Breen Resources Pty Ltd

Breen Resources Facility - EIS

Fire and Incident Management Review

April 2021

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1. Introduction

1.1 Background

Resources Pty Ltd (Breen) owns and operates the Existing Breen Resource Facility at 330 Captain Cook Drive, Kurnell comprising:

- Lot 1122 DP794114 (Lot 1122)
- Lot 1123 DP794114 (Lot 1123)
- Lot 5 DP1158627 (Lot 5) and
- Lot 6 DP1158627 (Lot 6).

The Existing Breen Resources Facility currently receives excavated materials and selected construction and demolition (C&D) waste, and carries out site restoration by application of these materials to land.

Parts of the Existing Breen Resources Facility (Lot 1122 and Lot 1123, and Lot 6) are also subject to a Voluntary Planning Agreement (VPA) which requires the future provision of regional recreation facilities and parklands (named by Sutherland Shire Council as the Embellished Marang Parklands).

The existing recycling infrastructure is located on land that will become the Embellished Marang Parklands. To deliver the Embellished Marang Parklands on Lots 1122 and 1123 and Lot 6, this existing infrastructure needs to be demolished and/or relocated.

Breen is therefore proposing to construct and operate a new integrated resource management facility to consolidate all functional recycling activities within the eastern part of the Proposal Site. This will allow Breen to deliver the recreational space and other publicly accessible parklands in the western part of the Proposal Site to the community. It will also provide improved recycling capability in line with NSW Government priorities and targets to increase resource recovery from the C&D and C&I sectors.

The Proposal is comprised of the delivery of the Embellished Marang Parklands, the continuation of landfilling on the residual parts of Lot 5 and the construction of the New Resource Recovery Facility.

1.2 Purpose of this report

Ethos Urban has been engaged by Breen to prepare an Environmental Impact Statement (EIS) to support a State Significant Development application for approval of the Proposal under Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (the EP&A Act). The EIS is being prepared in accordance with the provisions of the EP&A Act.

This report has been prepared by GHD to provide an assessment of the Fire and Incident Management considerations for the Proposal Site (The entirety of the Existing Breen Resources Facility, being Lot 1122 and Lot 1123, and Lot 5 and Lot 6) (See Section 1.3), as an input to the EIS.

This report addresses the Secretary of the NSW Department of Planning and Environment's Environmental Assessment Requirements (SEARS; SSD-10412) dated 14 February 2020. The SEARs are presented in Section 1.6.

1.3 The Proposal Site

1.3.1 Location

The Proposal Site is located within the Sutherland Shire Local Government Area, approximately 12 kilometres south of the Sydney Kingsford Smith Airport. The Proposal Site is situated on the Kurnell Peninsula, positioned between Quibray Bay (within Botany Bay) to the north and Bate Bay (being Cronulla and Wanda beaches) to the south. It is currently accessible from Captain Cook Drive and Lindum Road.

Figure 1.1 shows the location of the Proposal Site.

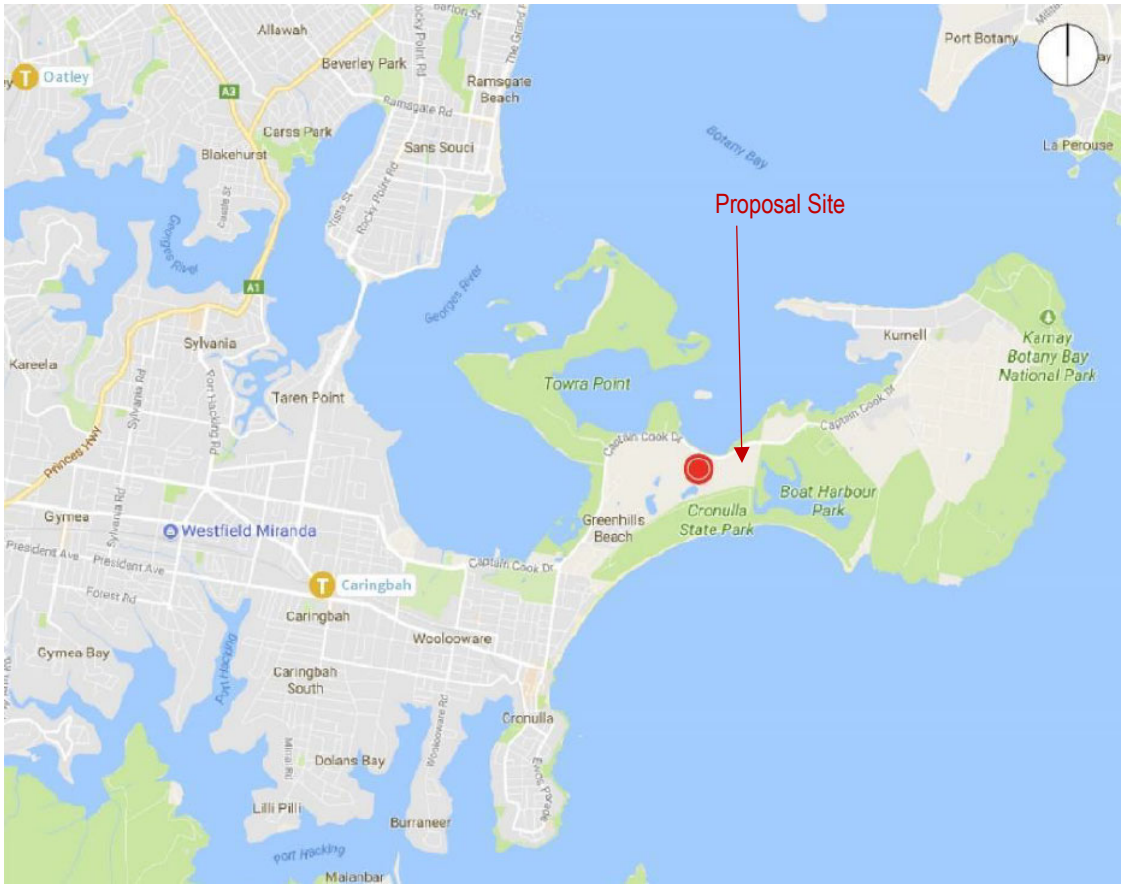


Figure 1.1 Proposal Site location

1.3.2 Site context

The Proposal Site is generally bounded to the north by Captain Cook Drive, which provides access from North Cronulla through to the village of Kurnell, as well as the main access to the Existing Breen Resources Facility. Further to the north of Captain Cook Drive are the foreshores and waters of Botany Bay, including the Towra Point Nature Reserve.

Near the eastern end of the Proposal Site, Sporting Field No. 1 and the Skate Park have recently been constructed on Lot 1 DP 1101922 and are now operational. This new recreational area represents the closest existing sensitive receptor to the eastern part of the Proposal Site, where the New Resource Recovery Facility is proposed to be located.

An electricity transmission line easement runs along this boundary, between the Proposal Site and the Sporting Field No. 1 and Skate Park recreational area. The easement contains Ausgrid 132kV overhead electricity transmission lines. Further to the west, Hockey Fields No. 2 and No. 3 have also already been constructed on Lot 111 DP777967 and part of Lot 1123, and are now operational.

To the south, the Proposal Site adjoins the Heritage Sand Dune and Cronulla State Park, which leads to Wanda Beach, fronting onto Bate Bay.

To the east, the Proposal Site is bounded by an unconstructed extension of Lindum Road, within which a pedestrian footpath has been constructed for beach and foreshore access. Beyond the Lindum Road reserve is a sand mining site that is being progressively mined for construction sand and backfilled with virgin excavated natural materials.

To the west, the Proposal Site adjoins Charlotte Breen Memorial Reserve and Sydney Water's Cronulla wastewater treatment plant. Beyond Charlotte Breen Memorial Reserve to the south west is the new residential suburb of Greenhills Beach, comprising low density residential housing.

1.4 Proposal overview

The Proposal is comprised of the delivery of the Embellished Marang Parklands, the continuation of landfilling on the residual parts of Lot 5 and the construction of the New Resource Recovery Facility.

Specifically, the Proposal involves the following key integrated components:

- Construction and operation of a resource management facility, comprising:
  - A New Resource Recovery Facility on the eastern part of the Proposal Site (Lot 5), including consolidation of existing waste management activities within this part of the Proposal Site.
  - A waste disposal facility, being the continuation of current land restoration, landfilling and contouring operations at the Proposal Site by permanent application of some of the residual waste materials from the New Resource Recovery Facility to land on Lot 5.
- Use of suitable material processed by the New Resource Recovery Facility to cap, contour and re-profile areas of the Proposal Site and to construct the Embellished Marang Parklands on Lots 1122, 1123 and Lot 6.
- Re-profiling of parts of the Proposal Site within Lots 1122, 1123 and 6, with some existing waste materials from those lots.
- Delivery of an activated and integrated community space in the form of the Embellished Marang Parklands on Lots 1122,1123 and Lot 6, to provide a superior parkland to that proposed under the VPA as detailed in Section 4.4.3 of the EIS (referred to as the Embellished Marang Parklands). This would include, among other things, integrated water usage and management and utilising personnel, plant, material and infrastructure across the whole of the Site.

To enable the above Proposal, the Existing Breen Resources Facility on Lots 1122, 1123 and 6 (this includes those parts of Lots 1122, 1123 and 6 that will comprise the Playing Fields) will be demolished and/or relocated (as required) to Lot 5.

These are shown on Figure 1.2.

Figure 1.2 Proposal – key components

1.5 Definitions

The following terms are used within this report:

- 'The Proposal' is defined through Section 1.4.
- The 'Proposal Site' refers to the land the subject of the SSDA, which also reflects the entirety of the Existing Breen Resources Facility, being Lot 1122 and Lot 1123, and Lot 5 and Lot 6.
- Embellished Marang Parklands refers to the regional recreation facilities and parklands proposed under the VPA
- The VPA refers to The Voluntary Planning Agreement entered into between Breen Holdings Pty Ltd (subsequently novated to Breen Property), Australand Kurnell Pty Ltd (now renamed Frasers Property Australia Limited) and Sutherland Shire Council in June 2010 which requires:
  - A staged transfer of 91 ha of land to public ownership for the purpose of environmental conservation and public open space.
  - Construction of regional recreation facilities, including 10 playing fields, a skate park, 3 amenities buildings, walking and cycling tracks, picnic facilities and associated parking for over 400 cars.
  - Rehabilitation and landscaping of degraded land previously dredged for sand mining to support an ecological 'green corridor' stretching from the Towra Point Nature Reserve to the ocean at Wanda Beach.
- FRNSW – Fire and Rescue New South Wales
- FRNSW Guidelines - NSW Fire & Rescue Fire Safety Guideline – Fire Safety in Waste Facilities
- BCA – Building Code of Australia
- NCC – National Construction Code

- AS – Australian Standard

1.6 Secretary Environmental Assessment Requirements and agency requirements

The specific SEARs and agency requirements addressed in this report are summarised in Table 1.1.

Table 1.1 Secretary's Environmental Assessment Requirements and agency requirements (extract)

Assessment requirements	Where addressed in report
Identification of the aggregate quantities of combustible waste products to be stockpiled at any one time;	Section 2.2, Table 2.1
Technical information on the environmental protection equipment to be installed on the premises such as air, water and noise controls, spill clean-up equipment and fire (including location of fire hydrants and water flow rates at the hydrant) management and containment measures;	Hydrants are addressed in Section 2.4.4 and drawings attached in Appendix A. Air, noise, spill containment are addressed separately by others.
Details regarding the fire hydrant system and its minimum water supply capabilities appropriate to the site's largest stockpile fire load;	Section 2.4.4
Details of size and volume of stockpiles and their management and separation to minimise fire spread and facilitate emergency vehicle access;	Section 2.2, Table 2.1 and Sections 2.4.20-2.4.25
Consideration of consistency with NSW Fire & Rescue Fire Safety Guideline – Fire Safety in Waste Facilities (October 2019);	Section 2.4
Detailed information relating to the proposed structures addressing relevant levels of compliance with Volume One of the National Construction Code (NCC).	By Others

1.7 Scope and structure of the report

1.7.1 Scope of report

This report provides an assessment of the proposed operations and design of the New Resource Recovery Facility against the SEARs and FRNSW Fire Safety Guidelines for Waste Facilities.

The scope of the report includes:

- Detail on the proposed stockpile sizes on site (Section 2.2).
- Description of the preliminary fire safety requirements and services pertinent to the site (Section 2.3)
- Review for consistency with the FRNSW Fire Safety Guideline – Fire Safety in Waste Facilities (Section 2.4).

1.7.2 Structure of report

This report is structured as follows:

- Chapter 1 – Introduction – this chapter introduces the project and describes the site
- Chapter 2 – Existing environment – this chapter describes the existing environmental characteristics of the site relevant to the assessment
- Chapter 3 – SEARs Review and NSW Fire & Rescue Fire Safety Guideline Assessment

2. SEARS Review and FRNSW Guideline Assessment

2.1 Assessment methodology

The FRNSW *Fire Safety in Waste Facilities Guidelines* ('FRNSW Guidelines') is a document designed to '*provide guidance on fire safety in waste facilities that receive combustible waste material, including adequate provision for fire safety and facilitate safe fire brigade intervention to protect life, property and the environment*'.

The FRNSW Guidelines provide two development pathways for waste facilities, with respect to fire safety at the site. They can be to design as par an 'Acceptable Solution', or a 'Performance Solution'. The Performance Solution pathway will include referral to FRNSW for consultation. Please see below for the figure from the FRNSW Guidelines:

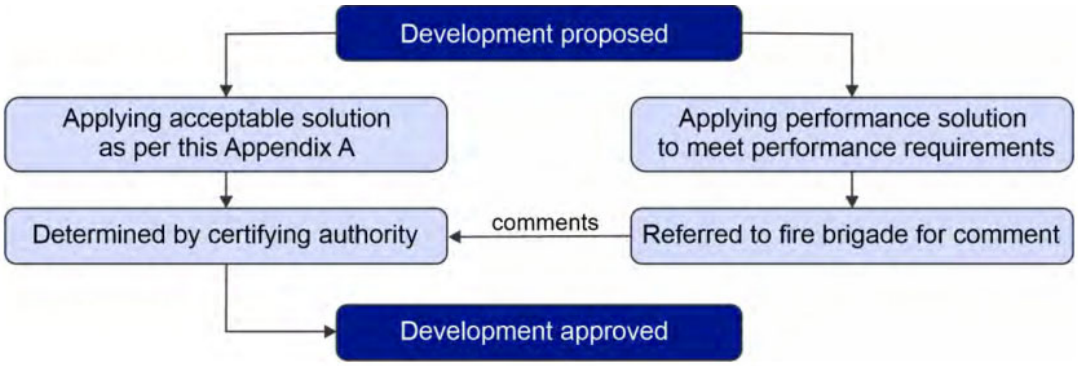


Figure 10 Pathways involving acceptable solution or performance solution

Figure 2.1 Excerpt from FRNSW Fire Safety in Waste Facilities Guidelines

During the continued development of the Proposal Site and prior to construction of facilities, engagement and consultation with FRNSW will be required to gain its feedback regarding the proposed design. This engagement and consultation will start with an initial meeting request to FRNSW, which is currently planned to occur following initial EIS submission.

2.2 Stockpile descriptions

The following information has been provided by Breen regarding the proposed operations and stockpiles onsite, broken down in Table 2.1 and marked up in Figure 2.2 and Figure 2.3.

Table 2.1 Stockpile information

Stockpile name	Stockpile location	Stockpile dimensions (L/W/H)	Stockpile contents
Shredded Timber	External, near Waste Processing Building	45 m x 12 m x 2.5 m ~1,400 m^3	>95% Timber
Containerised Bale Storage	External, near Waste Processing Building	50 m x 20 m x 3 m ~3,000 m^3	44% Timber/timber fines 25% Plastic 13% Textiles 11% Combustible fines 7% Cardboard
FE/Agg/Non FE	Adjacent Waste Processing Building, small areas	10 m x 6 m x 2 m (each, 3 of). ~360 m^3 total	Non-combustible materials – metals/aggregate.
PVC/Combustible Waste/Fines	Adjacent Waste Processing Building, small areas	10 m x 3 m x 1 m (each, 9 of) ~270 m^3 total	PVC >95% Plastic Combustible waste & fines to be mixed combustible materials, including plastic/timber and fines.
Light Waste #1 & #2	Internal to Waste Processing Building, in sorting bays	10 m x 18 m x 5 m ~900 m^3 each	40% Timber/timber fines 22% Plastic 11% Textiles 10% Low calorific 9% Combustible fines 6% Cardboard 2% Metal <1% PVC
Timber #1 &#2	Internal to Waste Processing Building in sorting bays	10 m x 18 m x 4 m ~720 m^3 each	>95% Timber
Brick/Soil C&D Heavy Waste #1 & #2	Internal to Waste Processing Building	15 m x 20 m x 5 m ~1,500 m^3 each	Limited contamination of combustible materials, otherwise non-combustible (brick/soil).
Floc	Floc store	15 m x 20 m x 4.25 m ~1,280 m^3	44% Timber/timber fines 25% Plastic 13% Textiles 11% Combustible fines 7% Cardboard
Bales	Floc store	15 m x 20 m x 4.25 m ~1,280 m^3	44% Timber/timber fines 25% Plastic 13% Textiles 11% Combustible fines 7% Cardboard
Concrete processing stockpiles	Not indicated, assumed near Concrete Processing Building	Not currently specified.	Non-combustible materials only – concrete.
Soil stockpiles	Not indicated, assumed near Soil Processing Building	Not currently specified.	Non-combustible materials only – soil.

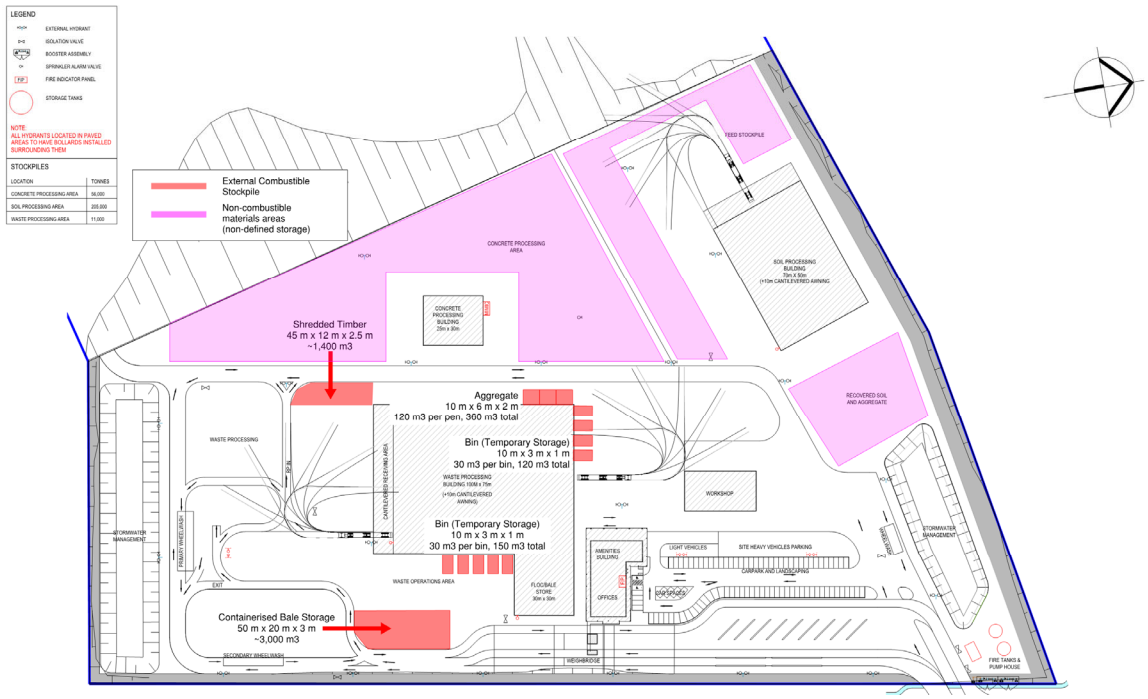


Figure 2.2 Indicative markup of stockpile areas – external

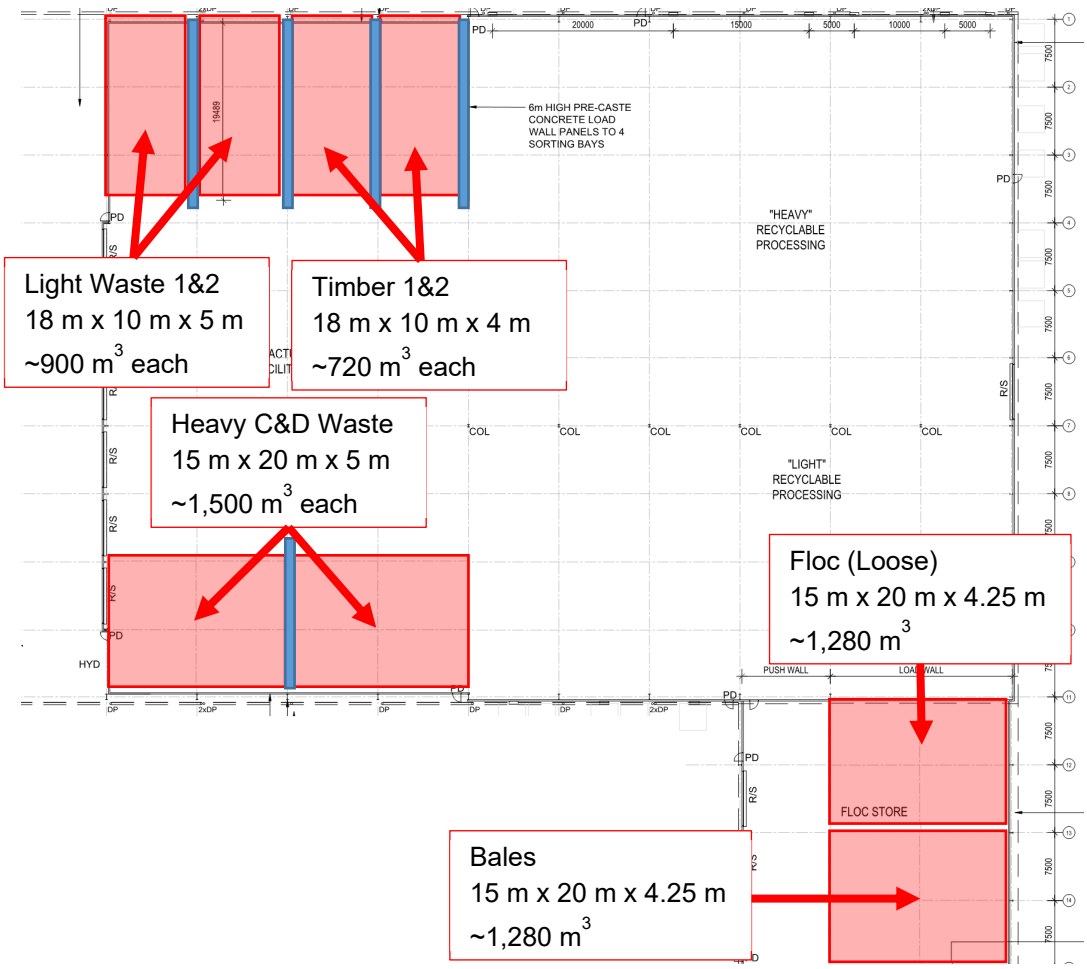


Figure 2.3 Indicative markup of stockpile areas - internal to Waste Processing Building

2.3 Summarised preliminary fire safety requirements

Table 2.2 provides a preliminary listing of fire safety requirements based upon the assessment of the FRNSW Guidelines in Section 2.4. It is noted that this listing would be continued to develop as the site develops, and therefore is preliminary in nature only, and not intended to be an exhaustive list.

Table 2.2 Preliminary fire safety requirements

Fire safety measure	Description
General	If not specifically mentioned the following fire safety measures are to be provided in accordance with the Deemed-to-Satisfy provisions. Please see the BCA Report for details on Deemed-to-Satisfy provisions which apply to this site.
Fire hydrant system	A fire hydrant system shall be provided in accordance with BCA Clause E1.3 and shall be designed to AS2419.1-2005. The following (summarised) FRNSW Guideline requirements shall also apply (see Section 2.3 for details): • In addition to internal coverage requirements, hydrant coverage shall be provided to all external (combustible) stockpiles. • The fire hydrant system shall be designed for at least 3 fire hydrants simultaneously flowing (30 L/s). • The fire hydrant system shall provide the above simultaneous flow rate for at least 4 hours minimum duration. • Hydrants shall not be located within 10 m of any stockpiled storage (internal or external).
Fire hose reels	Hose reels shall be provided in accordance with BCA Clause E1.4. The following (summarised) FRNSW Guideline requirements shall also apply (see Section 2.3 for details): • The fire hose reels shall be capable of coverage to internal and external combustible stockpiles. • It is proposed to calculate coverage to combustible stockpiles for fire hose reels based upon the edge of the stockpiles, not the centre. • 50 m hose reels would be proposed to be addressed by Performance Solution.
Fire sprinklers	An automatic fire sprinkler system is required in accordance with BCA Clause E1.5 and Specification E1.5 for the Waste Processing Building and adjoining buildings and shall be designed to AS2118.1-2017. Other buildings may require sprinklers, subject to BCA review and confirmation. The following (summarised) FRNSW Guideline requirements shall also apply (see Section 2.3 for details): • The sprinkler system to the Waste Processing Building shall be designed for High hazard classification. • Sprinkler water supply time is to be at least 2 hours. • Any awnings attached to the Waste Processing Building which cover storage areas, or are adjacent to stockpiles, shall be sprinkler protected, regardless of any exemptions in AS2118.1-2017.
Fire detection	A fire detection system complying with AS1670.1-2018 and BCA Clause E2.2 is proposed for the Waste Processing Building and adjoining buildings.

Fire safety measure	Description
	Other buildings may require fire detection systems, subject to BCA review and confirmation.
Smoke hazard management	As per the FRNSW Guidelines, an automatic smoke exhaust system shall be provided to the Waste Processing Building, and provide: • Exhaust rates are TBD depending on CFD modelling results, but shall be demonstrated to maintain a smoke layer height above 4 m. • Initiation switches shall be located at the FIP for any power-driven fans. • Signs and text alerting the Fire Brigade to the operation of the smoke exhaust system must be provided at the FIP in accordance with Clause 4.15 of AS1668.1. • The fans, fan cabling and the cabling of any doors required for make-up air shall be fire rated so fans are capable of operating at 200 °C for 2 hours. • On activation of the fans make up air is to be drawn via permanent openings or automatic opening doors at low levels. These openings must be on at least two or more separate walls.
Building occupant warning system	A building occupant warning system in accordance with BCA E2.2 and AS1670.1-2018 is proposed for the Waste Processing Building and adjoining buildings. Other buildings may require occupant warning systems, subject to BCA review and confirmation. Manual alarm points shall be installed throughout the Waste Processing Building, adjacent to each exit door.
Perimeter access	Perimeter road access of at least 6 m in width, capable of supporting specialist fire appliance use, shall be provided around each building and external stockpile, as required to satisfy the FRNSW Guidelines.
Combustible stockpile requirements (FRNSW Guidelines)	External (combustible) Stockpiles (see Figure 2.2): • There are two primary external (combustible) stockpiles: - Shredded Timber - Containerised Bail Storage • There are additional secondary external (combustible) stockpiles adjacent to the Waste Processing Building (multiple). • External (combustible) stockpiles are to be limited in size to 50 m in length and 20 m in width (so long as perimeter access is provided on both sides), except where varied through consultation with FRNSW. No variations are currently proposed. • Spacing and location of the external (combustible) stockpiles are to adhere to the FRNSW Guidelines, see Section 2.4.22. • These requirements do not apply to non-combustible stockpiles (concrete processing or soil processing areas). Internal (combustible) Stockpiles (see Figure 2.3): • There are multiple internal (combustible) stockpiles within the Waste Processing Building. • Each internal (combustible) stockpile is to be limited in volume to 1,000 m^3, except where varied through consultation with FRNSW. The following variations are currently proposed: - Heavy C&D Waste Stockpiles, 1,500 m^3 each - Floc (Loose) Stockpile, 1,280 m^3 - Floc (Baled) Stockpile, 1,280 m^3

Fire safety measure	Description
	• Each internal (combustible) stockpile is to be limited in height to 4 m, except where varied through consultation with FRNSW. The following variations are currently proposed: - Light Waste Stockpiles, 5 m - Heavy C&D Waste Stockpiles, 5 m - Floc (Loose) Stockpile, 4.25 m - Floc (Baled) Stockpile, 4.25 m • Separating construction between stockpiles shall be of fire resistant construction and extend at least 1 m above maximum stockpile heights. • Each internal (combustible) stockpile shall maintain a minimum of 6 m unobstructed access on accessible sides.
Fire water containment	An automatic fire water run-off containment system is to be provided and designed to contain the total combined hydraulic demand of the fire hydrant and fire sprinkler systems – approximately 3,000 m^3.
Operational Requirements (FRNSW Guidelines)	Prior to operations of the facility, Breen shall develop: • An operations plan is to be documented and implemented for stockpile management and a copy is be included within the Emergency Services Information Package (ESIP). • An Incident Response Management Plan is to be provided for staff and other persons at the facility in the event of fire. • An Emergency Services Information Package (ESIP) is provided for firefighters in accordance with FRNSW guideline Emergency services information package and tactical fire plans. Further to the above, the fire safety systems for the site are to be inspected and maintained with corresponding fire safety statements being issued; The provision of maintenance should be covered in any leasehold contract. AS1851-2012 shall be utilised.

2.4 Assessment against FRNSW Guidelines

2.4.1 'Specialist fire appliance' access

Requirement - 'Specialist fire appliance' access is provided to satisfy performance requirement CP9 of the NCC and FRNSW guideline Access for fire brigade vehicles and firefighters.

Specialist fire appliance access, as per the Vehicle Access guidelines, references aerial appliance use. The referral guideline for access in this case dictates that carriageway widths throughout the site are to be at least 6 m, sealed and capable of supporting aerial appliance weights. The current design proposes to provide each building (processing, concrete processing, soil processing and workshop) with a suitable perimeter access for fire appliance use, and indicative 6 m wide pathways.

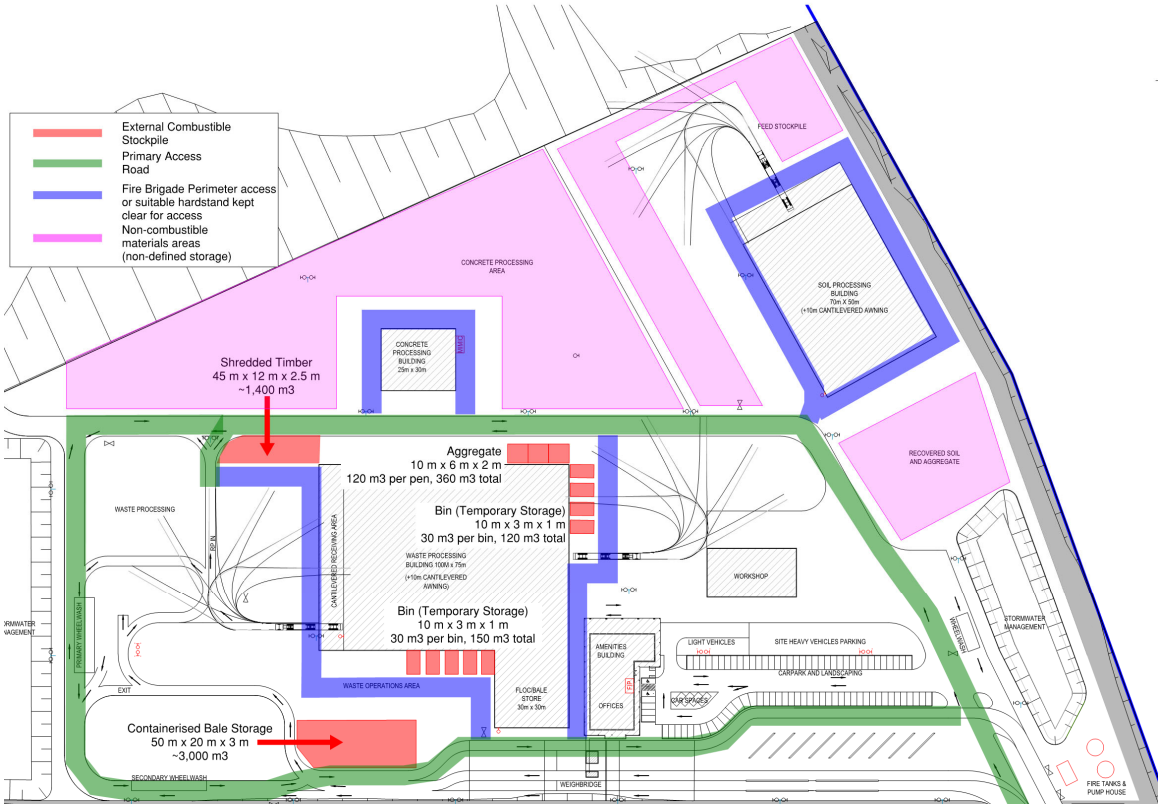


Figure 2.4 Indicative mark-up of access for FRNSW vehicles

As the design continues to develop, it is anticipated that the perimeter access and site access in general will continue to be adapted. Where any deviation in the perimeter access requirements are identified during the detailed development, these would be raised and discussed with FRNSW through the FEBQ process.

Traffic engineers will need to consider the length of the appliances in demonstrating the compliance of the roadways, in particular the swept paths of the aerial appliances, as internal roadway designs continue to be developed past the EIS stage.

Aerial fire brigade vehicles also have particular load requirements as they have stabilisers and high pressure points, which will need to be taken into account by designers as the accessways continue to be developed past the EIS stage.

2.4.2 Adequate firefighter access

Requirement - Adequate firefighter access is provided to the building, fire safety systems and equipment.

The high-level design strategy is to provide perimeter doors around any building, such that multiple access and egress options are available. This perimeter door strategy would facilitate firefighter access from multiple potential vantage points. The hydrant network serving the buildings would be designed with perimeter door use in mind, with external hydrant design being preferable, so long as coverage can be met.

Where internal hydrants are necessary in order to achieve AS2419.1 coverage requirements, they would be provided. These would be developed as further detailed design progresses.

2.4.3 Fire hydrant system design and coverage

Requirement - A fire hydrant system is installed to Australian Standard AS 2419.1 and provides coverage for both internal and external stockpiles.

Internal areas are required to be provided with complying hydrant coverage as per AS2419.1. Based upon preliminary layouts, it is anticipated that the hydrant system for buildings would utilise external hydrants placed in the proximity to buildings, in order to provide internal coverage throughout the building based upon a complying two-hose length design. For the Waste Processing Building in particular, external hydrants at multiple exits would be anticipated in order to provide this coverage.

The fire hydrant system shall be fed directly from the town mains, which has been verified with a pressure and flow inquiry that a minimum flow of 70 l/s @ 46m head is available from the existing DN 300 water main on south side of Captain Cook Drive.

While the internal layout will have direct impact as to coverage requirements and would be developed further to ensure compliance as the design progresses, Figure 2.5 shows a preliminary drawing which provides a proof of concept at this time.

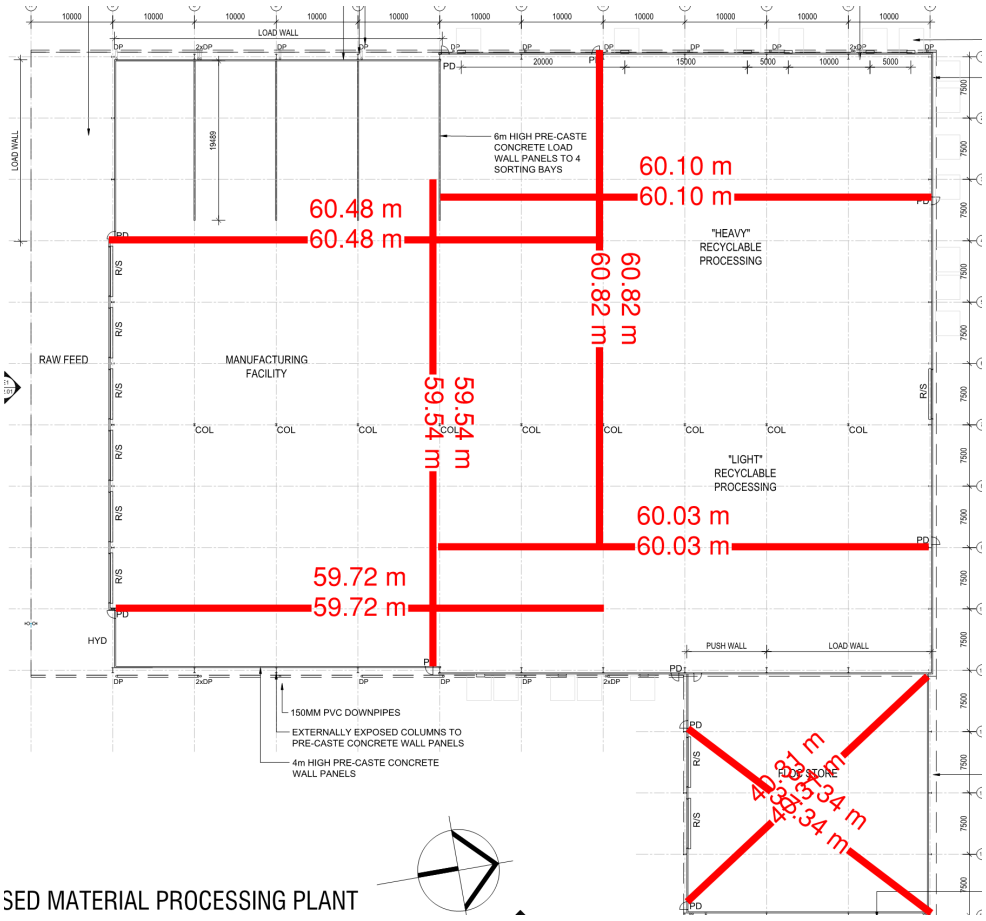


Figure 2.5 Concept design indicating coverage overlap via external hydrants

Design of internal layouts will be required to demonstrate hydrant locations prior to the issuance of a construction certificate. The design will be dependent on interior layouts, machinery placement and the like, therefore details of this design will be developed following the EIS stage.

External combustible stockpiles are required to be provided with external hydrant coverage as per the requirements of the FRNSW Guidelines, namely that they will have coverage from hydrants placed at least 10 m from the combustible stockpile. Based upon the current combustible stockpile locations provided, the coverage is demonstrated to comply with this requirement (Figure 2.6).

Note that this is indicative, proof of concept at this stage only, and the hydrant locations are likely to be modified as the design is developed following the EIS stage. However, the guidelines for coverage would be adhered to.

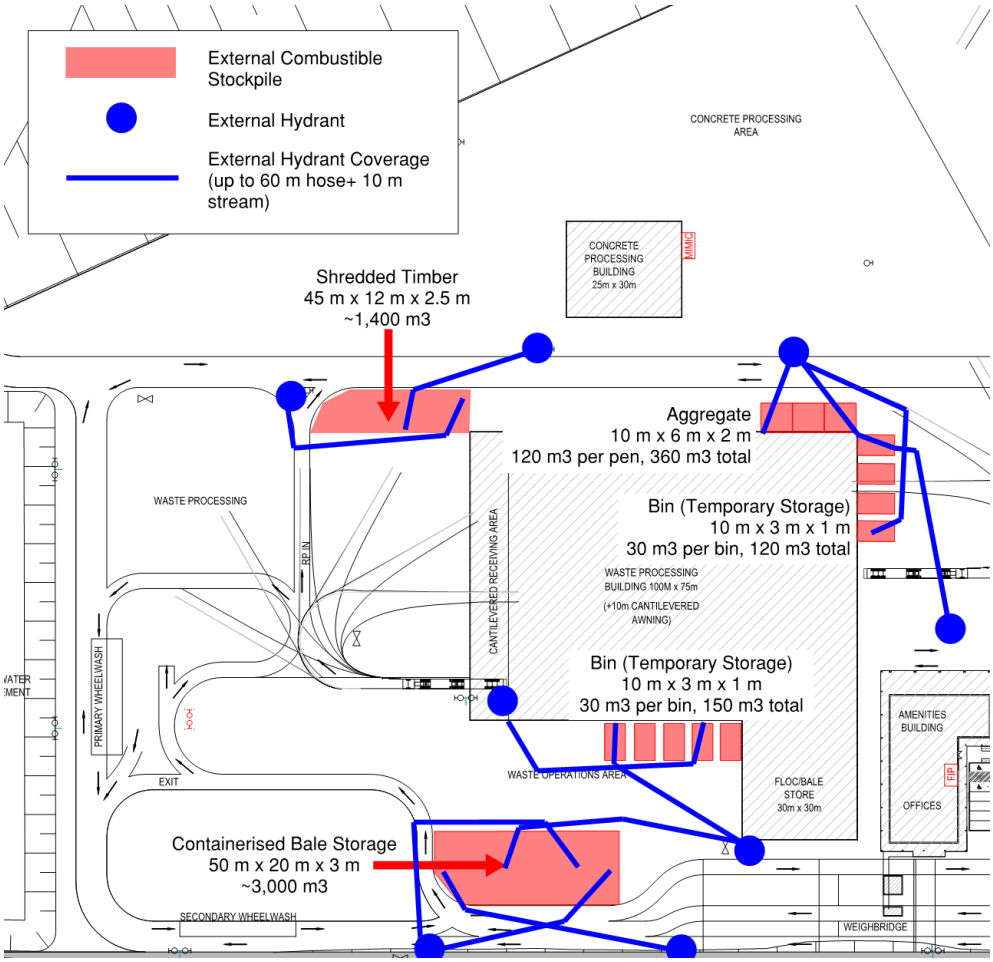


Figure 2.6 Indicative hydrant coverage to combustible external stockpiles

2.4.4 Fire hydrant system enhanced performance

Requirement - The fire hydrant system incorporates enhanced standard of performance for external stockpiles (i.e. one additional hydrant to flow).

Based upon the provided stockpile locations, it is estimated that the area of open yard that would be used for combustible external stockpiles will be in the order of ~3,000 m^2. Therefore the hydrant system shall allow for 3 fire hydrants simultaneous flow, as required by Section 7.5.3/Table 2 of the FRNSW Guidelines.

Fire compartment floor area of non-sprinklered building	Area of open yard (used for stockpiles)	No. of fire hydrants required to flow
≤ 500 m^2	≤ 3,000 m^2	2
> 500 m^2 ≤ 5,000 m^2	> 3,000 m^2 ≤ 9,000 m^2	3
> 5,000 m^2 ≤ 10,000 m^2	> 9,000 m^2 ≤ 27,000 m^2	4
> 10,000 m^2	> 27,000 m^2	5 (or more)

Table 2 Minimum fire hydrants for non-sprinklered buildings and external storage

Figure 2.7 Excerpt from FRNSW Guidelines

2.4.5 Fire hydrants and stockpile locations

Requirement - Fire hydrants are not located within 10 m of any stockpiled storage (or vice versa), whether being internal or external.

The external hydrant layout would be designed to provide at least 10 m separation from external stockpile areas. Internal hydrant locations would also be implemented, where necessary, in accordance with this 10 m separation. See Figure 2.5 and Figure 2.6 for indicative mark-ups.

2.4.6 Fire hydrant system duration

Requirement - The fire hydrant system delivers the required number of fire hydrants to flow simultaneously for a minimum of four hours duration.

The hydrant system for the site would be designed to be capable of providing 30 L/s (identified in Section 2.4.4) simultaneous flow for four hours duration.

2.4.7 Fire brigade booster location

Requirement - A fire brigade booster connection is installed within sight of the designated site entry point.

The fire brigade booster is proposed to be located adjacent to the designated site entry point. See Figure 2.8.

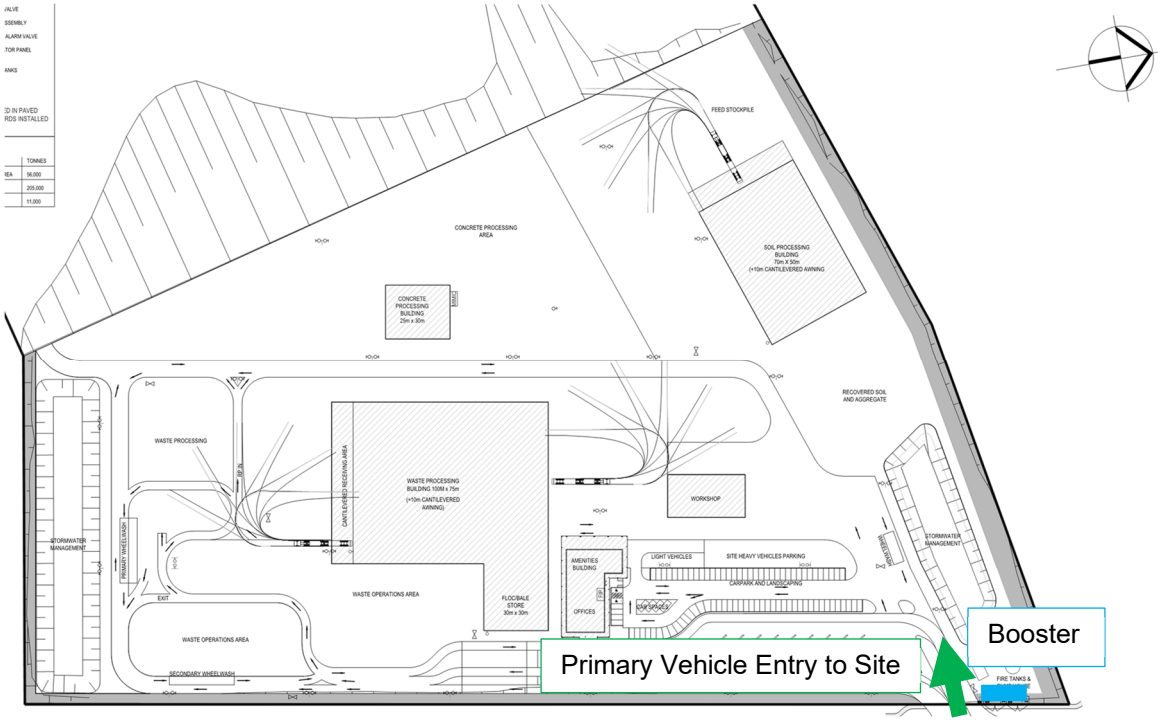


Figure 2.8 Booster location

2.4.8 Fire hose reel system

Requirement - A fire hose reel system is installed to Australian Standard AS 2441 and provides coverage for both internal and external stockpiles.

Fire hose reels would be located adjacent to hydrant locations to provide coverage. Additional hose reels, where required for coverage, would be provided, and would be developed further during detailed design phase.

50 m hose reel lengths are proposed to be used to provide additional lengths of coverage. Given the limitation of hose reel spray (4 m from hose reels, in lieu of 10 m from hydrants),

coverage consideration for external stockpiles would only be to the front edge of the stockpile, based upon the inherent limitations of the hose reels.

The use of 50 m hose reels would be subject to a Performance Solution for the buildings, as the length of hose is longer than prescriptive limitations (50 m in lieu of 36 m). This would be subject to consideration and consultation with Fire and Rescue NSW, as part of the detailed design phase prior to the issuance of a construction certificate.

2.4.9 Automatic fire sprinkler system design

Requirement - An automatic fire sprinkler system is installed to Australian Standard AS 2118.1 and designed for special hazard (e.g. 'high hazard' class).

The FRNSW Guidelines require any building on site exceeding 1,000 m^2 and contains combustible waste material to be provided with a sprinkler system. Therefore, at this time the following building shall have a sprinkler system incorporated, including for high hazard as required by the FRNSW Guidelines:

- Waste Processing Building and adjacent buildings (FLOC/Bale Store, offices and amenities).

The fire sprinkler system shall be fed from the sprinkler pump house, connected to two fire tanks (1020 KL each), considering an infill rate of 40 l/s. The tanks shall be refilled through infill connection from the town main. Large bore and small bore connections shall be provided from the tanks.

The other buildings (soil processing, concrete processing, workshop) on the site would not be subject to the additional sprinkler requirements as they would not house combustible stockpiles.

The requirement for sprinklers, if applicable, would be a determination of the BCA review for these buildings.

2.4.10 Sprinkler booster connection

Requirement - A fire brigade booster connection is installed for the automatic fire sprinkler system and is co-located with the hydrant system booster.

The fire brigade booster connection would incorporate the automatic fire sprinkler system and be co-located at the front entry to the site, adjacent to the hydrant system booster. See Figure 2.8.

2.4.11 Fire sprinkler duration

Requirement - The fire sprinkler system delivers not less than the total hydraulic demand for a minimum of two hours duration.

The sprinkler system for the Waste Processing Building would be designed for two hours duration, in accordance with the FRNSW Guidelines.

2.4.12 Fire detection and alarm system design

Requirement - A fire detection and alarm system is installed to Australian Standard AS 1670.1 and designed for the fire scenarios and environment (e.g. visual flame detectors, infrared detectors, heat detectors/probes).

A detection system in accordance with AS1670.1 would be provided to the following building:

- Waste Processing Building and adjacent buildings (FLOC/Bale Store, offices and amenities)

It is anticipated that thermal detection, or aspirating detectors, will be required in areas of the above buildings to avoid false-alarming, as permitted by AS1670.1.

The other buildings (soil processing, concrete processing, workshop) on the site would not be subject to this requirement as they would not house combustible stockpiles.

The requirement for fire detection therefore would be a determination of the BCA review for these buildings.

2.4.13 Manual alarm points

Requirement - Manual alarm points are installed for staff to initiate alarm of fire.

Manual alarm points would be installed in buildings. It is anticipated these would be located adjacent to exits from the buildings. These would be required for all buildings that have a detection system.

2.4.14 Smoke hazard management system design

Requirement - An automatic smoke hazard management system is installed and designed so the smoke layer does not descend below 4 m above floor level.

The Waste Processing Building would be provided with a smoke extraction system capable of maintaining the smoke layer above 4 m above floor level. This may require on the order of >150,000 L/s extraction, though would be subject to detail design prior to construction to determine exact exhaust rate requirements.

The other buildings (soil processing, concrete processing, workshop) on the site would not be subject to this requirement as they would not house combustible stockpiles. The requirement for any smoke hazard management system for these buildings therefore would be a determination of the BCA review for these buildings.

2.4.15 Make-up air design

Requirement - Low level openings (e.g. roller doors) on two or more walls to assist with venting de-stratified smoke.

The Waste Processing Building would be provided with roller doors on two separate walls which will assist with venting de-stratified smoke, as indicated below. The doors shall be automatically opened upon fire detection within the building, with the number of doors to be determined during detailed design prior to issuance of a construction certificate.

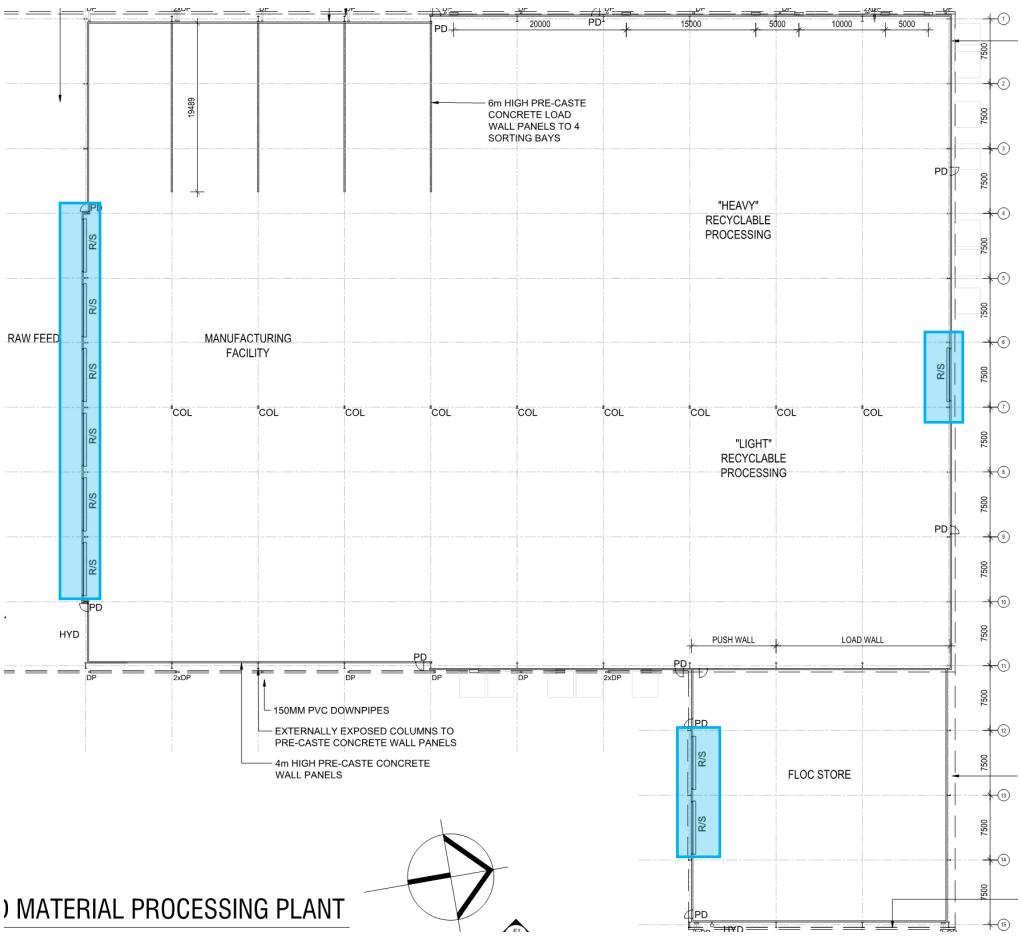


Figure 2.9 Indicative locations of roller shutters available for venting smoke

2.4.16 Smoke hazard management operation time

Requirement - The automatic smoke hazard management system is capable of continuous operation for a minimum of two hours duration.

The smoke hazard management system for the Waste Processing Building, including exhaust fans, drive, flexible connections, control gear and wiring, would be constructed and installed so that it is capable of continuous operation at a temperature of 200ºC for a period of not less than 2 hours, and comply with this requirement.

2.4.17 Automatic fire water run-off containment system

Requirement - An automatic fire water run-off containment system is provided and designed to contain the total hydraulic demand of the fire hydrant and fire sprinkler systems.

The total water to contain based upon the preliminary design of the fire and sprinkler systems is 2,412 m^3, which is the aggregate flow of 3 hydrant operations for four hours (432 m^3 total water flow), and the sprinkler operation within the Waste Processing Building for two hours (1,980 m^3 total water flow).

The containment system onsite by the stormwater system therefore shall contain at least 3,000 m^3, with an automatic isolation valve such that the fire water is contained on the site.

2.4.18 Pollution control equipment

Requirement - Pollution control equipment is provided to divert fire water run-off and isolate stormwater drainage in the event of fire.

Automatic closure of the stormwater system would be provided by an isolation valve upstream of the northern infiltration pond area. This shall be connected to the FIP for the site, such that in the event of an alarm, the isolation valve shall close.

2.4.19 Bush fire protection

Requirement - The waste facility complies with NSW RFS Planning for Bush Fire Protection when located on bush fire prone land.

A bushfire assessment has been completed for the site.

The bushfire assessment identified that the buildings on this site are not on bush fire prone land.

2.4.20 Stockpile separating walls

Requirement - Any separating masonry wall, revetment or pen is to extend at least 1 m above and at least 2 m beyond the stockpile.

Separating walls would be designed and installed for the internal stockpiles within the Waste Processing Building. The requirements of the FRNSW Guidelines would be applied, with the separating walls extending at least 1 m above and at least 2 m beyond any stockpile. An indicative example is provided in Figure 2.10.

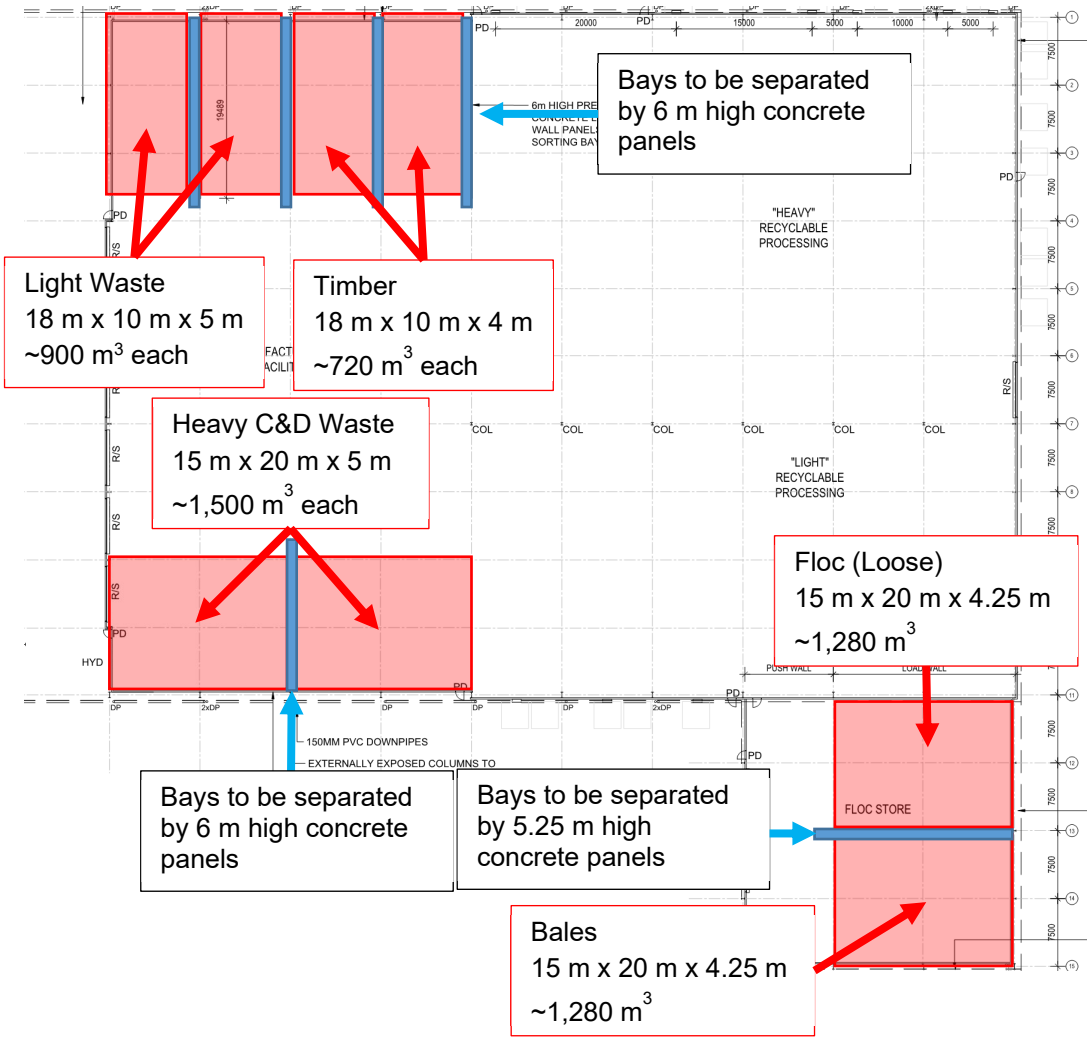


Figure 2.10 Internal Stockpiles and Indicative Separating Walls for Waste Processing Building

2.4.21 Self-heating stockpiles

Requirement - Any stockpile prone to self-heating is to be monitored and rotated as necessary to dissipate any hotspots.

No stockpiles are noted for self-heating properties at this time.

2.4.22 External stockpile design

Requirement - Any external stockpile is to be limited in size and maintain minimum separations to prevent fire spread, including reduced separation when protected by a masonry wall or an automatic fire sprinkler system.

Two primary external stockpiles (Shredded Timber and Containerised Bail Storage) would be substantially separated from each other by approximately 100 m.

Smaller combustible stockpiles of various materials are proposed to be adjacent to the Waste Processing Building, but separated from the building by a masonry, fire rated wall, consistent with the expectations of the FRNSW Guidelines.

At this time, the storage separation is capable of complying with the FRNSW Guidelines based upon the proposed design in Figure 2.11.

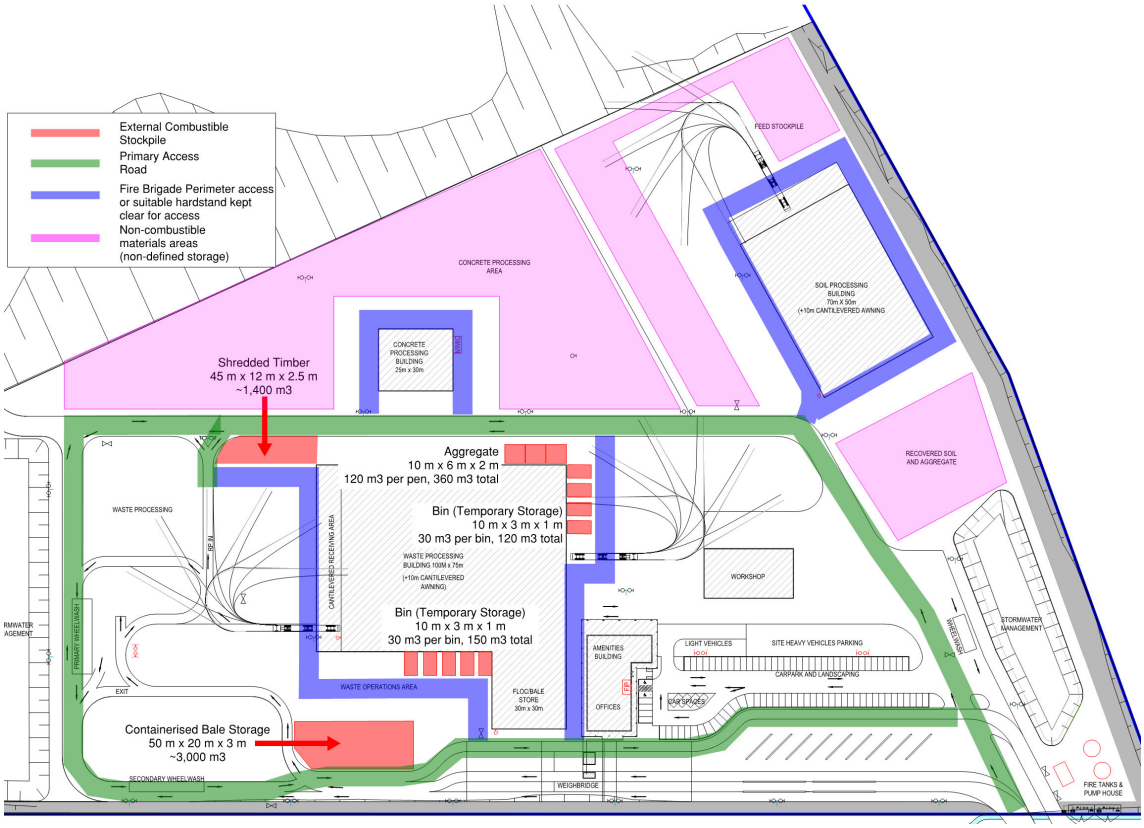


Figure 2.11 Proposed external combustible stockpile locations

2.4.23 External stockpile access

Requirement - Fire brigade vehicle access is provided between external stockpiles.

This would be provided between and around stockpiles as required, see Figure 2.11.

2.4.24 Internal stockpile size limitation

Requirement - Each internal stockpile is to be limited in size to 1,000 m³.

Internal stockpiles are proposed to exceed this limitation for the Heavy C&D waste and Floc areas. This would be subject to discussions with FRNSW, with the basis for exceeding these limitations being that the building would be provided with a robust sprinkler and smoke hazard management system which would provide suitable means of intervention to offset the extended size of the stockpiles.

It is noted that the stockpiles would also be separated via concrete panels, to limit their overall aggregate sizes. See Figure 2.12.

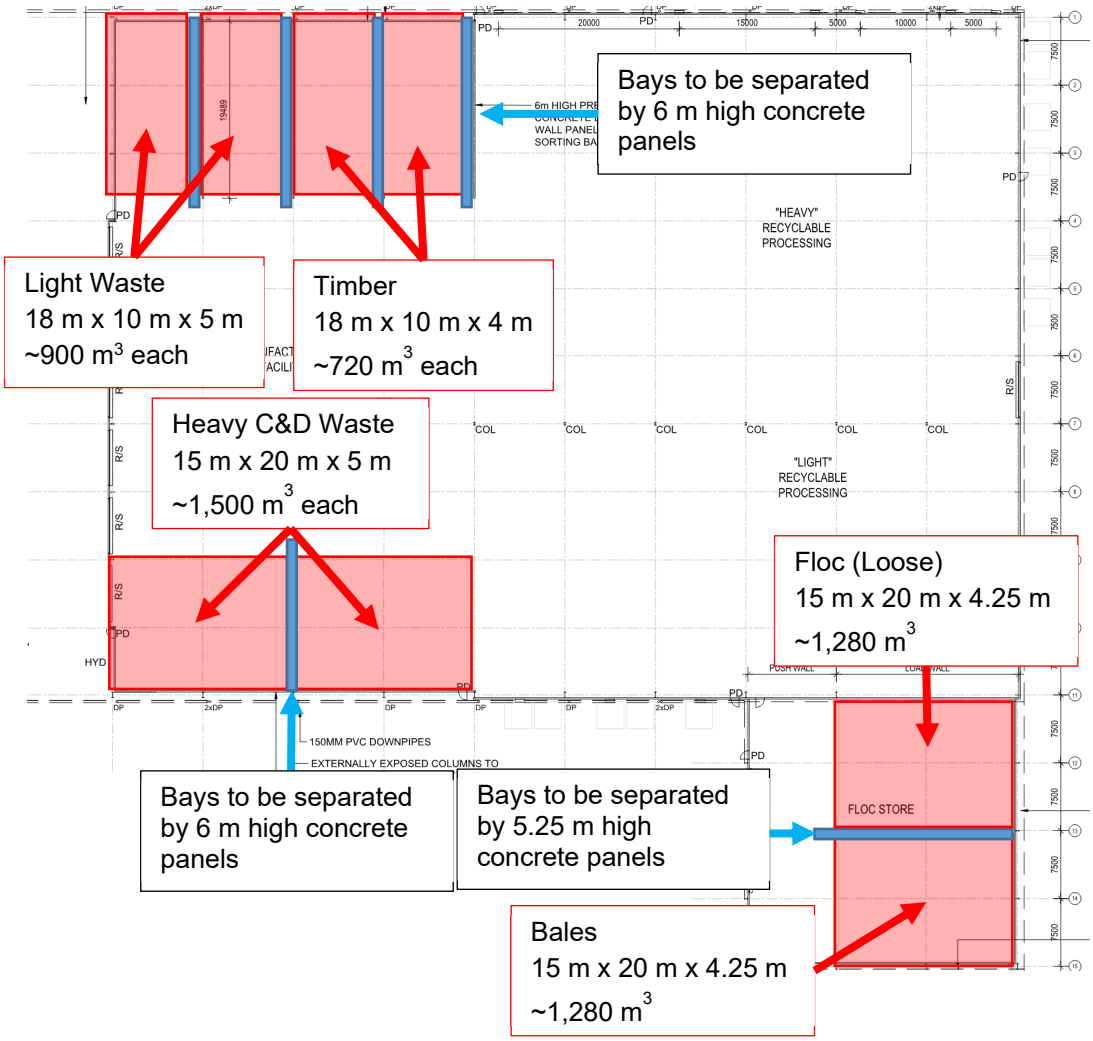


Figure 2.12 Proposed internal stockpile configuration

2.4.25 Internal stockpile access

Requirement - Internal stockpiles are to maintain a minimum of 6 m unobstructed access on each accessible side.

Each internal stockpile's accessible side would be provided with at least 6 m access, as required. See Figure 2.12.

2.4.26 Operations plan

Requirement - An operations plan is to be documented and implemented for stockpile management and a copy is be included within the Emergency Services Information Package (ESIP).

Breen would document and implement an operations plan, incorporating the requirements of the FRNSW Guidelines, prior to commencement of operation of the facility. These operations plans would be incorporated into the Emergency Services Information Package (ESIP).

2.4.27 Emergency plan

Requirement - An emergency plan is to be provided for staff and other persons at the waste facility in the event of fire.

Breen would document and implement an Incident Response Management Plan, incorporating the requirements of the FRNSW Guidelines, prior to commencement of operation of the facility. These emergency plans would be incorporated into the Emergency Services Information Package (ESIP).

2.4.28 Emergency services information package

Requirement - An Emergency Services Information Package (ESIP) is provided for firefighters in accordance with FRNSW guideline Emergency services information package and tactical fire plans.

Breen would document and provide the ESIP, incorporating the requirements of the FRNSW Guidelines, prior to commencement of operation of the facility.

2.4.29 Fire safety system inspection and maintenance

Requirement - Fire safety systems are to be inspected and maintained with corresponding fire safety statements being issued; The provision of maintenance should be covered in any leasehold contract.

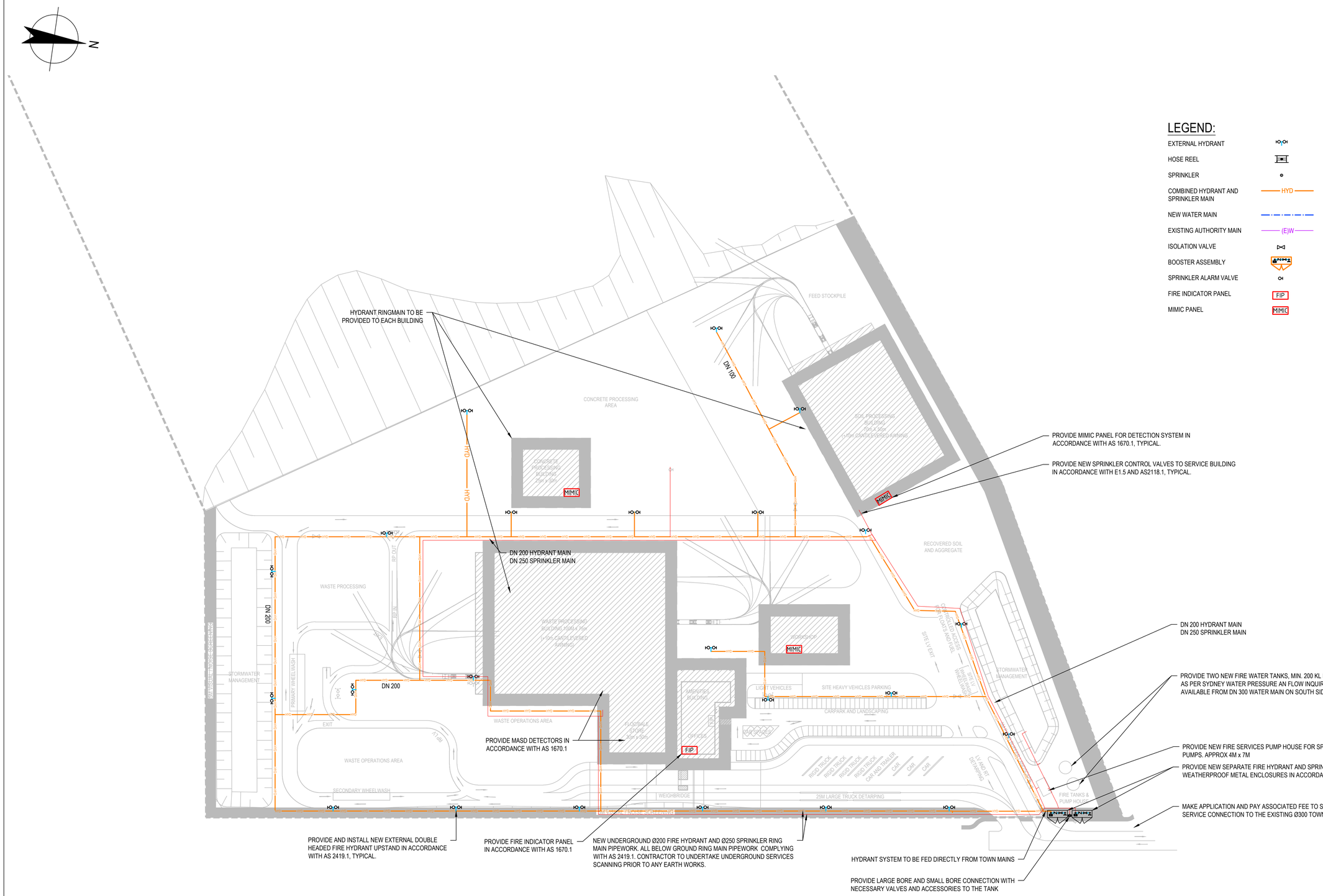
Breen would utilise AS1851-2012 as the base maintenance standard for the fire safety systems onsite, and a maintenance plan be developed prior to the operation of the facility.

2.5 Summary

As a result of the assessment of the proposed building against the FRNSW Fire Safety Guideline – Fire Safety in Waste Facilities, a list of preliminary fire safety requirements have been developed (Refer Table 2.2). It is noted that the list will continue to be developed as the site develops, and therefore is preliminary in nature only and not intended to be an exhaustive list.

Appendices

Appendix A – Fire Services Drawings



PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
C	REVISED CONCEPT SPATIALS	KD	GG		29.10.20
B	REVISED CONCEPT SPATIALS	KD	GG		15.09.20
A	CONCEPT SPATIALS	KD	GG		07.08.20

Note: * indicates signatures on original issue of drawing or last revision of drawing

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Client **BREEN RESOURCES PTY LTD**
Project **BREEN RESOURCE RECOVERY FACILITY**
Title **FIRE SERVICES LAYOUT**

Original Size **A1**
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Rev: **C**

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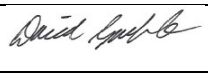
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	Colin Thomson	A Montgomery		D Gamble		29/10/20
1	C Thomson	A Montgomery		D Gamble		10/3/21
2	C Thomson	A Montgomery		D Gamble		08/4/21

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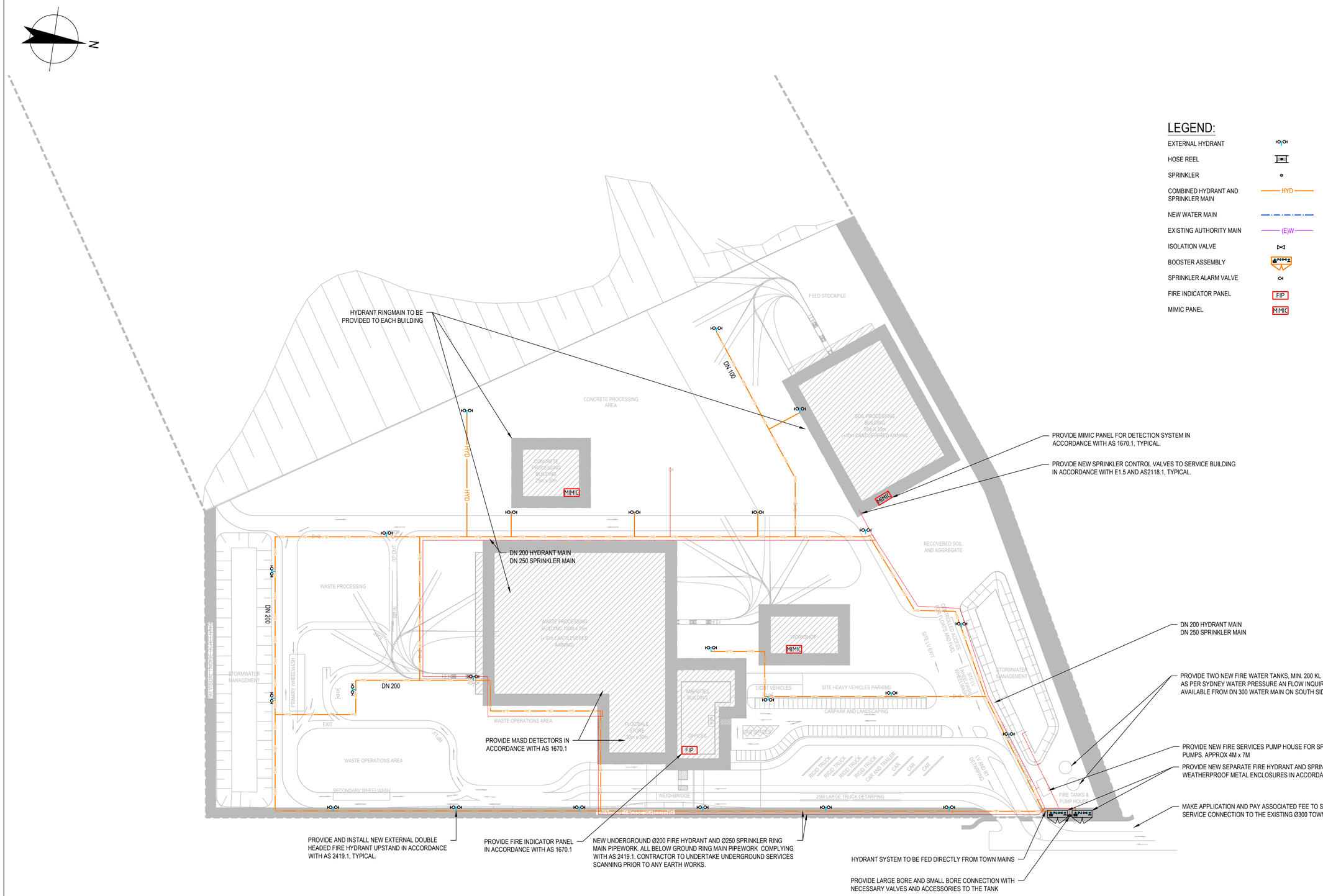

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