Appendix 5

Soil and Water Management Plan

Concrete Recyclers

Site Water Management Plan:

Minto Resource Recovery Facility
7 Montore Road, Minto, NSW.

P1203464JR01V05
March 2020

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to provide a stormwater management plan in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Concrete Recylcers (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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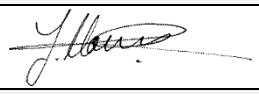
Megan Kovelis/Erica Zhu	Stanley Leung/Terry Harvey	Terry Harvey	

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

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1 Introduction

1.1 Overview

This Site Water Management Plan is prepared to support a State Significant Development (SSD) Application for a proposed resource recovery facility development at 7 Montore Road, Minto, NSW (the 'site'). It addresses the specific requirements of the Secretary's Environmental Assessment Requirements (SEARs) (Ref: SSD 5339; July 11, 2017).

1.2 Project Scope and Aim

The objectives of this plan are:

1. Develop a stormwater management system to prevent potential offsite water quality and quantity impacts.
2. Develop a stormwater reuse system.
3. Demonstrate compliance with relevant Water Sharing Plans (WSP).
4. Provide an impact assessment of the proposed development on the adjacent Bow Bowing Creek environment.
5. Provide an assessment of predicted wastewater loads.
6. Assess groundwater impacts.

1.3 Proposed Development

The proposed development is for the construction of a resource recovery facility with an intended capacity of 450,000 tonnes of bricks, concrete and sand processed per annum.

The facility will include the following infrastructure:

- Site office;
- Staff lunch room and associated amenities;
- Weighbridge and wheel wash;
- Feed concrete and product stockpiles;

- Concrete crushing plant housing primary screens, primary and secondary crushers, processed product stockpiles and the dust suppression system;
- Sand washing plant housing primary and secondary screens;
- Pug mill;
- Workshop for general repairs;
- Rainwater tanks;
- Stormwater storage tanks;
- Employee carpark; and
- Driveway and hardstand areas to service site.

1.4 Relevant Planning Controls and Design Principles

The following planning controls and design principles have been consulted and incorporated into the design of the site's stormwater management system:

- Campbelltown City Council (Sustainable City) DCP 2009;
- Landcom (2004) *Soils and Construction: Managing Urban Stormwater*; and
- BMT WBM (2015) *NSW MUSIC Modelling Guidelines*.

1.5 Consultation

The following agency consultation has been completed during the development of this plan:

Table 1: Agency Consultation.

Agency	Contact	Outcome
NSW Environment Protection Authority (EPA)	Jacqueline Ingham	Proposed development is to ensure any discharge is treated and of an appropriate quality. 'Dirty' and 'clean' parts of the site are to be separate Vehicles leaving the site are to be cleaned via a wheel wash of similar to prevent pollution of surrounding environments.
Department of Industry – Water (DPI Water)	Wayne Connor	The proposed sedimentation basin is exempt from harvestable rights calculations and does not require Water Management Act licenses. Collection of water from office roof is not required to be authorised. No further information is required.

2 Site Description

2.1 Location and Existing Land Use

The site is located at 7 Montore Road, Minto, NSW and lies within the Campbelltown City Council local government area (LGA). It is bounded by existing industrial development to the east and south, Montore Road and existing warehouses to the north and a drainage easement containing Bow Bowing Creek (canal) to the west.

The northern portion of the site contains an unsealed hardstand area and is currently utilised has a construction material storage compound, with two sheds located near the northern boundary.

The southern portion of the site is covered by grass with shrubs/trees along the western boundary.

2.2 Topography and Drainage

The site is predominately flat. The highest point is in the compound area of the site, at approximately 44m AHD. The compound area falls away from Bow Bowing Creek towards the site access. Any runoff from the compound area is assumed to be collected by Council's kerb and gutter system on Montore Road.

Bow Bowing Creek is located approximately 50m west of the site. Section 6 provides an impact assessment of the proposed development on the riparian environment.

3 Stormwater Quality

3.1 Overview

A stormwater retention system is proposed for the site to collect and treat runoff, preventing offsite migration of sediment contaminated stormwater. Onsite tanks will be utilised to store and supply captured stormwater to satisfy dust suppression and sand washing demands (Section 5).

Design of this system is in accordance with NSW Landcom (2004) *Soils and Construction* Handbook.

3.2 Landcome Water Quality Targets

Landcom (2004) notes that to ensure pollution of downslope receiving waters does not occur; treated discharge waters from sedimentation basins should not exceed 50 ppm of total suspended solids (TSS). This condition is considered appropriate for the site.

Although overflow from the basins and onsite above tanks is generally not expected during normal operation, it may occur during extended periods of wet weather where dust suppression and sand washing are not required or during extreme rainfall events. Under these circumstances, overflow shall be monitored and managed as per Section 3.5.

3.3 Sedimentation Basin Description

A concept sediment basin design has been developed for the proposed resource recovery facility:

- The site is graded to direct all surface runoff to site basins prior to reuse or discharge from the site to meet water quality objectives. The driveway and the entry section of the carpark are excluded from capture.

- Sedimentation basins are located to the north and south of the site (Attachment A). Both basins are below ground concrete pits.

- Provide a floating pump in each basin for extraction of clean water to onsite tanks for reuse in dust suppression and sand washing (see Section 5).

- Detailed design of the proposed basins to be undertaken in accordance with Landcom (2004) during the construction certificate (CC) stage.

3.4 Sedimentation Basin Design

Sedimentation basins are sized based on design procedures set out in the Landcom Handbook (2004) and summarised in Table 2.

Table 2: Total Site Sediment Basin Minimum Design Specifications Summary.

Element	Design Parameter
90th percentile 5-day rainfall Campbelltown	43 mm
Runoff coefficient	0.83
Catchment area	20,143 m^2
5-day runoff volume (m^3)	**720 m^3**

The total 5-day runoff volume from Table 2 stored onsite, split between both site basins and above ground tanks, is outlined in Table 3. Runoff captured by both basins will be pumped to above-ground tanks and used for stockpile watering, general site dust control and sand washing.

Table 3: Sediment Basin Details.

Parameter	Southern Sediment Basin	Northern Sediment Basin	Onsite Above Ground Tank
Volume[1]	100 m^3	100 m^3	520 m^3
Footprint	5 m x 10 m	5 m x 14 m	
Basin invert level	41.00 mAHD	41.00 mAHD	-
Overflow discharge weir level	43.00 mAHD [2]	43.30 mAHD	
Emergency overflow weir level [3]	43.55 mAHD	43.82 mAHD	-

Note: [1] Total volume of sediment basins = 200 m^3. [2] In the southern basin, overflow discharge weir is designed to convey minor storm event, tailwater condition in the major storm event prevents discharge being conveyed in the pipe. [3] Emergency overflow weirs formed in western site batter.

The basin shall have a series of custom pits. These pits work as describe below:

- Incoming site runoff is directed firstly to a sedimentation pit, capturing coarse sediments. Water is pumped from this pit to holding tanks for reuse onsite.

- Flows unable to be pumped to onsite tanks due to holding tank capacity being reached or incoming flows exceeding basin storage volume are directed to an overflow pit which pipe flows to Bow Bowing creek.

Outlet pipes from the two basins shall discharge to Bow Bowing Creek via existing headwalls. In the northern basin, pit/pipes have been sized to carry all storms up to and including the 100 year ARI storm. In the southern

basin, pit/pipes have been sized for the 10 year ARI storm. Flows exceeding the pipe capacity shall be directed to Bow Bowing Creek via the emergency overflow weir. The emergency overflow weir is designed to convey the 100 year ARI storm.

Preliminary stormwater outlet designs are provided in Attachment A - E100, E200 and E201.

3.5 Management and Monitoring

The sediment basins shall be managed by pumping the collected rainfall runoff to onsite holding tanks. If all storage tanks are full and water remains in the sedimentation basin, water shall be monitored to ensure water quality objectives are met prior to discharging Bow Bowing Creek.

Emergency overflow weirs are provided in the earth bund along the western portion of the site for the controlled release of ponded water from the site in the rare case of site pit or pipe blockage.

The water quality monitoring system shall be:

- A site calibrated 50ppm water sample kept onsite.
- In the event that water needs to be discharged from the basin, a water sample shall be taken daily from the basin settling zone.
- Water samples shall be compared to the calibrated sample.
- Discharge may occur from the basin once water samples match the calibrated sample (i.e. water quality objectives have been achieved).
- The calibrated water sample shall be recalibrated every 12 months by laboratory analysis for total suspended solids to ensure accuracy.

3.6 Campbelltown CC Water Quality Targets

As per Campbelltown City Council DCP (2009) Section 4.15 the development aims to use treatment methods to achieve the water quality objectives outlined below:

- Post development average annual load reduction for total suspended solids (TSS) – 80%
- Post development average annual load reduction for total phosphorus (TP) – 45%.

- Post development average annual load reduction for total nitrogen (TN) – 45%.

3.7 Modelling Methodology

3.7.1 Overview

Model for Urban Stormwater Improvement Conceptualisation (MUSIC, Version 6.3) was used to evaluate the treatment train effectiveness against Council's water quality objectives. Modelling was undertaken in accordance with BMT WBM (2015) guidelines. A layout is provided in Attachment A – E700.

3.7.2 Climate data

MUSIC was run using the Liverpool (Whitlam Centre) pluviography data obtained from eWater. The data was run on a 6-minute time step from 01/01/1967 – 31/12/1976.

For rates of average potential evapotranspiration data for Sydney was adopted.

3.7.3 Catchment Areas

Catchment areas were subdivided into areas corresponding to roofs, sealed roads and industrial land uses. Catchment area details are provided in Attachment A – E700.

3.7.4 Model Parameters

Input parameters for source and treatment nodes are consistent with BMT WBM (2015) guidelines. The adopted node types for individual catchments are provide in Attachment A – E700.

3.8 Treatment Train Philosophy

The stormwater treatment strategy for the site uses stormwater reuse and end of line controls in accordance with the principles of Water Sensitive Urban Design (WSUD). Individual stormwater quality improvement devices (SQIDs) are outlined in the following sections.

3.8.1 Rainwater tank

A 2 kL rainwater tank is to be provided on the office and lunchroom building to capture roof water. Rainwater from the workshop building is to be connected to a 3 kL rainwater tank. Captured water will be reused for toilet flushing.

3.8.2 Sedimentation Basins

The sediment basins discussed in Section 3.4 are to be provided as part of the proposed treatment train. The following parameters are provided in the MA MUSIC model and are summarised in Table 4 below.

Table 4: Sedimentation Basins (P1203464MUS01V02) Modelling Parameters.

Parameter	Southern Sediment Basin	Northern Sediment Basin	Southern/Northern Onsite Tank
Low flow bypass (m^3/s)	0	0	0
High flow bypass (m^3/s)	100	100	100
Surface area (m^2)	1552	365	130
Extended detention depth (m)	0.52	0.55	0.2
Permanent pool volume (m^3)	100	100	260
Initial volume (m^3)	100	100	260
Exfiltration rate (mm/hr)	0	0	0
Evaporated loss of PET	75	75	0
Equivalent pipe diameter (mm)	636	530	100
Overflow weir width (m)	3.00	5.00	0
Daily reuse (kL/yr)[1]	-	-	81.65

Note:

[1] Refer to Section 5.2 and Table 9 for reuse rate.

3.9 Modelling Results

MUSIC modelling results showing the efficacy of the treatment train have been provided in Table 5.

Table 5: Site MUSIC modelling results

Parameter	Sources	Residual Load	Achieved Reduction	Required Reduction	Complies (Y/N)
TSS (kg/year)	5250	969	81.5	80%	Y
TP (kg/year)	8.91	2.31	74	45%	Y
TN (kg/year)	39.4	17.5	55.5	45%	Y
Gross Pollutants (kg/year)	427	40.9	90.4	-	-

These results demonstrate that the stormwater reduction targets are able to be achieved. The proposed water quality controls are able to reduce the developed site pollutant loads to the target levels.

3.10 Conclusion

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

- Rainwater tanks to capture roof water for reuse.
- Sedimentation basins to capture stormwater for reuse.

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.

4 Stormwater Quantity

4.1 Overview

The developed site shall have well compacted unsealed surfaces which shall be largely impervious and consist of crushed recycled concrete and aggregates.

Volume 2 of Campbelltown City Council's *Sustainable City* Development Control Plan (DCP) (2009) requires that on site detention (OSD) be provided on sites where impervious area is increasing and upgrading downstream stormwater systems are not possible. However, in correspondence with Council (email dated 19/01/2018), Council noted there is no requirement for OSD to be provided for the proposed development.

4.2 Objective

To ensure adequate site drainage is provided by the concept drainage design.

4.3 Concept Site Drainage Network

The proposed pit and pipe network is provided in Attachment A – E100:

- Rainwater from the office and lunchroom building and workshop building shall be directed to a 2 kL and 3 kL rainwater tank respectively for non-potable (toilet flushing) reuse.
- A large portion of stormwater runoff from the site shall be directed to two sedimentation basins located in the site's north and south.
- Water from the basin is pumped to storage tanks via floating pumps. A buried pipe shall be provided between two tanks to balance the rainwater storage volume.
- Once tanks are full, pumping ceases and water collects in the sedimentation basins. Water stored in tanks shall be used for dust suppression and sand washing.
- An overflow pit is located within each sedimentation basin. In the northern basin, overflow from sedimentation basin shall discharge into the overflow pit during the minor and major storm event, prior to discharging to Bow Bowing Creek. In the southern basin, flows shall discharge to the overflow pit during the minor storm event. Once the pipe capacity is exceeded, water shall overtop the

basin and discharge to Bow Bowing Creek via the emergency overflow weir.

- Runoff from the driveway and the entry section of the carpark shall be captured by the proposed pit and pipe network and discharge to Council's kerb and gutter system.

- Runoff from vegetated batters discharge directly to Bow Bowing Creek.

4.4 Modelling

DRAINS modelling was used to assess the proposed stormwater drainage system. DRAINS (version 2018.06 - 28 June 2018) was used to analyse site hydrology and provide an adequately sized stormwater discharge system leading to Bow Bowing Creek.

4.5 Catchment Overview

The pre and post development catchment area is taken as the site area (i.e. 2.35 ha) as no adjacent catchment areas drain to the site. Assumed change in impervious percentage for post developed conditions are outlined in Table 6.

Table 6: DRAINS catchment area summary.

Scenario/Model	Catchment Area (ha)	% Pervious	% Impervious
Pre Development	2.35	100	0
Post Development	2.35	5	95

4.6 Stormwater Hydrological and Hydraulic Modelling

4.6.1 DRAINS Model Setup

Modelling assumes that sediment basins are at full capacity for minor storm event (1 to 10 year ARI) and the major storm event (100 year ARI).

IFD rainfall data adopted for stormwater modelling was derived from the Bureau of Meteorology (BOM) website for the site. Hydrological loss parameters are in accordance with Council's requirements.

4.6.2 DRAINS Results

No site OSD is required (Council email, dated 19/01/2018). DRAINS modelling for 1 in 10, and 1 in 100 year ARI design storms are summarised in Table 7 and Attachment A - E600.

Table 7: Peak site discharge.

ARI Storm Event	Pre Development Peak (m^3/s)	Post Development Peak (m^3/s)[1]
1 in 10 year ARI (minor system)	0.257	0.909
1 in 100 year ARI (major system)	0.602	0.927[2]

Note:

[1] Post development model includes sediment basins as detailed in Section 3.3.

[2] Driveway drainage was removed from the 1 in 100 ARI DRAINS model (as the downstream connection point (KIP in road) is flooded).

Pit freeboard is acceptable in all pits modelled in the minor system (>150mm). Results demonstrate the proposed site drainage is adequately sized.

Flood levels provided by Council for the 1 in 100 ARI event were used as downstream tail water levels in DRAINS modelling for the major system. The driveway pit and pipe line was modelled to demonstrate the drainage system can capture and convey the minor stormflows (1 in 10 year).

4.7 SQID Inspections and Maintenance

The proposed stormwater quantity and quality improvement devices (SQID) will require inspections and maintenance to ensure functioning efficiency.

4.7.1 SQID Elements

Key stormwater elements to be managed/maintained at the site includes:

- Pit and pipe network;
- Rainwater tanks;
- Sedimentation basins;
- Outlet structures.

4.7.2 SQID Inspections and Maintenance

SQID element inspection and maintenance is outlined in Table 8.

Table 8:Stormwater Element Inspection and Maintenance

Element	Inspection Frequency	Action	Notes
Pit/pipe Network	Weekly after rain	o Check within pit for debris build-up and remove. o Check within pit for sediment build-up. Collect accumulated sediment and place back into product. o Check for ponding in pits. If found locate and remove blockage.	Review inspection frequency annually.
Rainwater tanks	6 months	o Check inside the tank for sediment build-up and remove. o Check screens around the tank and on any accessories are properly cleaned and unbroken. o Check tank fittings, pump and pipes are in full working order and do not need repairs.	
Sedimentation Basins	On Construction	o Establish transects at known intervals and survey.	Hydraulic engineer to certify operation every 5 years.
	6 months	o Survey transects to determine sediment accumulation rate o Check for debris (e.g litter, bark, mulch and leaf) build-up and remove. o Collect accumulated sediment to ensure basin invert remains at original design level. Place sediment back into product. o Check outlet pipes, overflow weirs, water level control structure, and inlet erosion protection works.	
Outlet Structures	6 months	o Check for signs of erosion. o Check for evidence of litter/sediment accumulation at outlets. o Remediate erosion as required following engineer direction. o Remove accumulated sediment/litter at outlet.	NA

5 Proposed Water Reuse Scheme

5.1 Overview

The proposed water reuse scheme for the site has been developed to achieve significant reduction in the site's town water demands. Non potable site water uses include dust suppression, sand washing and toilet flushing. The proposed site water reuse scheme shall supply recycled stormwater for these purposes.

5.2 Water Demand

The client advises that at their operation at Camellia Resource Recovery Facility ("Camellia"), the water cart for dust suppression is 12 kL and sprinklers on crushers and stockpiles are used to supplement water carts.

During winter, the cart is used on average 3 times a day (36 kL/day) and total sprinkler water consumption is approximately 15 kL/day. In summer, water cart usage increases to 8 times a day (96 kL/day) and sprinkler water consumption doubles (i.e. to 30 kL/day).

The sand washing facility is considered as a 'closed' system, where wastewater is recollected and reused within the facility. A certain amount of 'water loss' is expected, mainly due to moisture within the washed product and evaporative loss. According to the client, the amount of water required to supplement the 'loss' is approximately 75 KL/day.

Water demand for toilets shall be approximately 20 L/person/day.

In summary water demands to be supplied by stormwater reuse are:

- Winter dust suppression - 51 kL/day;
- Summer dust suppression – 126 kL/day;
- Sand washing – 75 kL/day.
- Toilet flushing – 0.3 kL/day.

5.3 Water Supply

Dust suppression and sand washing demands shall be satisfied through reuse of stormwater runoff sourced from 200 kL sedimentation basins. Captured runoff will be transferred to storage tanks for use on demand. Approximately 520 kL of tank storage will be available onsite to provide 2 days of operational demand (based on 6 operational days per week

for dust suppression and 5 operational days per week for sand washing). Water demand for toilet flushing shall be supplied from a 2 kL rainwater tank and a 3 kL rainwater tank adjacent to the office and lunchroom building and workshop building.

Reticulated water supply is then available at the site to provide water once site storages are exhausted.

5.4 Site Water Balance

A daily timestep water balance model (*WatCycle*) was utilised to determine the water saving potential of proposed water reuse systems. Water balance modelling input parameters and results are summarised in Table 9.

Table 9: Water Balance Modelling Inputs and Results.

Parameter	Dust Suppression and Sand Washing System	Toilet System
Source		
Catchment	2.0 ha (site)	0.13 ha (roof)
Initial Loss (mm)	0.5	0.5
Continuing Loss (mm/hr)	0	0
Pan Evaporation Factor	75%	75%
Storage		
Volume	520 kL	5 kL [1]
Type	Covered tanks	Covered tanks
Demands (kL/day)		
Jan	201	0.3
Feb	201	0.3
Mar	163.5	0.3
Apr	163.5	0.3
May	163.5	0.3
Jun	126	0.3
Jul	126	0.3
Aug	126	0.3
Sept	163.5	0.3
Oct	163.5	0.3
Nov	163.5	0.3
Dec	201	0.3
Annual Savings Assessment		
Total Demand	59.6 ML	0.11 ML
Average Reuse Supply	11.7 ML	0.10 ML
% Saving	19.70%	92.07%

Note:

[1] The 5 kL tank consists of one 2 kL rainwater tank located adjacent to the office and lunchroom building and one 3 kL rainwater tank located adjacent to the workshop building.

Water balance modelling indicates that, on average, 47.91 ML/year of town water, is required to meet average water demands for the proposed development. Stormwater captured and reused on site reduces the average town water demand by approximately 20%.

Completed analysis demonstrates that increased storage of stormwater runoff would have minimum impact on the total water demand for the site.

5.5 Water Reuse System

The site water management and reuse system is summarised as follows:

- Rainwater from the office and lunchroom building and workshop building roof is to be collected and stored in rainwater tanks and used for toilet flushing.
- Stormwater from other roofs and hardstand areas is to be collected and stored for dust suppression via sprinklers and water cart and sand washing.
- Town water will be used for potable uses and to supplement other supplies as required.

The hierarchy of water usage for dust suppression, sand washing and toilet flushing by source is as follows:

1. Captured site stormwater.
2. Reticulated town water supply.

5.6 Compliance with Surface Water Water Sharing Plan (WSP)

The site lies within the Southern Sydney Rivers water source within the Greater Metropolitan Region Unregulated River Water Sources. The site is within the Lower Georges River and Bunbury Curran Creek management zone (MZ). The (WSP) includes rules for all utilisation of surface water within the plan area.

The proposed development includes site sediment basins in the form of concrete tanks; and collection of roof water from the proposed office and lunchroom building and workshop building for non-potable (toilet flushing) reuse. Based on correspondence with DPI Water Licensing Officer (W. Connors, January 18, 2018) (Attachment D):

- The sedimentation basin is exempt from licensing under the Maximum Harvestable Right Policy (MHRP) of DPI Water (formerly NSW Office of Water) as the structure is provided for the purposes of capture and circulation of contaminated drainage (i.e. sediment-laden runoff).
- The collection of water from the roof area is not required to be authorised under the Farm Dams Policy.

Additionally, the development does not include other collection or extraction from Bow Bowing Creek. Therefore no licensable surface

water elements are proposed. The development is therefore compliant with the rules of the WSP.

6 Riparian Impact Assessment

6.1 Overview

DPI Water's response provided with the SEARs requested an assessment of the creek and riparian environment with details of the likely impacts of the proposed development. This section of the report provides that assessment.

6.2 Existing Riparian Conditions

Bow Bowing Creek is a major tributary of Bunbury Curan Creek which joins the Georges River approximately 10km north east of the site. Aside from its headwaters, the creek channel is concrete lined to it confluence with Bunbury Curan Creek. In the vicinity of the site, this concrete channel is approximately 300mm deep and approximately 3.5m wide.

Downstream of the headwaters, the riparian corridor is either absent with industrial development on the right and left 'bank' of the concrete channel; or consists of grassed batters of approximately 20m either side of the channel. Screen planting along industrial lot boundaries is typical as seen at the subject site. Stormwater from industrial areas are discharged to the creek at numerous locations via stormwater pipes with concrete lined flow paths.

Attachment A provides a site plan locating relevant features. Photographs and aerials of Bow Bowing Creek and its riparian corridor are provided in Attachment B.

6.3 Impact Assessment

The site lies partly within 40m of the creek's right bank and is classified as 'waterfront land' and the development will be integrated development under the Water Management Act (2000). Proposed site works are approximately 25m from the top of bank and are consistent with uses on adjacent sites. The proposal includes measures to mitigate potential impacts including water quality and quantity with residual impacts considered negligible.

Development includes the removal of some trees and grass within 40m of the bank. Given the low ecological value of screen planting the impacts are considered low.

A detailed impact assessment is provided in Table 10.

Table 10: Impact Assessment on Nearby Riparian Environment.

Element	Impact	Comment
Channel stability	Negligible	Proposed development is more than 25m from the right top of bank. The low flow channel is concrete lined and high flow banks will be grassed. Proposed development attenuates post development flows to pre development level. No significant impact is anticipated.
Riparian zone	Low	The proposed development will involve the removal of existing screen planting along the western boundary. These trees have been assessed as non-significant by the Flora and Fauna Assessment (REF).
Sediment movement	Negligible	Bow Bowing Creek is concrete lined in the vicinity of the site. Development measures are provided to insure increases in sediment flux to the creek do not occur. Impacts on sediment movement are therefore not considered significant.
Water quality	Negligible	Proposed sediment basin (Section 3) will capture all sediment-laden runoff and treat it prior to reuse or discharge. Management and monitoring of discharge waters (Section 3.5) will ensure water is of a suitable quality and will have negligible environmental impact.
Hydraulic regime	Negligible	Hydrological regime is acceptable. No site OSD is required as indicated by Council.

6.4 Mitigation Measures

Table 10 details proposed measures to mitigate actual and potential environmental disturbances and consequences which are summarised as:

- Capture and treat site runoff to prevent sediment-laden runoff discharging into the creek.
- Inclusion of sedimentation basins sized in accordance with Landcom (2004).
- Reuse of captured stormwater to limit the amount of stormwater discharge.
- Water quality monitoring regime to ensure water discharged is of an appropriate quality (Section 3.5).
- Development outside of creek channel.

7 Wastewater Assessment

7.1 Overview

The SEARs require a wastewater assessment to be undertaken to determine predicted wastewater generation rates and proposed disposal methods. Wastewater generated by the site is limited to sewage generated by site staff. No proposed industrial site use shall generate wastewater other than runoff managed through the site stormwater system.

7.2 Predicted Site Population

The facility will have 15 employees including: foreman, loader drivers, excavator drivers, weighbridge attendants, fitters and labourers at any one time. This figure has been used for the purposes of wastewater load calculations (Section 7.3).

7.3 Predicted Wastewater Load

Based on Table H4 of AS/NZS 1547 (2012) a daily wastewater generation rate of 50 L/person/day is recommended for rural factories with reticulated water supply. Of this 20 L/person/day is expected to be reused for toilet flushing with the remainder for kitchen, handbasin and infrequent shower use. A predicted total wastewater load for the developed site is therefore 750 L/day.

7.4 Wastewater Management

The site is connected to Sydney Water sewer main for sewage disposal. No onsite treatment, reuse or disposal is proposed.

7.5 Adequacy

Connection of the site to reticulated town sewer is considered to be an adequate means of managing site wastewater.

8 Groundwater Assessment

8.1 Existing Groundwater Conditions

Review of NSW government public record (NRATLAS) revealed there are no bores within close proximity to the site, and situated at a comparable topographic location, with groundwater data or standing water level information.

In order to assess the proposed development's impact on groundwater a local groundwater level is assumed at the Bow Bowing Creek channel invert (approximately 39.3 mAHD). Groundwater gradient is assumed to reflect the local surface gradient of approximately 2%.

A conceptual groundwater model has been development and is provided in Attachment C.

8.2 Impact of Proposed Development

The proposed development shall have a negligible impact on groundwater as:

- The proposed sedimentation/OSD basin does not intercept the anticipated site groundwater table as shown on the conceptual section.
- The highly compacted nature of site surface shall limit infiltration across the site and prevent significant drainage to groundwater. Therefore, it is assumed that there will be no negative impacts regarding salinity.
- Site operation shall not introduce significant potential contaminants to the site. The primary site 'pollutant' is sediment, which poses no risk to groundwater. Other possible pollutants include fuel and lubricants associated with site equipment. Standard practice management and maintenance of equipment, fuel and lubricant storages shall achieve appropriate protection of local groundwater. This should include spill kits, use of bundings, procedures and trainings to contain pollutants in line with the recommendations of AS1940B1993 and AS4452B1997 as required by NSW EPA.
- There will be some areas of significant difference between the existing and proposed landform but generally excavation and grading is within -0.75 to +0.75 m from existing levels. Apart from

the excavations for the proposed sedimentation basins (approximately 2 m deep), no significant excavation is proposed.

During search of the NRATLAS public record, it was also noted that groundwater bores in close proximity to the site (between 1.5km – 8km from the site) were all monitoring bores and not for the purposes of irrigation or domestic use. The overall impact of the proposed development on beneficial groundwater use is considered negligible.

8.3 Compliance with Water Sharing Plan (WSP)

The site lies within the Southern Sydney Rivers WSP area of the Greater Metropolitan Region Groundwater Water Sources. The proposed development includes no excavation, wells or other elements which are expected to intercept groundwater. No extraction of groundwater is proposed. It is concluded that there are no licensable groundwater elements in the development and the development shall have no significant effect on local groundwater gradient. It is therefore considered to be compliant with the rules of the WSP.

8.4 Mitigation Measures

While minimal, risk posed to site groundwater by site equipment and fuel/lubricant storages are considered with recommended mitigation measures as follows:

- All fuel and lubricant to be stored within an approved concrete floored and bunded fuel storage inside the workshop designed in accordance with applicable best practice or regulatory requirements.

9 Integrated Water Cycle Management Plan

9.1 Overview

The following subsections form a summary of the project's integrated water cycle management plan (IWCMP).

9.2 Stormwater Quality

The proposed treatment train for the post developed site, which includes rainwater tanks and sedimentation basins achieves required Campbelltown City Council water quality performance criteria.

Rainwater tanks with a total volume of 5 kL shall be provided to collect and treat roof water from the office and lunchroom building and workshop building.

Sedimentation basins and storage tanks with an approximate total volume of 520 kL shall be constructed to capture and treat site stormwater. These basins have been designed in accordance with Landcom (2004) to appropriately hold and treat water prior to reuse or discharge. Discharge to Bow Bowing Creek shall be in accordance with the water quality management and monitoring regime.

9.3 Stormwater Quantity

The outlet pipes and overflow weir from the sediment basins shall discharge to Bow Bowing Creek.

9.4 Water Reuse Assessment

Roof water captured from the office and lunchroom building and workshop building shall be reused for non-potable (toilet flushing) reuse. Stormwater from the sedimentation basin shall be transferred to 520 kL storage tanks for dust suppression and sand washing reuse. Water balance modelling suggests that this water reuse scheme will result in a 19.8% reduction in town water demand.

9.5 Riparian Impact Assessment

The site is partly within 40m of Bow Bowing Creek and is considered waterfront land, therefore the development will be integrated development under Section 89, 90, 91 of the Water Management Act (2000). Given the low ecological value of the riparian environment and the distance between the channel and the site, the development shall have a negligible impact on Bow Bowing Creek. It will have an impact

on the riparian corridor as minor removal of existing landscape vegetation is required. This impact however is considered low.

9.6 Wastewater Assessment

Site wastewater generation is limited to sewage from staff. No industrial wastewater, other than runoff managed by site stormwater system, shall be produced.

Predicted peak site population is 15 people, a wastewater generation rate of 50 L/person/day (AS/NZS 1547, 2012) is adopted and peak wastewater load is calculated to be 750 L/day. The site is to be connected to Sydney Water town sewer which shall adequately provide for site sewage management.

9.7 Groundwater Assessment

No site or local groundwater data is available. A conceptual groundwater model for the site has been developed to assess the proposals impact. Groundwater level of 39.3 mAHD being channel invert level of Bow Bowing Creek is assumed with groundwater gradient expected to reflect the local surface gradient of approximately 2%.

No element of the proposed development shall intercept the groundwater table and no groundwater extraction is proposed. Measures are proposed to ensure surface operations do not result in contamination of underlying groundwater. The proposal shall have a negligible impact on groundwater.

9.8 Water Sharing Plan (WSP)

The proposed site basin is exempt from licensing and no extraction from Bow Bowing Creek is proposed. The surface water elements of the projet are therefore considered to be consistent with the Greater Metropolitan Region Unregulated River Water Sources WSP.

No groundwater extraction or significant impacts are included in the project proposal. It's therefore considered to be consistent with the Greater Metropolitan Region Groundwater Water Sources WSP.

10 References

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

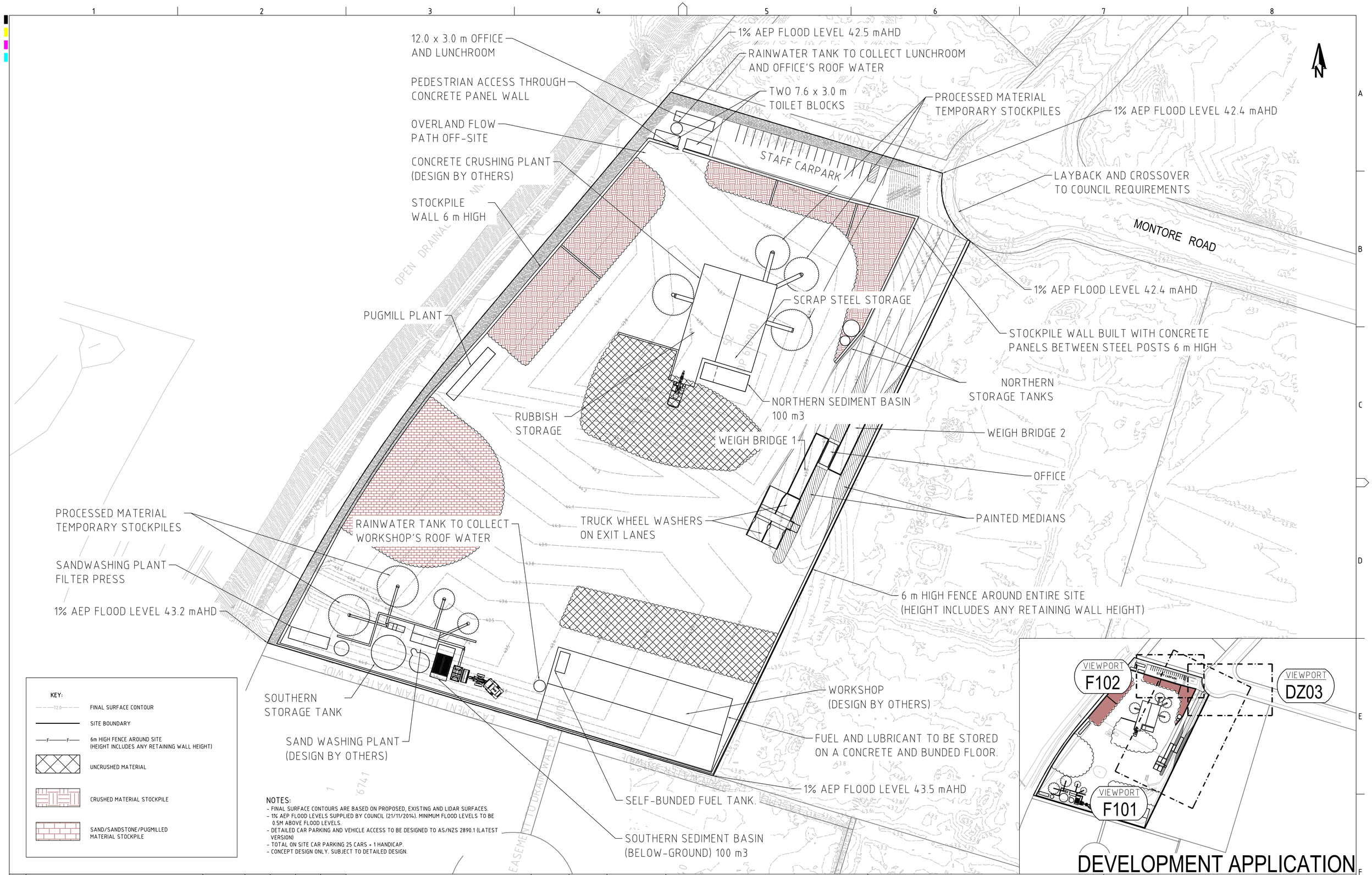
Environmental Investigation Services (EIS) (2018) *Preliminary Stage 1 / Stage 2 Environmental Site Assessment for Former Compound and Container Storage at 7 Montour Road, Minto NSW 2566*.

Landcom (2004) Soils and Construction: *Managing Urban Stormwater.*

NSW Office of Water (NOW) (2011) *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources – Background document*.

NSW Office of Water (NOW) (2011) *Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources – Background document*.

11 Attachment A – Proposed Development Plans



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
I	**MINOR AMENDMENTS**	**02/03/2020**	LL	JCF	TH	TH
H	MINOR AMENDMENTS	28/09/2018	JCF/LZ/PB	JCF	TH	TH
G	AMENDMENTS AS PER CLIENT COMMENTS	20/09/2018	PB/JCF/LZ	JCF	TH	
F	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF/LZ	JCF		
E	CLIENT REQUESTED AMENDMENTS	03/08/2018	LZ	JCF	TH	TH
D	UPDATED AS PER CLIENT REQUEST	06/06/2018	RK/JCF	JCF	TH	TH
C	CLIENT REQUESTED AMENDMENTS	21/03/2018	KW/JCF	JCF	TH	
B	CLIENT REQUESTED AMENDMENTS	09/03/2018	KW	CG/JCF	TH	

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GRID	DATUM	PROJECT MANAGER
MGA	MAHD	TH

CLIENT: CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE
MINTO CONCRETE RECYCLERS
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DRAWING TITLE: SITE LAYOUT

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-A400	I

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)
DRAWING ID: P1203464-PS02-R12-A400

CUT FILL ANALYSIS

LESS THAN -3.000m				
-3.000	to	-2.250	m	
-2.250	to	-1.500	m	
-1.500	to	-0.750	m	
-0.750	to	-0.150	m	
-0.150	to	0.150	m	
0.150	to	0.750	m	
0.750	to	1.500	m	
1.500	to	2.250	m	
2.250	to	3.000	m	
GREATER THAN 3.000m				

EARTHWORKS SUMMARY

	CUT	FILL
EARTHWORKS VOLUME (m^3)	-1298	7810
EARTHWORKS BALANCE (m^3)	-	6512
IMPORTED PAVEMENT (m^3)	-	6432
TOTAL BALANCE (m^3)	-	80

NOTES:
- EARTHWORKS VOLUMES MEASURED FROM EXISTING LEVELS TO DESIGN SURFACE LEVELS.
- APPROX. 6432 M3 OF HARDSTAND PAVEMENT AT 0.3 M DEPTH REQUIRED (21440 X 0.3).

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
G	**MINOR AMENDMENTS**	**28/09/2018**	**JCF/LZ/PB**	**CG/JCF**	**TH**	**TH**
F	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF/LZ	JCF		
E	CLIENT REQUESTED AMENDMENTS	03/08/2018	LZ	JCF	TH	TH
D	UPDATED AS PER CLIENT REQUEST	06/06/2018	RK/JCF	JCF	TH	TH
C	CLIENT REQUESTED AMENDMENTS	21/03/2018	KW/JCF	JCF	TH	
B	CLIENT REQUESTED AMENDMENTS	09/03/2018	KW	CG/JCF	TH	
A	BALANCE SITE EARTHWORKS	07/11/2017	CG	CG	TH	

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GRID ---
DATUM MAHD
PROJECT MANAGER TH

CLIENT
CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE
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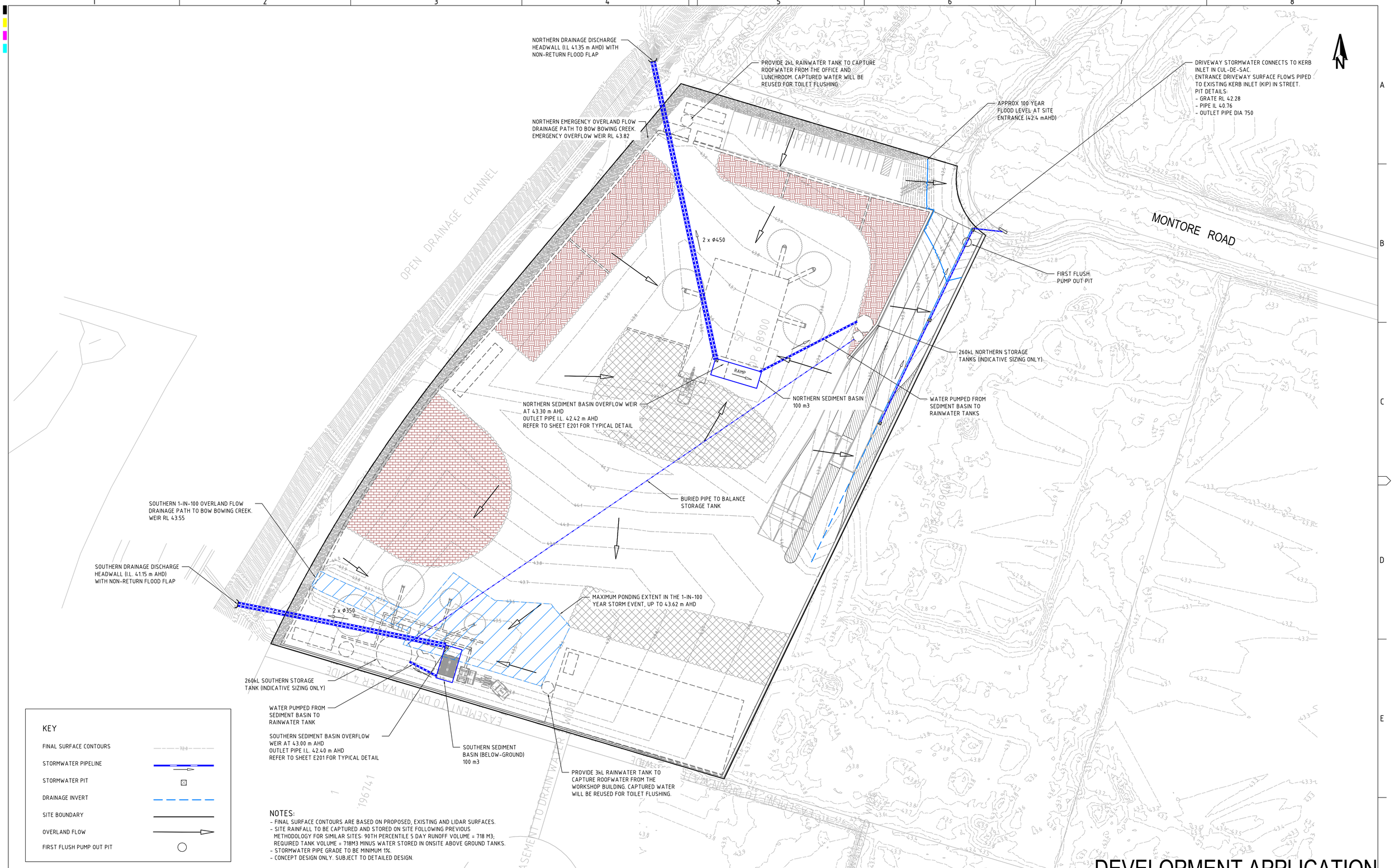
DRAWING TITLE
EARTHWORKS CUT & FILL ANALYSIS PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-C600	G

DRAWING ID: P1203464-PS02-R12-C600



KEY

- FINAL SURFACE CONTOURS
- STORMWATER PIPELINE
- STORMWATER PIT
- DRAINAGE INVERT
- SITE BOUNDARY
- OVERLAND FLOW
- FIRST FLUSH PUMP OUT PIT

NOTES:

- FINAL SURFACE CONTOURS ARE BASED ON PROPOSED, EXISTING AND LIDAR SURFACES.
- SITE RAINFALL TO BE CAPTURED AND STORED ON SITE FOLLOWING PREVIOUS METHODOLOGY FOR SIMILAR SITES: 90TH PERCENTILE 5 DAY RUNOFF VOLUME = 718 M3; REQUIRED TANK VOLUME = 718M3 MINUS WATER STORED IN ONSITE ABOVE GROUND TANKS.
- STORMWATER PIPE GRADE TO BE MINIMUM 1%.
- CONCEPT DESIGN ONLY. SUBJECT TO DETAILED DESIGN.

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
J	**MINOR AMENDMENTS**	**02/03/2020**	LL	**EZ**	**TH**	**TH**
I	MINOR AMENDMENTS	12/10/2018	RK	EZ	TH	TH
H	MINOR AMENDMENTS	28/09/2018	JCF/LZ/PB	DG/EZ/JCF	TH	TH
G	AMENDMENTS AS PER CLIENT COMMENTS	20/09/2018	PB/JCF/LZ	JCF	TH	
F	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF/LZ	EZ/JCF		
E	CLIENT REQUESTED AMENDMENTS	03/08/2018	PB	JCF	TH	TH
D	UPDATED AS PER CLIENT REQUEST	06/06/2018	RK/JCF	JCF	TH	TH
C	CLIENT REQUESTED AMENDMENTS	21/03/2018	KW/JCF	JCF	TH	

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GRID	DATUM	PROJECT MANAGER
MGA	MAHD	TH

CLIENT
CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE
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DRAWING TITLE
DRAINAGE PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-E100	J

DRAWING ID: P1203464-PS02-R12-E100

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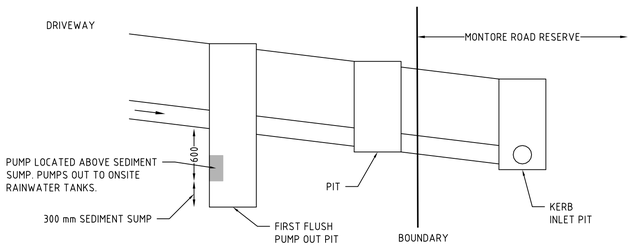

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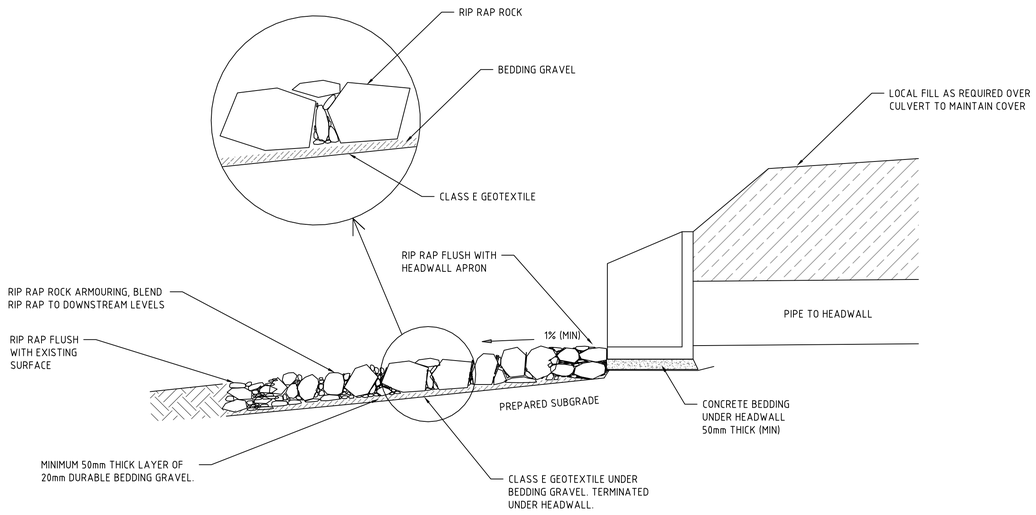

DETAIL: HEAD WALL OUTLET AND RIP RAP SECTION

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NOTES:
- CONCEPT DESIGN ONLY. SUBJECT TO DETAILED DESIGN.

DEVELOPMENT APPLICATION

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SCALE

GRID | DATUM | PROJECT MANAGER: TH

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DRAWING TITLE: DRAINAGE DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
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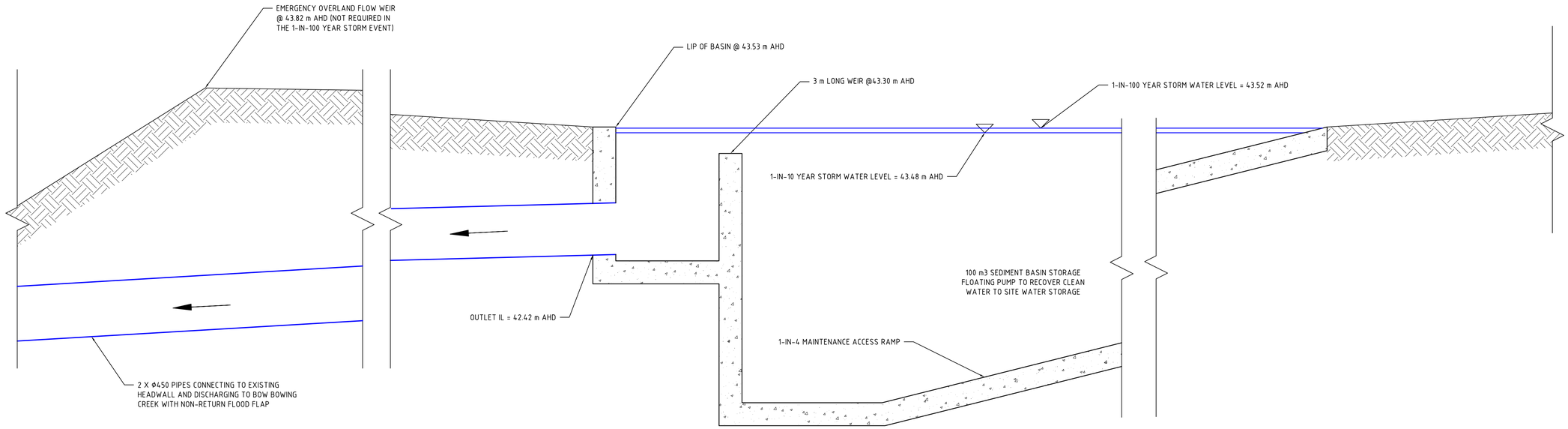

SECTION 01 - NORTHERN BASIN CONCEPT DESIGN

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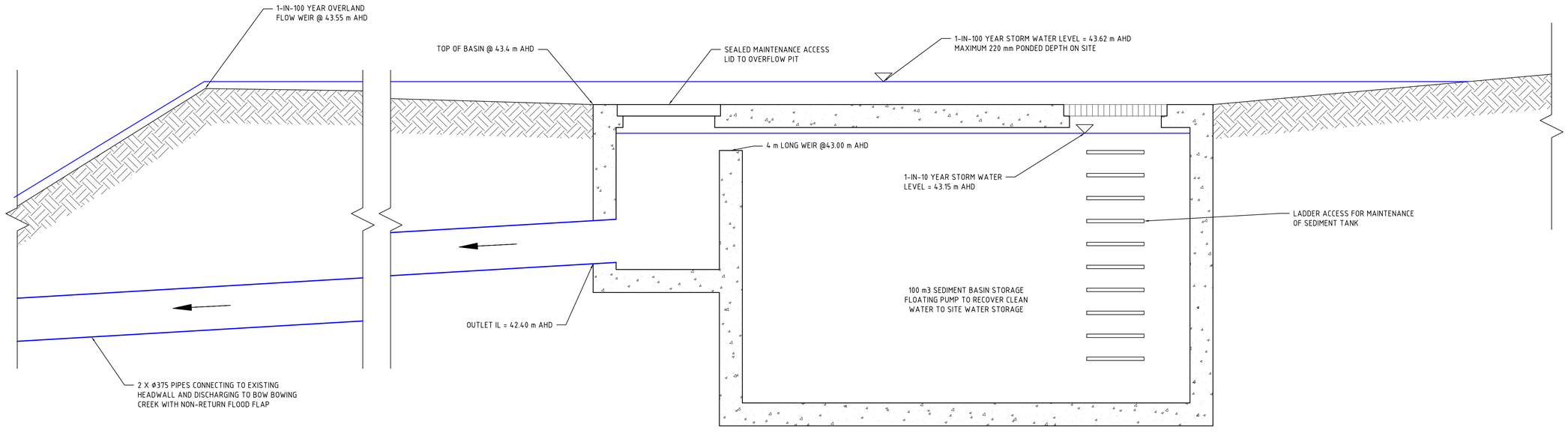

SECTION 02 - SOUTHERN BASIN CONCEPT DESIGN

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DEVELOPMENT APPLICATION

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GRID	DATUM	PROJECT MANAGER
		TH

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DRAWING TITLE: SEDIMENT BASIN CROSS SECTIONS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
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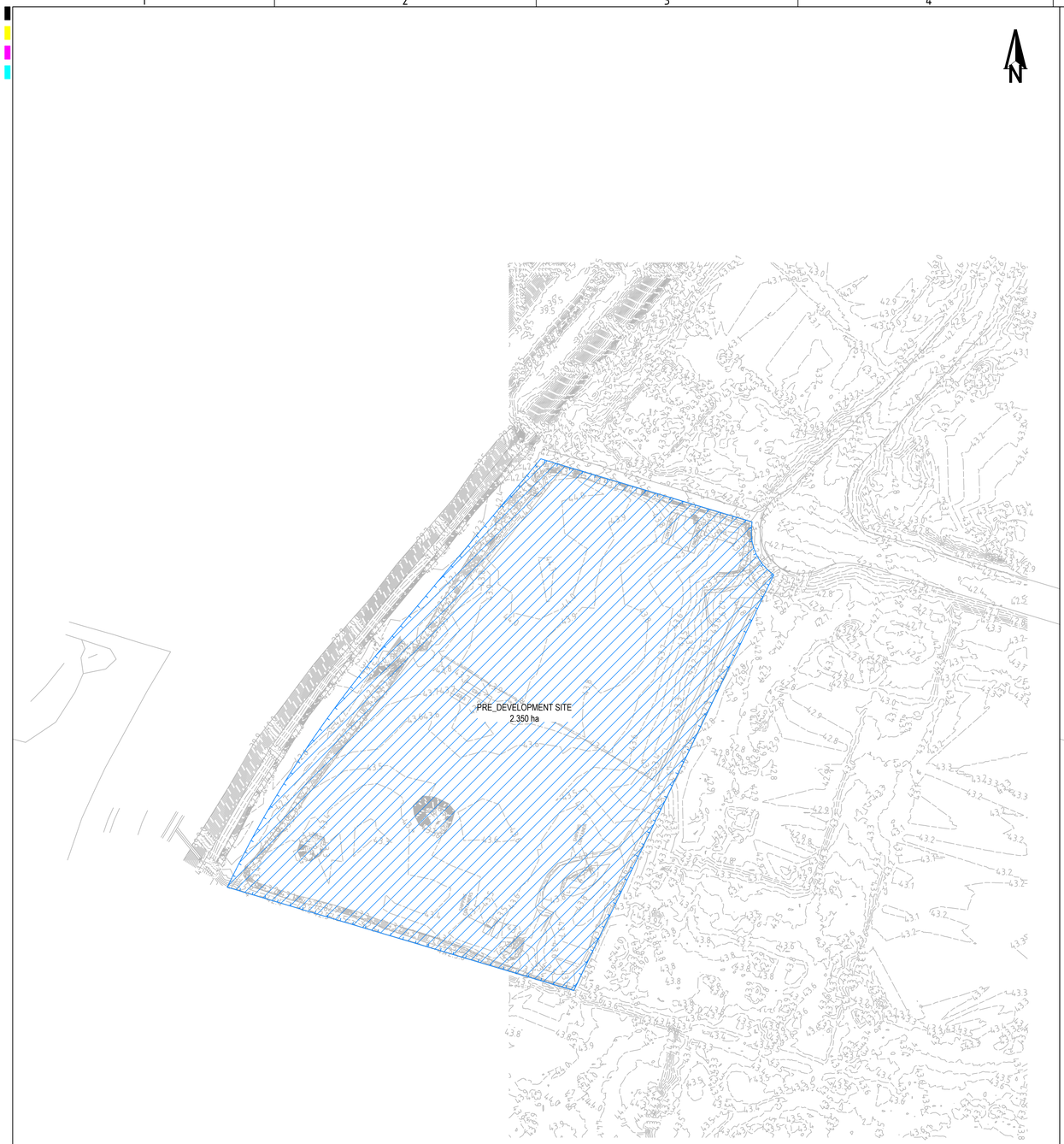

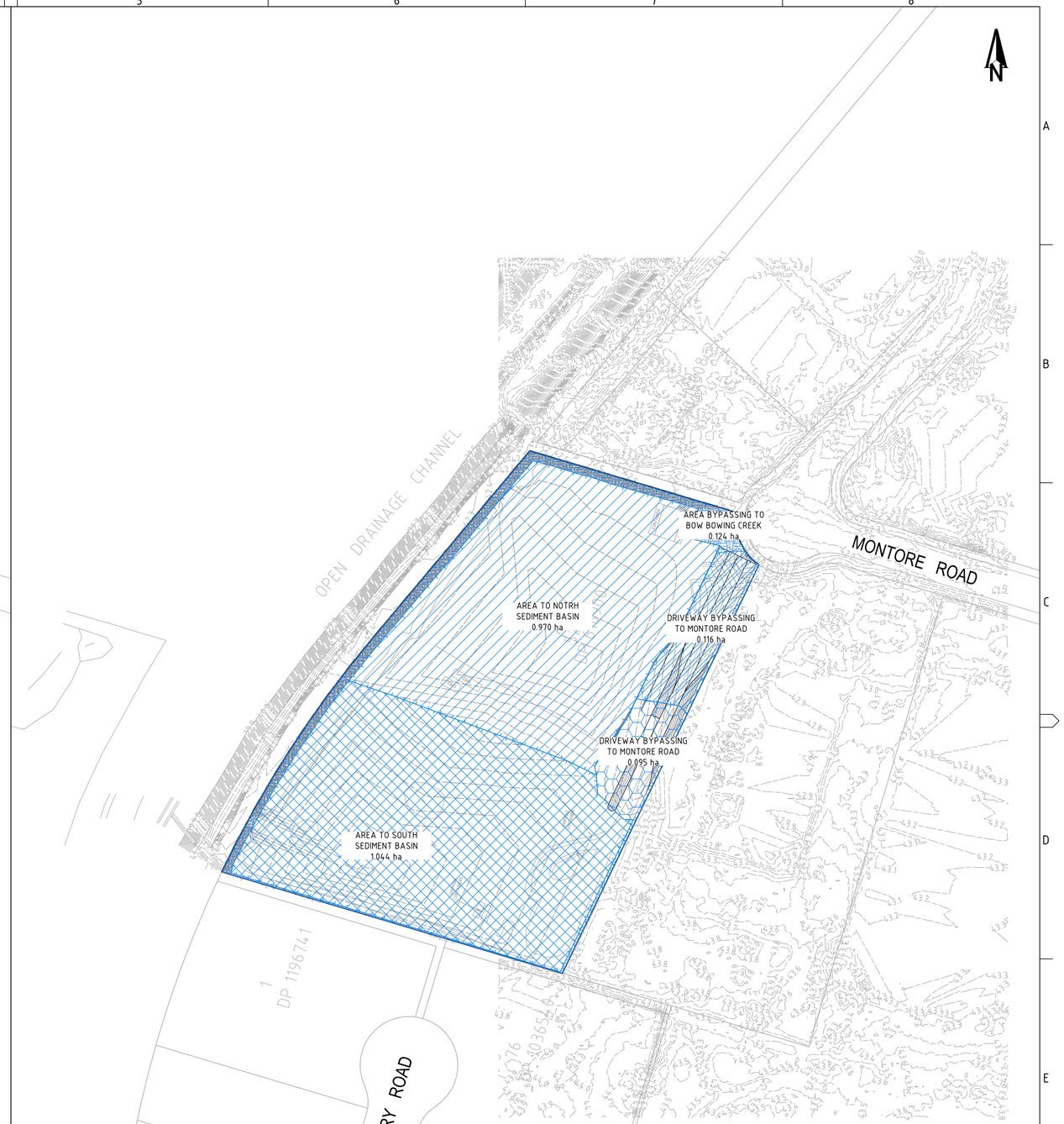

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
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GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT
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DRAWING TITLE
DRAINS CATCHMENT PLANS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-E410	A

DRAWING ID: P1203464-PS02-R12-E410

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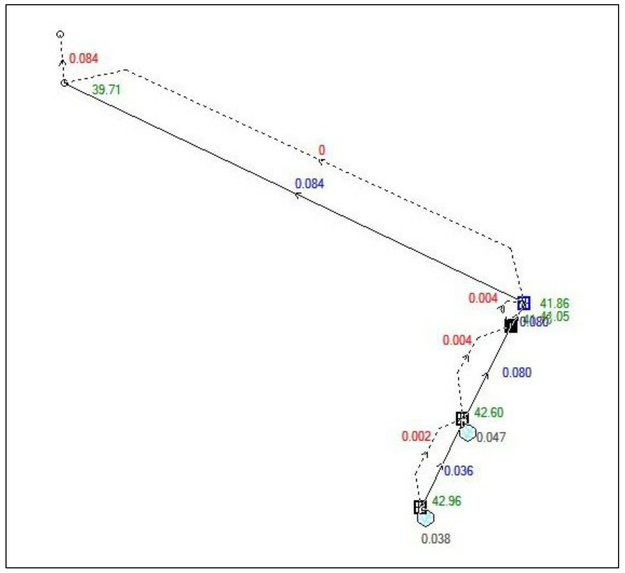

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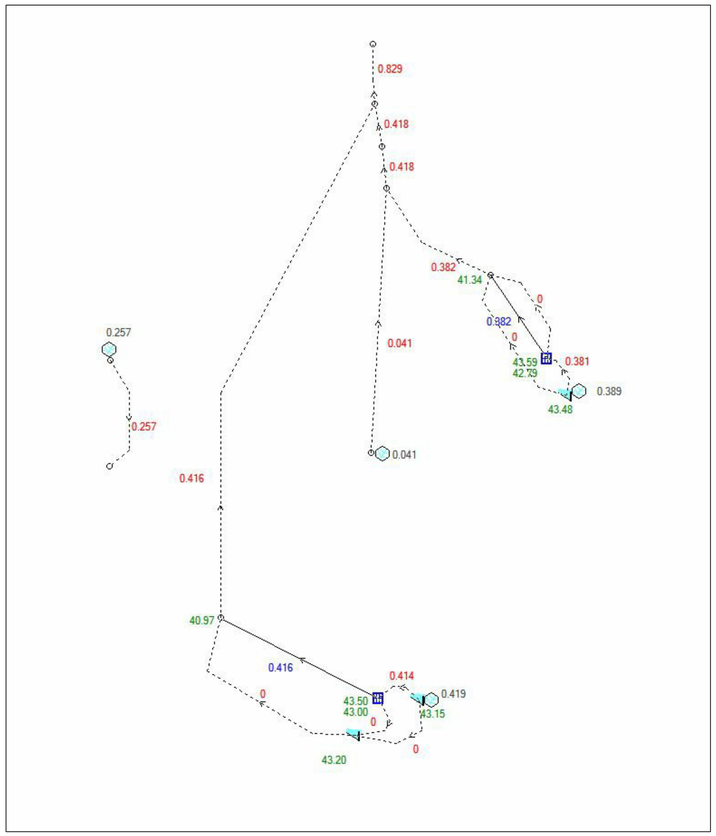

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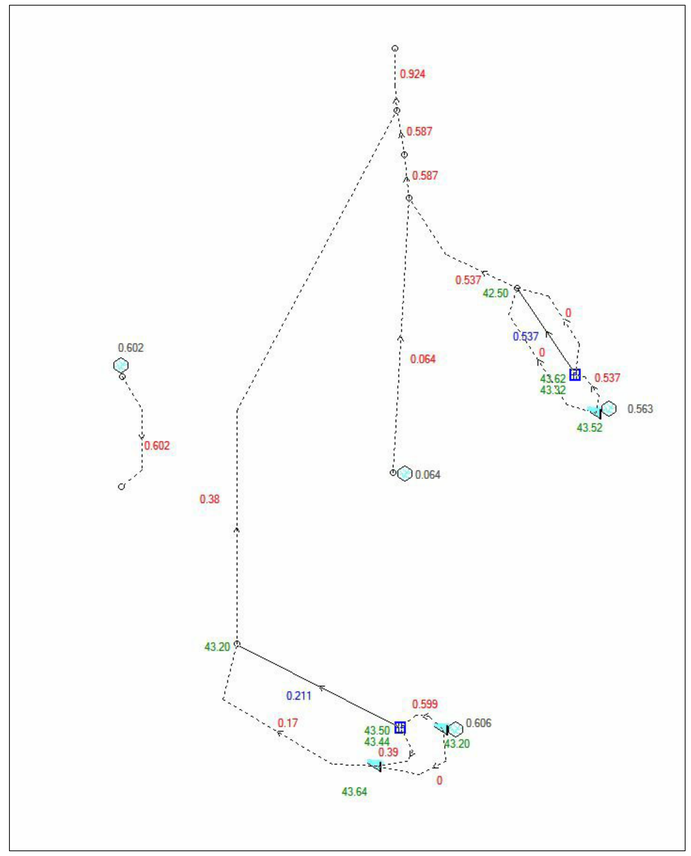

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DEVELOPMENT APPLICATION

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C	MINOR AMENDMENTS	28/09/2018	JCF/LZ/PB	DG/EZ/JCF	TH	TH
B	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF/LZ	EZ/JCF		
A	UPDATE	09/08/2018	PB	EZ		

SCALE

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	TH

CLIENT: CONCRETE RECYCLERS (GROUP) PTY LTD

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DRAWING TITLE: DRAINS MODELLING RESULTS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-E600	D

DRAWING ID: P1203464-PS02-R12-E600

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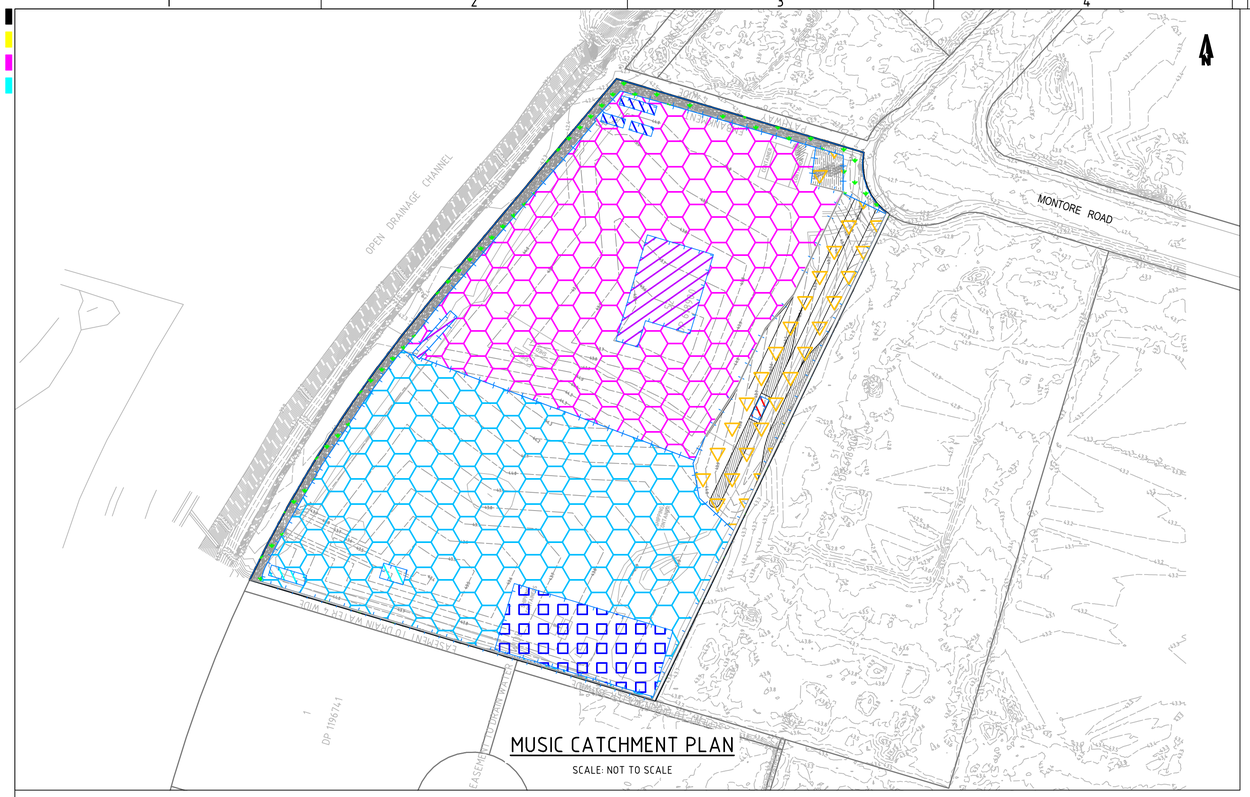

MUSIC CATCHMENT PLAN

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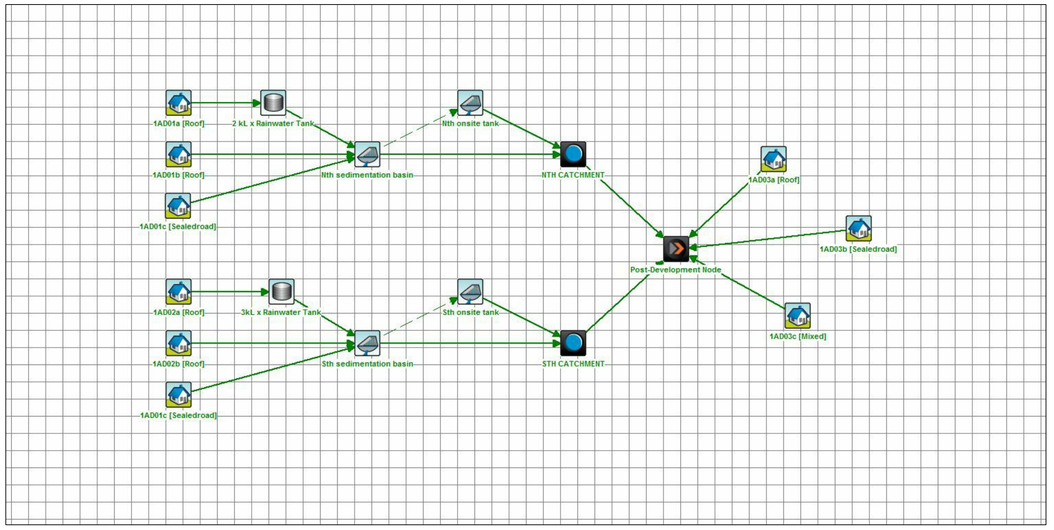


MUSIC LAYOUT

MUSIC CATCHMENTS (P12034641MUS01V01)

KEY	DESCRIPTION	MUSIC NODE ID	AREA (ha)	IMPERVIOUS %	MUSIC NODE REFERENCE
NORTHERN CATCHMENT					
	ROOF TO 2kL RWT	1AD01a	0.008	100	NSW MUSIC MODELLING GUIDELINES 2015
	ROOF BYPASS 2kL RWT	1AD01b	0.073	100	NSW MUSIC MODELLING GUIDELINES 2015
	SEALED ROAD TO SEDIMENT BASIN	1AD01c	0.887	100	NSW MUSIC MODELLING GUIDELINES 2015
SOUTHERN CATCHMENT					
	ROOF TO 3kL RWT	1AD02a	0.122	100	NSW MUSIC MODELLING GUIDELINES 2015
	ROOF BYPASS 3kL RWT	1AD02b	0.008	100	NSW MUSIC MODELLING GUIDELINES 2015
	SEALED ROAD TO SEDIMENT BASIN	1AD02c	0.913	100	NSW MUSIC MODELLING GUIDELINES 2015
CATCHMENT BYPASS SEDIMENT BASINS					
	ROOF	1AD03a	0.002	100	NSW MUSIC MODELLING GUIDELINES 2015
	SEALED ROAD	1AD03b	0.215	100	NSW MUSIC MODELLING GUIDELINES 2015
	BUFFER	1AD03c	0.118	0	NSW MUSIC MODELLING GUIDELINES 2015
TOTAL SITE					
		TOTAL - OVERALL		2.346	= 100 % OF OVERALL AREA
		TOTAL - IMPERVIOUS		2.228	= 95 % OF OVERALL AREA
		TOTAL - PERVIOUS		0.118	= 5 % OF OVERALL AREA
NOTES:					
1. INTERNAL REUSE FOR TOILET FLUSHING IS 20 kL/PERSON/DAY.					
2. INTERNAL REUSE FOR DUST SUPPRESSION AND SAND WASHING SYSTEM IS 81.65 kL/DAY FOR EACH SEDIMENTATION BASIN.					

MUSIC MODELLING RESULTS (P1203464MUS01V01)

MUSIC NODE	POST DEVELOPMENT NODE			
PARAMETER	SOURCES	RESIDUAL LOAD	% REDUCTION	% TARGET
Flow (ML/yr)	16.6	8.73	47.3	NONE
Total Suspended Solids (kg/yr)	5.25E+03	9.69E+02	81.5	80
Total Phosphorus (kg/yr)	8.91	2.31	74	45
Total Nitrogen (kg/yr)	39.4	17.5	55.5	45
Gross Pollutants (kg/yr)	427	40.9	90.4	90

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	15/11/2019	LL	EZ	TH	TH

SCALE

GRID | DATUM | PROJECT MANAGER: TH

CLIENT: CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE
MINTO CONCRETE RECYCLERS
SITE EARTHWORKS
7 MONTORE ROAD, MINTO NSW 2566
LOT 52 DP 618900

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 PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-E700	A

DRAWING ID: P1203464-PS02-R12-E700

PRINTED: --- - USER: LLU

A1 / A3 LANDSCAPE (A1LC_v02.0.01)

12 Attachment B - Figures

Plate 1: Aerial of riparian corridor neighbouring site.

Plate 2: Aerial of riparian corridor upstream of site.

Plate 3: View of Bow Bowing Creek channel facing upstream from adjacent to site.

Plate 4: View of Bow Bowing Creek channel and stormwater discharge point facing downstream from adjacent to site.

Plate 5: View of riparian corridor facing south. Site boundary on left, channel on right.

Martens & Associates Pty Ltd ABN 85 070 240 890		**Environment | Water | Wastewater | Geotechnical | Civil | Management**	
Drawn:	MLK/EZ	**Plates: Bow Bowing Creek**	**FIGURE 1**
Approved:	AN/TH		
Date:	18.10.2018		
Scale:	NA		Job No: P1203464

13 ATTACHMENT C – Conceptual Groundwater Model

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	MINOR AMENDMENTS	28/09/2018	JCF/LZ/PB	JCF	TH	TH
A	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF	JCF		

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

GRID	DATUM	PROJECT MANAGER
MGA	m AHD	TH

CLIENT
CONCRETE RECYCLERS (GROUP) PTY LTD

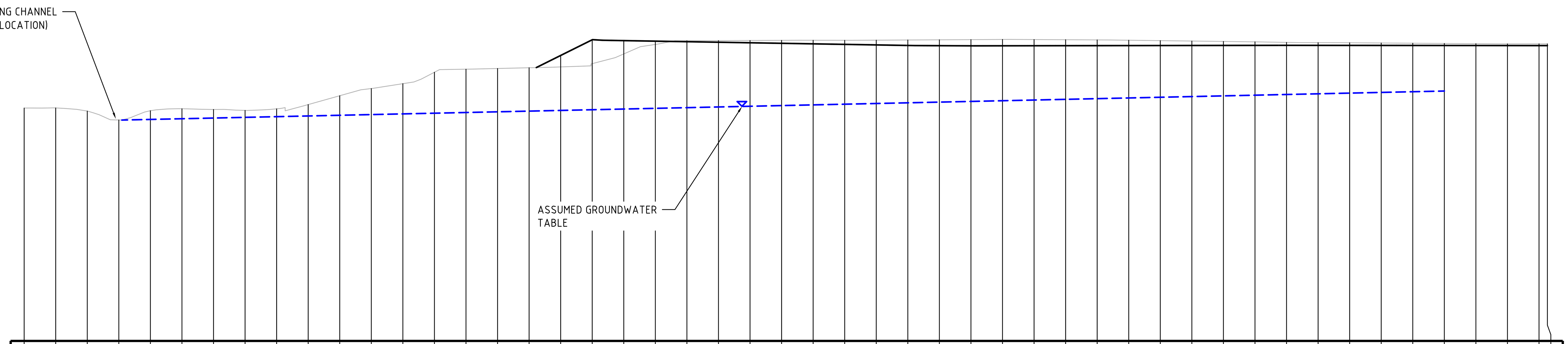
PROJECT NAME/PLANSET TITLE
MINTO CONCRETE RECYCLERS
SITE EARTHWORKS
7 MONTORE ROAD, MINTO NSW 2566
LOT 52 DP 618900

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
RIPARIAN FEATURES CONSTRAINTS PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-A300	B

PRINTED: --- (USER LU)
A1 / A3 LANDSCAPE (A1LC_v02.0.01)
DRAWING ID: P1203464-PS02-R12-A300

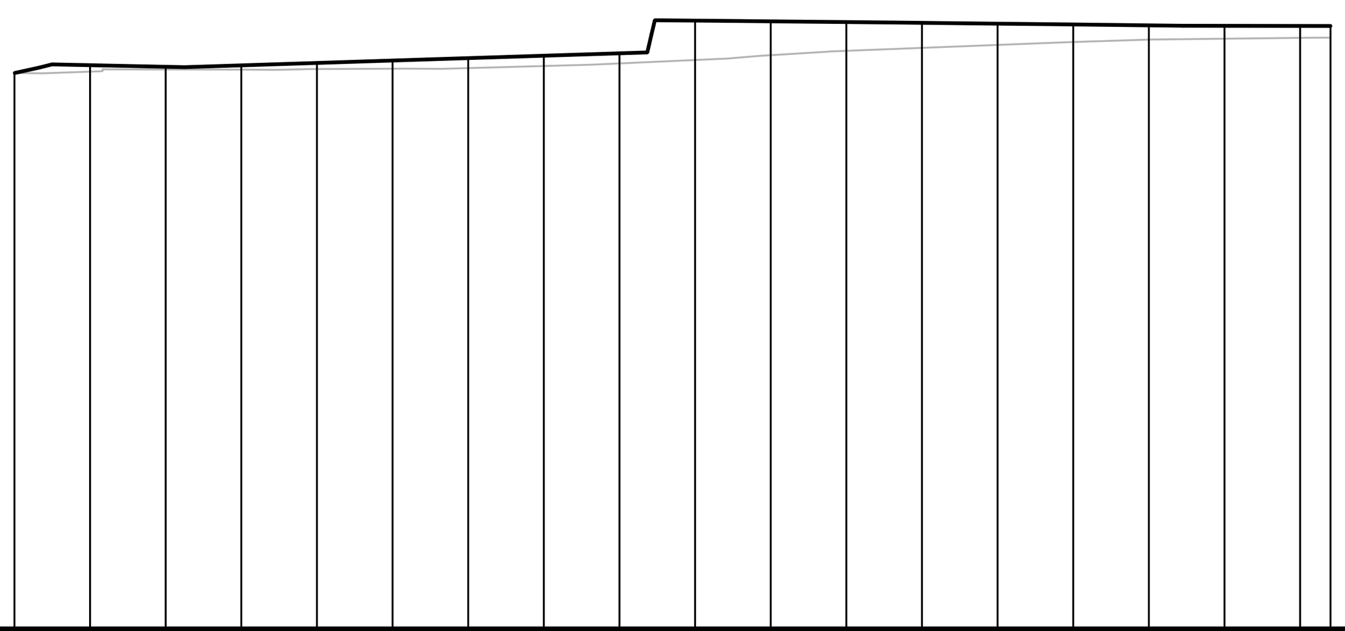


DATUM RL 25.000

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS	CUT / FILL DEPTH
0.000		39.764	0.000
2.000		39.771	0.000
4.000		39.572	0.000
6.000		39.008	0.000
8.000		39.594	0.000
10.000		39.719	0.000
12.000		39.674	0.000
14.000		39.615	0.000
16.000		39.715	0.000
18.000		39.984	0.000
20.000		40.545	0.000
22.000		41.000	0.000
24.000		41.310	0.000
26.000		42.034	0.000
28.000		42.228	0.000
30.000		42.272	0.000
32.000		42.319	0.000
34.000	43.098	42.372	0.727
36.000	44.093	42.579	1.514
38.000	44.039	43.196	0.843
40.000	44.005	43.797	0.208
42.000	43.971	44.031	-0.060
44.000	43.937	44.039	-0.102
46.000	43.903	44.047	-0.144
48.000	43.869	44.057	-0.188
50.000	43.835	44.061	-0.226
52.000	43.801	44.059	-0.258
54.000	43.767	44.067	-0.301
56.000	43.733	44.079	-0.346
58.000	43.718	44.090	-0.372
60.000	43.709	44.101	-0.392
62.000	43.711	44.113	-0.402
64.000	43.714	44.107	-0.392
66.000	43.718	44.096	-0.378
68.000	43.721	44.084	-0.363
70.000	43.724	44.064	-0.339
72.000	43.727	44.038	-0.310
74.000	43.731	44.012	-0.282
76.000	43.734	43.987	-0.253
78.000	43.737	43.961	-0.224
80.000	43.74	43.926	-0.186
82.000	43.738	43.909	-0.171
84.000	43.736	43.903	-0.167
86.000	43.734	43.888	-0.154
88.000	43.732	43.873	-0.141
90.000	43.73	43.858	-0.128
92.000	43.728	43.843	-0.115
94.000	43.726	43.833	-0.107
96.000	43.723	43.834	-0.111
96.531	43.723	43.835	-0.112

SECTION 3 - CONCEPTUAL GROUNDWATER MODEL

SCALE: HORIZONTAL - 1:200
VERTICAL - 1:200

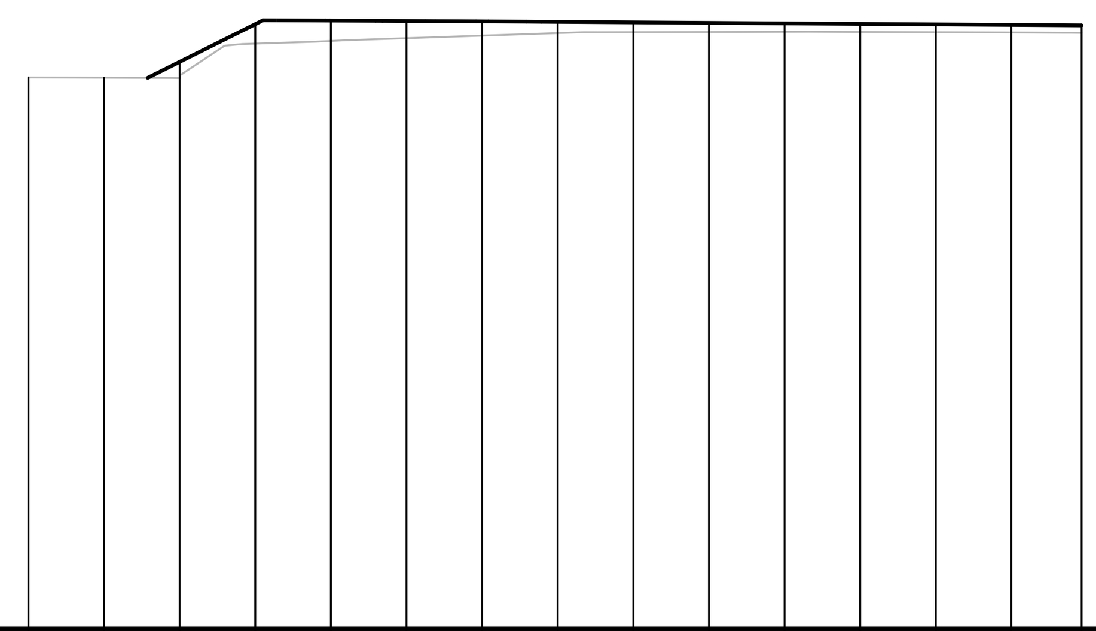


DATUM RL 28.000

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS	CUT / FILL DEPTH
0.000		42.706	0.000
2.000	42.912	42.741	0.171
4.000	42.87	42.799	0.071
6.000	42.907	42.794	0.113
8.000	42.971	42.810	0.161
10.000	43.035	42.819	0.216
12.000	43.099	42.835	0.264
14.000	43.162	42.890	0.272
16.000	43.226	42.959	0.267
18.000	44.091	43.049	1.041
20.000	44.071	43.176	0.894
22.000	44.052	43.292	0.757
24.000	44.032	43.370	0.657
26.000	44.01	43.448	0.556
28.000	43.989	43.525	0.454
30.000	43.965	43.588	0.365
32.000	43.953	43.612	0.315
34.000	43.95	43.634	0.265
34.804	43.949	43.639	0.248

SECTION 4

SCALE: HORIZONTAL - 1:200
VERTICAL - 1:200



DATUM RL 28.000

CHAINAGE	DESIGN SURFACE LEVELS	EXISTING SURFACE LEVELS	CUT / FILL DEPTH
0.000		42.587	0.000
2.000		42.582	0.000
4.000	42.999	42.572	0.427
6.000	43.997	43.482	0.515
8.000	44.092	43.552	0.534
10.000	44.082	43.625	0.444
12.000	44.071	43.693	0.359
14.000	44.058	43.760	0.272
16.000	44.044	43.785	0.227
18.000	44.031	43.790	0.200
20.000	44.018	43.795	0.173
22.000	44.004	43.791	0.153
24.000	43.991	43.784	0.137
26.000	43.978	43.776	0.122
27.857	43.965	43.767	0.113

SECTION 5

SCALE: HORIZONTAL - 1:200
VERTICAL - 1:200

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
E	**MINOR AMENDMENTS**	**28/09/2018**	**JCF/LZ/PB**	**CG/JCF**	**TH**	**TH**
D	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF/LZ	JCF		
C	UPDATED AS PER CLIENT REQUEST	06/06/2018	RK/JCF	JCF	TH	TH
B	CLIENT REQUESTED AMENDMENTS	09/03/2018	KW	CG/JCF	TH	
A	BALANCE SITE EARTHWORKS	07/11/2017	CG	CG	TH	

SCALE: 0 2 4 6 8 10 12 14 16 18 20 METRES
A1 (A3) 1:200 (1:400)

GRID: ---
DATUM: MAHD
PROJECT MANAGER: TH

CLIENT: CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE
MINTO CONCRETE RECYCLERS
SITE EARTHWORKS
7 MONTORE ROAD, MINTO NSW 2566
LOT 52 DP 618900

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
EARTHWORKS SECTIONS
SHEET 02

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-C701	E

DRAWING ID: P1203464-PS02-R12-C701

A1 / A3 LANDSCAPE (A1LC_v02.0.01)

PRINTED: ---- - USER: LLIU

14 ATTACHMENT D – DPI Water Licensing Correspondence

Erica Zhu

From: Wayne Conners <Wayne.Conners@waternsw.com.au>
Sent: Thursday, 18 January 2018 10:57 AM
To: Carolyn Stanley
Subject: RE: P1203464 - Sedimentation basin licensing - Minto Concrete Recyclers

Carolyn,

Water NSW has reviewed the information provided in your email dated 12 January 2018.

I can confirm that my previous advice that the sedimentation basins do not require authorisation by any approval or access licence under the Water Management Act, 2000 is still valid.

The link below provides information on harvestable right dams in NSW.

http://www.water.nsw.gov.au/water-licensing/basic-water-rights/harvesting-runoff

Wayne Conners
Senior Water Regulation Officer
Coastal (Parramatta)

Important: As a result of NSW water reforms, many functions previously provided by DPI Water have transferred to WaterNSW, effective 1 July. These functions include customer interactions for licencing, compliance and billing – as well as all in-field services and metering operations. Customers will experience streamlined, more convenient and efficient services. Over the coming months, you will begin to see WaterNSW branded materials for these services.

Please note my new address and phone number.

Level 14, 169 Macquarie St
PO Box 398
Parramatta NSW 2124
T: 02 9865 2323
wayne.conners@waternsw.com.au
www.waternsw.com.au

From: Carolyn Stanley [mailto:cstanley@martens.com.au]
Sent: Friday, 12 January 2018 3:17 PM
To: Wayne Conners <Wayne.Conners@waternsw.com.au>
Subject: P1203464 - Sedimentation basin licensing - Minto Concrete Recyclers

Good afternoon Wayne,

I received your correct email address from Marie Schildt (Lands & Water) this afternoon.

I am happy to discuss this with you, or provide additional information if you require. I look forward to hearing from you.

Kind regards,

Carolyn Stanley
Environmental Scientist
M.Sc., B.Sc., B.A.

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Hornsby, NSW 2077
P + 61 2 9476 9999
F + 61 2 9476 8767
E cstanley@martens.com.au
www.martens.com.au

From: Carolyn Stanley
Sent: Friday, 12 January 2018 12:33 PM
To: 'Wayne Conners' <Wayne.Conners@water.nsw.gov.au>
Cc: Nicole Hely <Nicole.Hely@water.nsw.gov.au>; Terry Harvey <THarvey@martens.com.au>
Subject: RE: Sedimentation basin licensing - Minto Concrete Recyclers

Good afternoon Wayne,

I tried to contact you via the phone number below, but I could not get through, so I will see if this email still works.

With regards to your previous email discussion with Megan Kovelis (in 2012 – refer to below), further modifications have been made to the site design for the proposed resource recovery facility (i.e. concrete recycling). Two sedimentation basins are now proposed for the site (refer to attached draft site plan), in addition to the previously mentioned 5KL rainwater tank (capturing roof water). Both sedimentation basins (north: 57KL, and south: 72KL, total 129KL, or 0.129 ML) have been designed to reuse stormwater runoff for dust suppression, primarily via sprinklers and water cart. Additionally, overflow stormwater will drain to 500KL of OSD covered tank storage, which will also be used for dust suppression purposes (and will allow for up to two weeks operational demand).

From review of your previous email, and DPI Water 'Dams in NSW – Do you need a licence?' information sheet, I believe that the advice as provided below is still valid, in that both sedimentation basins (having a total capacity of 0.129ML), and being used for the capture, containment and recirculation of contaminated drainage, would be exempt from harvestable rights calculations, and do not require a licence.

I would appreciate if you could please confirm, and also let me know if there are any further approvals that may be required by Water NSW/DPI Water regarding the proposed sedimentation basins.

Thank you and kind regards,

Carolyn Stanley
Environmental Scientist
M.Sc., B.Sc., B.A.

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Suite 201, 20 George Street
Hornsby, NSW 2077
P + 61 2 9476 9999
F + 61 2 9476 8767
E cstanley@martens.com.au
www.martens.com.au

From: Wayne Conners [mailto:Wayne.Conners@water.nsw.gov.au]
Sent: Thursday, 23 August 2012 11:22 AM
To: Megan Kovelis <mkovelis@martens.com.au>
Cc: Nicole Hely <Nicole.Hely@water.nsw.gov.au>
Subject: RE: Sedimentation basin licensing - Minto Concrete Recyclers

Megan,

Given the intended use and full storage capacity (0.71 megalitres) of the sedimentation basin, I can confirm that this structure is exempt from harvestable right calculations under the NSW Farm Dams Policy, which became effective on 1 January 1999.

The Farm Dams Policy refers to runoff as overland flows and as such the collection of water from the office roof is not required to be authorised.

I don't believe any further information is required.

Wayne Conners | Senior Licensing Officer, Licensing South (Sydney Metro)

Department of Primary Industries | Office of Water

Level 11 | 10 Valentine Avenue | Parramatta NSW 2150

T: 02 8838 7531 | F: 02 8838 7554 | E: wayne.conners@water.nsw.gov.au

W: www.water.nsw.gov.au

>>> Megan Kovelis <mkovelis@martens.com.au> 22/08/2012 7:54 am >>>
Wayne,

Apologies for leaving that detail out. The sed basin is proposed to be 709 KL (13KL storage zone 696 KL settling zone) in capacity with an additional 450 KL on top of this as OSD storage.

Kind Regards,

Martens & Associates Pty Ltd

Megan Kovelis
Environmental Scientist
BEnvSc (Hons1)

Martens & Associates Pty Ltd
Unit 6/37 Leighton Place
Hornsby, NSW 2077
P + 61 2 9476 9999
F + 61 2 9476 8767
www.martens.com.au

From: Wayne Conners [mailto:Wayne.Conners@water.nsw.gov.au]
Sent: Wednesday, 22 August 2012 7:23 AM
To: Megan Kovelis
Subject: Re: Sedimentation basin licensing - Minto Concrete Recyclers

Megan,

Please confirm the capacity of the proposed sedimentation basin.

Wayne Conners | Senior Licensing Officer, Licensing South (Sydney Metro)

Department of Primary Industries | Office of Water

Level 11 | 10 Valentine Avenue | Parramatta NSW 2150

T: 02 8838 7531 | F: 02 8838 7554 | E: wayne.conners@water.nsw.gov.au

W: www.water.nsw.gov.au

>>> Megan Kovelis <mkovelis@martens.com.au> 20/08/2012 8:20 am >>>
Wayne,

As discussed on Friday afternoon, we are seeking some advice in relation to whether or not our proposed sedimentation basin requires a license or is exempt. The site is located at 7 Montore Road, Minto NSW and is proposed to be a concrete recycling facility. I have attached a preliminary hand sketch of the proposed development as this is all we have to date – but it should give you the basic idea.

The sedimentation basin has been designed and sized in accordance with Landcom (2004) Soils and Construction Handbook. It shall capture all site runoff which shall be reused to satisfy dust suppression demands.

As we discussed, we believe we are exempt from requiring a license as we are a 'dam' *'for the capture, containment and recirculation of drainage'* as per the NOW (2010) factsheet "Dams in NSW: Do you need a license?" but are not sure what form of words we use in documenting this or what policy we refer to.

We also have a rainwater tank (5KL) proposed to capture runoff from the proposed office roof for the purposes of reuse in toilet flushing. What form of words exempts this from requiring a license?

Finally, the DGEARS for this project require us to consult with agencies prior to submission of the EIS. We have reviewed and integrated NOWs comments attached – is there anything else you feel we need to look at/keep in mind in relation to this project?

Kind Regards,

Martens & Associates Pty Ltd

Megan Kovelis
Environmental Scientist
BEnvSc (Hons1)

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15 ATTACHMENT E – Council Flooding Information

3 October 2019

Lee Zhou
lzhou@martens.com.au

Dear Sir/ Madam

Flood advice – 7 Montore Road, Minto

Council refers to your flood advice requested, dated 10 July 2019 for the abovementioned property.

Council advises as follows:

1. The abovementioned property is a Flood Control Lot with respect to 1% Annual Exceedance Probability (AEP) flood due.

   A Flood Control Lot is defined in the State Environment Planning Policy (Exempt and Complying Development Codes) 2008 - REG 1.5 as "a lot to which flood related development controls apply in respect of development for the purposes of industrial buildings, commercial premises, dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (other than development for the purposes of group homes or seniors housing).

2. In accordance with the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, I can confirm that the abovementioned property is **NONE** of the following:

   - Flood storage area
   - Floodway area
   - Flow path
   - High hazard area
   - High risk area

3. The minimum fill and floor level controls for any development on this property due to a 1% AEP flood event are provided in the table and shown on the enclosed Fill Level and Floor Level Location Plan.

Location	Minimum Fill Level (1% AEP Flood Level) (m AHD)	Minimum Floor Level (m AHD)
A	43.2	43.7
B	43.5	43.8
C	42.5	43.0
D	42.4	42.9
E	42.4	42.9

4. Please note that the required finished floor levels (FFL's) are defined by the relevant 1% flood level plus freeboard as defined in Table 4.1 of Council's Engineering Design for Development. Council does not have any information regarding floor levels of the existing building and if concerns are held with respect to any areas of the site, floor levels may need to be confirmed by a registered surveyor.
5. Any development of this site will require drainage to be accommodated in accordance with the Campbelltown City Council Engineering Design Guide for Development.
6. The floor level of the building must also comply with the requirements set out in Clause 3.1.2.3 of Volume 2 of the Building Code of Australia and Section 4.5 of the Engineering Design Guide for Development. Further controls may be applied at development application stage if the site is affected by a Section 88B (Conveyancing Act) Restriction.
7. Development consent and/or construction consent may be required for any development of this property.
8. The requested Council Stormwater Network Plan is attached.

If you require any further information, please contact Council's Coordinator Stormwater and Structural Design, Cathy Kinsey via email at cathy.kinsey@campbelltown.nsw.gov.au.

Yours sincerely

per Mark Wolczak
Executive Manager Infrastructure

AB

CAMPBELLTOWN CITY COUNCIL

7 Montore Road,
Minto

Fill Level and Floor Level Location Plan

N
W
E
S

Accuracy of the information shown on this plan is not guaranteed.

All service levels and locations should be confirmed on site.

Council does not have details of drainage lines within private property where these service only private lots.

The contour information is based on Airbo LaserSurvey provided by NSW Land and Property Information 2011. Any changes to the topography since that time may not be reflected in these plans.

Concrete Recyclers

Erosion & Sediment Control Plan:

Minto Resource Recovery Facility
7 Montore Road, Minto, NSW.

martens consulting engineers

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

P1203464JR02V01
January 2019

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to prepare a Stormwater Management Report in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and Concrete Recylcers (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.

Martens & Associates Pty Ltd derived the data in this report primarily from a number of sources which may include for example site inspections, correspondence regarding the proposal, examination of records in the public domain, interviews with individuals with information about the site or the project, and field explorations conducted on the dates indicated. The passage of time, manifestation of latent conditions or impacts of future events may require further examination / exploration of the site and subsequent data analyses, together with a re-evaluation of the findings, observations and conclusions expressed in this report.

In preparing this report, Martens & Associates Pty Ltd may have relied upon and presumed accurate certain information (or absence thereof) relative to the site. Except as otherwise stated in the report, Martens & Associates Pty Ltd has not attempted to verify the accuracy of completeness of any such information (including for example survey data supplied by others).

The findings, observations and conclusions expressed by Martens & Associates Pty Ltd in this report are not, and should not be considered an opinion concerning the completeness and accuracy of information supplied by others. No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report. Further, such data, findings and conclusions are based solely upon site conditions, information and drawings supplied by the Client *etc*. in existence at the time of the investigation.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between Martens & Associates Pty Ltd and the Client. Martens & Associates Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

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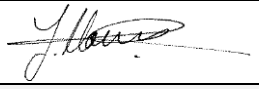
Web: www.martens.com.au

Document and Distribution Status

Author(s)	Reviewer(s)	Project Manager	Signature
Erica Zhu	Terry Harvey	Terry Harvey	

Revision No.	Description	Status	Release Date	Document Location			
				File Copy	Muscat Developments		
1	Draft	Draft	22/08/2018	1E,1P	1P		
2	Draft	Draft	24/10/2018	1E,1P	1P		
3	For Submission	Final	14/01/2019	1E,1P	1P		

Distribution Types: F = Fax, H = hard copy, P = PDF document, E = Other electronic format. Digits indicate number of document copies.

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

Contents

1 Introduction

1.1 Overview

This Erosion and Sediment Control Plan (ESCP) has been prepared to support a State Significant Development (SSD) application for a proposed resource recovery facility development located in Campbelltown City Council (CCC) local government area, known as 7 Montore Road, Minto, NSW.

This ESCP addresses the specific requirements of the Secretary's Environmental Assessment Requirements (SEARs) (Ref: SSD 5339; July 11, 2017).

1.2 Project Scope and Aim

The objectives of this ESCP are:

- Control the transport of sediment from areas disturbed by construction activities;
- Minimise erosion; and
- Manage stormwater to protect downstream water quality.

1.3 Proposed Development

The proposed development is for the construction of a concrete recycling operation with an intended capacity of 450,000 tonnes of bricks, concrete and sand processed per annum.

The facility will include the following infrastructure:

- Site office;
- Staff lunch room and associated amenities;
- Weighbridge and wheel wash;
- Feed concrete and product stockpiles;
- Concrete crushing plant housing primary screens, primary and secondary crushers, processed product stockpiles and the dust suppression system;
- Sand washing plant housing primary and secondary screens;

- Pug mill;
- Workshop for general repairs;
- Rainwater tanks;
- Stormwater storage tanks;
- Employee carpark; and
- Driveway and hardstand areas to service site.

1.4 Relevant Planning Controls and Design Principles

The following planning and engineering controls and design principles have been considered:

- Campbelltown City Council (2009) *Development Control Plan (DCP)*.
- Campbelltown City Council (CCC) (2009) *Engineering Design for Development.*
- Landcom (2004) *Soils and Construction: Managing Urban Stormwater*.

2 Site Description

2.1 Location and Existing Land Use

The site is located at 7 Montore Road, Minto, NSW and lies within the Campbelltown City Council local government area (LGA). It is bounded by existing industrial development to the east and south, Montore Road and existing warehouses to the north and a drainage easement containing Bow Bowing Creek (canal) to the west.

The northern portion of the site contains an unsealed hardstand area and is currently utilised has a construction material storage compound, with two sheds located near the northern boundary.

The southern portion of the site is covered by grass with shrubs/trees along the western boundary.

2.2 Topography and Drainage

The site is predominately flat. The highest point is in the compound area of the site, at approximately 44m AHD. The compound area falls away from Bow Bowing Creek towards the site access. Any runoff from the compound area is assumed to be collected by Council's kerb and gutter system on Montore Road.

Bow Bowing Creek is located approximately 50m west of the site.

2.3 Lithology and Soil Landscapes

The Wollongong 1:100,000 Geological Series sheet indicates that the site's natural soil profile is underlain by quaternary deposits of quartz and lithic 'fluvial' sand, silt and clay.

The Wollongong 1:100 000 Soil Landscapes sheet indicates site soils are of the Blacktown soil landscape comprising earthy sands in valley flats.

3 Erosion and Sediment Control Plan

3.1 Overview

This section details the erosion and sediment controls proposed for the construction phase of the works at the site. To eliminate the discharge of sediment from the site, temporary sediment and erosion controls are to be constructed prior to commencement of any work. The controls are to be installed in accordance with the Sediment and Erosion Control Plans prepared by Martens and Associates (see Attachment A) and the requirements of Landcom (2004).

3.2 Sedimentation Basin

Based on the methods provided in the Blue Book, sediments generated during the construction are calculated to be less than 150 m^3/year. Therefore, no sedimentation basin is required for the construction phase of the development. Refer to Attachment B for further details of the calculations.

3.3 Erosion and Sediment Control Measures

The following sediment and erosion control measures are proposed to prevent the pollutants generated from construction activities from adversely affecting the water quality of the receiving environment.

- Sediment fencing shall be used at the downslope end of the site for the duration of all earthworks.
- Proposed site clearance and bulk earthworks shall be undertaken in a single stage, following the implementation of site sediment control fences.
- Stormwater inlets shall be protected by geotextile sediment barriers at all times during work on site.
- All site stockpile areas shall have sediment fencing downslope of them.
- Stabilised site access is to be used at all times during the construction phase.

3.4 Recommendation

The following recommendations are made with respect to the proposed sediment and erosion control measures:

- Sediment and erosion control measures are to be maintained in good working order, and be repaired or replaced throughout the entire duration of the works.
- Sediment and erosion control measures are to be installed, inspected and approved by the superintendent prior to commencement of excavation works.
- Daily inspection of stockpiles and bunds should be undertaken by the site superintendent with issues noted and remedial actions undertaken as soon as feasible where any such issues arise.
- Entrance street sweeping must be undertaken as required during and after excavation and construction until the site is fully established.
- The contractor shall maintain dust control until final completion of works. The controls shall be as per the Air Quality Report submitted with the Environmental Impact State (EIS).
- During windy weather, large, disturbed, unprotected areas shall be kept moist (not wet) by sprinkling with water to keep dust under control.
- Erosion and sediment control measures are not to be removed until all site disturbance works are completed and the site is rehabilitated.

4 References

Campbelltown City Council (CCC) (2009) *Development Control Plan (DCP)*.

Campbelltown City Council (CCC) (2009) *Engineering Design for Development.*

Landcom (2004) *Soils and Construction: Managing Urban Stormwater*.

Nexus Environmental Planning (2018) Environmental Impact Statement: Resource Recovery Facility, No. Montore Road, Minto.

5 Attachment A – Erosion and Sediment Control Plan

KEY:

- INDICATIVE STOCKPILE
- GEOTEXTILE INLET FILTER
- SEDIMENT FENCE
- STABILISED SITE ACCESS

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
G	**MINOR AMENDMENTS**	**28/09/2018**	**JCF/LZ/PB**	**CG/JCF**	**TH**	**TH**
F	CLIENT REQUESTED AMENDMENTS	12/09/2018	JCF/LZ	JCF		
E	CLIENT REQUESTED AMENDMENTS	03/08/2018	PB	JCF	TH	TH
D	UPDATED AS PER CLIENT REQUEST	06/06/2018	RK/JCF	JCF	TH	TH
C	CLIENT REQUESTED AMENDMENTS	21/03/2018	KW/JCF	JCF	TH	
B	CLIENT REQUESTED AMENDMENTS	09/03/2018	KW	CG/JCF	TH	
A	BALANCE SITE EARTHWORKS	07/11/2017	CG	CG	TH	

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

GRID	DATUM	PROJECT MANAGER
MGA	MAHD	TH

CLIENT
CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE
MINTO CONCRETE RECYCLERS
SITE EARTHWORKS
7 MONTORE ROAD, MINTO NSW 2566
LOT 52 DP 618900

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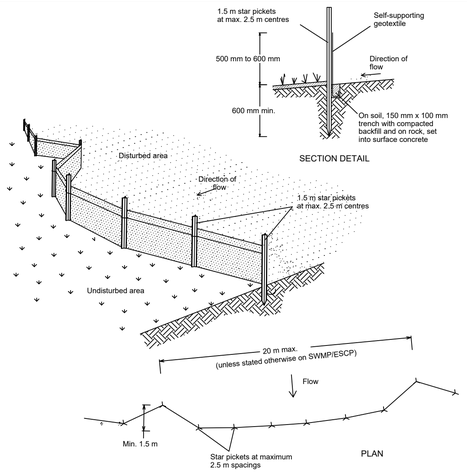
Email: mail@martens.com.au Internet: www.martens.com.au

DRAWING TITLE
SEDIMENT AND EROSION CONTROL PLAN

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-B300	G

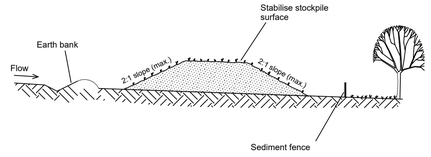
PRINTED: --- (USER LUI)
A1 / A3 LANDSCAPE (A1LC_v02.0.01)
DRAWING ID: P1203464-PS02-R12-B300



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.

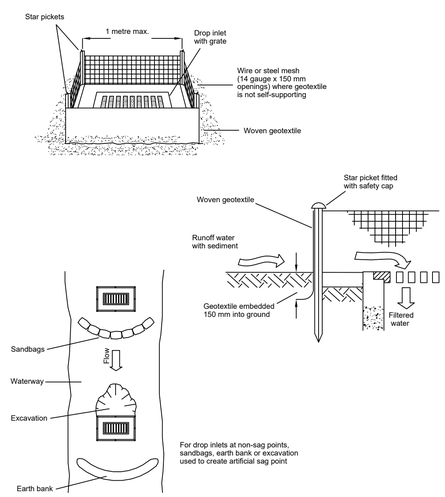
SEDIMENT FENCE — SD 6-8



Construction Notes

1. 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.

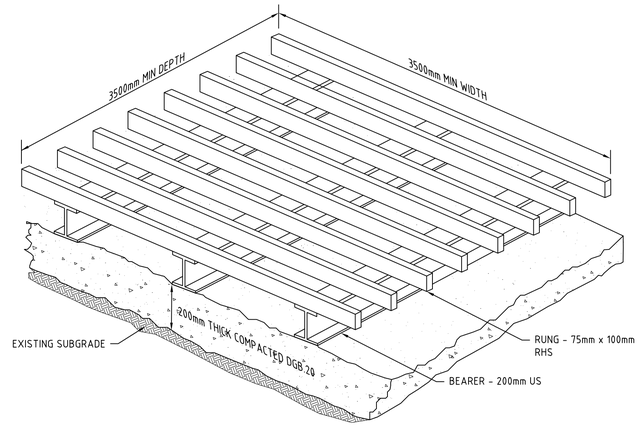
STOCKPILES — SD 4-1



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

A correctly designed and installed shaker pad will assist in preventing sediment transfer from a site. Any stabilised access point (SAP) can be designed with a shaker pad (compulsory in Type II SAP's)

Shaker pads can be designed and constructed to enable re-use on future projects.

The shaker pad:

1. Must be designed and certified by a practicing structural engineer. The certified design should be submitted with the relevant application.
2. Can be constructed from any suitable material.
3. Must be located on a suitably prepared and compacted sub-grade/base material.
4. Must be situated such thatthe rungs of the shaker pad are level with the adjoining natural surface.
5. Must be a minimum of 3.5 m in length.
6. Must be a minimum of 3.5 m in width.
7. Must have clear spacing between rungs of 200 - 250 mm.
8. Rings must have a maximum width (bearing area) of 75 mm.
9. Must have a minimum clear depth of 300 mm ie. from the top of the rung to the finished sub-grade/base level.
10. Must be provided with suitable barriers at the sides to ensure that all tyres of vehicles leaving the site traverse the device.

SHAKER PAD (CATTLE GRID)

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
B	**CLIENT REQUESTED AMENDMENTS**	**03/08/2018**	**PB**	**JCF**	**TH**	**TH**
A	BALANCE SITE EARTHWORKS	07/11/2017	CG	CG	TH	

SCALE

GRID	DATUM	PROJECT MANAGER
---	---	TH

CLIENT: CONCRETE RECYCLERS (GROUP) PTY LTD

PROJECT NAME/PLANSET TITLE: MINTO CONCRETE RECYCLERS
SITE EARTHWORKS
7 MONTORE ROAD, MINTO NSW 2566
LOT 52 DP 618900

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DEVELOPMENT APPLICATION

DRAWING TITLE: SEDIMENT AND EROSION CONTROL DETAILS

PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1203464	PS02	R12	PS02-B350	B

DRAWING ID: P1203464-PS02-R12-B350

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

6 Attachment B – Basin Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

1. Site Data Sheet

Site Name:	**P1203464**
Site Location:	**7 Montore Road, Minto**
Precinct:	**Proposed Concrete Recycling Facility**
Description of Site:	**Blacktown Soil Landscape**

Site area	Site						Remarks
Total catchment area (ha)	2.35						
Disturbed catchment area (ha)	2.017						
Soil analysis							
% sand (faction 0.02 to 2.00 mm	80						Soil texture should be
% silt (fraction 0.002 to 0.02 mm)	10						assessed through mechanical
% clay (fraction finer than 0.002 m	5						dispersion only. Dispersing
Dispersion percentage	9.0						E.g. enter 10 for dispersion of
% of whole soil dispersible	0.9						See Section 6.3.3(e)
Soil Texture Group	C						See Section 6.3.3(c), (d) and
Rainfall data							
Design rainfall depth (days)	5						See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	90						See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	43.2						See Section 6.3.4 (h)
Rainfall intensity: 2-year, 6-hour	10.1						See IFD chart for the site
RUSLE Factors							
Rainfall erosivity (R-factor)	2250						Automatic calculation from
Soil erodibility (K-factor)	0.1						
Slope length (m)	87						
Slope gradient (%)	2						RUSLE data can be obtained
Length/gradient (LS-factor)	0.13						from Appendixes A, B and C
Erosion control practice (P-	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (C-factor)	1	1	1	1	1	1	
Calculations							
Soil loss (t/ha/yr)	38						
Soil Loss Class	1						See Section 4.4.2(b)
Soil loss (m^3/ha/yr)	29						
Sediment basin storage volume,	10						See Sections 6.3.4(i) and 6.3.5

Source: Blue Book (Landcom, 2004)