified	Date
Approved	Date

Request No. RN4656

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

PRODUCT : SPEL ECOCEPTOR 4000 SERIES

TITLE

SCALE	SIZE	SHEET	REV
N.T.S	1	1	1

CUSTOMER CODE :

DWG No. SP17-EC39280-P

Spel ECOCEPTOR 6000 SERIES

6000

SELECTION CHART

Weight approximately 700kg each

Model	E/606767	E/607575	E/609090
Inlet (mm)	675	750	900
Outlet (mm)	675	750	900
Invert* Level (mm)	1400	1400	1400
Overall* Height (mm)	3300	3300	3300
Diameter (mm)	2200	2200	2200
Manhole Opening (mm)	900 x 600	900 x 600	900 x 600
Manhole Quantity	1	1	1
Max Silt Capacity (Litre)	6000	6000	6000
Max Hydrocarbon Capacity (Litre)	2200	2200	2200
Max Capacity (Litre)	11500	11500	11500

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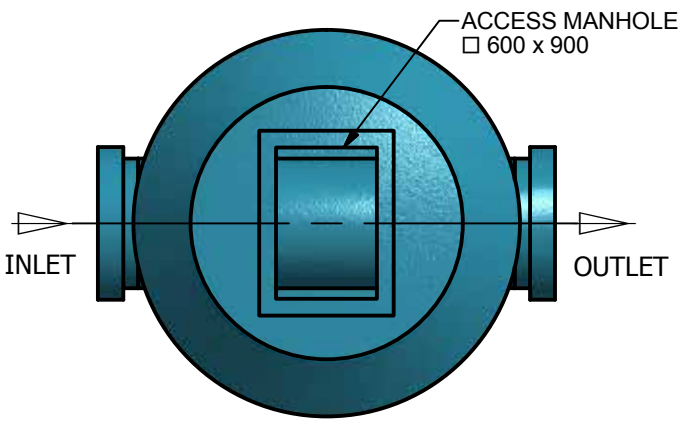
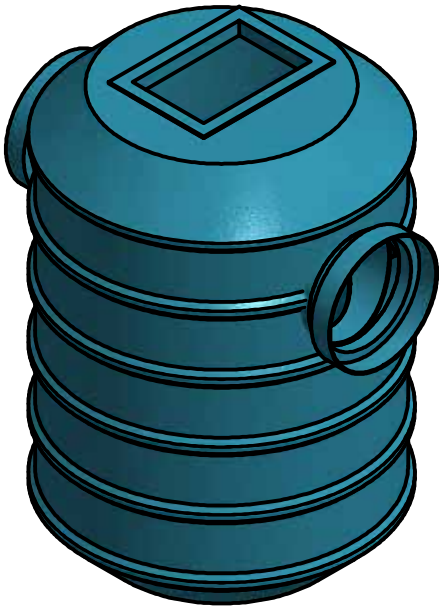
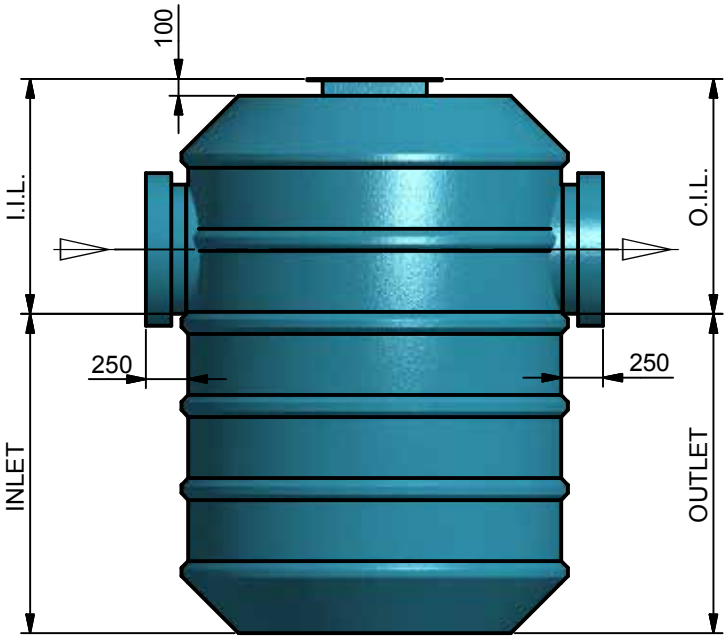


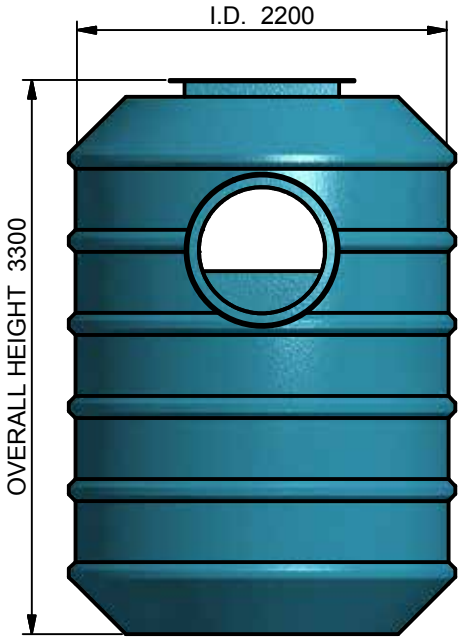
PLAN VIEW



ISOMETRIC VIEW



ELEVATION VIEW



SIDE VIEW

C:\Vault Working Folder\Designs\SPEL\PRODUCTS\ECOCEPTOR\6000 Series\SPEL BROCHURE DRAWING\SP17-EC39300-P.IDW

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

Drawn P.Z.	Date 10-10-17
Check	Date
Verified	Date
Approved	Date
Request No. RN4656	

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

PRODUCT : SPEL ECOCEPTOR 6000 SERIES

TITLE

SCALE	SIZE	SHEET	REV
N.T.S	1	1	1

CUSTOMER CODE :

DWG No. SP17-EC39300-P

Spel ECOCEPTOR
8000 SERIES

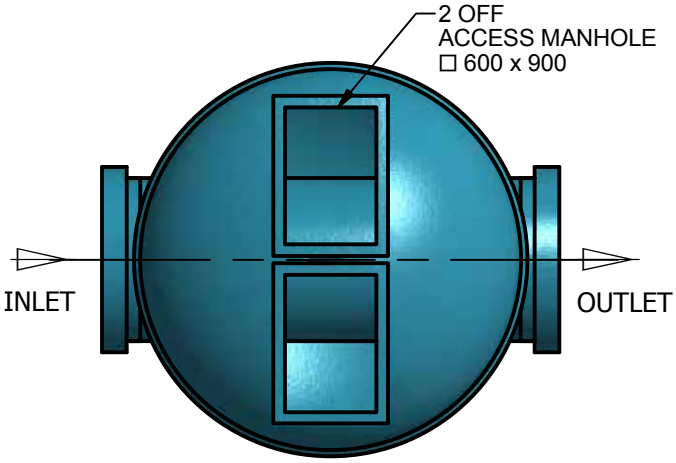
8000

SELECTION CHART

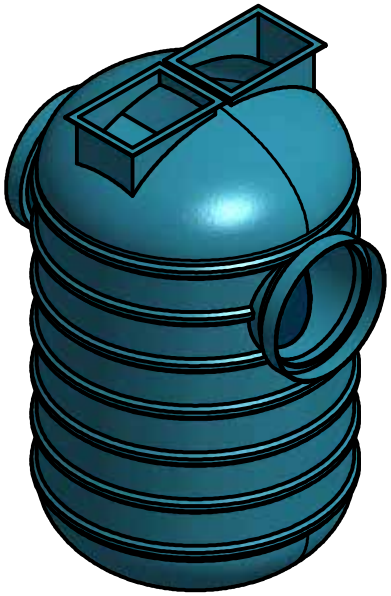
Weight approximately 1350kg each

Model	E.175.105105	E.185.135135	E.200.150150	E.8018090.BC
Inlet (mm)	1050	1350	1500	1800 X 800 BC
Maximum Treatment Flow	1750 LPS	1850 LPS	2000 LPS	-
Outlet (mm)	1050	1350	1500	1800 X 800 BC
Invert* Level (mm)	2400	2400	2400	1800
Overall* Height (mm)	4500	4500	4500	4500
Diameter (mm)	2480	2480	2480	2480
Manhole Opening (mm)	900 x 600	900 x 600	900 x 600	900 x 600
Manhole Quantity	2	2	2	1
Max Silt Capacity (Litre)	10,000	10,000	10,000	10,000
Max Hydrocarbon Capacity (Litre)	4200	4200	4200	4200
Max Capacity (Litre)	19,000	19,000	19,000	19,000

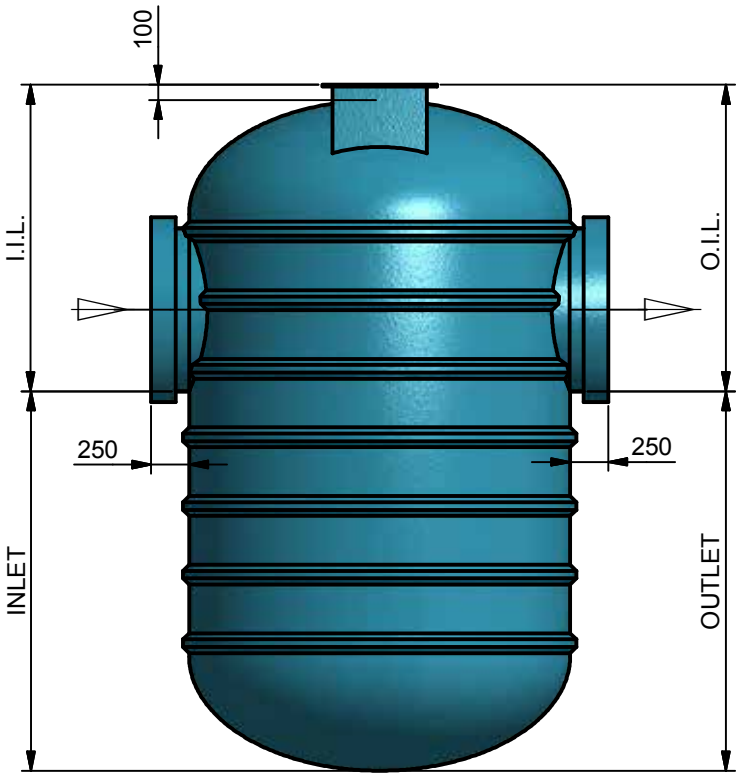
SPEL Environmental accepts no responsibility for any loss or damage resulting from any person acting on this information. The details and dimensions contained in this document may change, please check with SPEL Environmental for confirmation of current specifications. *Height does not include lid.



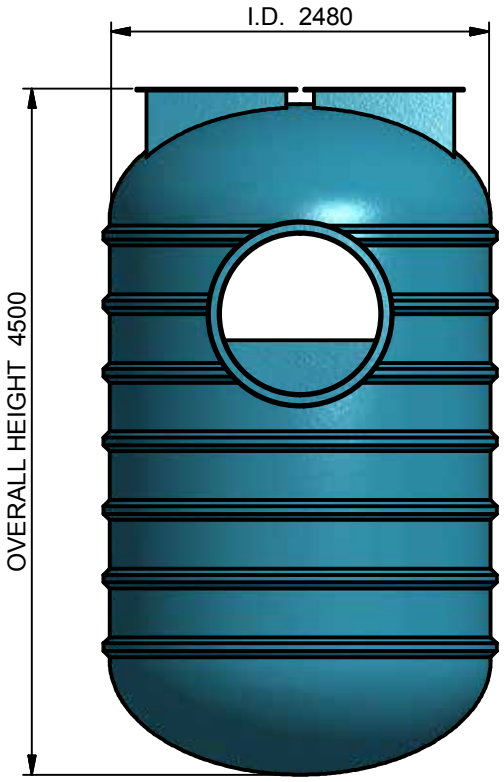
PLAN VIEW



ISOMETRIC VIEW



ELEVATION VIEW



SIDE VIEW

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TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

Drawn P.Z.	Date 22-03-18
Check	Date
Verified	Date
Approved	Date
Request No. RN1801	

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

PRODUCT : SPEL ECOCEPTOR 8000 SERIES

TITLE

SCALE	SIZE	SHEET	REV
N.T.S	1	1	1

CUSTOMER CODE :

DWG No. SP18-EC10590-P

spelstormwater
joy in water

100 Silverwater Rd, Silverwater NSW 2128 Australia
Phone: (02) 8705 0255
Fax: (02) 8014 8699
Email: sales@spel.com.au

spel.com.au