Hanson Construction Materials Pty Ltd

Water Cycle Management Plan: Lot 3, Lot 4 & Part Lot 5, DP 1225803 Hanson Eastern Creek Resource Recovery Facility, NSW

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

P1806739JR03V06
March 2022

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to provide a water cycle management report in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Hanson Construction Materials Pty Ltd (hereafter known as the Client). That scope of works and services were defined by the requests of the Client.

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

Contents

1 Introduction

This Water Cycle Management Plan (WCMP) has been prepared on behalf of Hanson to support a state significant development application (SSDA) that seeks approval for a resource recovery facility at Lot 3, 4 and 5 DP 1225803, Eastern Creek within the Blacktown City Council (BCC) local government area (LGA). The site is approximately 4.5 km west of Prospect Reservoir. The site fronts a cul-de-sac to the west and has a northern and western frontage to Hanson Place, with an area of approximately 5 hectares.

The site was used historically for industrial uses associated with quarrying, aggregate processing and concrete production. The site has a major project concept approved for a resource recovery facility.

A review of the available documentation for the previous Hanson Place Estate (the estate) subdivision (approved under MP06_0225 Concept MOD 2) which included lots 1 - 5 in DP 1225803 and lots 61 and 62 in DP 1234758, identified a Costin Roe 'Civil Engineering Report' for the development. It was titled *Civil Engineering Report for S75w Infrastructure Application* (2016), hereafter referred to as the "Costin Roe report". The Costin Roe report, used DRAINS for hydraulic modelling and MUSIC for water quality modelling consisted with the site's concept approval. A water quality and onsite detention (OSD) basin for the estate was documented then constructed.

Recent advice from Blacktown City Council (BCC) relating to a separate Hanson proposal in the same estate is that Council understands and accepts that the constructed basin addresses water quality and quantity considerations other than the gross pollutants. BCC's advice is that the GPT installed as part of the estate's development is undersized and additional GPTs are required for any further development within the estate.

This Water Cycle Management Plan is prepared to provide:

- A description of the existing site conditions;
- A sediment and erosion control plan during construction;
- A site water balance assessing water demands, supply sources and opportunities for onsite reuse;
- A stormwater management system to prevent potential offsite water quality and quantity impacts;

- Identification of wastewater sources and development a site wastewater management solution; and
- A water monitoring plan including mitigation measures.

2 Site Description

The site is identified as Lot 3, 4 and 5 DP 1225803 with a total area of approximately 5 hectares. The site slopes gently to the south west. The proposed development area comprises all of Lot 3 and 4 and part of Lot 5.

At the time of preparing this report the site was vacant, bulk earthworks as part of previous site subdivision works had created two "tiers" with a ramp constructed from Hanson Place to the south portion of the site. A stormwater retention and water quality basin / bioretention system servicing the local estate located in the west of lot 5. The site was mostly cleared of vegetation, having been cleared during previous earthworks.

An aerial photo of the site is shown at Figure 1.

The site is adjoined by rural uses to the south and west and industrial uses in all other directions. Recently subdivided industrial lots to the north west, vacant industrial lots and distribution centres to the north east respectively.

Figure 1: The site (Lot 3, 4 & 5 DP1225803) and proposed development footplant.

2.1 Proposed Development

Construction and operation of the "Eastern Creek Resource Recovery Facility", comprising a concrete recycling plant with a processing capacity of 100,000 tonnes per year and a material storage depot with a capacity of 36,000 tonnes per year (SEARs, SSD 9774). The plant will operate 24 hours per day, seven days per week and employ up to 28 employees or contractors.

Site development is expected to be near to the existing grade and significant cut / fill works are not expected (IP, 2018).

2.2 Rainfall and Evaporation

The Eastern Creek area is characterised by an average annual rainfall of 875 mm/year. Rainfall varies throughout the year as shown in Table 1, with a late summer/early autumn peak. Comparison with evaporation data indicates that the regional area surrounding Eastern Creek experiences a significant moisture deficit on average. Evaporation exceeds precipitation most months except late autumn and early to mid winter.

Table 1: Monthly climatic information based on average monthly rainfall from Prospect Reservoir (67019) and evaporation data from Parramatta Monthly Areal PET.

mm	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Rainfall	95.3	96.5	97.7	76.1	69.4	77.2	55.7	50.4	45.9	58.1	72.8	75.9	875.0
Evap.	172.7	128.2	115.9	75.6	50.2	38.4	38.4	55.5	75.0	77.9	145.5	154.1	1169.5

2.3 Topography and Drainage

The site typically slopes southwest at gradients <5 %. A steep batter (with grade of approximately 30 %) separated the upper portion of the site (Lot 3) from the lower portion (Lots 4 & 5). Site elevation ranges between approximately 81 mAHD (northeast of Lot 3) and 69.5 mAHD (southwest of Lot 5) (Costin Roe Consulting, 2016).

2.4 Geology and Soils

The Sydney 1:100,000 Geological Sheet 9130 (NSW Dept. of Mineral Resources, 1983) describes geology at the site being underlain by shale, carbonaceous claystone, claystone, laminate, fine to medium grained lithic sandstone, rare coal and tuff.

The NSW Environment and Heritage eSPADE website identifies the site as having clay loams or loams.

2.5 Previous Stormwater Modelling

As part of their report, Costin Roe used DRAINS for hydraulic modelling and MUSIC for water quality modelling. These models have accounted for the modifications listed in MP 06_0225 MOD 1 (24 October 2013), which are generally consistent with the land uses in the current MP 06_02225 MOD 3 in regards to lot sizes and land use. Comparing the source nodes of the site in the Costin Roe report and the current design of the recycling facility shows that there would be a decrease in the pollutant generation due to the inclusion of a large roofed area, large vacant lands (not be used for movement or storage of any heavy vehicles, plant or equipment), and reduction in the area of road.

No further water quality or quantity modelling is considered necessary as the constructed estate basin is considered (by Martens and BCC) to have adequately addressed the water quality and quantity considerations for the original design and the proposed use shall generate less runoff and reduced pollutant loads.

3 Water Supply Strategy

3.1 Overview

The water supply strategy was created based on an analysis of likely water demands and supply sources from the proposed resource recovery facility.

The water generation rates summarised below are average daily values based on 365 production days per year.

3.2 Methodology

The assessment can be separated into three components:

1. Site Water Demand: Estimation of average daily water demands for the proposed development.

2. Site Water Supply: Consideration of available water supply options including: townwater, stormwater runoff from roofs and ground surface, and recycled wastewaters.

3. Site Water Balance: Undertaken to determine supply requirements to meet long term water demands for the proposed development.

3.3 Water Demand

Table 2 summaries site water demand as provided by the Client. These values are based on an average daily demand (365 days per year) to be compatible with MUSIC modelling units (Table 3). This is necessary as water balance calculation (Section 3.5) and water quality assessment use MUSIC.

Table 2: Summary of water demands for the Eastern Creek Resource Recovery Facility.

Demand [1]	Average Daily Demand (kL/day)
Dust Suppression for Crusher [2]	10.96 [2]
Amenities	0.612

Notes

1. Information provided by Hanson (2020).
2. Calculated based on the proposed 100,000T of product produced per year and 40 L/T of water demand is required: 100,000 / 365 X 40 = 10, 958 L/day
3. Calculated based on 20 fulltime staff based on 27 L/day and 8 part time staff based on 9 L/day: 20 X 27 + 8 X 9 = 612 L/day. See Section 4.2 for more details.

3.4 Water Supply

The proposed development relies on three water supply sources:

1. Stormwater roof runoff to be used for amenities and dust suppression in crusher.

2. Stormwater from the stormwater tank to be used for dust suppression in crusher.

3. Town water used for potable uses and to supplement other supplies as required.

As the development does not require collection or extraction of other surface water or groundwater, no Water Management Act licence is required for the proposed development.

3.5 Water Balance

The concrete recycling facility demand is met via a combination of reuse from the on-site stormwater tanks and from town water supply Town water is to be used only when on-site stormwater tanks are empty.

3.5.1 Modelling Methodology

Overview

The Model for Urban Stormwater Improvement Conceptualisation (MUSIC, Version 6.33) was used to evaluate the site water balance and stormwater reuse system.

Modelling has been undertaken in accordance with BCC Water Sensitive Urban Design (WSUD) (2013) with the developed site based on the conceptual site layout and catchment area details (refer to Attachment B).

The model proposed reflects the proposed Hanson site development on lot 3, 4 and (part) 5 to assess the available stormwater for reuse for the site rainwater tanks and the stormwater tank.

Climate Data

MUSIC was run on a 6 minute timestep using the MUSIC link function for Blacktown City Council data obtained from *eWater*.

Input Parameters

Input parameters for source nodes have been obtained from the approved Costin Roe report. Input parameters for treatment notes have been obtained via the MUSIC link function for Blacktown City Council and are consistent with BCC WSUD (2013).

Catchment Areas

Catchment areas were subdivided into areas corresponding to roofs, roads and hardstand areas. Catchment area details, with the post development MUSIC model layout, are provided in Attachment B.

Rainwater Tanks

A 31.25 kL rainwater tank (with retention volume of 25 kL) is proposed in lot 3 collecting all the roof water from the Sales Office and Production Office. The rainwater tank water is to be used for flushing the toilets of all these offices.

6 x 50 kL aboveground rainwater tanks (with a total retention volume of 240 kL) are proposed in lot 5 collecting all the roof water from the to be provided to collect runoff from roof areas for the reuse for dust suppression.

Stormwater tank

A underground stormwater tank with a total retention volume of 30 kL (below overflow level) is proposed to collect surface runoff from Lot 5 and overflow from the proposed rainwater tanks. This tank will require water to be pumped out and reuse for dust suppression. Location of the tank is shown in Attachment B. Modelling specifications are summarised in .

3.5.2

3.5.2 Water Balance Results

Details of the water balance model results for the site is summarised on Table 3. Results indicated that with a total site use of 11.57 kL/day, 9.53 kL/day is supplied by stormwater sourced from the proposed rainwater tanks and stormwater tank, and the remainder of 2.03 kL/day is supplied by town water. 80.2 % of the total site water demand can be achieved by stormwater reuse.

Table 3: Water balance for the development site.

Use	Demand (kL/day)	Supplied by Lot 3 Aboveground Rainwater Tank (kL/day)	Supplied by Lot 5 Aboveground Rainwater Tanks (kL/day)	Supplied by Lot 5 Belowground Stormwater Tank (kL/day)	Supplied by Town Water (kL/day)
Dust Suppression for Crusher	10.96	0.00	6.69	2.18	2.08
Amenities within Lot 3	0.61	0.40	0.00	0.00	0.21
Total	11.57		9.27		2.29

3.6 Recommendations

Final design of the system shall be undertaken at the construction certificate stage. A suitably qualified engineer should undertake all elements of the water supply system design.

3.7 Conclusion

The proposed site water supply strategy satisfied Council DCP requirement that 80.2 % of non potable site water demand is satisfied by stormwater reuse.

4 Site Wastewater Management Plan

4.1 Overview

The proposed site wastewater management system has been designed to provide a sustainable outcome for the proposed development.

4.2 Wastewater Sources and Generation Rates

4.2.1 Staff Amenities Wastewater

According to information supplied by the client, 20 full time, and a further 8 staff who will only be on site part time (i.e. truck drivers), are expected daily. Amenities are to be provided for both drivers and site staff.

Based on site occupancy data and NSW Health (2012), the site's wastewater generation rate is approximately 612 L/day.

4.2.2 Industrial Wastewater

There are no significant wastewaters produced by the operation. As such no industrial wastewater requiring offsite disposal is generated. Contamination of surface water is avoided by enclosure of all stockpiles and processing activities within a shed.

Roof water of the shed will be captured by the proposed rainwater tanks for dust suppression in crusher and manual wash down of trucks wheel when required.

4.3 Proposed Wastewater Management System

Only sewage water from staff amenities (approximately 612 L/day) shall be disposed of offsite, it is to be discharged to Sydney Water sewer.

5 Stormwater Management Strategy

5.1 Stormwater Quantity Assessment

5.1.1 Concept Site Drainage Network

The site drainage plans provided in Attachment A – Stormwater Concept Drainage Plan, has been prepared by Martens in order to address the conveyance of stormwater within and through the site. A few existing stormwater drainage lines have been made redundant to suit the proposed layout which have no impacts on the approved stormwater management system under MP06_0225 Concept MOD 2.

Outlet pipes from the site have been sized to covey the minor storm flows - 5% AEP in accordance with council's requirements.

5.1.2 Stormwater Detention

BCC (2015) requires on site detention for all industrial developments where an infiltration system is not permitted. The existing estate onsite detention (OSD) system (approved under MP06_0225 Concept MOD 2) has been constructed as a regional facility which shall adequately detain stormwater from the development site to achieve design performance. Therefore, no further OSD modelling or assessment is required and no further site OSD management measures are required or proposed.

5.2 Stormwater Quality Assessment

The existing estate stormwater quality treatment system designed by Costin Roe has been constructed as a regional facility that services the site. The regional facility caters for the site's TSS, TP and TN WSUD removal requirements which meet the growth centres pollutant reduction targets. This conclusion has been previously confirmed by BCC in assessment of another estate development.

Whilst the water quality objectives for the estate have been achieved it is understood from previous BCC advice that GPT(s) sized for the 4EY flow are required on site to capture litter, debris and other pollutants before discharge offsite.

GPT devices (Vortsenty HS and OcenSave) have been provided at each stormwater outlets from the site including the overflow from the underground stormwater tank tanks. Proposed GPTs have been sized to treat the 4EY flow and are shown on Attachment A – Stormwater Concept Drainage Plan.

5.3 Flooding

The site is located on a high elevation area between Ropes Creek and Eastern Creek with minimum elevation of approximately 61 mAHD, located in the swale at the southern end of the site. The entirety of the site is located outside of Council's flooding precincts based on 'BLEP 2015 Maps online'. The proposed development is not flood affected and shall not impact on flood regime.

The existing cul-de-sac located immediately north of the proposed building within Lot 5 is at a low point and affected by local upstream stormwater catchment flows from the road. By reviewing of the CC plan completed by Costin Roe Consulting (C010726.13, 2016) and WAE plans provided by Hanson, a trap low point with a sag pit is located on the western side of the cul-de-sac, connecting to a 1350 mm diameter outlet pipe under a 7.3 m wide trapezoidal channel which runs along the north western boundary of the site and discharges into to the estate basin.

Comparison of the upstream catchment flows with the capacity of the existing estate pipe and channel is summarised below:

Total upstream catchment flow (Q_{tota})

Q_{total} = CIA

C20 = 1.0 (Table 3.4 - bcc engineering guidelines)

i = 184 mm/hr (Table 3.0 - bcc engineering guidelines)

a = 16.5 ha (catchment upstream)

Q_{totol} = 8433 l/s

Pipe capacity ($Q_{pipe\ cap}$)

Diameter = 1350 mm

Pressure slope = 1.2% (minimum pipe slope)

$Q_{pipe\ cap}$ = 6334l/s

$Q_{pipe\ cap}$ with 25% blocked = 5776 l/s

Excess overland flow entering channel ($Q_{overland\ flow}$)

$Q_{overland\ flow}$ = Q_{totol} - $Q_{pipe\ cap}$ with 25 % blocked

= 2667 l/s

Channel capacity ($Q_{channel\ cap}$)

Note: Channel dimensions estimated based on the CC plan completed by Costin Roe Consulting (C010726.13, 2016) and the Work as Executed Plan provided by the client.

Bottom width = 2.5 m

Top width = 7.3 m

depth = 0.8 m

Longitudinal grade = 1.2% (minimum swale slope)

$Q_{channel\ cap}$ = 7919 l/s > Q overland flow

Results show that the existing estate pipe (25% blocked) and swale can cater for the upstream overland flows in the 1% AEP event. Therefore, we consider that the proposed development is adequately protected by the existing drainage infrastructure.

6 Water Monitoring Plan

6.1 Objective

The objective of the site water monitoring plan is to provide means to assess the effectiveness of the implemented stormwater reuse management solution. Monitoring of site water movements is proposed to confirm site stormwater reuse targets are achieved.

6.2 Monitoring Locations

The following locations shall be metered and monitored:

1. Outlet of rainwater tanks.
2. Outlet of stormwater tank.
3. Delivery of water pumped from rainwater tanks and the stormwater tank.
4. Sydney Water supply to non-potable system.

6.3 Sampling Methodology

Flow meters are to be read monthly and results are to be reviewed monthly, quarterly and annually to assess site compliance with 80% non potable supply target.

6.4 Mitigation Measures

According to Blacktown City Council DCP (2015) Part J, industrial and commercial developments must supply 80% of their non potable demand using non potable sources. In the event that long term data

indicates less than 80% of flow is from stormwater supply, the following measures are to be taken:

- Confirm the pumps are operating correctly.
- Review site demand to determine if it is consistent with anticipated rates.
- Confirm site non potable demands are being preferentially supplied with stormwater collected in the proposed on-site stormwater/rainwater tanks.

Where it is found that the total site stormwater supply of non potable demand is less than 80% and above measures have not resolved the issue further assessment would be required.

7 Integrated Water Cycle Management

7.1 Overview

This section provides a summary of the site water management for the development including water supply for site demands, stormwater quality and quantity management, and generation, reuse and disposal of wastewaters.

7.2 Water Supply Analysis

Water supply for site demands comes from two sources:

- Stormwater reuse; and
- Town water.

Water balance modelling shows that reuse of stormwater results in a reduction in town water demand of 80.2 % for non potable demand. Stormwater is drawn both from on-site rainwater and stormwater tanks.

7.3 Wastewater Management

Staff will generate approximately 612 L/day of wastewater that will be disposed of to town sewer.

There is no significant wastewater produced by the operation. As such no industrial wastewater requiring offsite disposal is generated.

7.4 Stormwater Management

7.4.1 Stormwater Quantity

A concept stormwater drainage system has been developed for the proposed concrete recycling facility by Hanson. The proposed drainage system has been designed to convey site runoff via reuse and treatment to the discharge point.

The estate OSD basin shall adequately detain stormwater from the site to achieve design performance. Therefore, no further OSD modelling or assessment is required and no further site OSD management measures are required or proposed.

7.4.2 Stormwater Quality

The existing estate stormwater quality treatment system designed by Costin Roe has been constructed as an estate facility that services the

site. The estate facility caters for the sites TSS, TP and TN WSUD removal requirements (confirmed previously by BCC) meet the growth centres pollutant reduction targets. GPT sized for the 4EY flow is to be installed on site to capture litter, debris and other pollutants. This pre treatment device removes the larger pollutants prior to the stormwater water discharging offsite to the road and estate stormwater facility.

7.5 Additional Works

Detailed design of a number of water cycle management system components presented in this report shall be provided during the construction certificate (CC) stage. These include:

1. Detailed design of the stormwater collection tanks.

2. Design of the stormwater collection, reticulation, treatment and transfer/supply system, including GPT(s), pump specifications, pit and pipe sizes etc.

8 References

Blacktown City Council (2015). *Development Control Plan 2015 - Part J: Water Sensitive Urban Design and Integrated Water Cycle Management*.

Blacktown City Council (2013). *Developer Handbook for Water Sensitive Urban Design*.

Blacktown City Council (2015). *Local Environmental Plan 2015*.

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

Costin Roe (2015). *Civil Engineering Report for S75w Infrastructure Application.*

NSW Department of Mineral Resources, (1983) *Sydney 1:100,000 Geological Sheet 9130*.

NSW Health (2012). *Septic Tank and Collection Well Accreditation Guideline*.

NSW Office of Environment & Heritage. *Stormwater First Flush Pollution*. accessed 58 May, 2018,
https://www.environment.nsw.gov.au/water/stormwatermao.htm

Secretary's Environmental Assessment Requirements (2018).

9 Attachment A – CONCEPT DRAINAGE PLAN

PROJECT: HANSON CONCRETE RECYCLING FACILITY

PLANSET: CONCEPT DRAINAGE PLAN

CLIENT: HANSON CONSTRUCTION MATERIALS

LOCALITY PLAN
NOT TO SCALE

DRAWING LIST		
DWG NO.	REV	DWG TITLE
GENERAL		
PS02-A000	D	COVER SHEET
CONSTRUCTION MANAGEMENT WORKS		
PS02-B300	B	SEDIMENT & EROSION CONTROL PLAN
PS02-B310	A	SEDIMENT & EROSION CONTROL DETAILS
DRAINAGE		
PS02-E100	D	DRAINAGE PLAN - SHEET 1
PS02-E101	B	DRAINAGE PLAN - SHEET 2
PS02-E200	C	DRAINAGE DETAILS
PS02-E300	C	DRAINAGE LONGITUDINAL SECTIONS (SHEET 1)
PS02-E301	C	DRAINAGE LONGITUDINAL SECTIONS (SHEET 2)
PS02-E302	B	DRAINAGE LONGITUDINAL SECTIONS (SHEET 3)
PS02-E700	E	WATER BALANCE CATCHMENT PLAN & MODEL
PS02-EZ01	A	SWALE, PIPE, CATCHMENT & SIZING DETAILS

LGA: BLACKTOWN CITY COUNCIL

HANSON PLACE, EASTERN CREEK

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
D	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
C	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	JF
B	MINOR AMENDMENT	19/02/2021	LL	SS/LL	SL	JF
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE

GRID	DATUM	PROJECT MANAGER
---	---	JF

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CLIENT: HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE: HANSON CONCRETE RECYCLING FACILITY
CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

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DRAWING TITLE: COVER SHEET

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-A000	D

DRAWING ID: P1806739-PS02-R07-A000

PRINTED ---- USER: NNKZAD

A1 / A3 LANDSCAPE (A1LC_v02.0.01)

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	**MINOR AMENDMENT**	**23/07/2021**	**LL/JS**	**EZ**	**SL**	**JF**
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE
0 7.5 15.0 22.5 30.0 37.5 45.0 52.5 60.0 67.5 75.0 METRES
A1 (A3) 1:750 (1:1,500)

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE
HANSON CONCRETE RECYCLING FACILITY
CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

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DRAWING TITLE
SEDIMENT & EROSION CONTROL PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-B300	B

DRAWING ID: P1806739-PS02-R07-B300

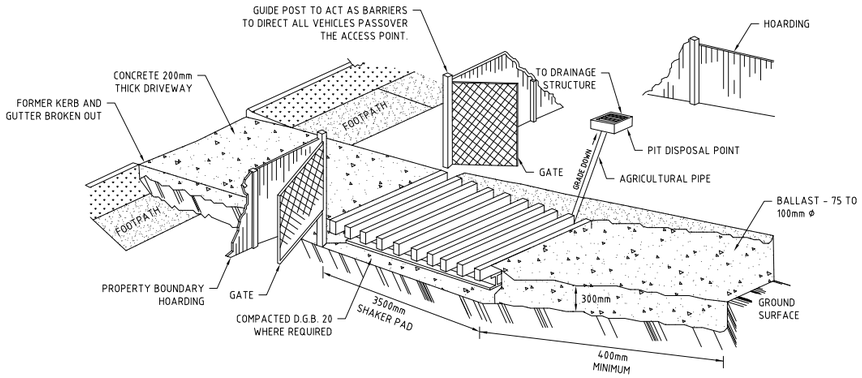
PRINTED: ---- USER: NWYZAD
A1 / A3 LANDSCAPE (A1LC_v02.0.01)

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)

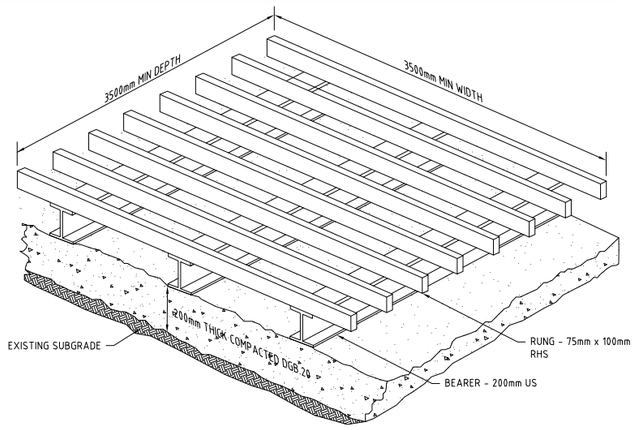
A CORRECTLY DESIGNED AND INSTALLED SHAKER PAD WILL ASSIST IN PREVENTING SEDIMENT TRANSFERE FROM A SITE. ANY STABILISED ACCESS POINT (SAP) CAN BE DESIGNED WITH A SHAKER PAD (COMPULSOPRY IN TYPE II SAP'S)

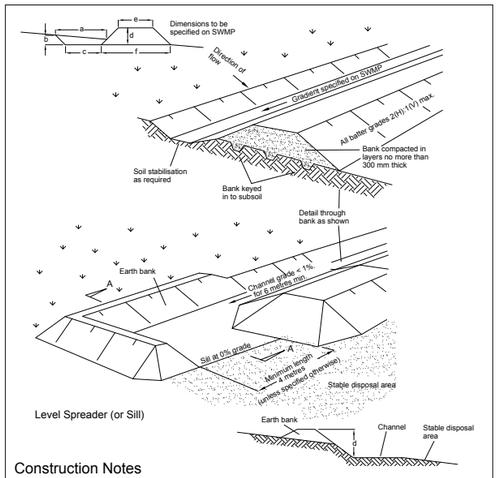
SHAKER PADS CAN BE DESIGNED AND CONSTRUCTED TO ENABLE RE-USE ON FUTURE PROJECTS.

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.





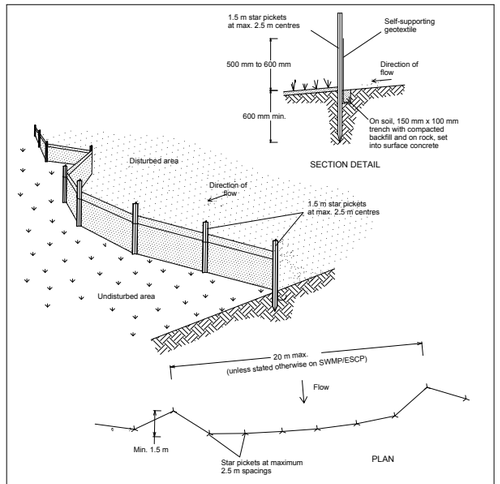
Level Spreader (or Sill)

Section AA

Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 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, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

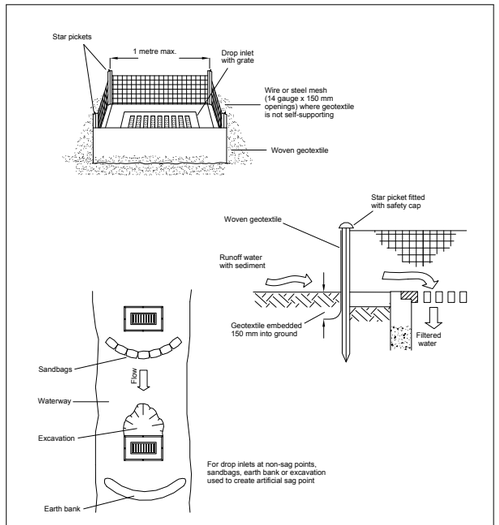
EARTH BANK (HIGH FLOWS) SD 5-6



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.

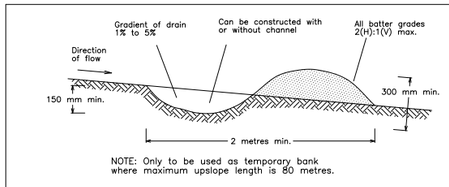
SEDIMENT FENCE SD 6-8



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.

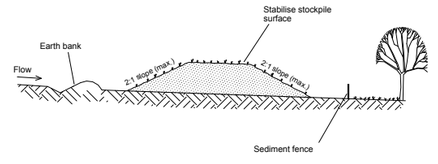
GEOTEXTILE INLET FILTER SD 6-12



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

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

GRID	DATUM	PROJECT MANAGER
---	---	JF

CLIENT: HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE
HANSON CONCRETE RECYCLING FACILITY
CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

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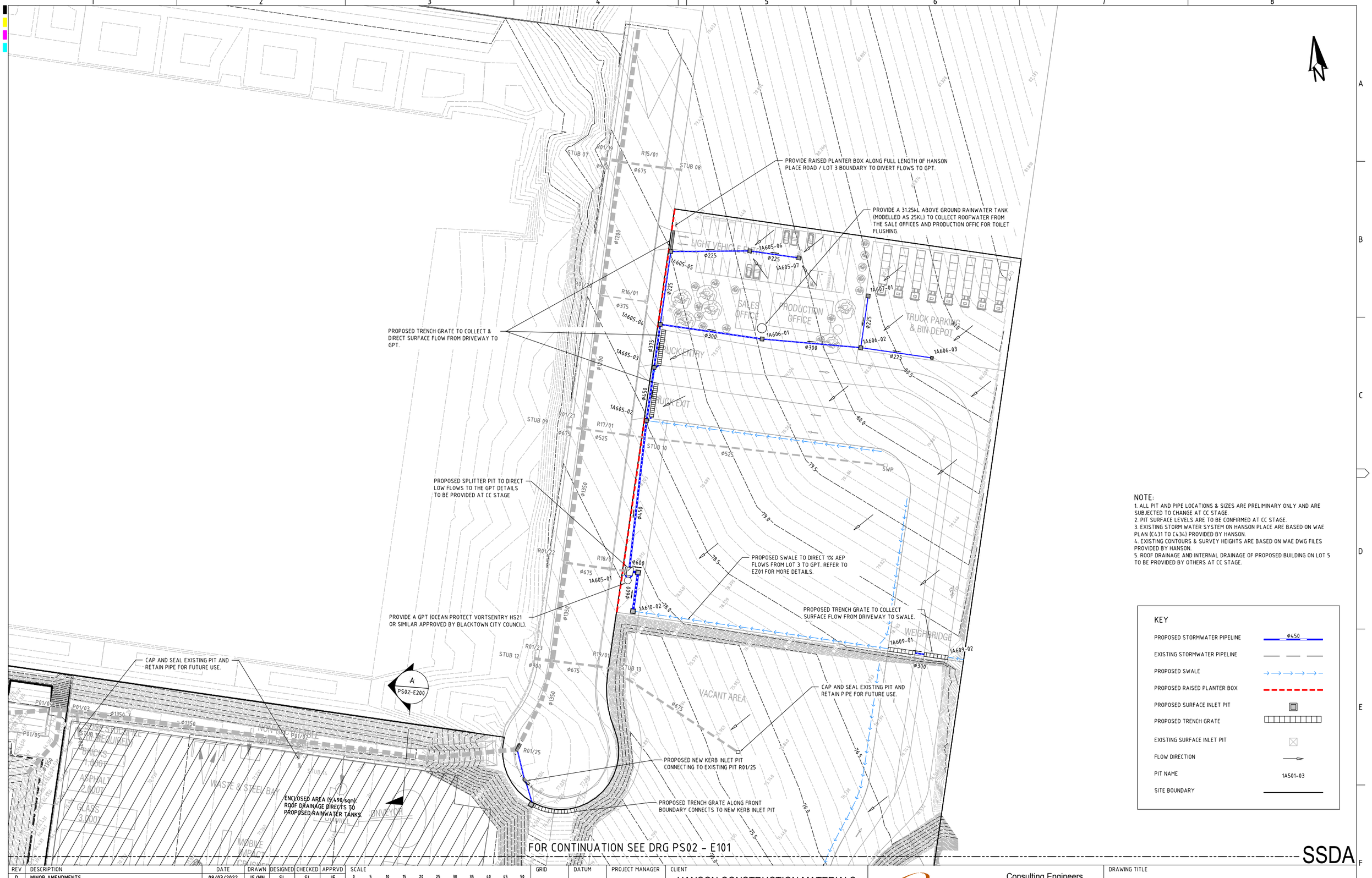
DRAWING TITLE: SEDIMENT & EROSION CONTROL DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-B310	A

DRAWING ID: P1806739-PS02-R07-B310



NOTE:
1. ALL PIT AND PIPE LOCATIONS & SIZES ARE PRELIMINARY ONLY AND ARE SUBJECTED TO CHANGE AT CC STAGE.
2. PIT SURFACE LEVELS ARE TO BE CONFIRMED AT CC STAGE.
3. EXISTING STORM WATER SYSTEM ON HANSON PLACE ARE BASED ON WAE PLAN (C431 TO C434) PROVIDED BY HANSON.
4. EXISTING CONTOURS & SURVEY HEIGHTS ARE BASED ON WAE DWG FILES PROVIDED BY HANSON.
5. ROOF DRAINAGE AND INTERNAL DRAINAGE OF PROPOSED BUILDING ON LOT 5 TO BE PROVIDED BY OTHERS AT CC STAGE.

KEY

PROPOSED STORMWATER PIPELINE	ø450
EXISTING STORMWATER PIPELINE	
PROPOSED SWALE	
PROPOSED RAISED PLANTER BOX	
PROPOSED SURFACE INLET PIT	
PROPOSED TRENCH GRATE	
EXISTING SURFACE INLET PIT	
FLOW DIRECTION	
PIT NAME	1A501-03
SITE BOUNDARY	

FOR CONTINUATION SEE DRG PS02 – E101

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
D	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
C	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	JF
B	MINOR AMENDMENT	19/02/2021	LL	SS/LL	SL	JF
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE: A1 (A3) 1:500 (1:1,000) — 0 5 10 15 20 25 30 35 40 45 50 METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT: HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE
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DRAWING TITLE: DRAINAGE PLAN SHEET 1

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E100	D

DRAWING ID: P1806739-PS02-R07-E100

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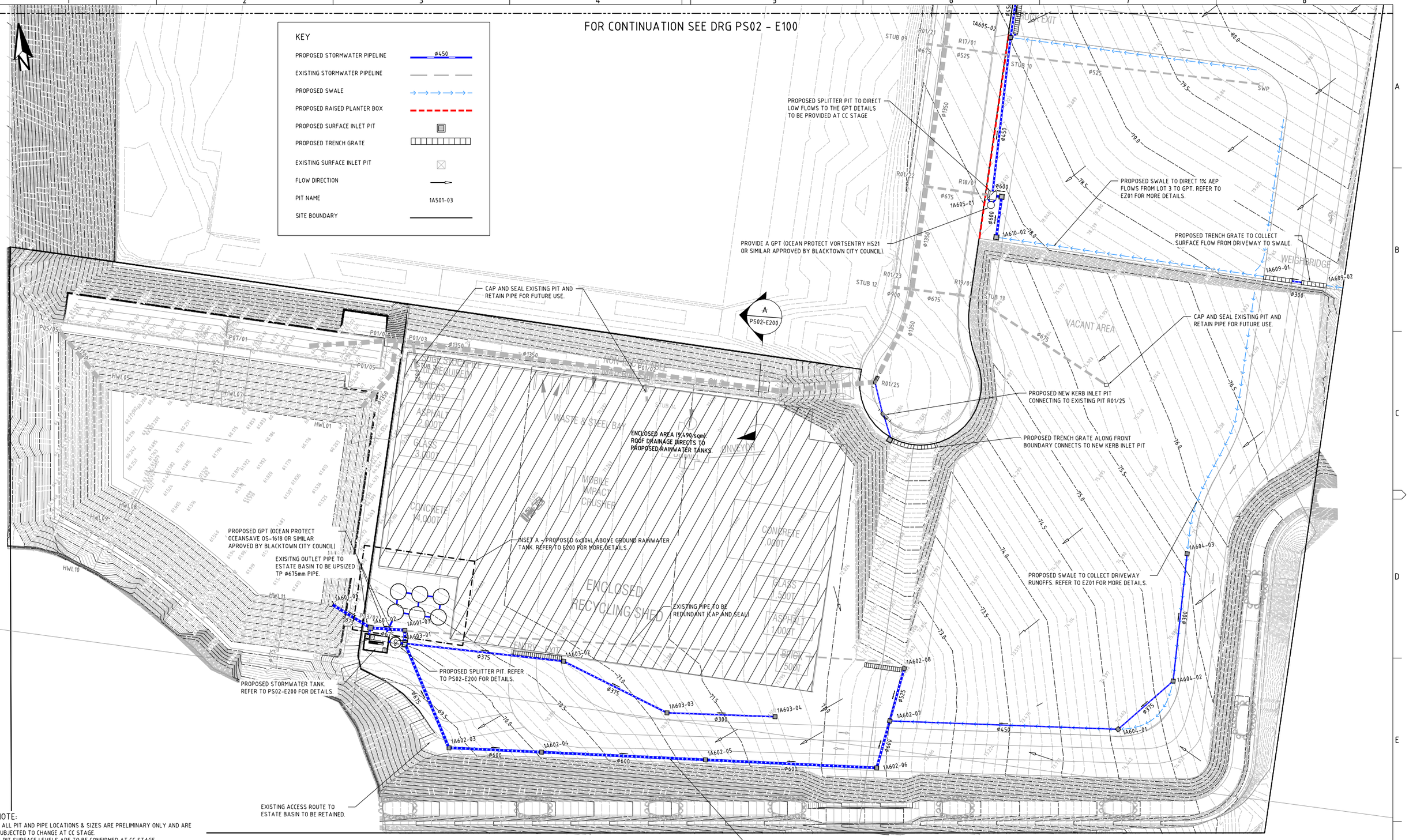

NOTE:
1. ALL PIT AND PIPE LOCATIONS & SIZES ARE PRELIMINARY ONLY AND ARE SUBJECTED TO CHANGE AT CC STAGE.
2. PIT SURFACE LEVELS ARE TO BE CONFIRMED AT CC STAGE.
3. EXISTING STORM WATER SYSTEM ON HANSON PLACE ARE BASED ON WAE PLAN (C431 TO C434) PROVIDED BY HANSON.
4. EXISTING CONTOURS & SURVEY HEIGHTS ARE BASED ON WAE DWG FILES PROVIDED BY HANSON.
5. ROOF DRAINAGE AND INTERNAL DRAINAGE OF PROPOSED BUILDING ON LOT 5 TO BE PROVIDED BY OTHERS AT CC STAGE.

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	MINOR AMENDMENTS	08/03/2022	JS/NN	SL	SL	JF
A	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	

SCALE: A1 (A3) 1:500 (1:1,000) — 0 5 10 15 20 25 30 35 40 45 50 METRES

GRID | DATUM | PROJECT MANAGER: JF

CLIENT: HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE: HANSON CONCRETE RECYCLING FACILITY
CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

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DRAWING TITLE: DRAINAGE PLAN SHEET 2

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E101	B

DRAWING ID: P1806739-PS02-R07-E101

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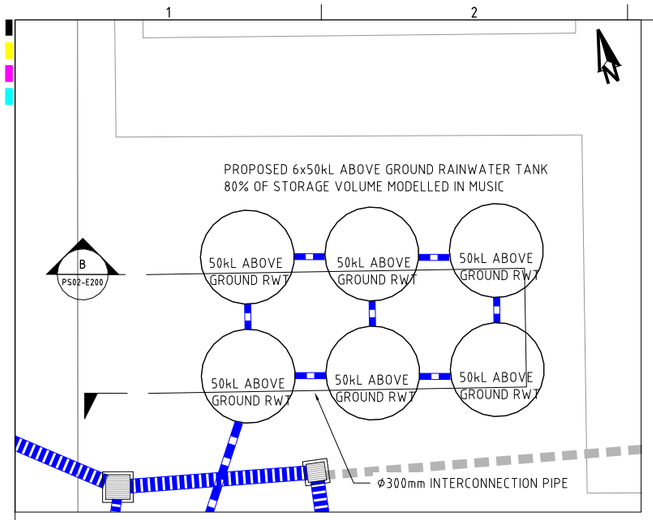
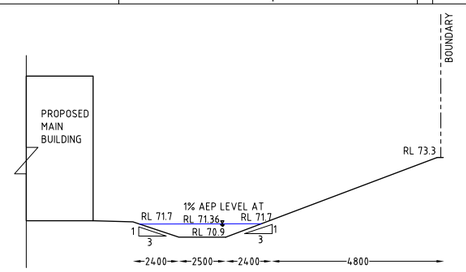


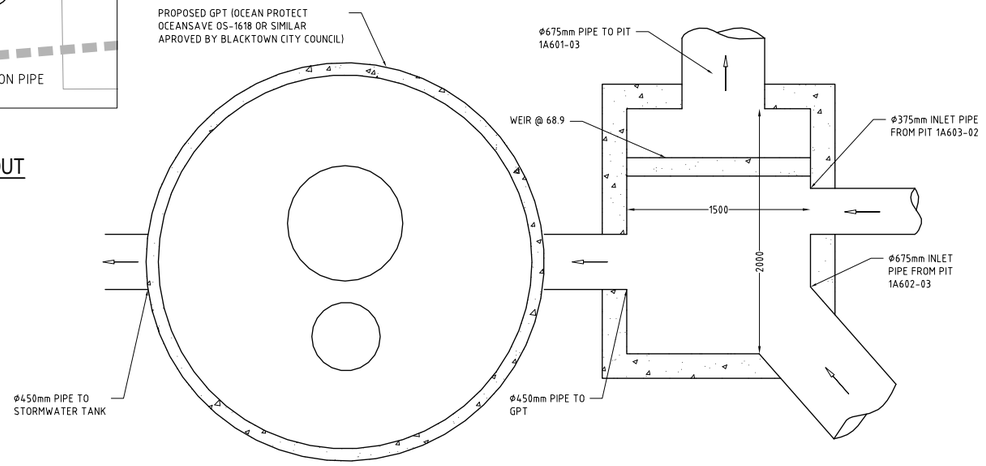
INSET A - PROPOSED INTERCONNECTED ABOVE GROUND RAINWATER TANK LAYOUT

SCALE - N.T.S



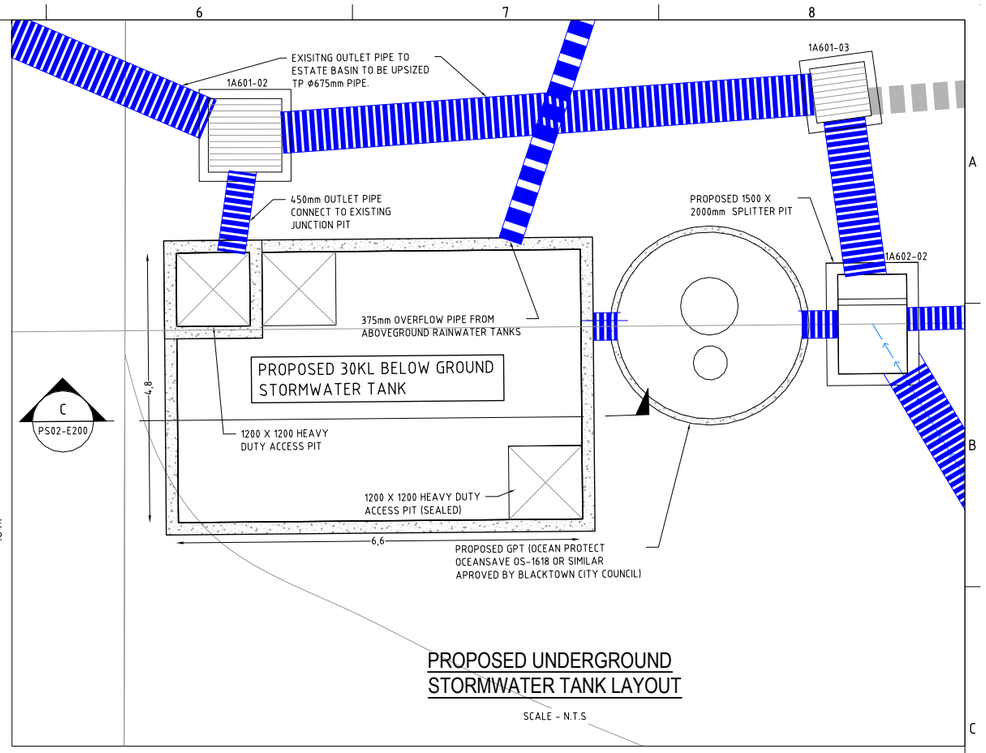
SWALE SECTION ON UPSTREAM END - SECTION A-A

SCALE: N.T.S



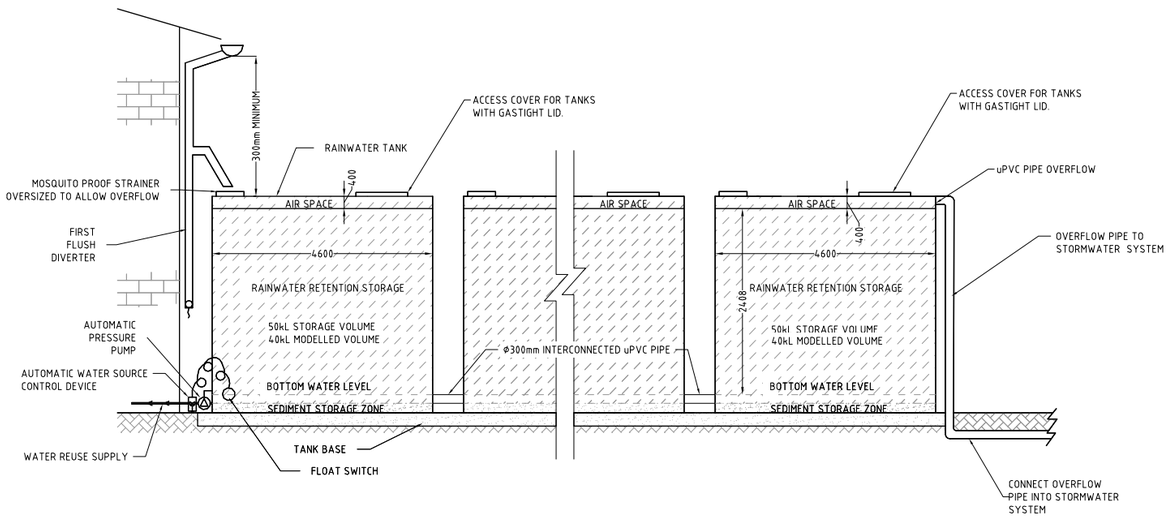
SPLITTER PIT DETAILS

SCALE 1:25



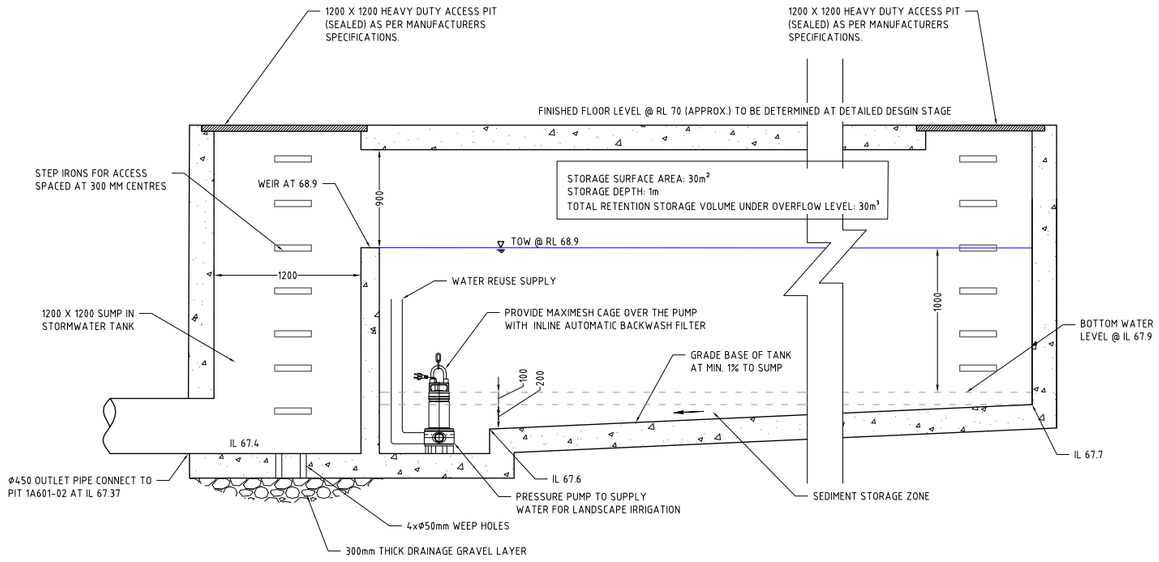
PROPOSED UNDERGROUND STORMWATER TANK LAYOUT

SCALE - N.T.S



ABOVE GROUND RAINWATER TANK SECTION (SHCEMATIC ONLY) - SECTION B-B

SCALE - N.T.S



UNDERGROUND STORMWATER TANK DETAILS - SECTION C-C

NOT TO SCALE

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
C	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
B	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	JF
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
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PROJECT NAME/PLANSET TITLE
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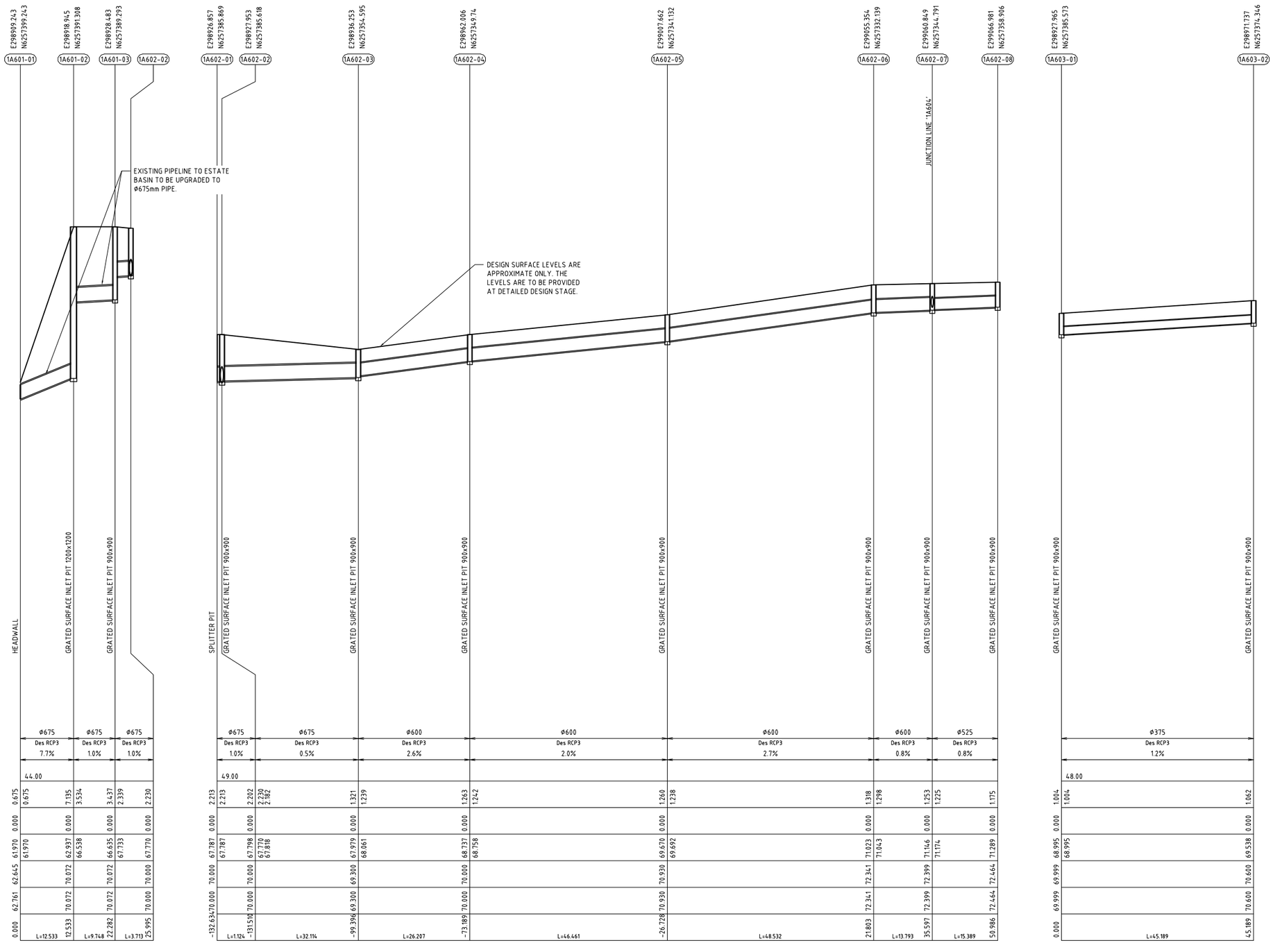
DRAWING TITLE
DRAINAGE DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E200	C

DRAWING ID: P1806739-PS02-R07-E200



NOTE:
- ALL PIPE LEVELS AND CLASSES TO BE CONFIRMED AT DETAILED DESIGN STAGE.

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
C	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
B	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	JF
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
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DRAWING TITLE
DRAINAGE LONGITUDINAL SECTIONS
(SHEET 1)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E300	C

DRAWING ID: P1806739-PS02-R07-E300

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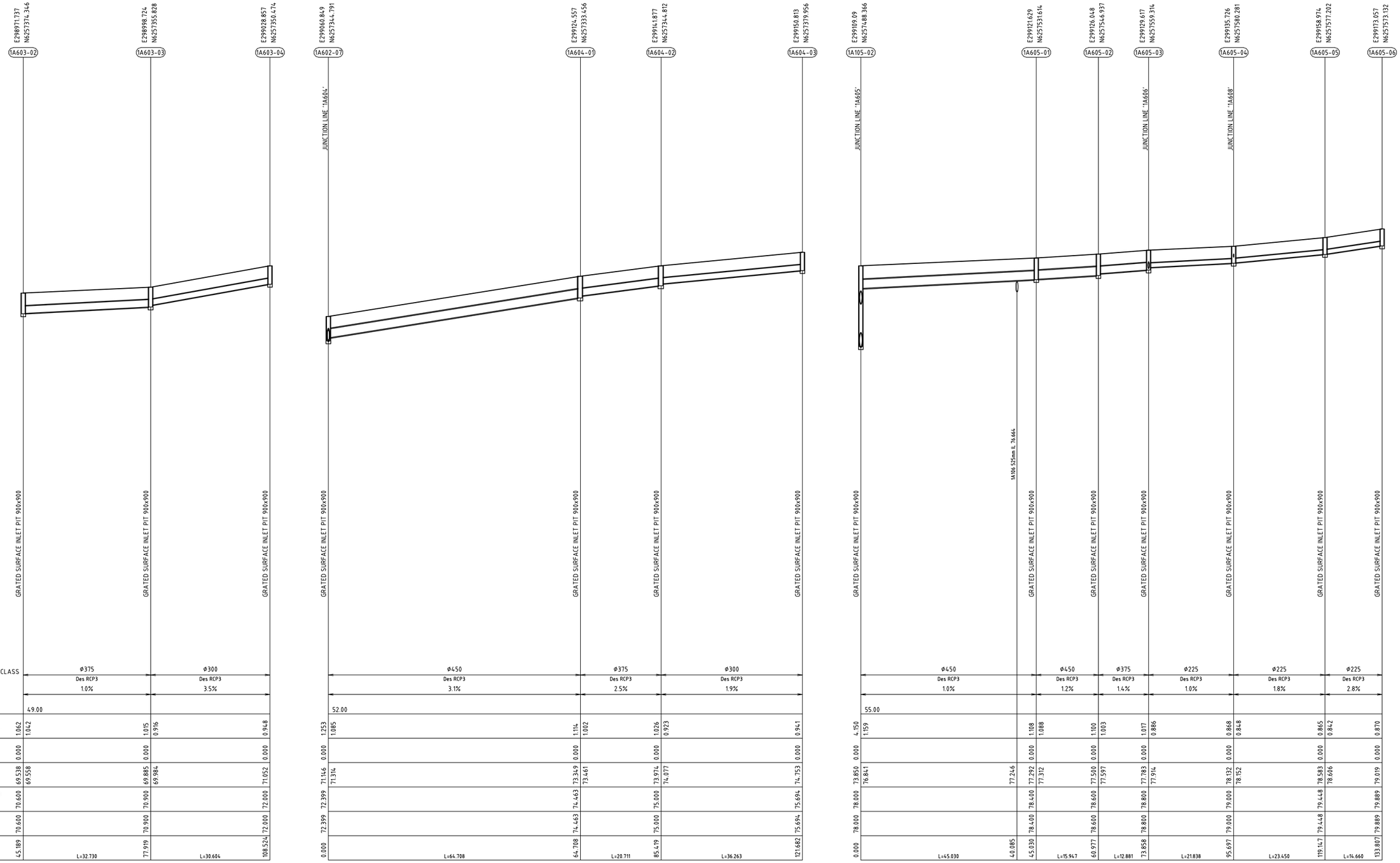

LINE 1A603

LINE 1A604

LINE 1A605

NOTE:
- ALL PIPE LEVELS AND CLASSES TO BE CONFIRMED AT DETAILED DESIGN STAGE.

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
C	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
B	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	JF
A	INITIAL RELEASE	04/02/2021	LL	SS/LL	SL	JF

SCALE

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE
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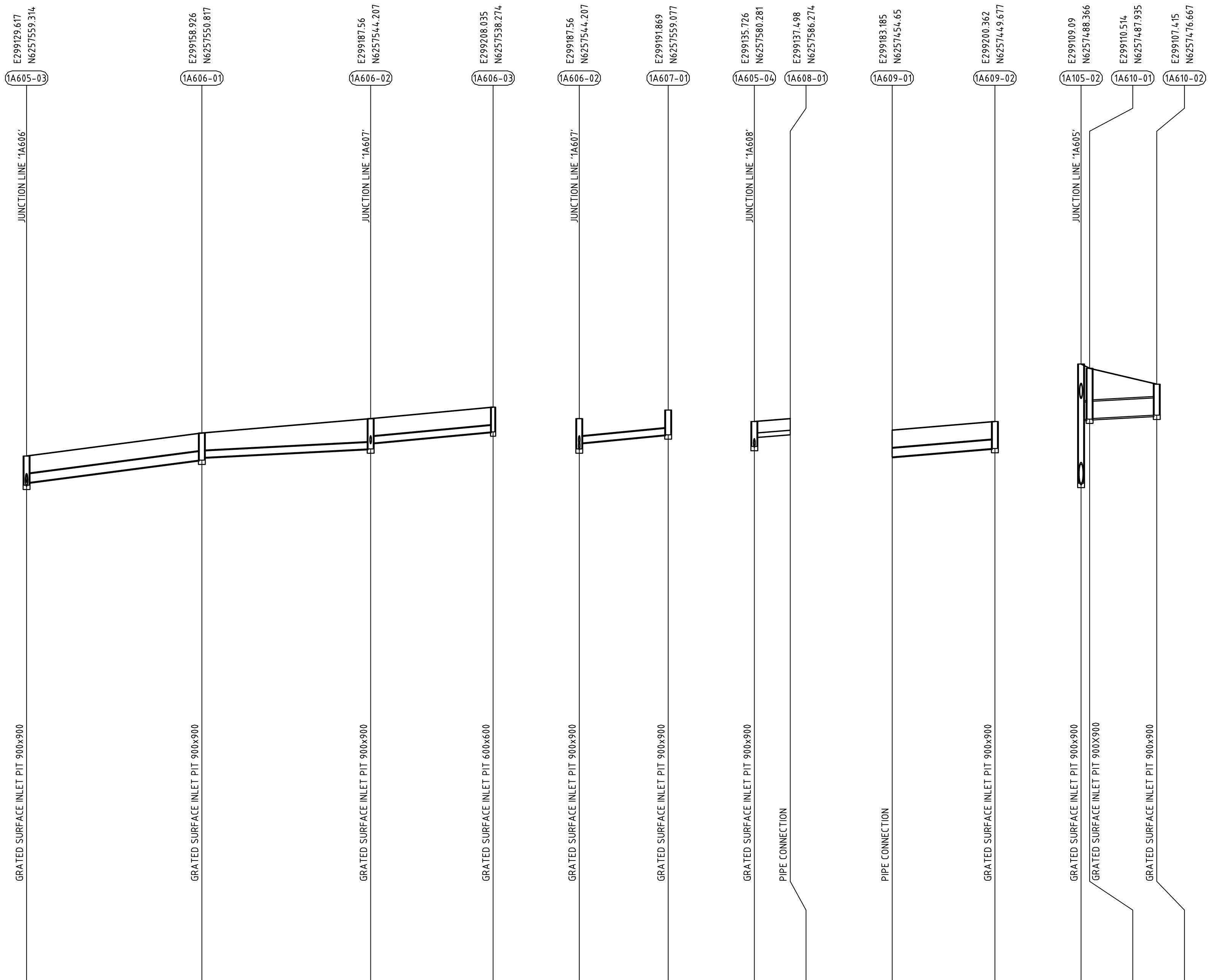
DRAWING TITLE
DRAINAGE LONGITUDINAL SECTIONS
(SHEET 2)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E301	C

DRAWING ID: P1806739-PS02-R07-E301

PRINTED: ---- USER: NNYZAD

A1 / A3 LANDSCAPE (A1LC_v02.0.01)



PIPE SIZE & CLASS	Ø300 Des RCP3		Ø225 Des RCP3		Ø225 Des RCP3	
GRADE (%)	2.5%		1.0%		1.8%	
Datum R.L	58.00					

DEPTH TO INVERT	1.017	0.920	0.944	0.848	1.054	0.848	0.862
H.G.L. LEVEL	0.000		0.000		0.000		0.000
INVERT LEVEL	77.783	77.880	78.656	78.752	79.046	79.252	79.638
PROPOSED LEVEL	78.800		79.600		80.100		80.500
EXISTING LEVEL	78.800		79.600		80.100		80.500
CHAINAGE	0.000	L=30.517	30.517	L=29.387	59.904	L=21.317	81.220

LINE 1A606

PIPE SIZE & CLASS	Ø225 Des RCP3	
GRADE (%)	1.8%	
Datum R.L	58.00	

DEPTH TO INVERT	1.054	0.847	0.865
H.G.L. LEVEL	0.000		0.000
INVERT LEVEL	79.046	79.253	79.535
PROPOSED LEVEL	80.100		80.400
EXISTING LEVEL	80.100		80.400
CHAINAGE	0.000	L=15.481	15.481

LINE 1A607

PIPE SIZE & CLASS	Ø150 Des uPVC	
GRADE (%)	1.5%	
Datum R.L	57.00	

DEPTH TO INVERT	0.868	0.552	0.559
H.G.L. LEVEL	0.000		0.000
INVERT LEVEL	78.132	78.448	78.541
PROPOSED LEVEL	79.000		79.100
EXISTING LEVEL	79.000		79.100
CHAINAGE	0.000	L=6.250	6.250

LINE 1A608

PIPE SIZE & CLASS	Ø300 Des RCP3	
GRADE (%)	1.6%	
Datum R.L	57.00	

DEPTH TO INVERT	0.932	0.932	0.940
H.G.L. LEVEL	0.000		0.000
INVERT LEVEL	77.768	77.768	78.060
PROPOSED LEVEL	78.700		79.000
EXISTING LEVEL	78.700		79.000
CHAINAGE	0.000	L=17.882	17.882

LINE 1A609

PIPE SIZE & CLASS	Ø600 Des RCP3		Ø600 Des RCP3	
GRADE (%)	1.0%		1.0%	
Datum R.L	54.00			

DEPTH TO INVERT	4.150	1.932	1.767	1.747	1.080
H.G.L. LEVEL	0.000		0.000		0.000
INVERT LEVEL	73.850	76.068	76.083	76.103	76.220
PROPOSED LEVEL	78.000		77.850		77.300
EXISTING LEVEL	78.000		77.850		77.300
CHAINAGE	0.000	L=1.488	1.488	L=11.687	13.175

LINE 1A610

NOTE:
- ALL PIPE LEVELS AND CLASSES TO BE CONFIRMED AT DETAILED DESIGN STAGE.

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
A	INITIAL RELEASE	23/07/2021	LL/JS	EZ	SL	JF

SCALE

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

CLIENT
HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE
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CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

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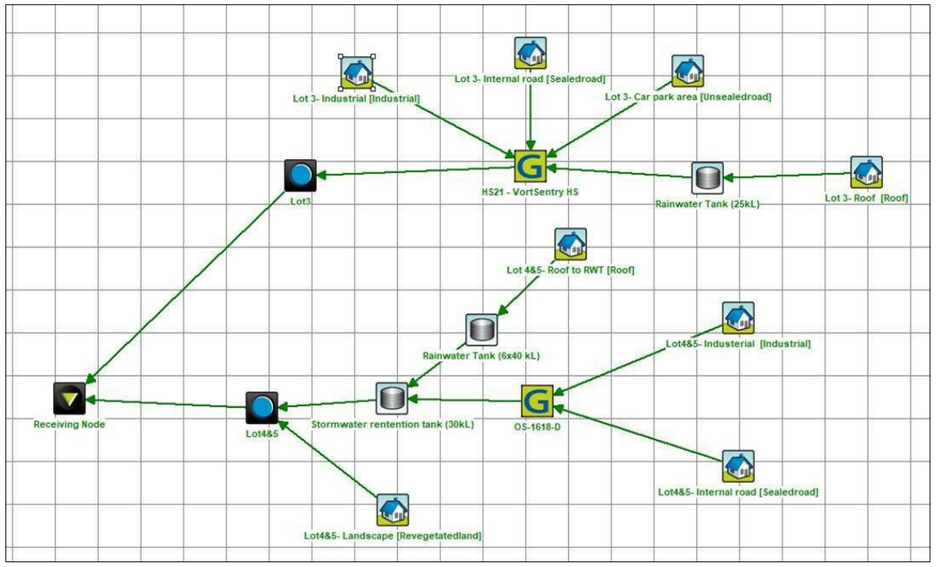
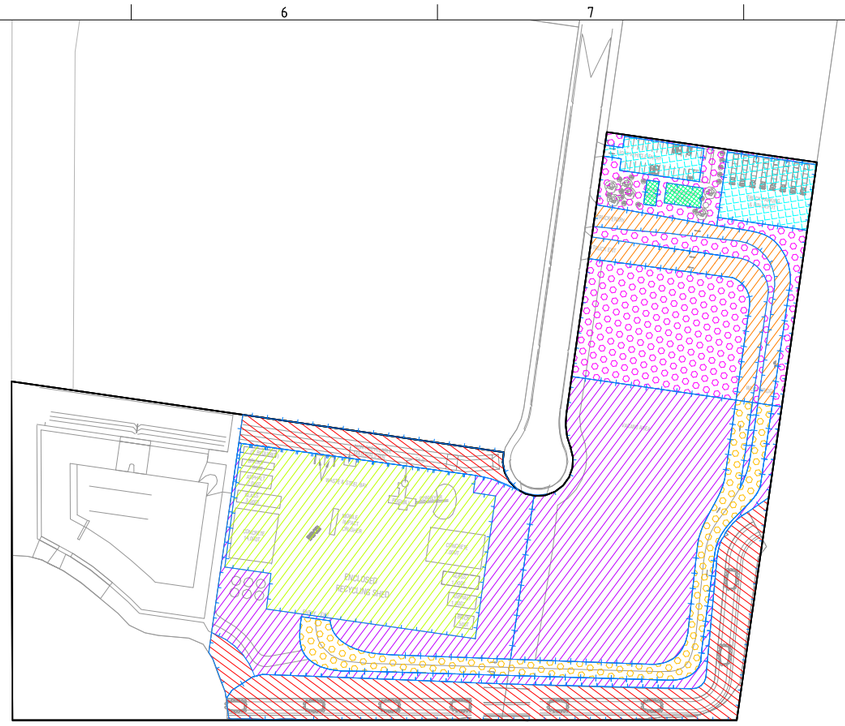
DRAWING TITLE
DRAINAGE LONGITUDINAL SECTIONS
(SHEET 3)

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E302	B

DRAWING ID: P1806739-PS02-R07-E302
A1 / A3 LANDSCAPE (A1LC_v02.0.01)



MUSIC MODELLING LAYOUT (P1806739MUS05V01)

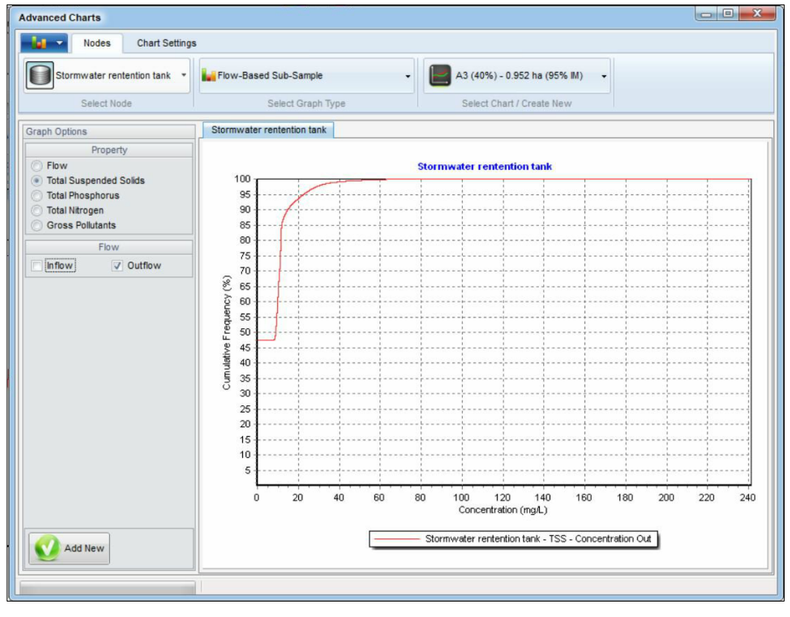


MUSIC MODELLING CATCHMENTS FOR THE SITE

MUSIC CATCHMENTS (P1806739MUS05V01)

THE SITE (LOT 3, 4 $ 5)

KEY	DESCRIPTION	MUSIC NODE TYPE	AREA (ha)	IMPERVIOUS %	MUSIC NODE REFERENCE
	LOT 4&5 - INDUSTRIAL	INDUSTRIAL	1.653	100%	BLACKTOWN CITY COUNCIL WSUD
	LOT 4&5 - INTERNAL ROAD	SEALED ROAD	0.340	100%	BLACKTOWN CITY COUNCIL WSUD
	LOT 4&5 - ROOF TO RWT	ROOF	0.949	100%	BLACKTOWN CITY COUNCIL WSUD
	LOT 4&5 - LANDSCAPE	REVEGETATED LAND	0.840	0%	BLACKTOWN CITY COUNCIL WSUD
	LOT 3 - INDUSTRIAL	INDUSTRIAL	0.738	100%	BLACKTOWN CITY COUNCIL WSUD
	LOT 3- INTERBAL ROAD	SEALED ROAD	0.264	100%	BLACKTOWN CITY COUNCIL WSUD
	LOT 3- CAR PARK AREA	UNSEALED ROAD	0.189	100%	BLACKTOWN CITY COUNCIL WSUD
	LOT 3 - ROOF	ROOF	0.025	100%	BLACKTOWN CITY COUNCIL WSUD
TOTAL AREA			5.00	= 100% OF TOTAL AREA	
TOTAL IMPERVIOUS AREA			1.77	= %35 OF TOTAL AREA	
TOTAL PERVIOUS AREA			3.23	= %65 OF TOTAL AREA	



NOTE:

- MUSIC MODEL IS USED FOR WATER BALANCE ASSESSMENT ONLY. THE EXISTING ESTATE STORMWATER QUALITY TREATMENT SYSTEM (REGIONAL FACILITY) THAT SERVES THE SITE WHICH MEETS THE GROWTH CENTRES POLLUTANT REDUCTION TARGETS TSS, TP AND TN. NO FURTHER STORMWATER QUALITY MODELLING IS REQUIRED FOR TSS, TP AND TN. REFER TO MA REPORT P1806739JR03 FOR MORE DETAILS.

- ACCORDING TO AUSTRALIAN GUIDELINE FOR WATER RECYCLING: STORMWATER HARVESTING AND REUSE (2009), THE WATER QUALITY OBJECTIVES FOR REUSE OF STORMWATER FOR DUST SUPPRESSION INCLUDE:
  - TURBITY: <25 NTU (EQUIVALENT TO 8.33 mg/L) (MEDIAN)
    < 100 NTU (EQUIVALENT TO 33.33 mg/L) (95th PERCENTILE)
  - E. COLI: <100 NTU

AS SHOWN IN FIGURE ABOVE, THE WATER QUALITY OBJECTIVES FOR TURBITY IS ACHIEVED.
- TURBITY: 0 < 8.33 mg/L (MEDIAN)
  20< 33.33 mg/L) (95th PERCENTILE)

AS THE WASTEWATER RECYCLING IS NOT PROPOSED FOR THE SITE, THE OBJECTIVE FOR E.COLI IS CONSIDERED ACHIEVED.
THEREFORE, THE STORMWATER COLLECTED IN STORMWATER RETENTION TANK IS FIT FOR REUSE FOR DUST SUPPRESSION.

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
E	**MINOR AMENDMENTS**	**08/03/2022**	**JS/NN**	**SL**	**SL**	**JF**
D	MINOR AMENDMENT	23/07/2021	LL/JS	EZ	SL	JF
C	MINOR AMENDMENT	04/02/2021	LL	SS	SL	JF
B	MINOR AMENDMENT	20/11/2020	JS	SS	SL	JF
A	INITIAL RELEASE	03/09/2020	RK	SS	SL	JF

SCALE: A1 (A3) 1:1,500 (1:3,000) METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	JF

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CLIENT: HANSON CONSTRUCTION MATERIALS

PROJECT NAME/PLANSET TITLE: HANSON CONCRETE RECYCLING FACILITY
CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

martens & Associates Pty Ltd
Consulting Engineers
Environment
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Geotechnical
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DRAWING TITLE: WATER BALANCE CATCHMENT PLAN & MODEL

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-E700	E

PRINTED: ---- USER: NNYZLO
A1 / A3 LANDSCAPE (A1LC_v02.0.01)
DRAWING ID: P1806739-PS02-R07-E700

PRELIMINARY SWALE SIZING

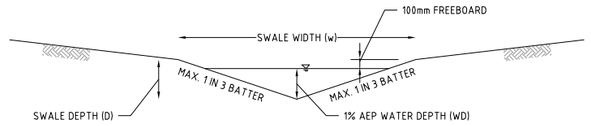
SWALE	1% AEP FLOW RATE ESTIMATION				SWALE DIMENSION		1% AEP WATER DEPTH	FREEBOARD ACHIEVED (m)
	C100	I (mm/hr)	A (ha)	Q(L/s)	W (m)	D (m)	WD (m)	
1	1.2	194	0.65	420	3	0.5	0.39	0.11
2	1.2	194	0.6	388	3	0.5	0.38	0.12
3	1.2	194	0.46	297	3	0.5	0.34	0.16
4	1.2	194	1.93	752 (1)	3.6	0.6	0.48	0.12

NOTE:
PRELIMINARY SIZING ONLY, FINAL SIZING SUBJECTS TO DETAILED DESIGN AT CC STAGE
(1) CATCHMENT FLOW SUBTRACTED BY 50% OF PIPE FLOW

PRELIMINARY PIPE SIZING

PIPELINE FROM SPLITTER PIT TO ESTATE BASIN	5% AEP FLOW RATE ESTIMATION				PIPE CAPACITY		
	C100	I (mm/hr)	A (ha)	Q(L/s)	D (mm)	S(%)	Qcap(L/s)
PIT 1A602-02 TO 1A601-02	1.05	168	1.93	946	675	1	993
PIT 1A601-02 TO 1A601-01	1.05	168	2.97	1455	675	7.71	2760

NOTE:
PRELIMINARY SIZING ONLY, FINAL SIZING SUBJECTS TO DETAILED DESIGN AT CC STAGE



TYPICAL SWALE SECTION
SCALE - N.T.S

KEY
CATCHMENT BOUNDARY
SWALE

SSDA

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	08/03/2022	JS/NN	SL	SL	JF

SCALE
0 7.5 15.0 22.5 30.0 37.5 45.0 52.5 60.0 67.5 75.0 METRES
A1 (A3) 1:750 (1:1,500)

GRID | DATUM | PROJECT MANAGER: JF

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CLIENT
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PROJECT NAME/PLANSET TITLE
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CONCEPT DRAINAGE PLAN
HANSON PLACE, EASTERN CREEK

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DRAWING TITLE
SWALE, PIPE, CATCHMENT & SIZING DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1806739	PS02	R07	PS02-EZ01	A

DRAWING ID: P1806739-PS02-R07-EZ01

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