

Water Management Plan

Concrete Recyclers
7 Montore Road, Minto, NSW

Management plan reference:

CR_WatMP

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Acknowledgement of Country

Concrete Recyclers acknowledges the Traditional Owners of the land on which this site is located, the people of the Dharawal Nation. We acknowledge their continuing connection to land and sea Country and we pay our respects to their Elders past, present and emerging.

Document Control

Version	Issue Date	Details	Author	Authorisation
0.0	7 Sep 2023	Draft WatMP document for OEMP.	Kay Porter James Hammond	Concrete Recyclers (Group) Pty Ltd
1.0	5 Apr 2024	Final WatMP document for OEMP	Kay Porter James Hammond	Concrete Recyclers (Group) Pty Ltd
1.1	30 July 2024	Revisions based on Department comments received July 2024. Updated Site Layout Plan to most up-to-date version.	Rhys Thompson	Concrete Recyclers (Group) Pty Ltd
1.2	8 August 2024	Updating Overall Site Water Flow Diagram (Appendix 2) and providing clarity that the process presented in this diagram and D & M Consulting's 2023 Site Stormwater Cycle Report (Appendix 3) are equivalent, though to a different level of detail.	Rhys Thompson	Concrete Recyclers (Group) Pty Ltd

1 Introduction

1.1 Background

4Pillars was engaged by Concrete Recyclers (Group) Pty Ltd to prepare a Water Management Plan (WatMP) as part of an Operational Environmental Management Plan (OEMP) for a proposed Resource Recovery Facility (RRF) at 7 Montore Road, Minto (the Site). The preparation of this WatMP is a requirement of Condition B23 of the Development Consent (SDS-5339) for the Site.

The RRF will accept up to 450,000 tonnes per annum of construction and demolition (C&D) waste for storage, processing and reuse. A maximum of 50,000 tonnes of unprocessed and 22,000 tonnes processed material of will be stored on Site at any one time.

1.2 Site details

The Site details are summarised in Table 1 below. Please refer to Figure 1 for a map of the Site locality.

Item	Details
Local Government Area	Campbelltown City Council
Address	7 Montore Road, Minto, NSW
Lot(s)	Lot 52 DP 618900
Zoning	IN1 – General Industrial (Campbelltown LEP 2015)
Site size (total)	23,500 m ² (2.35 ha)
Previous land use	Various commercial/industrial activities including waste and equipment storage. See Figure 2 for recent satellite imagery of the Site.
Intended future land use	Resource Recovery Facility
Surrounding land uses	IN1 – General Industrial (Campbelltown LEP 2015) SP2 – Drainage (Campbelltown LEP 2015)
Elevation	Approximately 43 m AHD above sea level
Hydrology	The Site is located on the south bank of Bow Bowing Creek, within the Bow Bowing Bunbury Curran (BBBC) Creek catchment.
Geology	Preliminary Site Investigation determined a layer of fill material (up to 1 m depth) is present on the Site. The natural materials underlying the Site are expected to be primarily clay, shale and laminate.

Table 1: Summary of Site details.

2 Application

The WatMP will provide the principles and procedures for the management of water during the operational phase of the development. It will guide the use, metering, and disposal of water on Site, as well as surface water and wastewater management with the aim of minimising offsite surface water impacts. Operations will not commence until this WatMP has been approved by the Planning Secretary, in accordance with Condition B24 of the Development Consent.

This WatMP has been prepared to comply with Conditions B23, B24 and C5 of the Development Consent, as well as taking into consideration Appendix 2 of the Development Consent “*Applicant’s Management And Mitigation Measures*”. Table 1 below details where aspects of Condition B23 are addressed in this document.

Development Consent Condition	Section where addressed
B23. Prior to the commencement of operation, the Applicant must prepare a Water Management Plan to the satisfaction of the Planning Secretary. The Water Management Plan must form part of the OEMP required by condition C5. The Water Management Plan must:	
(a) be prepared by a suitably qualified and experienced person(s);	See Page 2.

Development Consent Condition	Section where addressed
B23. Prior to the commencement of operation, the Applicant must prepare a Water Management Plan to the satisfaction of the Planning Secretary. The Water Management Plan must form part of the OEMP required by condition C5. The Water Management Plan must:	
(b) detail water use, metering, disposal and management on-site;	See Section 4.
(c) detail the management of wastewater streams on-site;	See Section 4.1.
(d) include a Surface Water Management Plan, including;	See Section 4.
(i) a program to monitor: – surface water flows and quality; – surface water storage and use; and – sediment basin operation;	See Section 4.4.
(ii) surface water impact assessment criteria, including trigger levels for investigating any potential adverse surface water impacts; and	See Section 4.5.
(iii) a protocol for the investigation and mitigation of identified exceedances of the surface water impact assessment criteria.	See Section 4.6.

Table 2: Where Condition B23 of the Development Consent are addressed in this WatMP.

This plan has also been developed in accordance with relevant State legislation and best-practice guidelines including:

- Campbelltown City Council's Sustainable City Development Control Plan (DCP) (2015); and
- 'Blue Book' Landcom (2004) Soils and Construction: Managing Urban Stormwater.

4Pillars has also taken into consideration the Environmental Impact Statement (EIS) for the Site, and the initial Site Water Management Plan developed by Martens & Associates Pty Ltd in March 2020 (ref: P1203464JR01V05) which supported the EIS. The WatMP supersedes this plan.

3 Site Context

The Site and surrounding properties are zoned as IN1 General Industrial. Bow Bowing Creek (zoned SP2 – Drainage) is the nearest receiving waterway and runs along the western border of the Site. The entirety of the Site is mapped within the Probable Maximum Flood (PMF) extent and areas of 0.1% - 20% Annual Exceedance Probability (AEP) are mapped along the perimeters of the Site. The Preliminary Flood Assessment for the Site assessed the hydraulic hazard for 1% AEP at the Site entrance to be low hazard. A riparian and groundwater impact assessment were included in the 2020 Martens & Associates *Site Water Management Plan*, which was considered during the preparation of this Plan.

4 Surface Water Management Plan

4.1 Site Water Usage

Total water demand for Site processes is expected to be approximately 127,000 L per day in winter, and 202,000 L per day in summer. The surface water management system allows for up to 440,000 L of treated water, supplying up to two to three days' worth of water required for Site operations. Water used in Site operations will be cycled through the surface water management system and re-used to reduce water demand.

Staff toilet facilities are expected to use 300 L per day, supplied by rainwater collection tanks. These rainwater collection tanks have a combined capacity of 5,000 L, or over two weeks' worth of water. Town water usage is minimal, supplying kitchen, handbasin and shower facilities on Site. Municipal wastewater generation on Site is estimated at approximately 750 L per day, and will be disposed of via the Sydney Water sewer main.

4.2 Surface Water Management System

The Site surface water management system has been developed in accordance with applicable Australian Standards and collects all surface water on Site to prevent any contaminated or sediment impacted stormwater from leaving the Site. Surface water collection measures described in the Environmental Impact Statement for the Site included sediment basins for the purposes of stormwater storage. However, some changes to the proposed development have been made since the submission of the EIS, with these changes reflected in this WatMP. Surface water (pre and post treatment) is now proposed to be collected in water storage tanks as shown in The Overall Site Water Flow Diagram (Appendix 2), rather than sediment basins as initially proposed. The diagram details the updated collection, treatment, and reuse

surface water system on the Site, as well as the instrumentation involved, and the specifics of the Water Treatment Plant. These specific details are not presented in the Site Stormwater Cycle Report (prepared in 2023 by D & M Consulting, Appendix 3), although the two diagrams reflect the identical overall process.

Two flowmeters are included in the surface water management system. The first is located at the inlet of the water treatment plant which will measure all collected stormwater on Site. The second is located at the outlet of the Southern Storage Tank to record treated water usage on Site.

Rainwater from the staff amenities roof is collected in a 2,000 L tank and utilised for staff amenities toilets. Rainwater from the workshop building roof is collected in a 50,000 L tank and stored for use in staff amenities toilets or other Site operations, as appropriate. The crushing plant water is collected in a 50,000L tank. The stormwater run-off from the driveway and carpark are directed to another 50,000L onsite storage tank for reuse.

All other rooftop rainwater and stormwater runoff on Site is collected in a series of sumps across the Site. Stormwater collected in the sumps is pumped through a flowmeter to a 25,000 L mixing tank where flocculant and pH dosing is applied before being pumped into one of two 100,000 L thickener tanks fitted with conductivity and pH sensors. Water separated from the thickener tanks is directed into the Primary Tank (50,000 L capacity). Some water is pumped directed from the Primary Tank for reuse in the sand washing plant, other water from the Primary Tank is pumped through a series of media filters, passes through a total suspended solids (TSS) meter and a turbidity sensor, and is collected in the Southern Storage Tank (898,000 L capacity). Water stored in the Southern Storage Tank has been completely treated by the Site stormwater treatment system and is re-used on Site for usage in the dust suppression sprinklers, wheel wash, pug mill, crushing shed, sand wash, yard cannon, sumps, and mixer/thickener tanks. Excess treated water in the Southern Storage Tank will be analysed according to the monitoring program in Section 4.4, and discharged into the Campbelltown City Council stormwater system via the Ocean Protect Ocean Cycle device.

The Site Stormwater Cycle Report (prepared in 2023 by D & M Consulting, Appendix 3) includes a MUSIC model of the Site surface water management system and assesses the treatment train against pollution reduction targets required by the Campbelltown City Council DCP. This Report also includes a summarised version of the Overall Site Water Flow Diagram presented in Appendix 2 (i.e. without any instrumentation or the specifics of the Water Treatment Plant).

4.3 Mitigation Measures

4.3.1 Sediment

A number of mitigation measures limit erosion on and around the Site. The surface water management system is closed, and prevents non-treated water from exiting the Site into the receiving waterway. The driveway is fitted with a vehicle wheel wash and trench grate which prevent vehicles from carrying sediment off-Site. The wheel wash water collects in the trench grate and drains into a sump before being directed through the Site surface water treatment system. Dust suppression measures will also be implemented on Site to prevent escape of airborne sediment.

Each site pit is provided with a Gross Pollutant Trap (GPT) to trap large sediment prior to collection.

Following large rain events the site surfaces will be inspected for sediment and ponding of water, and will be cleaned with a skid steer or other suitable device.

It is noted that these mitigation measures supersede Proposed Actions 1-7 as presented in the *Erosion and Sediment Control* section and Proposed Actions 1-7 as presented in the *Stormwater Management* section of Appendix 2 of the Development Consent *Applicant's Management And Mitigation Measures*, as these assumed that sedimentation basins would be a component of the water management system employed on the Site. The closed-water management system presented in Appendix 2 replaces the initially proposed sedimentation basins and is considered to be a much more suitable management strategy.

Proposed Actions 8-14 of the *Erosion and Sediment Control* section of Appendix 2 of the Development Consent are predominantly related to dust management, and as such have been incorporated into the Air Quality Management Plan for the Site.

4.3.2 Groundwater

While surface water poses negligible risk to groundwater (as per the 2020 Martens & Associates *Site Water Management Plan*), the below mitigation measures further limit groundwater impacts:

- The Site surface is constructed of compacted aggregate which will sufficiently limit surface water infiltration into groundwater.

- The Site surface water management system prevents non-treated water from exiting the Site where infiltration could occur.
- Trained use of spill kits and other spill controls will be implemented on Site in the event of a chemical or fuel spill.

4.3.3 Surface water

The Site construction and water management system prevent impacts on surface waters outside of the Site. The entirety of the Site is bunded, including a six-metre-high concrete bund wall separating the western boundary of the Site from the Bow Bowing Creek. As stated above, the surface water management system holds all water on Site until it is treated and suitable for discharge. The treatment system flocculates collected water, adjusts pH, and filters out suspended solids, heavy metals and nutrients. Fitted pH, conductivity, turbidity, and TSS meters/sensors ensure treatment is effective before waters are discharged into the Campbelltown City Council stormwater system. Surface water is re-used where possible on Site to limit the volume of discharged waters.

4.4 Monitoring Program

The most prominent pollution source on Site is sediment from stored and processed materials, with a lower potential for other contaminants such as plant/equipment fuel to enter the surface water system. This monitoring program outlines the required monitoring steps for Site water monitoring.

- The Site Manager or delegate must check the surface water management system meter/sensors each day to ensure treatment processes are effective.
- The Site Manager or delegate must record the flowmeter readings once per week to document Site water usage and capacity.
- Water monitoring must be conducted prior to discharge from the Southern Storage Tank. The Site Manager or delegate must record the pH, conductivity, turbidity and TSS sensor readings for two consecutive days prior to discharge into the Campbelltown City Council stormwater system.
- Discharge may only be carried out if pH, conductivity, turbidity and TSS measure below the assessment criteria specified in Section 4.5 below.
- Discharge must be supervised and will not continue outside of Site operation hours specified in the DA and EPL.
- Water monitoring must continue daily during active discharge. The Site Manager or delegate must record daily pH, conductivity, turbidity and TSS sensor readings.
- All water monitoring records must be filed and kept in hard copy on Site and provided to the Council upon request.

4.5 Assessment Criteria

Water monitoring results must be compliant with the water quality assessment criteria values for each analyte specified in Table 3. The water quality criteria values have been derived with reference to the Australian & New Zealand Guidelines for Fresh & Marine Water quality (ANZG) 2000.

Water quality criteria values may be subject to change in accordance with the conditions of the Site Environment Protection Licence (EPL) and other recommendations issued by the EPA.

In the event that water quality samples exceed any of the water quality assessment criteria values, discharge must not be carried out and the response protocols detailed in Section 4.6 below must be followed.

Analyte	Units	Limit of Reporting (LOR)	Water Quality Assessment Criteria Values	
			ANZECC/ARMCANZ (2000) - Tables 3.3.2 – 3.3.3 South-east Australia, Lowland rivers	ANZECC/ARMCANZ (2000) – Tables 4.4.2-4.4.3
pH	pH units	0.01	6.5 – 8.0	-
Conductivity	µS/cm	1	2200 (maximum)	-
Turbidity	NTU	0.1	50 (maximum)	-
Total suspended solids	mg/L	5	-	40

Table 3: Water quality assessment criteria values.

4.6 Response Protocols

The table below details possible trigger events that may impact water management, their potential impacts if not properly controlled, and the relevant response protocols required.

Trigger event	Potential impacts (uncontrolled)	Required Response Protocols
Exceedance of water quality criteria	Excess water accumulation that is unsuitable for discharge.	1. Discharge to Council stormwater system must not commence, or is to immediately cease; 2. If pH has exceeded, additional pH dosing may be required; 3. If conductivity, turbidity or TSS has exceeded, flocculating and thickening tank processes are to be checked; 4. Recirculation of water from the Southern Storage Tank through the treatment system may be required; 5. Discharge may only recommence once all analytes meet the assessment criteria for two consecutive days.
High rainfall/Flooding	Excess water accumulation in Site surface water management system.	1. Pre-emptive water monitoring and discharge may be required to ensure Site capacity is maximised; 2. Extra care to be taken to ensure water treatments are effective.
Fire	Fire-associated water entering the surface water management system/discharging.	1. Discharge to Council stormwater system must not commence, or is to immediately cease; 2. If fire controls were used on Site all water for discharge must be sampled for the presence of contamination and Council must be notified; 3. If contamination is identified, a water quality expert must be engaged for further advice; 4. Fire contaminated water must be disposed of at a liquid waste facility; 5. If contamination is not identified, discharge may recommence at the written approval of Council.

Table 4: Response protocols for potential trigger events.

5 Closing Statement

We note that this WatMP has been prepared for water management during the operational phase of this project, and will be revised as needed, in order to remain up to date with changes to Site operations or regulatory requirements.

6 Appendix List

Appendix 1: Figures and Maps

Appendix 2: Overall Site Water Flow Diagram

Appendix 3: Stormwater Cycle Report – D & M Consulting (2023)



Figure 1: Site locality.

Aerial view of the Site (pre-development)



Drawn by:	KP	Report reference:	CR_WatMP	Key:	Refer to map legend.
Date:	6/7/22	Image source:	QGIS with Nearmap overlay (dated 15/6/22)		

Figure 2: Site boundary and aerial view.

Site layout (proposed)

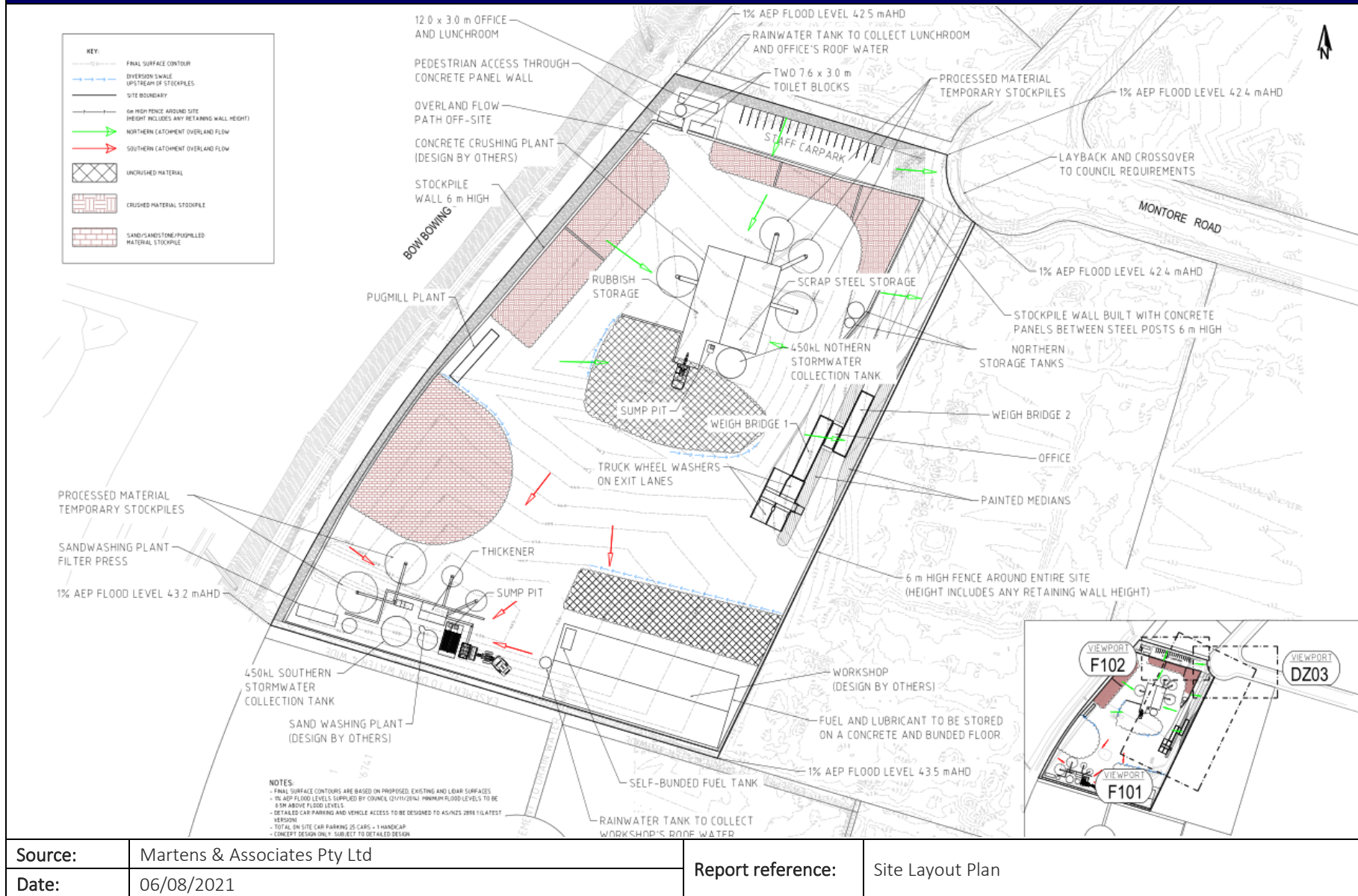


Figure 3: Site layout plan.

Council flood mapping

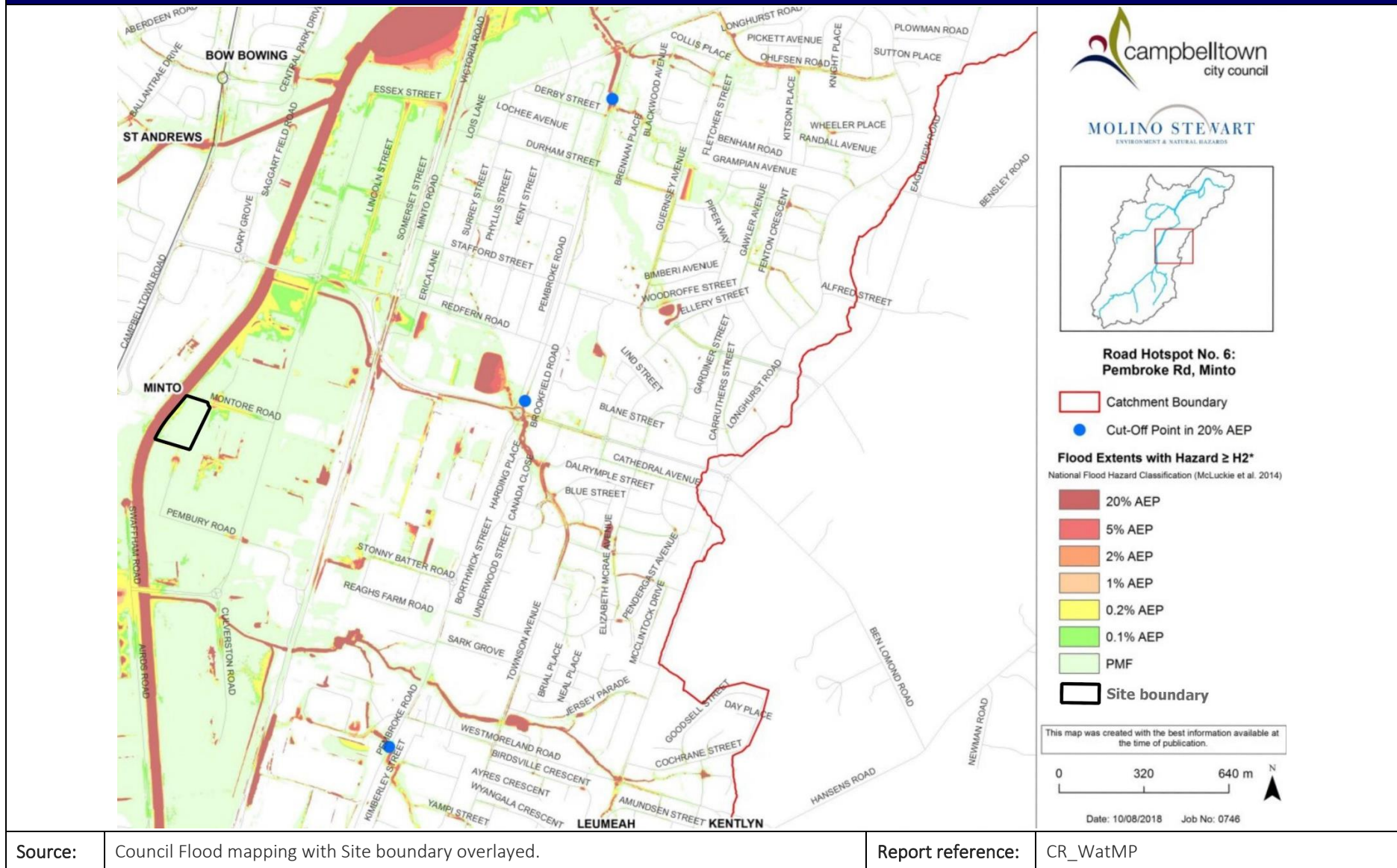
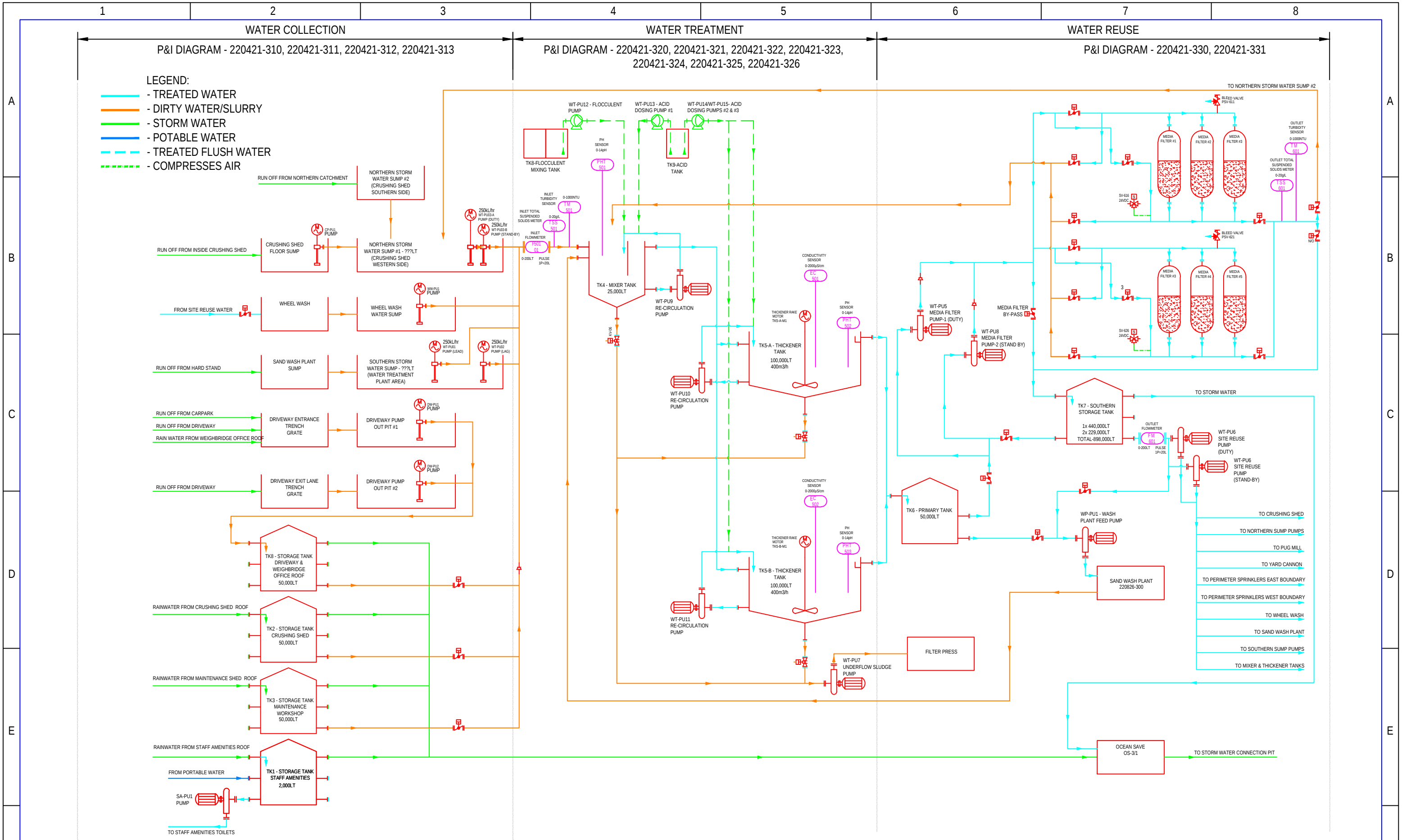


Figure 4: Flood mapping from the Bow Bowling Bunbury Curran Creek Strategic Floodplain Risk Management Study and Plan.



F	5	STORM WATER TANKS UPDATE	CS	AM	AM	06/08/2024	GENERAL NOTES: -DO NOT SCALE -ALL DIMENSIONS IN MILLIMETERS -GENERAL TOLERANCE UNO; LINEAR ±2; ANGULAR ±1°  This drawing is the PROPERTY OF CONCRETE RECYCLERS, PTY LTD and being Private and Confidential is supplied on the express condition that it is not to be used for any purpose or copied or communicated to any other person without our written consent.  <td>CLIENT CONCRETE RECYCLERS</td> <td>CONTRACT No.</td> <td rowspan="3">TITLE OVERALL SITE WATER FLOW DIAGRAM</td> <td rowspan="3">DRAWN CS</td>	CLIENT CONCRETE RECYCLERS	CONTRACT No.	TITLE OVERALL SITE WATER FLOW DIAGRAM	DRAWN CS				
	4	NORTHERN TANKS MOVED TO WT AREA	CS	AM	AM	13/11/2023		LOCATION MINTO NSW	JOB No. 220421						
	3	FLOC MIXING TANK ADDED	CS	AM	AM	06/03/2023		EQUIPMENT	DWG. REPLACED BY						
	2	MEDIA FILTERS UPDATE	CS	AM	AM	15/11/2022		CAD FILE No. 220421-300	DWG. REPLACES	PLANT CONCRETE CRUSHING PLANT	DATE 06/08/2024				
	1	ISSUE FOR REVIEW	CS	AM	AM	21/10/2022		SCALE NTS	SEP. PARTS LIST						
	0	ORIGINAL	CS	AM	AM	11/07/2022				DWG No. 220421-300	SHEET SIZE A3	REV. 5			
	REV.	DESCRIPTION	DRAWN	CHECKED	APPROVED	ISSUE DATE									
1		2		3		4		5		6		7		8	

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30 November 2023

My Ref: 200319.WCS
Client: Concrete Recyclers
Project Address: Lot 52 (DP618900) 7 Montore Road, Minto
Project: Concrete Recycling Plant

Stormwater Cycle Report

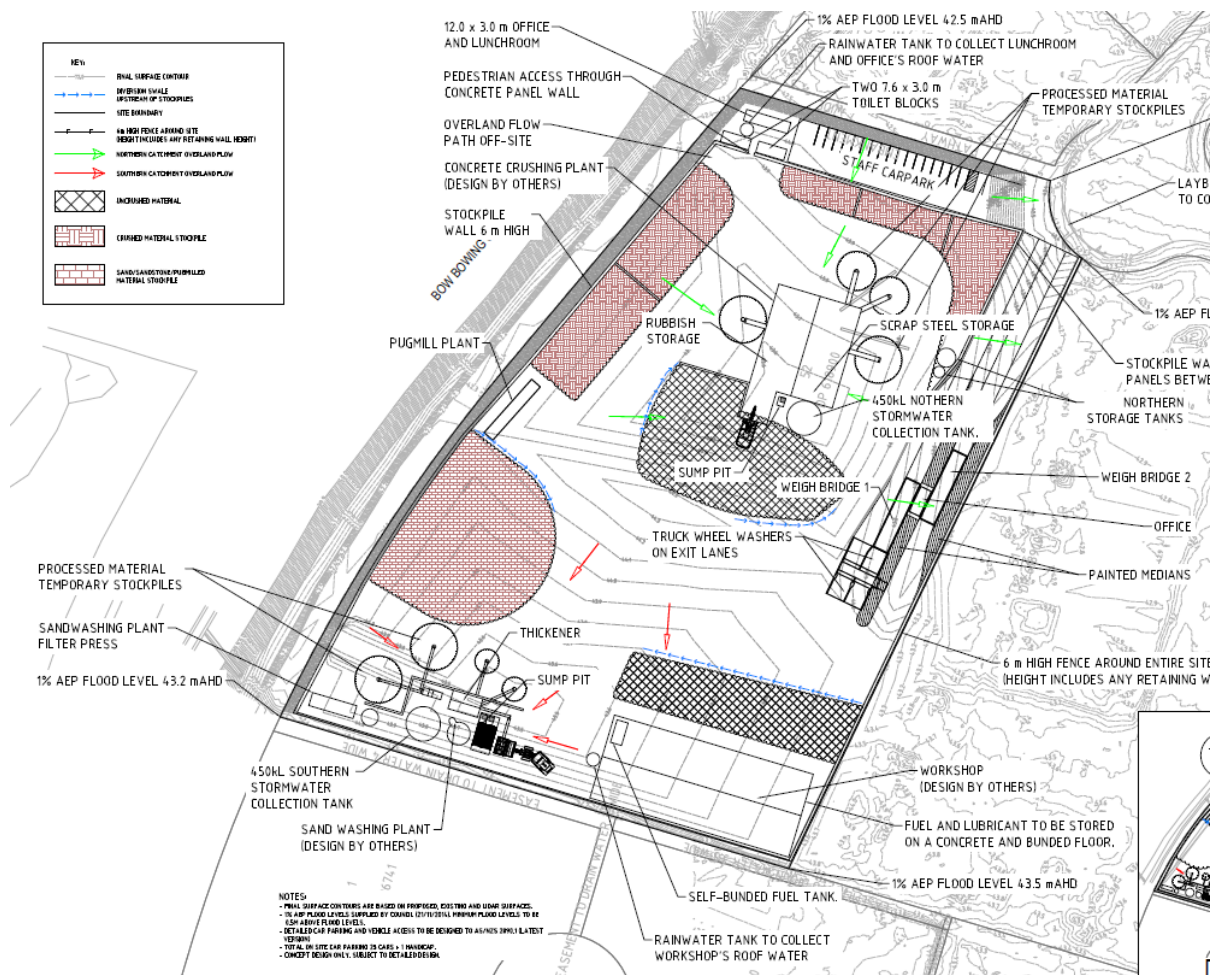


Figure 1: General Site Layout. 7 Montore Road, Minto NSW (North to the top of page)

Scope

This stormwater cycle report has been prepared by D & M Consulting to review the data prepared by Concrete Recyclers and assess the stormwater treatment system for the water usage as part of the site's internal processing as well as the frequency of stormwater discharging from the site.

General Stormwater Arrangement & Treatment

The site stormwater system has been designed to split the stormwater into two distinct treatment catchments. The first catchment area is for all the areas part of the recycling process where there is potential for waste material to enter the stormwater system. The stormwater from these catchment areas, the northern crushing plant and the southern material stockpile areas is collected and directed to a storage depressions and sumps where the water is pumped into the treatment plant where the stormwater is processed, treated and stored within storage tanks to be reused onsite as part of the processing of waste material and dust suppression system. During large rainfall events, the storage depressions can flood creating more storage capability onsite. This stormwater can then be pumped into the treatment plant and storage tanks. In the rare event that the total site storage reaches capacity and the tanks overflow. The overflow is directed to Ocean Protect OceanSave gross pollutant treatment system to treat the stormwater before discharge to Bow Bowing Creek.

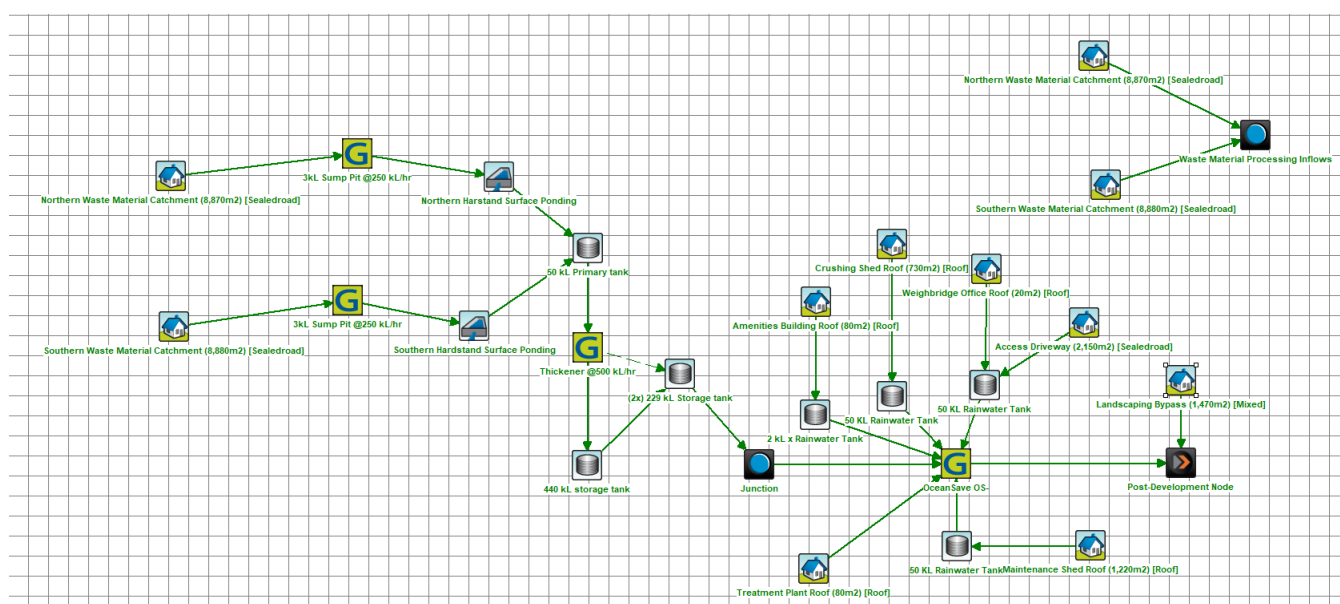
The Second Catchment area is for all the areas outside of the recycling process such as the main access driveway, the maintenance shed roof, the crushing plant shed roof, and the amenities building roof. This stormwater does not come into contact with the waste material being processed onsite. The roof and access driveway stormwater is collected into storage tanks where it can be pumped into the treatment plant to supplement water usage as part of the processing of waste material and dust suppression system. During rainfall events, the overflow from these storage tanks is directed into Ocean Protect OceanSave gross pollutant treatment system to treat the stormwater before discharge to Bow Bowing Creek.

A copy of the site water cycle schematic appears in Appendix A.

Site Water Storage Capacity

The stormwater storage capacity for the site has been increased from the DA approved MUSIC model and plans. Additional above-ground storage tanks have been provided such as the additional 50,000 litre rainwater tank from the Maintenance Shed and the 440,000 litre storage tank as part of the treatment plant. The northern and southern storage depression volumes have been recalculated with the north storage depression capacity calculated at 1,030m³ (1,030,000 litres). The south storage depression capacity is calculated at 1,118m³ (1,118,000 litres). A copy of the calculation for the northern and southern storage depression appears in Appendix B.

The treatment system has been revised since the DA-approved model prepared by Martens and Associates with the treatment being split into two distinct treatment catchments. (See Figure 2 Revised MUSIC model) This was done to evaluate the volume of stormwater outflowing from the waste material processing area over a 30-year period. The Waste Material Processing Inflows node was used to output the flow data to develop the attached spreadsheet to analyse the water balance for the site.



As a result, the proposed treatment train for 7 Montore Rd as modelled in MUSIC meets the pollution reduction targets as required by Section 4.15 of Campbelltown City Council DCP.

7 MONTORE ROAD TREATMENT TRAIN				
	Annual Pollutant Loading (kg/yr)			
	TSS	TP	TN	GP
Pre-Treatment Train	4220.00	7.130	31.50	355.00
Post-Treatment Train	113.00	0.532	6.06	0.00
Difference	4107.00	6.60	25.44	355.00
Reduction (%)	97.3%	92.5%	80.8%	100.0%
Target (%)	80.0%	45.0%	45.0%	90.0%
Meets Campbelltown Treatment targets	YES	YES	YES	YES

Should any of the above information be unclear, please contact the author for clarification.

Yours Faithfully,



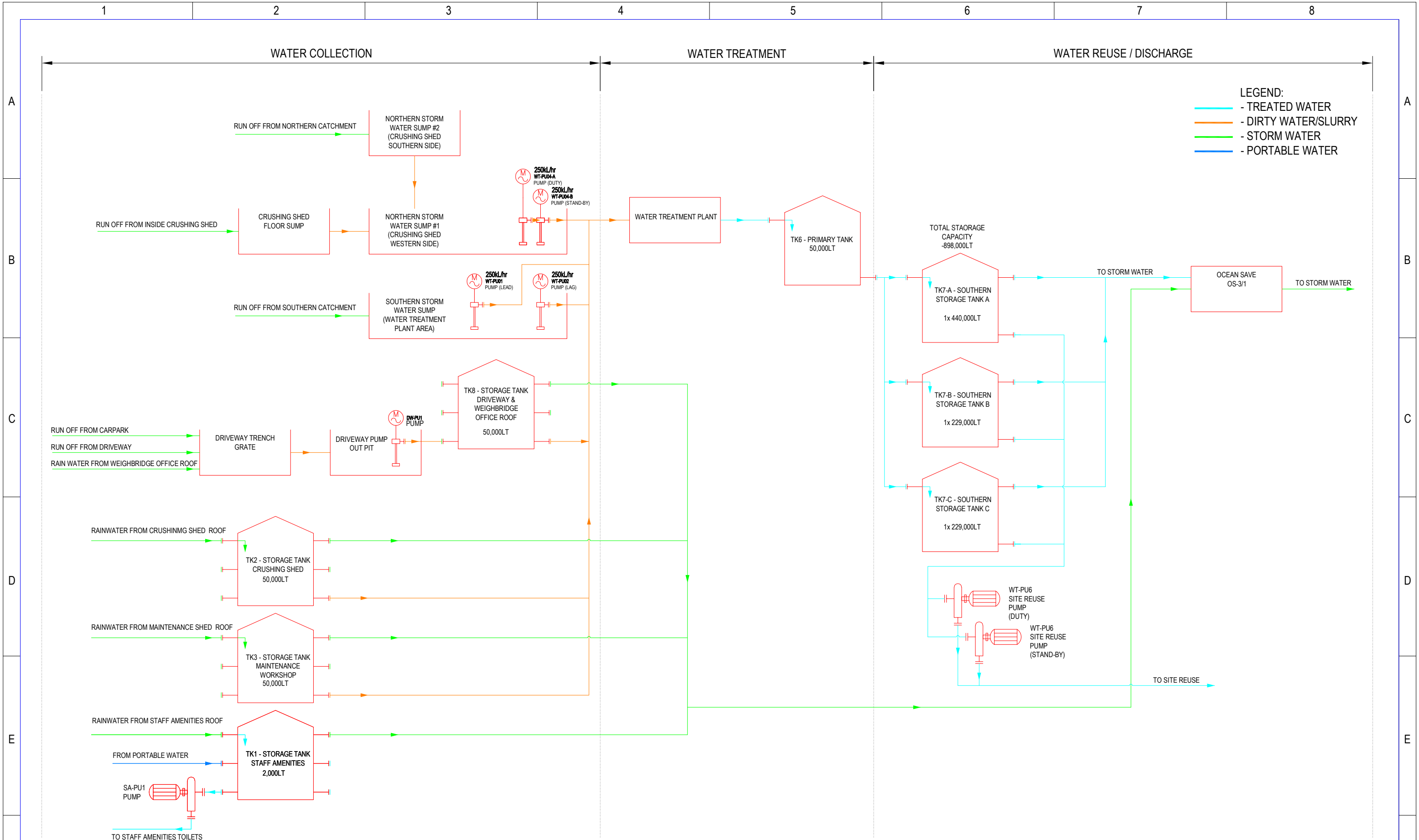
Nathan Yabsley

B.E. MIEAust. NER (5965400)

Appendix A



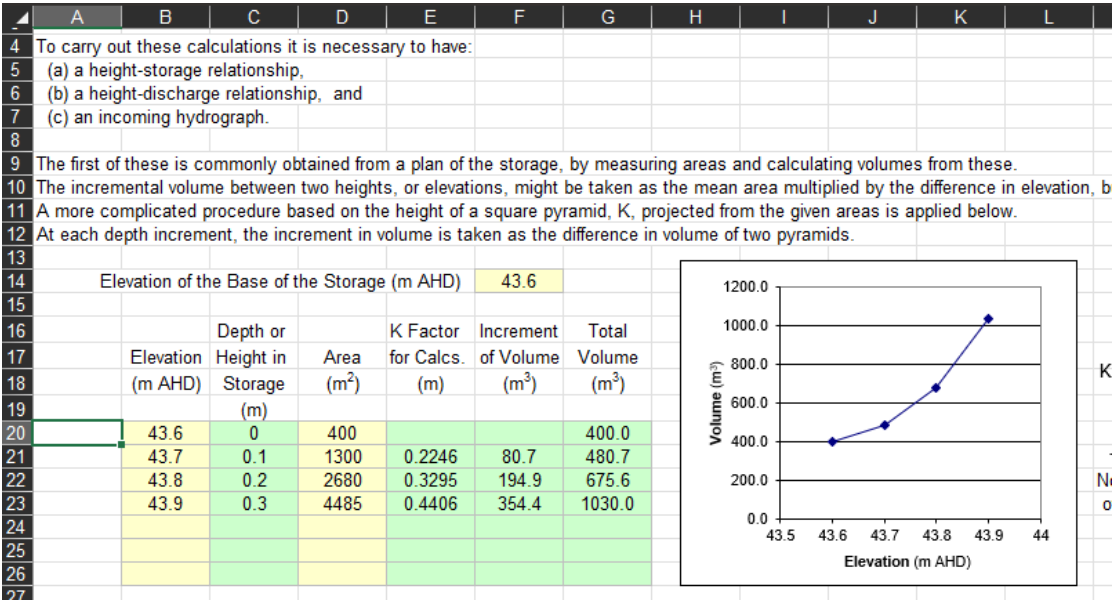
engineer@dmceng.com.au | www.dmceng.com.au
PO BOX 1304, NARELLAN NSW 2567



F	5					GENERAL NOTES: -DO NOT SCALE -ALL DIMENSIONS IN MILLIMETERS -GENERAL TOLERANCE UNO; LINEAR ±2; ANGULAR ±1°  This drawing is the PROPERTY OF CONCRETE RECYCLERS PTY LTD and being Private and Confidential is supplied on the express condition that it is not to be used for any purpose or copied or communicated to any other person without our written consent. 	CLIENT CONCRETE RECYCLERS	CONTRACT No.	TITLE OVERALL SITE WATER MANAGEMENT PLAN PROCESS FLOW DIAGRAM	DRAWN CS		F		
	4						LOCATION MINTO NSW	JOB No. 220421					CHECKED AM	
	3						EQUIPMENT	DWG. REPLACED BY					APPROVED AM	
	2						CAD FILE No. 220421-300	DWG. REPLACES					PLANT CONCRETE CRUSHING PLANT	DATE 18/11/2023
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REV.	DESCRIPTION	DRAWN	CHECKED	APPROVED	ISSUE DATE									
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Appendix B

Northern Storage Depression Capacity.



Southern Storage Depression Capacity

