

Flood Emergency Response Plan

Concrete Recyclers
7 Montore Road, Minto, NSW

July 2022

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Cover image: Satellite image of the site and its surrounds. Image credit: Nearmap.

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Acknowledgement of Country

4Pillars 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.

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Revision History				
Revision	Date	Details/Comments	Review team	Authorisation
1.0	11/7/2022	Draft FERP document for CEMP.	K. Porter J. Hammond	Concrete Recyclers (Group) Pty Ltd
1.1	15/7/2022	Final FERP document for CEMP.	K. Porter J. Hammond	Concrete Recyclers (Group) Pty Ltd
2.0	1/8/2022	RFI amendments.	K. Porter J. Hammond	Concrete Recyclers (Group) Pty Ltd

1 Introduction

4Pillars was engaged by Concrete Recyclers (Group) Pty Ltd to prepare a Flood Emergency Response Plan (FERP) as part of the Construction Environmental Management Plan (CEMP) and Operational Management Plan (OEMP) for a proposed Resource Recovery Facility at 7 Montore Road, Minto (the Site). The preparation of a FERP is a requirement of condition B18 of the Development Consent for the Site.

1.1 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 and industrial activities including waste and equipment storage. Currently used for equipment storage by both Concrete Recyclers and Coates Hire.
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 Creek catchment.

Table 1: Summary of Site details.

2 Objectives

2.1 Legislative requirements and definitions

Campbelltown City Council (the Council) have identified the Site as a Flood Control Lot. The *State Environment Planning Policy (Exempt and Complying Development Codes) 2008* (Section 1.5) defines Flood Control Lots 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).”

As part of the Development Consent issued by Campbelltown City Council the following condition must be satisfied:

B18. Prior to the commencement of construction, the Applicant must prepare a Flood Emergency Response Plan to the satisfaction of the Planning Secretary. The Plan must form part of the CEMP and OEMP required by Conditions C2 and C5 and must:

- a. be prepared by a suitably qualified and experienced person(s);
- b. address the provisions of the Floodplain Risk Management Guideline (OEH, 2007);
- c. include details of:
 - i. the flood emergency responses for both construction and operation phases of the development;
 - ii. predicted flood levels;
 - iii. flood warning time and flood notification;
 - iv. assembly points and evacuation routes;
 - v. evacuation and refuge protocols; and
 - vi. awareness training for employees and contractors.

2.2 Application

4Pillars have developed this FERP to demonstrate the emergency response to flooding for both the construction phase and the operation phase of the development. This FERP has been developed based on the information included in the Preliminary Flood Assessment conducted by Martens & Associates Pty Ltd for the Site as well as Campbelltown City Council's flood mapping.

This FERP has also been developed in accordance with relevant State legislation and best-practice guidelines, to satisfy requirements and conditions outlined in the Determination Notice, including:

- Floodplain Risk Management Guideline (OEH, 2007);
- Flood emergency response planning classification of communities (OEH, 2007);
- SES requirements from the floodplain risk management process (OEH, 2007);
- Campbelltown (Sustainable City) Development Control Plan 2015; and
- Bow Bowing Bunbury Curran Creek Strategic Floodplain Risk Management Study and Plan (Molino Stewart 2019).

The table below summarises where this FERP document addresses each aspect of condition B18 of the Development Consent:

Condition point	Where addressed in this FERP
B18. Prior to the commencement of construction, the Applicant must prepare a Flood Emergency Response Plan to the satisfaction of the Planning Secretary. The Plan must form part of the CEMP and OEMP required by Conditions C2 and C5 and must:	
a. be prepared by a suitably qualified and experienced person(s);	This FERP has been prepared by a suitably qualified and experienced environmental consultant.
b. address the provisions of the Floodplain Risk Management Guideline (OEH, 2007);	This FERP has been developed in reference to the Floodplain Risk Management Guideline (OEH, 2007).
c. include details of:	
i. the flood emergency responses for both construction and operation phases of the development;	Refer to Section 4.2.
ii. predicted flood levels;	Refer to Section 3 and Figure 4.
iii. flood warning time and flood notification;	Refer to Sections 3 and 4.2.
iv. assembly points and evacuation routes;	Refer to Sections 4.3 and 4.4, and Figure 5.
v. evacuation and refuge protocols; and	Refer to Sections 4.3 and 4.4.
vi. awareness training for employees and contractors.	Refer to Section 4.1.

This FERP will be revised after the commencement of the construction phase and prior to the operational phase of the development to ensure the emergency responses detailed within this plan continue to be effective. Implementing this FERP will ensure flood response is effective and the impacts of flooding are minimised.

3 Flood Risk Summary

The Probable Maximum Flood (PMF) is the largest flood extent that can occur in an area. The 1% Annual Exceedance Probability (AEP) is the flood extent with a 1% chance per year of being exceeded. According to the Bow Bowing Bunbury Curran Creek Strategic Floodplain Risk Management Study and Plan (refer to Figure 4), the entirety of the Site is mapped

within the PMF and areas of 0.1% - 20% AEP are mapped along the perimeters of the Site. For the purposes of this FERP, the entirety of the Site is assumed to be impacted by PMF, however smaller flood extents may only impact portions of the Site.

Martens & Associates Pty Ltd conducted a Preliminary Flood Assessment (PFA) for the Site in March 2020. The assessment included hydraulic modelling that predicted the flood risk for the Site. A TUFLOW hydraulic model was used to assess flooding for the 1% AEP flood event both before and after development works. The assessment made the following observations and conclusions:

- The majority of the Site (prior to development) to be elevated above the 1% AEP extent (1% AEP flood levels were modelled to be between 42.50 m AHD – 43.12 m AHD);
- The critical storm duration was determined to be 2 hours for the 1% AEP;
- The earthworks associated with the development will elevate the Site levels to at least 500 mm above the 1% AEP extent to comply with the Campbelltown (Sustainable City) Development Control Plan 2015 and further reducing the potential impacts of flooding on the Site; and
- The modelling found the 1% AEP hydraulic hazard at the Site entrance to be low hazard.

The critical storm duration for the Site was determined to be 2 hours for the 1% AEP. This means a 1% AEP flood extent is expected to be reached after 2 hours of consistently storm-heavy rainfall. It should be noted that rainfall intensity is variable, so the critical storm duration should be used as a guide only for flood warning time.

This FERP has been developed based on the information included in both the Preliminary Flood Assessment and Campbelltown City Council's flood mapping.

4 Emergency Flood Response

4.1 Preparatory measures

The following section presents a brief outline of key preparatory measures and responsibilities associated with the implementation of the FERP at the site. The table below summarises the preparatory measures to be taken to ensure a prompt emergency response and minimise the impacts of flooding.

Measure	Responsibility	Schedule
Weather monitoring through Bureau of Meteorology (BoM). Both daily forecast and weather warnings.	Site Supervisor or delegate	Daily
Monitor signs of flooding on and around the Site	Site Supervisor or delegate	Continual
Flood risk training	All Site staff	Prior to construction commencing, and yearly ongoing.

Table 2. Preparatory measures to be taken throughout the construction and operation of the Site.

Overall site management and compliance, as well as the activation, training and reviewing the FERP is the responsibility of the Site Supervisor or their delegate, with assistance from advisory managers, employees, and regular contractors. The Site Supervisor or their delegate will ensure that all employees read and understand the FERP. The Site Supervisor or their delegate will also ensure all relevant persons are re-trained if the FERP is altered in a substantial way.

4.2 Response procedure

Trigger	Response	Responsibility
Storms forecast on BoM	Alert. All site staff are to be alerted of the forecast and the weather should continue to be monitored.	It is the responsibility of the Site Supervisor to action responses to these triggers, and the responsibility of all personnel on Site to inform the Site Supervisor if triggers have been identified.
Severe weather or thunderstorm warning for the area	Increased alert level. All site staff are to be alerted to the weather warning. All vehicles, mobile plant, equipment and hazardous substances are to be moved to higher ground.	
Increased rainfall on Site	Prepare for activation of FERP. All site staff are to be prepared for activation of the FERP. All vehicles, mobile plant, equipment and hazardous substances are to be moved to higher ground.	
Visible signs of flooding around the Site (i.e. rising water levels)	Activation of the FERP. All site staff notified of activation of the FERP. An evacuation warning will be issued to all site staff.	

4.3 Evacuation procedure

Once the FERP had been activated, the following steps must be followed:

1. The Site Supervisor will issue an evacuation warning over the radio to all personnel on Site.
2. The Site Supervisor will issue an evacuation order over the radio to all personnel on Site.
3. All personnel will follow the clearest possible route to the emergency flood assembly point identified in Figure 5. All Site visitors are to follow the directions for Site personnel.
4. Once assembled, the Site Supervisor will ensure all personnel are accounted for. Any Site staff not accounted for will be contacted via phone. Any Site visitors not accounted for will be contacted via phone numbers recorded on the Site sign-in register.
5. Emergency Services will be contacted as necessary.

4.4 Evacuation route

The recommended evacuation route is shown in Figure 5. However, Site conditions may require an alternative route to be followed. If the recommended evacuation route is blocked, site staff should take the clearest direct route to the emergency flood assembly point. The emergency flood assembly point has been determined based on existing flooding information and modelling for the Site. If the emergency flood assembly point is inaccessible during an evacuation, the Site Supervisor should identify an alternative assembly point outside of the flood extent. The FERP will be updated to reflect actual Site conditions where necessary.

4.5 Post-flood

Employees involved in a flood evacuation are not permitted to leave the emergency flood assembly point unless approved to do so by management, or a representative of the Emergency Services (if in attendance). Once it is safe to return to Site, the following will be assessed:

- Remaining hazards;
- Damage to any structures, plant or equipment; and
- Pollution, erosion and other environmental impacts.

Emergency services will be contacted for any remaining hazards where necessary. Any damage will be repaired before construction/operational works resume. If environmental impacts are identified as a result of the flood, the Site Supervisor should notify the Project Manager and contact regulatory authorities (i.e. the EPA) and stakeholders where necessary. Contact details for relevant authorities are included in the table below.

Contact	Description	Contact information
Concrete Recyclers Project Manager (Anthony Males)	Contact on FERP activation	0427 308 437
NSW Environment Protection Authority (EPA)	Main environmental regulator for sites with an EPL	131 555
Campbelltown City Council	Local government environmental regulator	(02) 4645 4000
NSW Ministry of Health	Public health authority	(02) 9391 9000
SafeWork NSW	WHS authority	13 10 50
Fire and Rescue NSW	Emergency services – flood hazards	1300 729 579 (or 000)

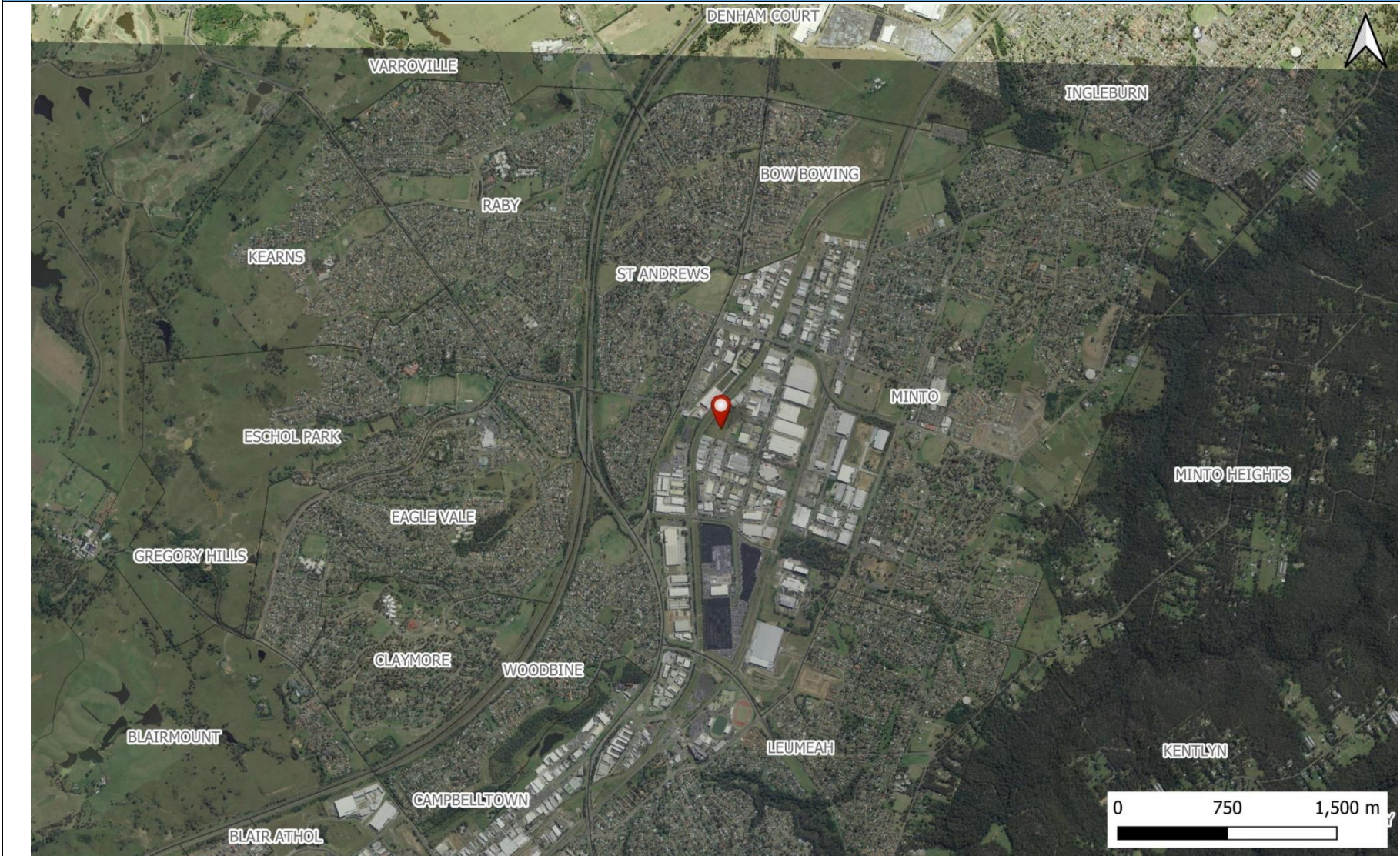
5 FERP review

We note that the proposed development has not commenced at the time this FERP has been prepared and will be reviewed once the development is complete. It will also be reviewed following an activation, to ensure response actions remain effective. A basic review of the FERP will involve the Site Supervisor, or relevant delegate conducting a review of all information in the plan, paying particular attention to the following elements:

- i. Flood mapping;
- ii. Site elevation and topography;
- iii. Site layout; and
- iv. Evacuation routes.

The document is to be revised and re-issued following the review. The Site Supervisor or their delegate must ensure that all relevant persons are re-trained in the FERP following the review.

Site locality



Drawn by:	KP	Report reference: 20220325CON_FERP	Key:	Red pin: Site
Date:	6/7/22	Image source: QGIS and Six Map overlay		

Figure 1: Site locality.

Aerial view of the Site (pre-development)



Drawn by:	KP	Report reference:	20220523CON_FERP	Key:	Refer to map legend.
Date:	6/7/22	Image source:	QGIS with Nearmap overlay (dated 15/6/22)		

Figure 2: Site aerial view.

Site layout (proposed)

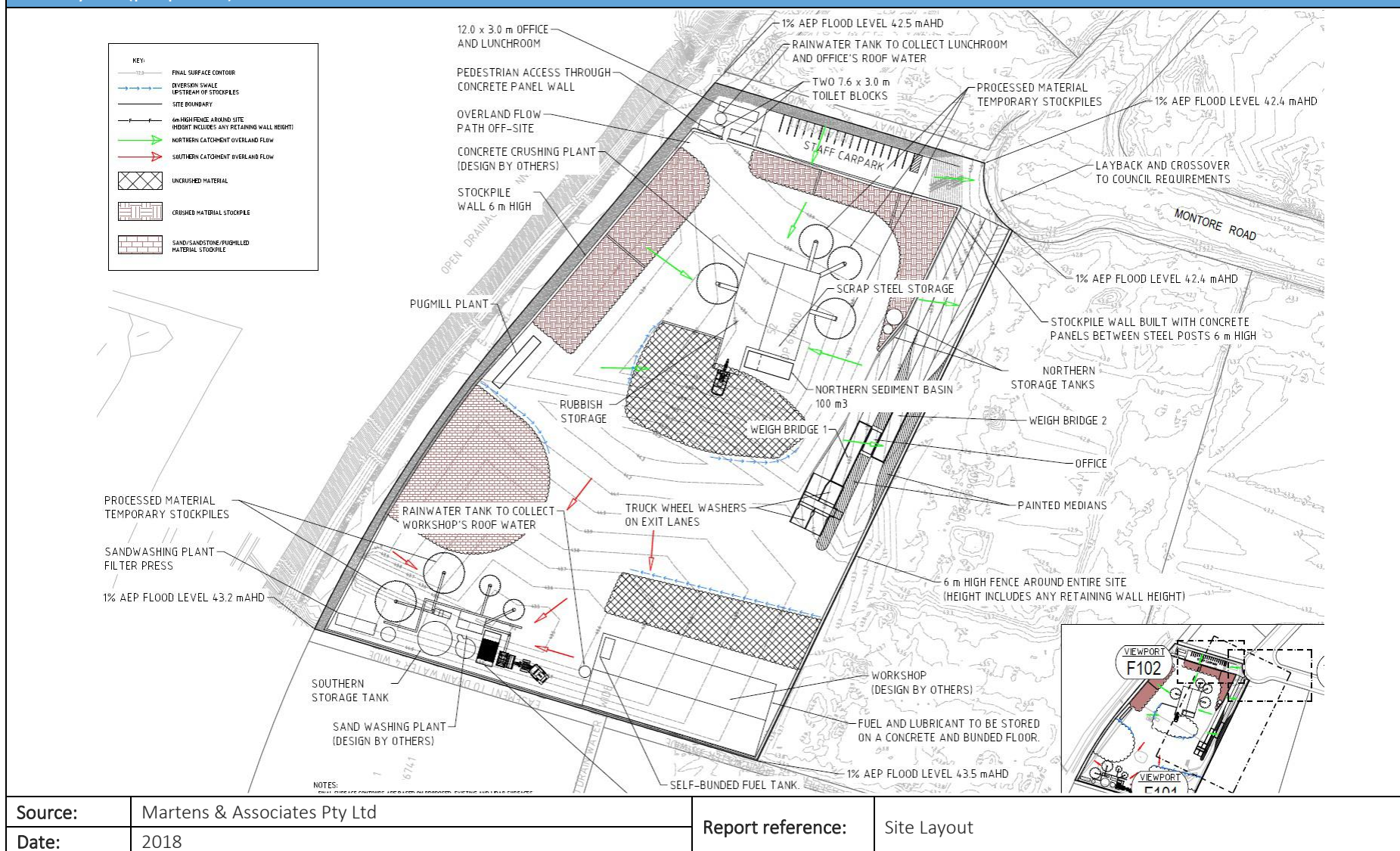
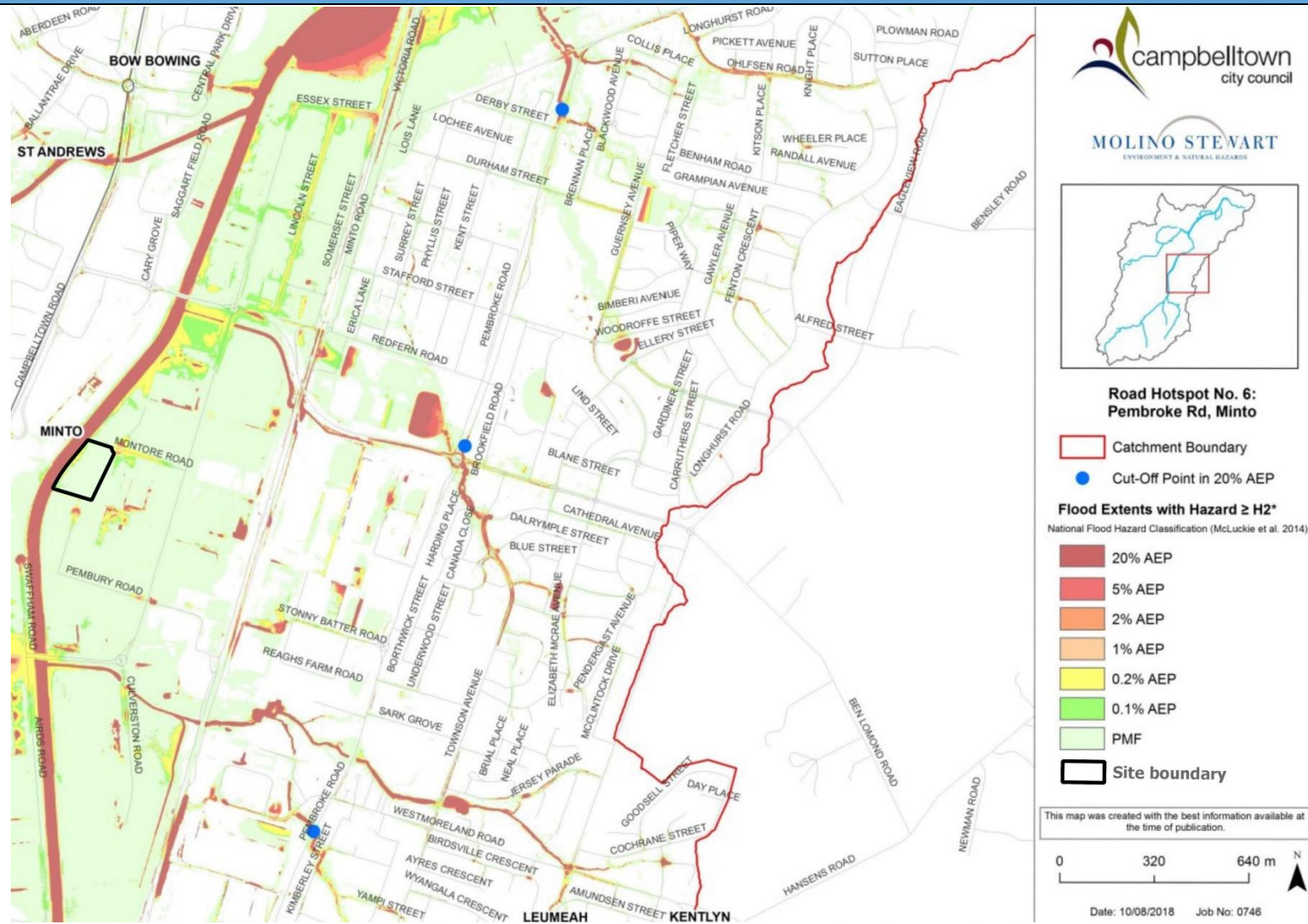


Figure 3: Site layout plan.

Council flood mapping

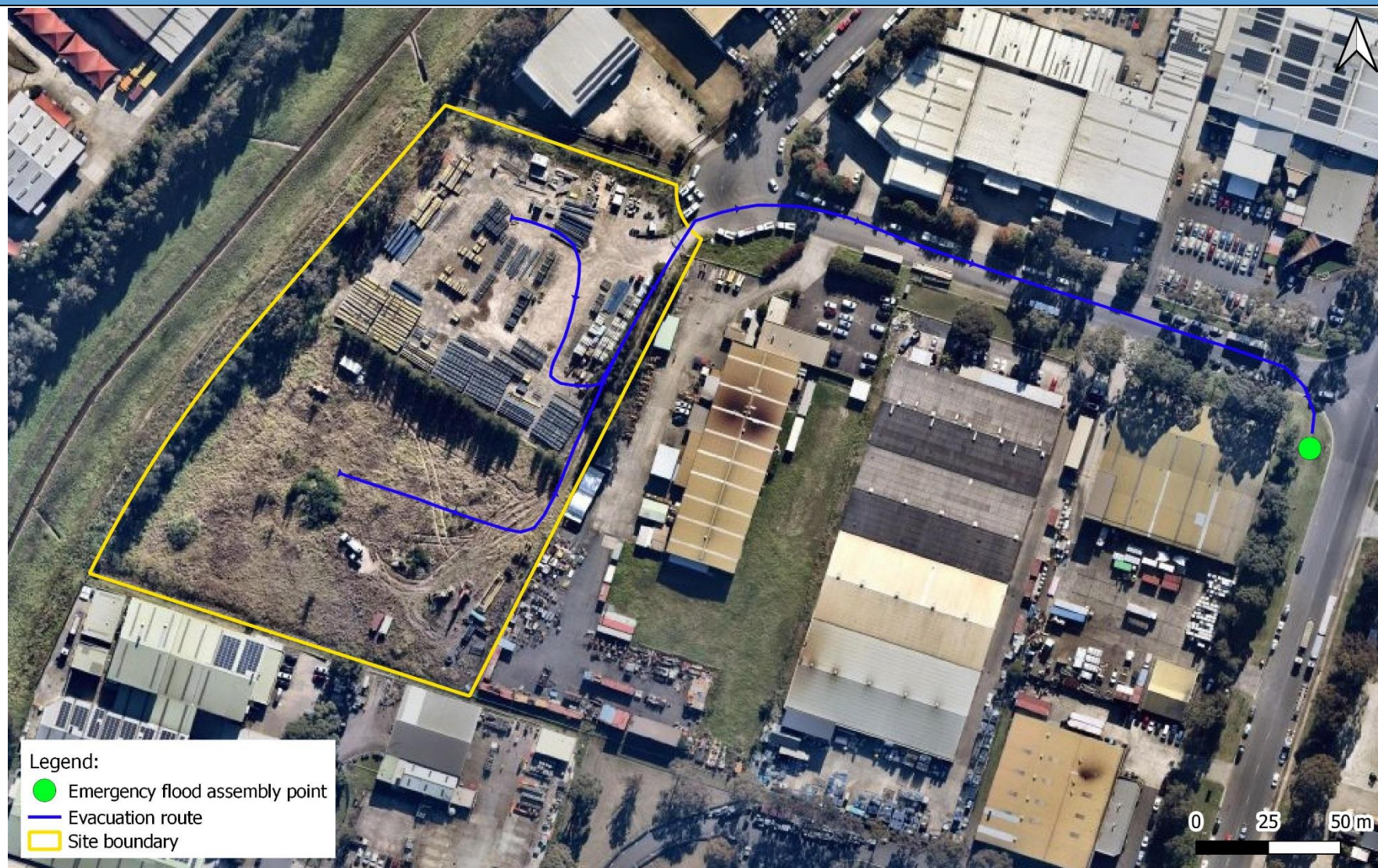


Source: Council Flood mapping with Site boundary overlayed.

Report reference: 20220523CON_FERP

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

Site evacuation route



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Date:	6/7/22	Image source:	QGIS with Nearmap overlay (dated 15/6/22)		

Figure 5: Evacuation route to emergency flood assembly point.