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Waste Minimisation and Management Plan
REMONDIS Australia Pty Ltd
Tomago Resource Recovery Facility and Truck Parking Depot

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We declare that:
This Waste Minimisation and Management Plan contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and the information contained in this plan is neither false nor misleading.

Report version	Authors	Date	Reviewer	Approved for issue	Date
FINAL	R. Loemker, Dr M.Jackson	31/08/20	Dr M.Jackson	Dr M.Jackson	16/09/20
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Executive Summary

REMONDIS Australia Pty Ltd is proposing to operate a Resource Recovery Facility and Truck Parking Depot at 21D and 21F School Drive, Tomago (Lot 11, DP270328 and Lot 8, DP DP270328) and a small amount of land north of 21D School Drive, referred to as Lot 301 / DP 634536.

REMONDIS will use the existing buildings at 21D School Drive for the receipt and processing of up to 98,201 tonnes per annum of solid and liquid waste materials. The main sources of waste materials include:

- Dry non-putrescible waste materials from commercial and industrial sources; and
- Dry mixed building waste (construction waste only) from residential and commercial construction, including office fitouts. No demolition waste will be accepted.

The facility will also receive within this total a small amount of putrescible waste materials from the de-packaging of food, such as drinks and packaged food items. The facility will also receive and recycle liquid wastes such as drill muds from hydro-excavation and oily wastes from mining and industrial activities across the region.

Facility Description

The recycling operations will be established within Buildings 1 and 2 on 21D School Drive. Each recycling operation listed below will be established in discreet parts of the existing industrial warehousing, and collectively, the Tomago Resource Recovery Facility will provide a wide range of recycling services.

Materials Recovery Facility

The Materials Recycling Facility will sort and recycle non-putrescible commercial and industrial mixed general solid waste via front-lift bin collections (approximately 60% of total waste received) and construction building waste from residential and commercial construction. This includes office fitouts (approximately 40% of total waste received). The Materials Recycling Facility is expected to process up to 31,000 tonnes per annum.

Cardboard Baling Facility

A separate part of the Building 1 will be a dedicated Cardboard Baling Facility which will process up to 30,000 tonnes per annum.

Drill Mud Recycling Facility

Drill mud is currently generated by various commercial activities which include hydro-excavation or non-destructive digging, exploration drilling and horizontal boring. Drilling fluid (drill mud) is used as a lubricant and as a coolant during drilling operations such as horizontal direction drilling, potholing and investigative digging for civil, construction and mining. Drill mud is a mixture of water, clays, fluid loss control additives, density control additives and viscosifiers, which typically requires transport for off-site treatment at a recycling facility. The Drill Mud Recycling Facility is expected to process up to 5,000 tonnes per annum.

Packaged Food Recycling Plant

The Packaged Food Recycling Plant will receive, depackage and recycle foods, drinks and associated packaging collected from retailers and manufacturers. The PFRP will separate foods from their packaging, to enable the recovery of the food fraction (such as through off-site composting or soil injection) and packaging, including steel, aluminium, plastics and liquid paperboard. The Packaged Food Recycling Plant is expected to process up to 2,000 tonnes per annum.

Garden Organics Primary Processing plant

A separate part of the Tomago Resource Recovery Facility will be a dedicated Garden Organics Primary Processing plant. This facility will receive, shred and send off-site primary processed garden organics to licenced composting

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facilities for processing and manufacturing into compost. The Garden Organics Primary Processing is expected to process up to 5,000 tonnes per annum

A Hazardous Waste Recycling Facility

A range of spent solid materials and liquids containing oils and chemicals will be received, aggregated and stored according to chemical group within the Tomago Resource Recovery Facility. These materials are collected from mining and manufacturing in the Hunter. Sorting and aggregation of the materials by type enables these materials to the efficiently collected and transported to off-site processing, recycling or disposal facilities. The HWMR is expected to process up to 20,201 tonnes per annum. Quantities sorted on site will be less than Dangerous Goods threshold levels.

A Copper Processing area

The Tomago Resource Recovery Facility will also include a Copper Processing area. This area will involve the processing of electrical cabling sourced from mine sites, building and communications centre decommissioning to enable the recovery of copper wire and plastics. The Copper Processing area is expected to process up to 1,000 tonnes per annum.

A Metals Recycling Facility.

A separate part of the Tomago Resource Recovery Facility will be a dedicated Metals Recycling facility. This facility will receive, sort, cut and potentially bale ferrous and non-ferrous metals from commercial and industrial collections. The Metal Recycling facility is expected to process up to 4,000 tonnes per year of ferrous and non-ferrous metals.

Construction Waste Management

The construction of the Tomago Resource Recovery Facility and Truck Parking Depot will include:

- Clearing of vegetation and grubbing for the proposed truck parking depot on 21F School Drive;
- Earthworks and installation of a weighbridge on 21D School Drive; and
- Installation of above ground mechanical and electrical plant and equipment Installation for sorting and processing waste withing the buildings on 21D School Drive, Tomago.

Trees/shrubs removed during initial works will be mulched and surface applied to exposed soil surface outside of the immediate construction area for soil erosion control in accordance with Appendix D of Landcom (2004) Managing Urban Stormwater – Soils and Construction . All vegetation will be fully recycled and re-used on-site as erosion control mulch.

It is noted that site soils on 21F School Drive will be largely retained and capped on site as recommended by the Remedial Action Plan by JM Environments (see Appendix M3 of the EIS). Where site soil is surplus to requirements and cannot be used on site, this waste will be classified under the NSW EPA's *Waste Classification Guidelines Part 1: Classifying Waste* (2014). This soil will be placed in labelled hook lift bins and sent off-site for lawful disposal.

Operational Waste Management

The site operations will generate little waste itself. The vast bulk of "waste" materials will be brought onto site for processing or for aggregation and off-site transport to other facilities for recycling. While some material will be non-recyclable "residual" waste, most material will be recovered, processed and sold as products.

The recycling operations will be established within existing buildings on the Site, which were approved under Major Project MP 10_003 and will process up to 98,201 tonnes of solid and liquid waste materials per annum. The project will involve the construction of sorting plant, sorting equipment, mobile plant and waste and sorted material storage bunkers. The Tomago Resource Recovery Facility will recycle an expected 97.4% of all incoming waste (or 95,151 tonnes per annum). The remainder of the waste received will be disposed at a lawful landfill (~3,050 tonnes per annum). The major products expected to be manufactured by the facility include paper and cardboard (~28,500 tonnes

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per year), followed by RDF (15,500 tonnes per year), contaminated soils (12,000 tonnes per annum) and recovered fines (11,470 tonnes per annum). These five products make up ~69% of all products manufactured.

The proposed Facility has been designed to recover residual materials with calorific value for manufacturing into fuel. Energy recovery facilities may only receive feedstock from waste processing facilities or collection systems that meet the criteria outlined in Table 1 of the *NSW Energy from Waste Policy Statement*.

The Materials Recovery Facility will receive up to 31,000 tonnes, consisting of approximately:

- 18,600 tonnes per annum of commercial and industrial mixed general solid waste (non-putrescible); and
- 12,400 tonnes per annum of construction building waste from residential and commercial construction (non-putrescible).

All waste materials and processed products will be stored in separate concrete bays with three sides or in dedicated hook lift bins. Storage of incoming waste in dedicated areas and sorted materials and products in dedicate bays helps in inventory control, good housekeeping, reduces potential for cross contamination and is critical for quality control.

Building 1 can safety store, in separate designated areas, up to 1,684 tonnes (or 5,822 m^3) of waste and processed products at any one point in time and Building 2 can safety store, in separate designated areas, up to 1,817 tonnes (or 4,500m^3) of waste and processed products at any one point in time.

Combustible materials and products make up 1,473 tonnes or 5,627 m^3 of waste held on-site at any one point in time in Building 1. This makes up 87.4% by volume of all waste materials and products held in Building 1. Combustible materials and products make up 256 tonnes or 866 m^3 of waste held on-site at any one point in time in Building 2. This makes up 14.1 % by volume of all waste materials and products held in Building 2.

Therefore, REMONDIS can store up to 3,500 tonnes of material (both waste and product) at any one time under the proposed consent.

The proposed development will increase and expand recycling infrastructure in Port Stephens and the greater Hunter area and will make an important contribution to key result areas, including:

- Increase recycling for both commercial and industrial (C&I) and construction and demolition (C&D); and
- Divert more waste from landfill.

The proposed facility will make an important contribution towards the recycling targets as set out in the *NSW Waste Avoidance and Resource Recovery Strategy* 2014-21

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1. Introduction

1.1. Background

REMONDIS Australia Pty Ltd (REMONDIS) is proposing to operate a Resource Recovery Facility and Truck Parking Depot at 21D and 21F School Drive, Tomago (Lot 11, DP270328 and Lot 8, DP DP270328). The development also includes a small amount of land north of 21D School Drive, referred to as Lot 301 / DP 634536.

REMONDIS will use the existing buildings at 21D School Drive for the receipt and processing of up to 98,201 tonnes per annum of solid and liquid waste materials. The main sources of waste materials include:

- Dry non-putrescible waste materials from commercial and industrial sources; and
- Dry mixed building waste (construction waste only) from residential and commercial construction, including office fitouts. No demolition waste will be accepted.

It will also receive within this total a small amount of putrescible waste materials from the de-packaging of food, such as drinks and packaged food items. The facility will also receive and recycle liquid wastes such as drill muds from hydro-excavation and oily wastes from mining and industrial activities across the region.

Each recycling operation will be established in discreet parts of the existing industrial warehousing, and collectively, the Tomago Resource Recovery Facility will provide a wide range of recycling services through:

- A fully integrated Materials Recovery Facility for sorting and processing:
    - Commercial and industrial mixed general solid waste (non-putrescible) (60%); and
    - Construction building waste from residential and commercial construction (non-putrescible) (40%);
- A Cardboard Baling Facility for source separated cardboard collected from businesses;
- A Drill Mud Recycling Facility for drill muds sourced from the civil, construction and mining industries;
- A Packaged Food Recycling Plant, which will accept packaged foods and drinks, separating the food contents and packaging for recycling;
- A Garden Organics Primary Processing plant, which will receive, decontaminate, and shred woody garden organics for off-site composting;
- A Hazardous Waste Recycling Facility, for sorting and aggregating a range of spent solid materials and liquids containing oils and chemicals;
- A Copper Processing area; and
- A Metals Recycling Facility.

A truck parking depot will be established on the adjacent vacant lot referred to as 21F School Drive.

The development will serve the recycling needs of the Newcastle and Hunter region for recycling commercial and industrial waste materials.

The proposed development will provide a broader range of recycling options and make progress towards the NSW Government's recycling targets. It will also deliver on key priorities of the NSW Government to develop new recycling infrastructure to boost the recovery of commercial and industrial waste in the region.

Under Schedule 1, Clause 23(6)(b) of the *State Environmental Planning Policy (State and Regional Development*) 2011, waste and resource management facilities that treats, stores or disposes of industrial liquid waste and handles more than 1,000 tonnes per year of other aqueous or non-aqueous liquid industrial waste is declared State Significant Development.

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The proposed development is therefore considered State Significant Development under Schedule 1(23)(6b) of the State and Regional Development SEPP. The State Significant Development application is to be assessed by the Minister for Planning and referred under delegation to DPIE or the Independent Planning Commission for assessment.

This Waste Minimisation and Management Plan (WMMP) has been developed to meet the NSW Department of Planning and Environment's Secretary's Environmental Assessment Requirements, which were issued on 24 April 2020 by Chris Ritchie, Director, Industry Assessments as a delegate of the Secretary.

1.2. Scope and objectives

This Section assesses how the waste will be dealt with in the most environmentally sustainable way and contains the following information:

- Relevant legislation and guidelines for waste management for the Facility;
- The systems, procedures and initiatives proposed to address the management of waste materials generated during the construction and operation phases of the Facility;
- Safeguards, mitigation measures and monitoring to manage waste impacts during construction and operation;
- Roles and responsibilities of those involved in the design and implementation of waste management controls; and
- An effective monitoring, auditing and reporting framework to assess the effectiveness of the controls implemented.

The proposed development will consider environmental best practice and sustainability to reduce the impact of the development on the environment. The following features will be built into the design of the site:

- Fully enclosed operations to reduce noise and air quality impacts; and
- Stormwater improvements to increase quality of runoff from site.

The facility will also support the *NSW Waste Avoidance and Resource Recovery Strategy*: 2014-2021 targets for municipal and commercial and industrial recycling as set by the NSW Government by contributing to significant shortfalls in recycling infrastructure. Successfully meeting diversion targets as set in the *NSW Waste Avoidance and Resource Recovery Strategy*: *2014-2021* will result in:

- Energy savings equivalent to the energy usage of 1.49 million households each year;
- Water savings equivalent to 5,392 Olympic sized swimming pools each year; and
- Greenhouse gas benefits equivalent to removing 530,971 cars from the road.

The facility will also produce Refuse Derive Fuel (RDF) from its resource recovery operations. This WMMP demonstrates compliance with the *NSW Energy from Waste Policy Statement*, especially the Resource Recovery Criteria in Table 1 of the *NSW Energy from Waste Policy Statement*.

This WMMP is a sub plan to the overall Environmental Management System (EMS) for the Facility.

1.3. Agency requirements

The following agencies provided specific waste management issues that are to be addressed in the EIS as part of the Secretary's Environmental Assessment Requirements (SEARs) that were issued on 24 April 2020:

- NSW Department of Planning and Environment;
- Port Stephens Council; and
- NSW EPA.

An outline of the waste management requirements is provided in Table 1.1.

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Table 1.1. Agency requirements that relate to waste management for the proposed Tomago Resource Recovery Facility and Truck Parking Depot.

Agency	Requirement	Section of report requirement is addressed
Secretary's Environmental Assessment Requirements	A description of the waste streams that would be accepted at the site including maximum daily, weekly and annual throughputs and the maximum size for stockpiles and any liquid waste storage.	Section 4.3 (and subsections)
	A detailed description of waste processing operations (including flow diagrams for each waste stream) including a description of the technology to be installed, resource outputs, and the quality control measures that would be implemented	Section 4.3 (and subsections)
	Details of how waste would be stored (including the maximum daily waste storage capacity of the site) and handled on site, and transported to and from the site, including details of how the receipt of non-conforming waste would be dealt with	Section 4.3 (and subsections)
	Details of the waste tracking system for incoming and outgoing waste	Section 4.3 (and subsections)
	Details of the waste management strategy for construction and ongoing operational waste generated	Section 4.2 and Section 4.9 (and subsections)
	The measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy* 2014-2021.	Section 5.1
Port Stephens Council Requirements	Waste Management Detail of the proposed waste management system will need to be provided. The site does not have access to reticulated sewer, and it is understood that there is an existing on-site sewer management system for 21D School Drive. Details of servicing, including any proposed changes to current utilities will need to be included as part of the application. Any proposed OSMS for 21F School Drive will also need to be addressed within the application. A Waste Management Report, prepared by a suitably qualified person will need to be provided, demonstrating that the proposed sewage and trade waste are appropriate for the proposed development.	This Waste Management Plan

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Agency	Requirement	Section of report requirement is addressed
NSW EPA Requirements	Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's Waste Classification Guidelines 2014 (as amended from time to time	Section 4.3 (and subsections)
	Provide details of liquid waste and non-liquid waste management at the facility, including: a) the transportation, assessment and handling of waste arriving at or generated at the site b) any stockpiling of wastes or recovered materials at the site c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site d) the method for disposing of all wastes or recovered materials at the facility e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility f) the proposed controls for managing the environmental impacts of these activities.	Section 4.3 (and subsections)
	Provide details of spoil disposal with particular attention to: a) the quantity of spoil material likely to be generated b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil c) the need to maximise reuse of spoil material in the construction industry d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material e) designation of transportation routes for transport of spoil.	Section 4.2 (and subsections)
	Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes.	Section 4.3 (and subsections)
	Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage.	Section 4.3 (and subsections)

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Agency	Requirement	Section of report requirement is addressed
	Reference should be made to the guidelines: EPA's Waste Classification Guidelines 2014 (as amended from time to time.	Throughout report

1.4. The site

The Site is located at 21D and 21F School Drive Tomago within the Port Stephens Local Government Area (LGA). The development also includes a small amount of land north of 21D School Drive, referred to as Lot 301 / DP 634536. The general locality of the Site is shown in Figure 1.1.

The lands are zoned IN1 General Industrial under the *Port Stephens Local Environmental Plan* 2013. The Site is approximately 4.08 hectares in size. Existing buildings on the site includes two large warehouse buildings and one workshop (refer to Figure 1.2).

The lot at 21F School Drive (Lot 8, DP270328) is currently undeveloped, with the majority of vegetation cleared.

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Figure 1.1. General locality of the Site. Approximate site boundaries are shown in yellow for 21D School Drive and Lot 301/DP634536, and in blue for 21F School Drive.



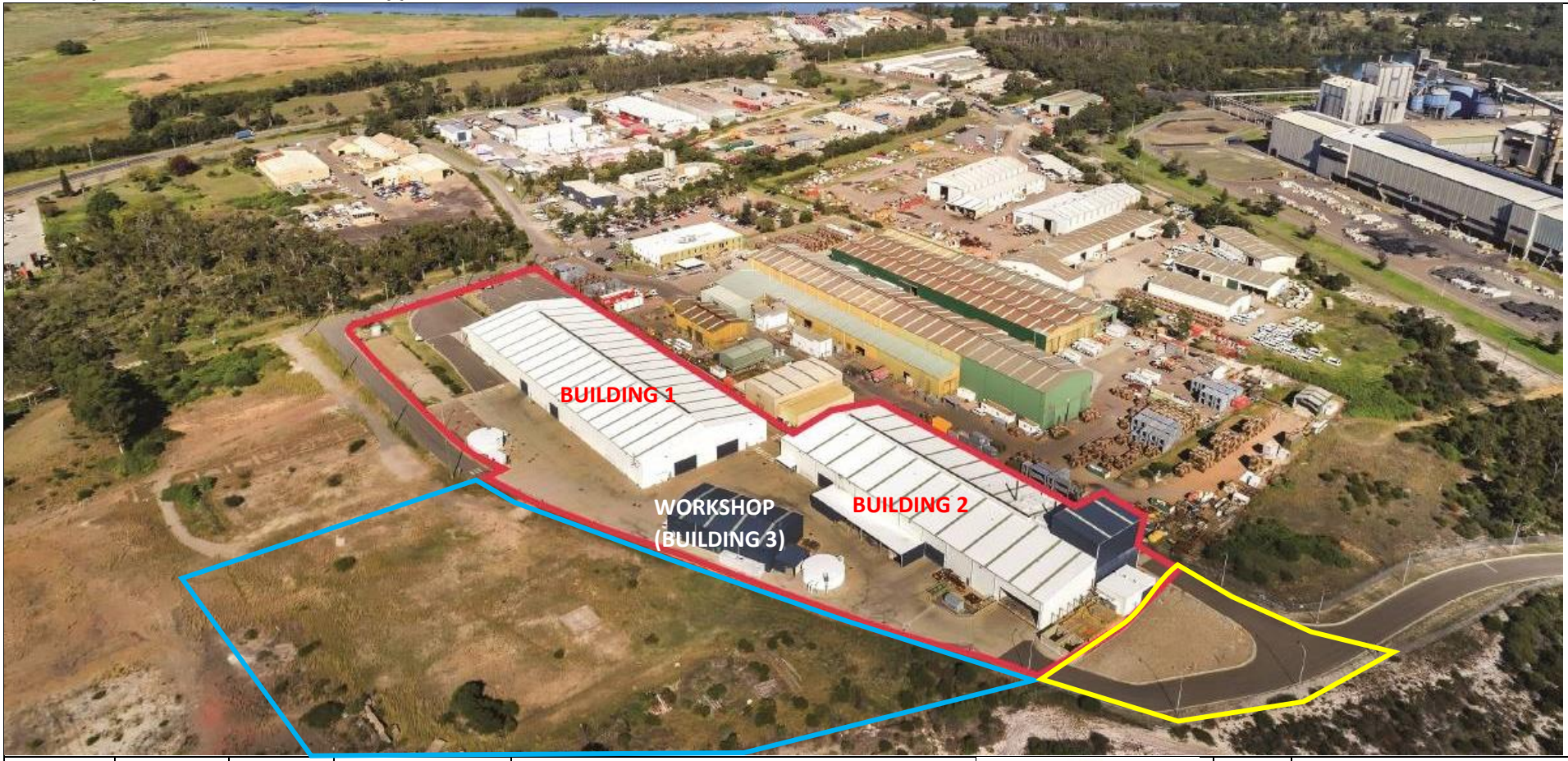
Date	Revision	Drawn By	Site description
30/10/19	Revision A	R. Loemker	21D and 21F School Drive, and Lot 301 / DP634536
04/02/20	Revision B	M. Jackson	
30/04/20	Revision C	R. Loemker	

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Client	REMONDIS Australia Pty Ltd
Project	Waste Management Plan
Title	General Locality
Scale	As shown
Source	Google Maps

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Figure 1.2. Aerial view of 21D School Drive Tomago (Lot 11, DP270328) (red line) and 21F School Drive Tomago (Lot 8, DP270328) (blue line) (partial) and Lot 301, DP 634536 (yellow line). Boundaries are approximate.



Date	Revision	Drawn By	Site description
30/10/19	Revision A	R. Loemker	21D and 21F School Drive, and Lot 301 / DP634536
04/02/20	Revision B	M. Jackson	
30/04/20	Revision C	R. Loemker	

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Client	REMONDIS Australia Pty Ltd
Project	Waste Management Plan
Title	Aerial Image
Scale	N/A
Source	Newcastle Herald

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2. Legislative requirements

The key sources of waste management regulation in New South Wales include:

- The *Protection of the Environment Operations Act* 1997, which provides enforcement provisions, a licensing framework and other tools to protect human health and environment from the inappropriate use of waste;
- The *Protection of the Environment Operations (Waste) Regulation* 2014, which includes thresholds for environment protection licences, and outlines the waste levy system;
- The *Protection of the Environment Operations (Clean Air) Regulation* 2010, which provides regulatory measures to control emissions from various sources including industry;
- The *Waste Avoidance and Resource Recovery Act* 2001, which sets the waste hierarchy and the *NSW Waste Avoidance and Resource Recovery Strategy*;

The requirements for classifying, handling and disposing of particular types of wastes is defined in the *EPA Waste Classification Guidelines*.

2.1. Relevant waste management policies

2.1.1. Waste Avoidance and Resource Recovery Strategy 2014-21

The *NSW Waste and Resource Recovery Strategy* 2014–21 was released in December 2014 and is the state's strategy for reducing waste generation, improving resource recovery rates, and keeping materials circulating within the economy.

This strategy is supported by *Waste Less, Recycle More*, a government initiative funded by the waste levy to provide waste and recycling improvements across the state. The strategy seeks to support investment in much-needed infrastructure, encourage innovation and improve recycling behaviour. The strategy also seeks to facilitate the development of new markets for recycled materials and reduce litter and illegal dumping.

The strategy sets the following targets for 2021–22:

- Avoiding and reducing the amount of waste generated per person in NSW;
- Increasing recycling rates to:
    - 70% for municipal solid waste
    - 70% for commercial and industrial waste
    - 80% for construction and demolition waste
- Increasing waste diverted from landfill to 75%;
- Managing problem wastes better, establishing 86 drop-off facilities and services across NSW;
- Reducing litter, with 40% fewer items (compared to 2012) by 2017; and
- Combatting illegal dumping, with 30% fewer incidents (compared to 2011) by 2017.

The strategy provides a clear framework for waste management to 2021–22 and provides an opportunity for NSW to continue to increase recycling across all waste streams.

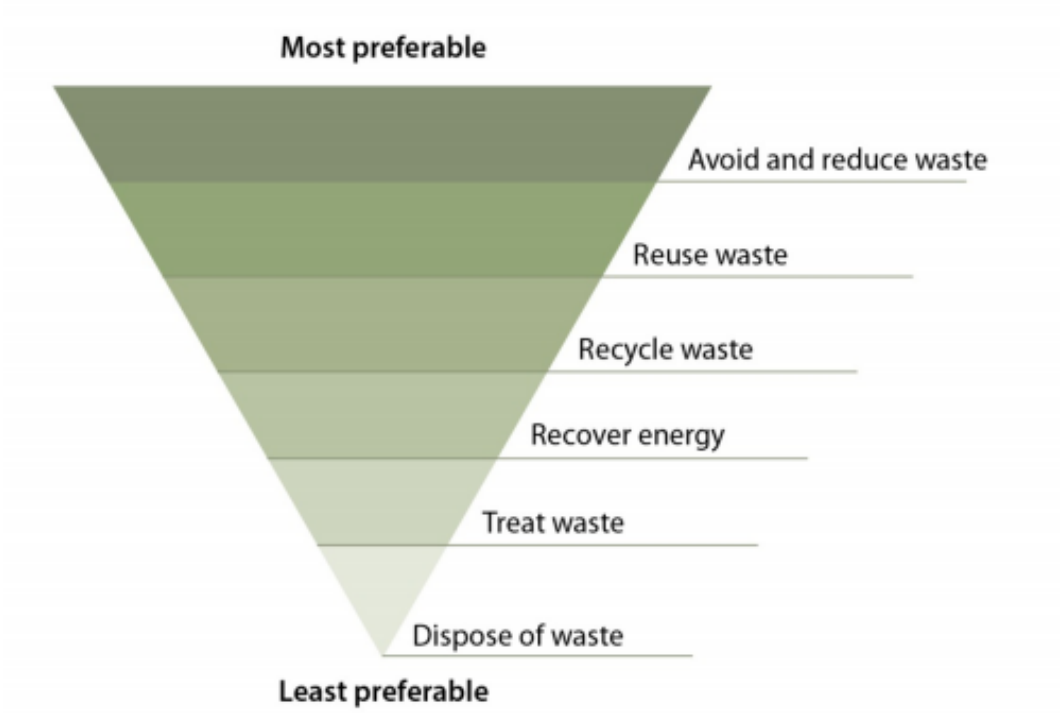
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The proposed development will increase and expand recycling infrastructure in Port Stephens and the greater Hunter area and will make an important contribution to key result areas, including:

- Increase recycling for both construction and demolition (C&D) and commercial and industrial (C&I); and
- Divert more waste from landfill.

The way waste is to be managed is driven by the Ecologically Sustainable Development principles. Guidance in managing waste has been provided by the hierarchical chart below.

Figure 1.3. The waste hierarchy as published in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21.*



Classifying waste into groups that pose similar risks to the environment and human health facilitates their management and appropriate disposal.

The following classes of waste are defined in clause 49 of Schedule 1 of the *Protection of the Environment Operations Act* 1997 (POEO Act) and the NSW EPA's *Waste Classification Guidelines* (2014)*:*

- Special waste;
- Liquid waste;
- Hazardous waste;
- Restricted solid waste;
- General solid waste (putrescible); and
- General solid waste (non-putrescible)

Where waste cannot be avoided, reused or recycled it will be classified and appropriately disposed of. The classification of waste is based on the *Waste Classification Guidelines* (NSW EPA, 2014). The guideline outlines how to assess waste, waste classification and sets out management options for the disposal of classified waste.

Waste classification will involve one or more of the following steps:

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1. Establish if the waste should be classified as special waste;
2. If not special waste, establish whether the waste should be classified as liquid waste;
3. If not special waste or liquid waste, establish whether the waste is of a type that has already been pre-classified;
4. If the waste is not special waste, liquid waste or pre-classified, establish if it has certain hazardous characteristics and can therefore be classified as hazardous waste;
5. If the waste does not possess hazardous characteristics, it needs to be chemically assessed to determine what class of waste it is. If the waste is not chemically assessed, you must manage the waste as if it were hazardous waste; and
6. If the waste is chemically assessed as general solid waste, a further test is available to determine whether the waste is putrescible or non-putrescible. This test determines whether the waste is capable of significant biological transformation. If you do not wish to undertake this test, you must manage the waste as if it were general solid waste (putrescible).

The EPA's *Waste Classification Guidelines* provide a framework for accepting, testing and determining management options for waste received to ensure human health and the environment are protected.

2.1.2. NSW Energy from Waste Policy Statement

The NSW Government describes energy from waste as a process through which energy and resources are retrieved from waste through thermal treatment. Thermal treatment is defined in Schedule 1 to the *Protection of the Environment Operations Act* 1997 as 'the processing of waste by burning, incineration, thermal oxidation, gasification, pyrolysis, plasma or other thermal treatment processes'.

Energy from waste technologies may result in heat, electricity, or fuel.

In 2015, the NSW EPA published the *NSW Energy from Waste Policy Statement*. The policy sets out the requirements for facilities seeking to recover energy by thermally treating waste, or materials derived from waste. Key features of the policy include:

- The energy from waste process must not result in any increase to 'the risk of harm to human health or the environment';
- Energy from waste processing should only be used where it is considered 'the most efficient use of the resource', that is the process will not undermine the higher order waste management options;
- A definition of 'eligible waste fuels' (certain low-risk waste that can be used as fuel);
- Any facility proposing to thermally treat waste or waste-derived material that is not an eligible waste fuel must meet the requirements for an energy recovery facility;
- Operators of energy recovery facilities are required to demonstrate they will use international best practice in relation to:
    - process design and control
    - emission control equipment design and control
    - emission monitoring with real-time feedback to the controls of the process
    - arrangements for the receipt of waste
    - management of residues from the energy recovery process
- The process and air emissions from the facility must satisfy at a minimum the requirements of the Group 6 emission standards within the *Protection of the Environment Operations (Clean Air) Regulation* 2010;
- Proponents of energy recovery facilities must use reference facilities to demonstrate 'technologies that are proven, well understood and capable of handling the expected variability and type of waste feedstock';
- Energy recovery facilities must meet technical, thermal efficiency and resource recovery criteria; and
- The 'good neighbour' principle, that is a proponent must be considerate, genuinely engage and provide readily available information to stakeholders.

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The NSW EPA considers energy recovery to be a complementary waste management option for the residual waste produced from material recovery processes or source separated collection systems.

The policy statement's objectives in setting resource recovery criteria are to:

- Promote the source separation of waste where technically and economically achievable;
- Drive the use of best practice material recovery processes; and
- Ensure only the residual from bona-fide resource recovery operations are eligible for use as a feedstock for an energy recovery facility.

Energy recovery facilities may only receive feedstock from waste processing facilities or collection systems that meet the criteria outlined in Table 1 of the NSW Energy from Waste Policy Statement.

The proposed Facility has been designed to recover residual materials with calorific value for use as a sustainable fuel. Additional information regarding the receival of feedstock to produce waste fuels is summarised in Section 4.6.

2.1.3. Standards for Managing Construction Waste in NSW

The *Standards for Managing Construction Waste in NSW* commenced on 15 May 2019. The Standards have been implemented to:

- Minimise the risk of harm to human health and the environment from asbestos and other contaminants found in construction waste;
- Ensure operators of construction waste facilities implement appropriate processes and procedures to manage these risks; and
- Improve industry and community confidence in the quality of resources recovered from construction and demolition waste.

The Standards apply to all construction and demolition waste facilities with an environment protection licence for waste storage, waste processing or resource recovery.

The Standards require construction and demolition waste facilities to:

- Implement a two-stage inspection process to ensure asbestos waste and other unpermitted wastes do not enter the facility;
- Implement sorting and waste storage requirements to improve the quality of recovered resources and avoid cross-contamination of materials;
- Ensure construction waste is only transported from the facility if it has been handled in accordance with the Standards on-site; and
- Ensure that all staff managing, supervising or undertaking tasks required by the Standards have been appropriately trained.

Where any load is found or reasonably suspected to contain unpermitted wastes, the entire load of waste must be rejected, and must be removed from the facility on the vehicle on which it arrived.

The Standards also include the following requirements:

- Construction waste must be sorted and classified into individual waste types;
- Sorted construction waste must not be mixed with any other type of waste;
- Each individual waste type must be stored separately, and storage areas must be clearly labelled;
- Stockpiles must be clearly delineated and separated by a minimum of three metres; and
- Stockpiles must be checked by staff every business day to ensure waste is correctly stored.

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Compliance with the Standards is a compulsory licence condition for all construction and demolition waste facilities. Failure to comply with the Standards is a breach of section 64 of the *Protection of the Environment Operations Act* 1997.

2.1.4. Fire and Rescue NSW – Fire Safety Guidelines

In August 2019, Fire and Rescue NSW published new guidelines that apply to waste and resource recovery operations. These guidelines need to be considered for facilities that are seeking approval for upgrades or changes, and for new facilities.

The purpose of the document is to provide guidance on fire safety in waste facilities that receive combustible waste materials, including adequate provision for fire safety and facilitate safe fire brigade intervention to protect life, property and the environment. The guideline specially outlines the requirement of Fire and Rescue NSW for:

a) Considering for safety during all stages of a waste facility, including site selection, planning, design, assessment and operation;
b) Fire safety systems to be adequate to the special hazards identified within a waste facility and which also meet the operational needs of fire fighters;
c) Safe storage and stockpiling of combustible waste material based on expected combustibility and maximum pile size;
d) Workplace fire safety and fire safety planning, including procedures in the event of fire or an emergency incident.

An assessment of the facility with regards to the management of waste in accordance with the Fire and Rescue Guidelines has been carried out in preparing this WMMP.

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3. Project description

The Tomago Resource Recovery Facility will receive, sort, process and recycle a range of materials from businesses and industries across the Hunter. The operation will also include a truck parking depot for the collection fleet, a maintenance workshop and self-bunded storage tanks for liquid wastes and fuels/oils to support the collection fleet.

The recycling operations will be established within Buildings 1 and 2 on the site (refer to Figure 1.2). Each recycling operation will be established in discreet parts of the existing industrial warehousing, and collectively, the Tomago Resource Recovery Facility will provide a wide range of recycling services through:

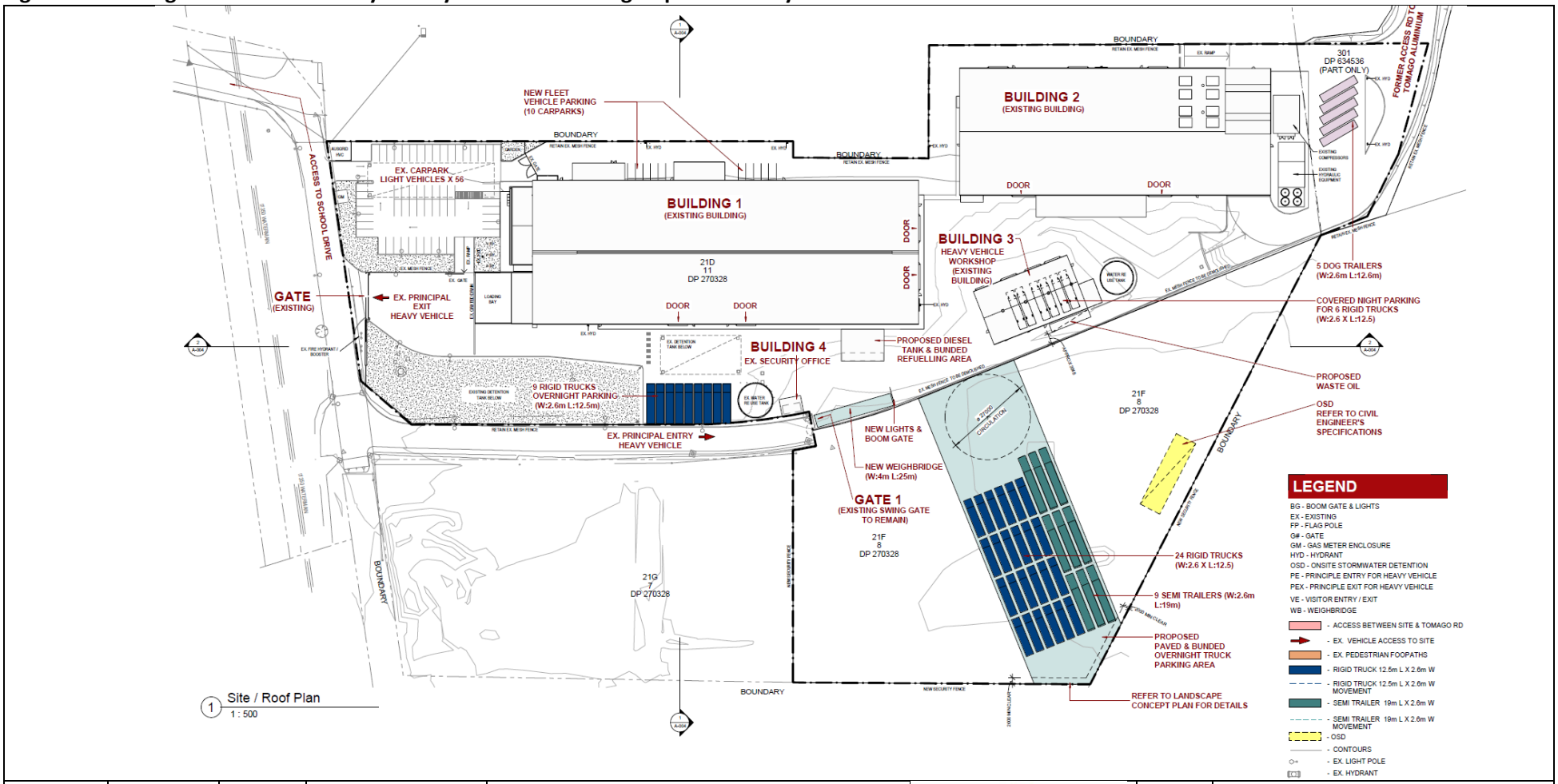
- A fully integrated Materials Recovery Facility for sorting and processing:
    - Commercial and industrial mixed general solid waste (non-putrescible) (60%); and
    - Construction building waste from residential and commercial construction (non-putrescible) (40%);
- A Cardboard Baling Facility for source separated cardboard collected from businesses;
- A Drill Mud Recycling Facility for drill muds sourced from the civil, construction and mining industries;
- A Packaged Food Recycling Plant, which will accept packaged foods and drinks, separating the food contents and packaging for recycling;
- A Garden Organics Primary Processing plant, which will receive, decontaminate and shred woody garden organics for off-site composting;
- A Hazardous Waste Recycling Facility, for sorting and aggregating a range of spent solid materials and liquids containing oils and chemicals;
- A Copper Processing area; and
- A Metals Recycling Facility.

A truck parking depot will be established on the adjacent vacant lot referred to as 21F School Drive.

Site plans providing an overview of the proposed development and operations, including vehicle turning paths, are given in Attachment 2. An operational overview of the functional areas of the site is provided below. The Site Plan is provided in Figure 3.1. The general arrangement plans for the Building 1 and Building 2 are shown in Figures 3.2 and 3.3 respectively. The internal storage arrangements for the Hazardous Waste Materials Storage Facility are outlined in Figure 3.4.

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Figure 3.1. Tomago Resource Recovery Facility and Truck Parking Depot – Site Layout.



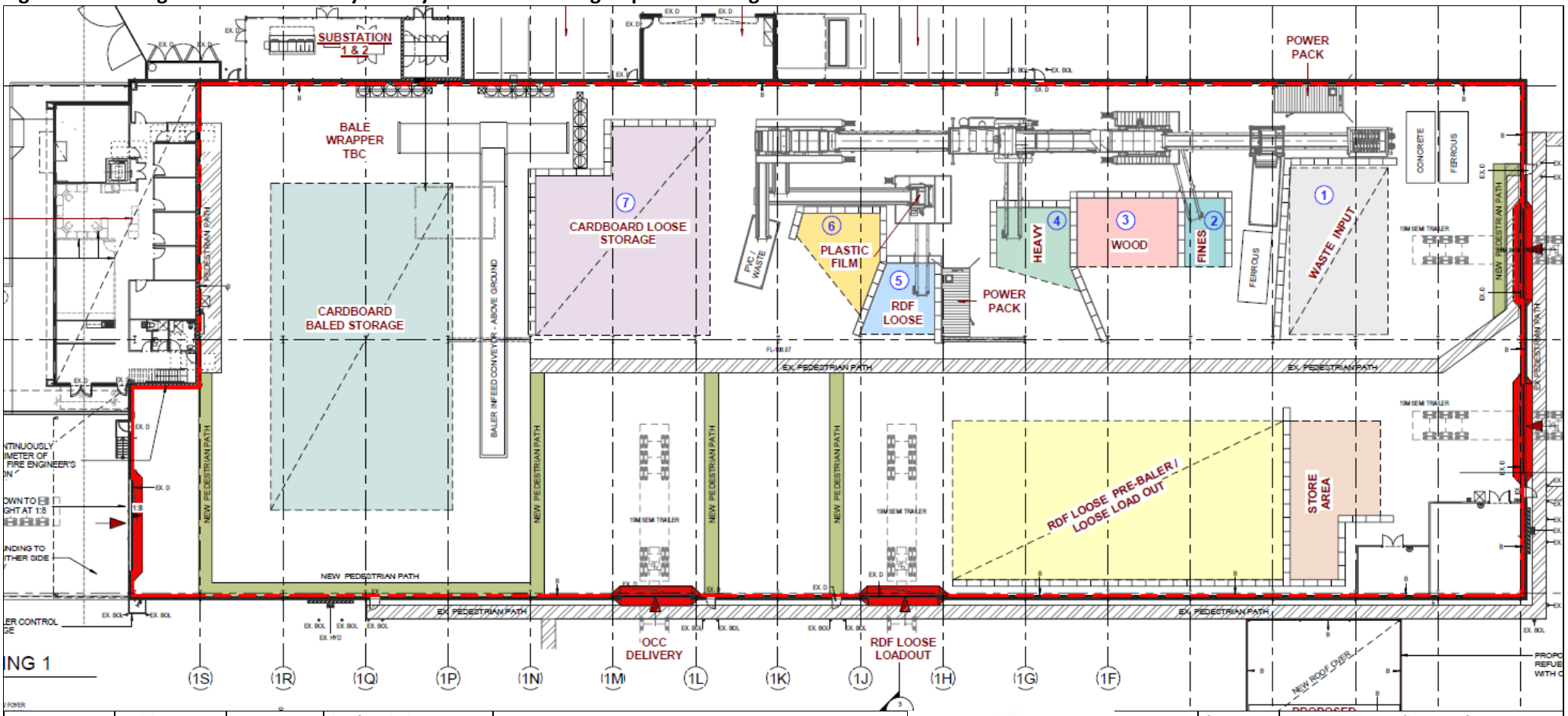
Date	Revision	Drawn By	Site description
18/08/20	Revision A	R. Loemker	21D and 21F School Drive, and Lot 301 / DP634536
13/11/20	Revision B	R. Loemker	

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Client	REMONDIS Australia Pty Ltd
Project	Waste Management Plan
Title	Site Layout
Scale	N/A
Source	EJE Architecture

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Figure 3.2. Tomago Resource Recovery Facility and Truck Parking Depot – Building 1 Floor Plan.



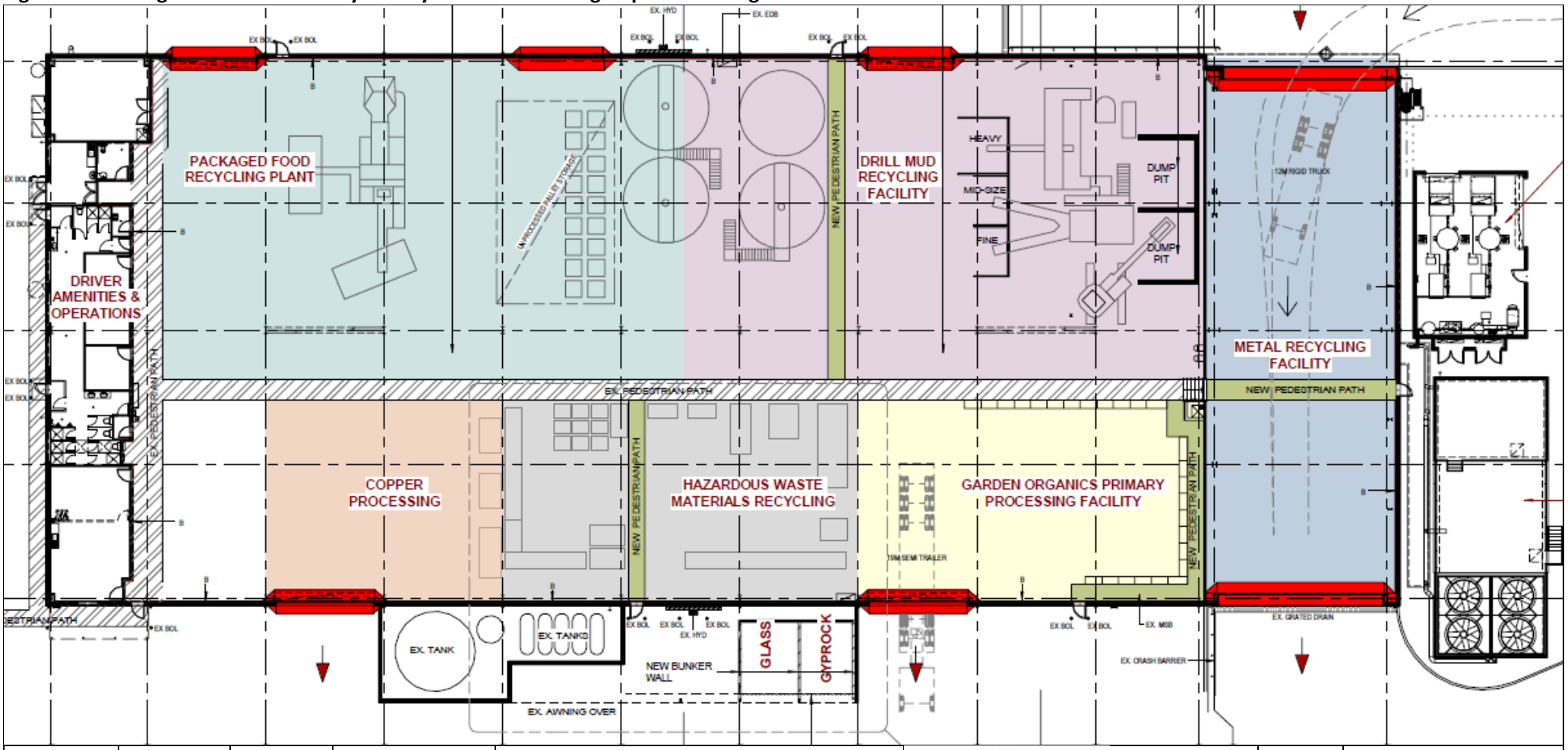
Date	Revision	Drawn By	Site description
18/08/20	Revision A	R. Loemker	21D and 21F School Drive, and Lot 301 / DP634536
13/11/20	Revision B	R. Loemker	

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Client	REMONDIS Australia Pty Ltd
Project	Waste Management Plan
Title	Building 1 Floor Plan
Scale	N/A
Source	EJE Architecture

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Figure 3.3. Tomago Resource Recovery Facility and Truck Parking Depot – Building 2 Floor Plan.



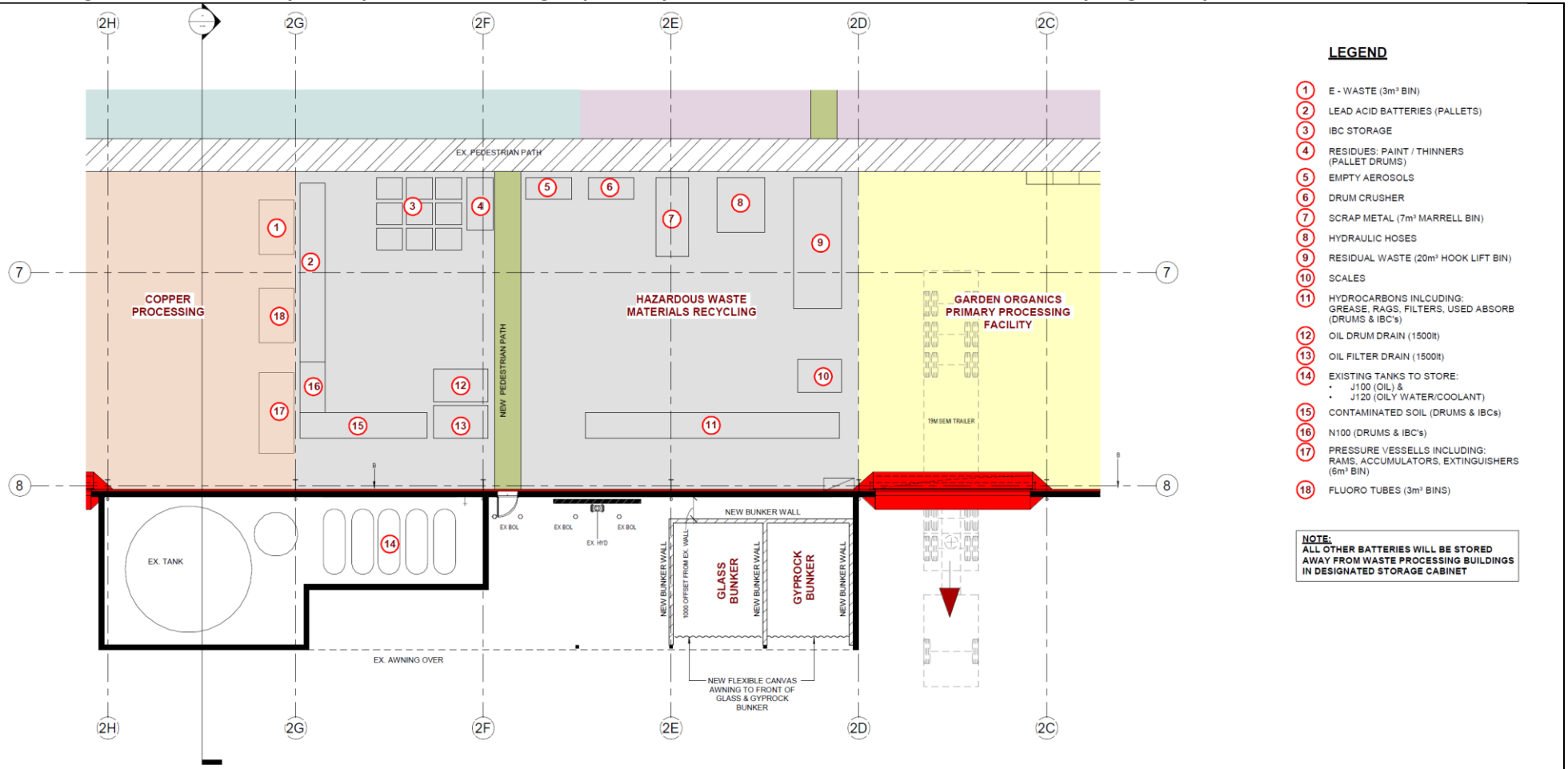
Date	Revision	Drawn By	Site description
18/08/20	Revision A	R. Loemker	21D and 21F School Drive, and Lot 301 / DP634536
13/11/20	Revision B	R. Loemker	

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Client	REMONDIS Australia Pty Ltd
Project	Waste Management Plan
Title	Building 2 Floor Plan
Scale	N/A
Source	EJE Architecture

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Figure 3.4. Tomago Resource Recovery Facility and Truck Parking Depot – Layout of the Hazardous Waste Materials Recycling Facility.



Date	Revision	Drawn By	Site description	Jackson Environment and Planning Pty Ltd		Client	REMONDIS Australia Pty Ltd
25/11/20	1	M.Jackson	21D and 21F School Drive, and Lot 301 / DP634536	Strategy | Infrastructure | Compliance | Procurement A: Suite 102, Level 1, 25-29 Berry St, North Sydney NSW 2060 E: admin@jacksonenvironment.com.au T: 02 8056 1849 W: http://www.jacksonenvironment.com.au		Project	Waste Management Plan
						Title	Layout of the Hazardous Waste Materials Recycling Facility.
						Scale	N/A
						Source	EJE Architecture

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4. Waste management

Waste management practices outlined below address the economic, environmental and safety imperatives during the construction phase and into the operational phase. These enhanced management practices also produce triple bottom line benefits including financial efficiencies, sustainable construction methods and a safe work site for the duration of the construction process.

These positive outcomes will be achieved through thorough planning and procurement of exacting measurements reducing upfront costs of construction and preventing the generation of waste.

The benefits of the management practices outlined in the plans will be realised from the outset by both the business and the broader community in the form of reduced costs of disposal, reduced costs of legal liability and common good through:

- Minimising waste by manufacturing building components off site to design specifications;
- Maximising recovery of valuable resources;
- Exercising due diligence for safe disposal of waste; and
- Providing a safe worksite.

4.1. Demolition phase

The development phase of the project does not involve the demolition of any built structures on 21D or 21F School Drive, Tomago.

4.2. Construction phase

The construction of the Tomago Resource Recovery Facility and Truck Parking Depot will generate construction waste. Typical construction activities would include:

- Clearing of vegetation and grubbing for the proposed truck parking depot on 21F School Drive;
- Earthworks and installation of a weighbridge on 21D School Drive; and
- Installation of above ground mechanical and electrical plant and equipment Installation for sorting and processing waste withing the buildings on 21D School Drive, Tomago.

The waste streams generated on site during the construction phase is summarised in Table 4.1 below.

Trees/shrubs removed during initial works will be mulched and surface applied to exposed soil surface outside of the immediate construction area for soil erosion control in accordance with Appendix D of Landcom (2004) *Managing Urban Stormwater – Soils and Construction*[1]. All vegetation will be fully recycled and re-used on-site as erosion control mulch.

It is noted that site soils on 21F School Drive will be largely retained and capped on site as recommended by the Remedial Action Plan by JM Environments (see Appendix M3 of the EIS). Where site soil is surplus to requirements and cannot be used on site, this waste will be classified under the NSW EPA's *Waste Classification Guidelines Part 1: Classifying Waste* (2014). This soil will be placed in labelled hook lift bins and sent off-site for lawful disposal.

[1] Landcom (2004). Managing Urban Stormwater – Soils and Construction. 4th Edition, March 2004. Internet publication: https://www.environment.nsw.gov.au/resources/water/BlueBookVol1.pdf

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Minor amounts of concrete, timber, metal and plastics will be generated during the construction of the truck parking depot and weighbridge. These wastes will be segregated to maximise recycling and stored separately in hook lift bins and will be transported off-site for recycling at a lawful facility.

The overall waste recovery rate during the construction phase will be >97%.

Residual waste will be collected in a separate hook lift bin and regularly removed from the site for disposal in a licensed landfill. Other recovered materials will be sent to EPA licenced recycling facilities in the region

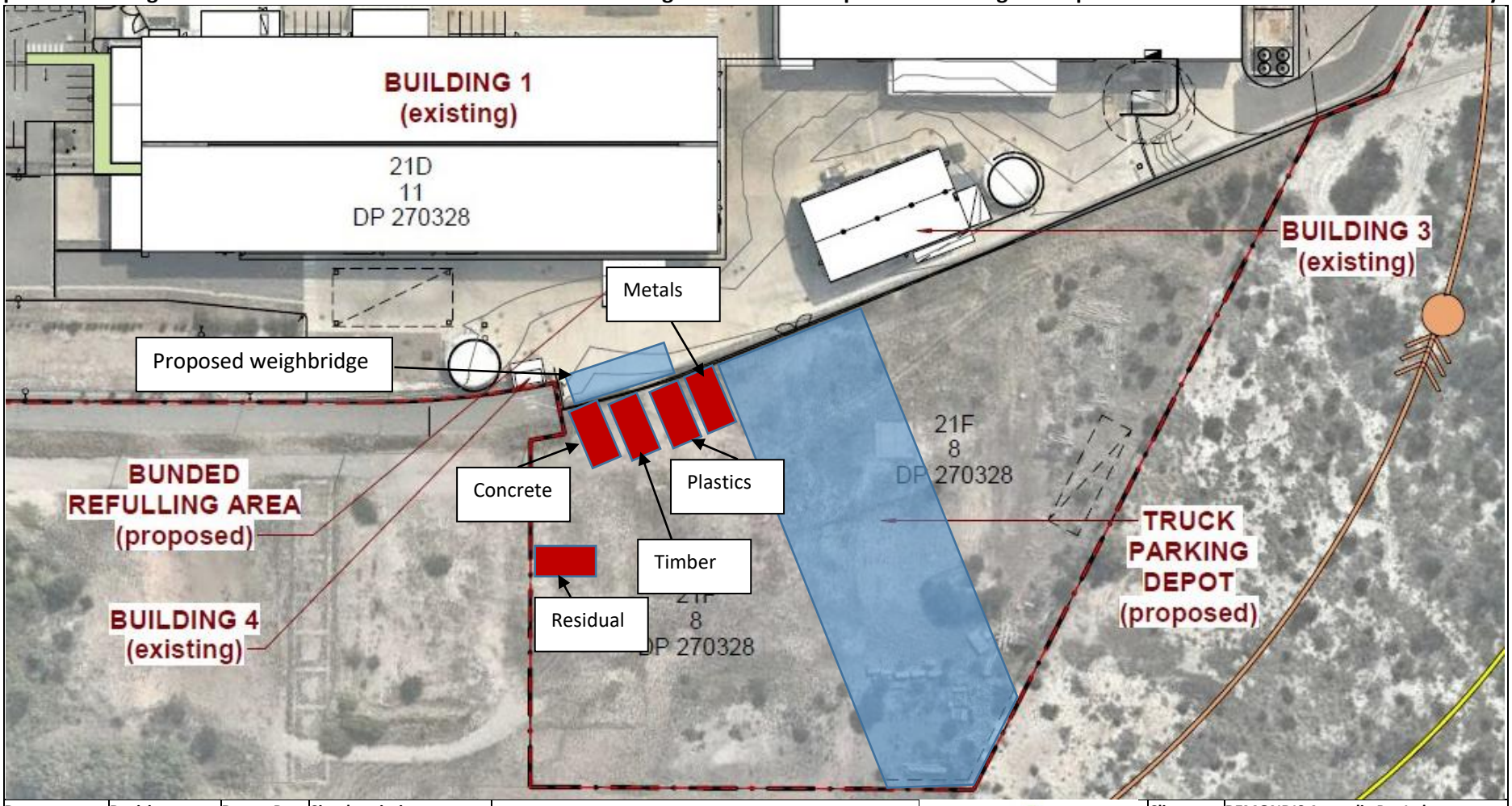
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Table 4.1. Estimated waste generation during the construction phase.

Waste Type	Waste Identified	Waste Description	Reuse/recycling /Disposal Method	Suggest Receiving Facility	Tonnes	Recycling rate
General Solid Waste (non-putrescible)	Woody garden organics	Tree stumps and branches, as well as some grasses. These will be mulched and used on-site around the perimeter of the site for soil erosion control	On-site recycling	Use on-site as an erosion control mulch	20	100%
	Soil	Earthworks spoil to prepare the truck parking area and weighbridge construction areas.	Off-site disposal	Summerhill Landfill – Newcastle or licenced facility as appropriate	2,000	100%
	Construction waste	Timber, packaging, metal, asphalt, concrete, glass, plastic, rubber, plasterboard, ceramics, bricks from the installation of foundations and underground services and above mechanical and electrical plant and equipment	Off-site recycling	Central Waste Station - Kurri	100	95%
	Grit, sediment, litter and gross pollutants	Collected in, and removed from, stormwater treatment devices and/or stormwater management systems	Off-site disposal	Summerhill Landfill - Newcastle	50	0%
	Site office waste	Paper, cardboard and co-mingled recycling.	Off-site recycling	Remondis - Thornton	10	100%
Hazardous	Waste oils, fuels, lubricants and chemicals	Waste oils and containers that previously contained Class 1, 3, 4, 5 or 8 substances used for construction plant	Off-site recycling / disposal	Remondis - Thornton	0.5	0%
General Solid Waste (putrescible)	Site office waste	Generated from worker's lunches.	Off-site disposal	Summerhill Landfill - Newcastle	0.5	0%
TOTAL Amount of waste generated (tonnes)					2,181	
TOTAL Amount of waste recycled (tonnes)					2125	
Overall recycling rate					97.4%	

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Figure 4.1. Plan showing the area to be excavated during construction works (blue boxes). Areas for placement of waste storage and recycling bins during the construction phase are also given. Red boxes indicate bins that will be used during the construction phase for sorting and separation of materials for either off-site recycling or disposal.



Date	Revision	Drawn By	Site description
18/08/20	Revision A	R. Loemker	21D School Drive Tomago (Lot 11, DP270328) and 21F School Drive (Lot 8, DP270328)

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Client	REMONDIS Australia Pty Ltd
Project	Waste Management Plan
Title	Construction works
Scale	N/A
Source	EJE Architecture

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4.3. Operational phase

The site operations will generate very little waste itself. The vast bulk of “waste” materials will be brought onto site for processing or for aggregation and off-site transport to other facilities for recycling. While some material will be non-recyclable “residual” waste, most material will be recovered, sorted and moved off site for further processing / recycling.

The recycling operations will be established within existing buildings on the Site, which were approved under Major Project MP 10_003 and will process up to 98,201 tonnes of solid and liquid waste materials per annum. The overall waste recovery rate during the operation phase will be more than 96%.

Each recycling operation will be established in discreet parts of the existing industrial warehousing. A summary of the waste materials processed in each operation is provided in Table 4.2.

An overview of each of the above recycling services is provided in the following sections.

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Table 4.2. Summary of the waste materials processed in each operation within the Tomago Resource Recovery Facility.

Recycling process	Types of materials to be received and processed	Source	Waste classification	Annual tonnage projections (tonnes pa)	Sorted product (tpa)	Sorted and recovered product output (tpa)	Residual waste (tpa)
Materials Recovery Facility (MRF)	Paper / cardboard Plastics Glass Timber / wood Mixed dry general waste	Commercial and Industrial waste collections Construction waste	General solid waste (non-putrescible)	31,000	Fines Ferrous metal Concrete/brick/tile RDF	11,470 620 3,100 15,500	310
Cardboard Baling Facility (CBF)	Cardboard	Businesses	General solid waste (non-putrescible)	30,000	Cardboard	28,500	1,500
Drill Mud Recycling Facility (DMRF)	Drill mud (soil and water mixture)	Industry	Category 1 trackable liquid waste	5,000	Wastewater Engineering Fill	2,500 2,500	0
Packaged Food Recycling Plant (PFRP)	Packaged food products	Businesses Industry	General solid waste (non-putrescible) General solid waste (putrescible)	2,000	Paper/ cardboard Plastics Glass Ferrous metal Non-ferrous metals Wastewater Food organics	60 60 60 60 60 1,300 360	40
Garden Organics Primary Processing (GOPP)	Woody garden organics	Households Businesses	General solid waste (non-putrescible)	5,000	Timber/ wood mulch	4,500	500
Metals Recycling (MR)	Ferrous metals Non-ferrous metals	Households Businesses	General solid waste (non-putrescible)	4,000	Ferrous metal Non-ferrous metals	1,800 2,000	200
Copper Processing area (CP)	Copper wire	Businesses	General solid waste (non-putrescible)	1,000	Copper wire Plastics	500 500	0

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Recycling process	Types of materials to be received and processed	Source	Waste classification	Annual tonnage projections (tonnes pa)	Sorted product (tpa)	Sorted and recovered product output (tpa)	Residual waste (tpa)
Hazardous Waste Recycling Facility (HWRF)	Drained Oil filters, rags and absorbent material (hydrocarbons)	Businesses Industry	General solid waste (non-putrescible)	500	Drained Oil filters, rags and absorbent material	0	500
	Containers & drums of controlled waste residues	Businesses Industry	Category 1 trackable solid waste (N100)	500	Containers & drums of controlled waste residues	500	0
	Contaminated Soils	Businesses Industry	Category 1 trackable solid waste (N120)	12,000	Contaminated Soils	12,000	0
	Lead Acid Batteries	Businesses Industry	Category 1 trackable solid waste (D220)	500	Lead Acid Batteries	500	0
	Waste Mineral Oils	Businesses Industry	Category 1 trackable liquid waste (J100)	6,000	Waste Mineral Oils	6,000	0
	Oily water/Coolant etc	Businesses Industry	Category 1 trackable liquid waste (J120)	300	Oily water/Coolant etc	300	0
	Batteries (Li-ion/NiCad/etc)	Businesses Industry	General solid waste (non-putrescible)	1	Batteries (Li-ion/NiCad/etc)	1	0
	Fluoro Tubes	Businesses Industry	General solid waste (non-putrescible)	50	Fluoro Tubes	50	0
	Gyproc	Businesses Industry	General solid waste (non-putrescible)	200	Gyproc	200	0

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Recycling process	Types of materials to be received and processed	Source	Waste classification	Annual tonnage projections (tonnes pa)	Sorted product (tpa)	Sorted and recovered product output (tpa)	Residual waste (tpa)
	Used Fire extinguishers and Pressure Vessels/Rams etc	Businesses Industry	General solid waste (non-putrescible)	50	Used Fire extinguishers and Pressure Vessels/Rams etc	50	0
	Residual Solvents / Thinners / Paints	Businesses Industry	Category 1 trackable liquid waste (J100)	50	Residual Solvents / Thinners / Paints	50	0
	E-waste	Businesses Industry	General solid waste (non-putrescible)	50	E-waste	50	0
TOTALS				**98,201**		**95,651**	**3,050**
TOTAL Amount of waste processed (tonnes)							**98,201**
TOTAL Amount of waste recycled (tonnes)							**95,151**
TOTAL Amount of waste landfilled (tonnes)							**3,050**
Overall recycling rate							**97.4%**

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4.3.1. Materials Recycling Facility

Building 1 will house the Materials Recycling Facility (MRF) for sorting and recycling non-putrescible commercial and industrial mixed general solid waste via front-lift bin collections (approximately 60% of total waste received) and construction building waste from residential and commercial construction, including office fit-outs (approximately 40% of total waste received). The MRF is expected to process up to 31,000 tonnes per annum (refer to Table 4.2).

Collection vehicles will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording (Figure 3.1) and then will enter Building 1 for unloading (refer to Figure 3.2).

All incoming waste from construction sites will be managed in accordance with the *Standards for Managing Construction Waste in NSW* (NSW EPA, 2018) and *the Waste Classification Guidelines* (NSW EPA, 2014) (refer to Section 4.6).

Accepted waste will be tipped in the "tip and spread inspection area" which the bunded concrete inspection bay. This area will be used solely for tipping, spreading, turning and inspecting each load of construction waste as required. Rejected loads and unwanted materials will be managed accordingly. Any gross physical contamination will be removed by a Material Handler and placed into a waste disposal bin.

Waste materials suitable for processing will then be loaded into a hopper of the sorting plant for separation by material type. The MRF processing line will separate waste into the following:

- Recovered fines;
- Shredded wood;
- Heavies (concrete/brick/tile);
- Loose Refuse-derived fuel (RDF);
- Plastics; and
- PVC.

Waste outputs will be stored in separate storage areas (Refer to Figure 3.2 and Table 4.7.). Products such as RDF, concrete/brick/tile, recovered fines, engineering fill, timber / wood mulch and Gyproc will be sampled and tested where required to confirm conformance with the relevant NSW EPA Resource Recovery Order specifications.

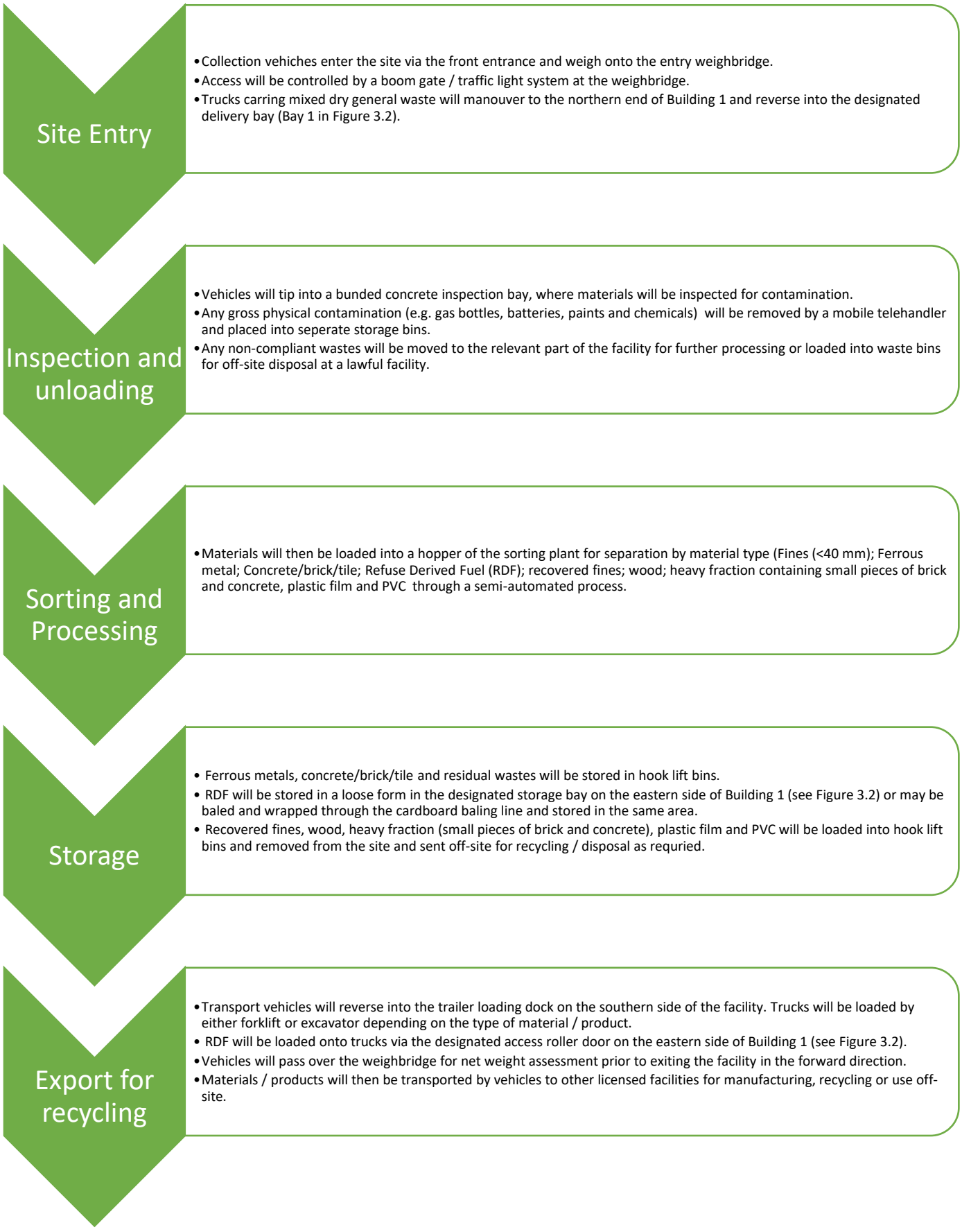
The RDF fraction will consist of the dry calorific fractions derived from the waste which usually contains plastics, timber, paper, cardboard, rubber and textiles. The materials will be separated, shredded, stored loose or baled and wrapped to be transported as feedstock to a third-party user.

Products will then be transported off site by vehicles for manufacturing, recycling or use off-site. Note that vehicles will pass over the weighbridge for net weight assessment prior to exiting the facility in the forward direction.

A process flow chart for the operation of the MRF is provided in Figure 4.2.

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Figure 4.2. Process flow chart for the operation of the Materials Recycling Facility.



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4.3.1.1. Waste inspection, acceptance and non-conforming waste

The incoming waste inspection and management of non-conforming loads will conform to the standards in the NSW EPA's *Standards for managing construction waste in NSW*. A non-conforming waste procedure is provided in Attachment 1.

4.3.1.1.1. Standard 1 Inspection requirements

At the verified weighbridge on entry into the facility, trained personnel must:

1. Inspect the entire top of each load from an elevated inspection point or by using a video camera connected to a monitor and determine whether or not the load contains any asbestos waste and any other unpermitted waste;
2. Where the load is identified as containing, or is reasonably suspected to contain, any asbestos waste, reject the entire load of waste by directing the driver to immediately leave the facility and record the information required by Standard 1.4 into the C&D waste facility's rejected loads register; and
3. Where the load is not rejected, record the details as required by clause 27 of the Waste Regulation and direct the driver and the load of waste to proceed directly to inspection point 2.

At inspection point 2 – tip and spread inspection area (inside Building 1), trained personnel must:

1. Direct the driver of the vehicle to tip the entire load on the tip and spread inspection area;
2. Spread the entire load and inspect the visible surface area for any asbestos waste and any other unpermitted waste;
3. Manually turn, or direct a plant operator to turn, the entire load and inspect the entire load for any asbestos waste and any other unpermitted waste on or beneath the visible surface;
4. Where any asbestos waste is identified, reject the entire load of waste.
5. Where any other unpermitted waste is identified under this Standard 1.2, remove that waste from the load or reject the entire load of waste.
6. Where a load is rejected under this Standard 1.2, ensure that the entire load is immediately reloaded onto the vehicle in which it arrived or onto another vehicle and ensure that the vehicle with the rejected load leaves the C&D waste facility on the same business day and then immediately record the information required by Standard 1.4 into the C&D facility's rejected loads register; and
7. Ensure that all waste that may lawfully be received at the waste facility proceeds to be sorted and stored in accordance with Standards 2, 3 and 4.

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4.3.2. Cardboard Baling Facility

A separate part of the Tomago Resource Recovery Facility will be a dedicated Cardboard Baling Facility (CBF). Collection vehicles will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording, and then will enter the eastern side of Building 1 for unloading in the dedicated OCC delivery bay area (refer to Figure 3.2). The CBF is expected to process up to 30,000 tonnes per year of source separated cardboard (Table 4.2).

Trucks will then manoeuvre to the OCC Tipping and Inspection Area where cardboard is to be emptied within the concrete bunker cardboard receival area. Cardboard will be spread with a telehandler to remove any contamination prior to baling. Contaminants will be separated and placed into a general waste bin for off-site disposal.

Cardboard will be processed internally in the CBF. A bobcat or front-end loader will be used to load the cardboard baler. Cardboard is baled in a hydraulic bale press and secured via steel wire into one tonne blocks and stored before transport off-site for recycling. Bales will be stored in a separate area in the southern section of Building 1, prior to loading onto semi-trailers for transport to manufacturers. Trucks carrying baled cardboard will pass over the weighbridge for net weight assessment, and trucks will leave the site in the forward direction.

A process flow chart for the operation of the CBF is provided in Figure 4.3.

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Figure 4.3. Process flow chart for the operation of the Cardboard Baling Facility.



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4.3.3. Drill Mud Recycling Facility

Drill mud is currently generated by various commercial activities which include hydro-excavation or non-destructive digging, exploration drilling and horizontal boring. Drilling fluid (drill mud) is used as a lubricant and as a coolant during drilling operations such as horizontal direction drilling, potholing and investigative digging for civil, construction and mining. Drill mud is a mixture of water, clays, fluid loss control additives, density control additives and viscosifiers, which typically requires transport for off-site treatment at a recycling facility. The Drill Mud Recycling Facility is expected to process up to 5,000 tonnes per year of drill mud (Table 4.2).

REMONDIS proposes to establish a small drill mud recycling operation to receive, process and recycle drill muds. Drill mud will be transported via liquid tanker truck to the Tomago Resource Recovery Facility, passing over the weighbridge for gross weight assessment. The vehicle will then manoeuvre to the Drill Mud Recycling Facility (DMRF) in Building 2 (refer to Figure 3.3). The operation will involve the following:

- Drill mud tanker trucks will enter the DMRF and will be pumped out into a bunded 50,000 L drill mud holding tank. Trucks will then exit in the forward direction over the weighbridge for net weight recording;
- The internal body of the tanker truck may be cleaned internally with rainwater from the site's rainwater harvesting system, and the wash out water will be pumped into the 50,000 L drill mud holding tank;
- The contents of the drill mud holding tank will be pumped at a specific rate into an on-site drill mud centrifuge, which will separate the solids (soil) from the liquid phase (mainly water);
- Dewatered solids (soil) will be transferred into a hook lift bin and moved to the dewatered drill mud storage area for sampling and testing to confirm compliance with the EPA's *Treated Drilling Mud Order* 2014;
- The supernatant (liquid phase) will be pumped to a 50,000 L holding tank for testing. This water may be sent off-site for treatment or recycling at a lawful facility.

A process flow chart for the operation of the Drill Mud Recycling Facility is provided in Figure 4.4.

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Figure 4.4. Process flow chart for the operation of the Drill Mud Recycling Facility.



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4.3.4. Packaged Food Recycling Plant

The Packaged Food Recycling Plant (PFRP) will receive, de-package and recycle foods, drinks and associated packaging collected from retailers and manufacturers. The PFRP will separate foods from their packaging, to enable the recovery of the food fraction (such as through off-site composting or soil injection) and packaging, including steel, aluminium, plastics and liquid paperboard. The Packaged Food Recycling Plant is expected to process up to 2,000 tonnes per year of Packaged food products (Table 4.2).

Collection vehicles carrying packaged food on pallets will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording, and then will enter Building 2 for unloading (refer to Figure 3.3).

Trucks will then manoeuvre to the PFRP where pallets of packaged food and drinks will be unloaded and stored in a bunded storage bay. Forklifts will transfer the contents of the pallets into a receiving hopper of the food de-packaging unit. The food de-packaging unit 'chops and squeezes' the content of the food or drink item, separating the packaging from the food contents. The liquidised food is discharged and pumped into a 20,000 L on-site liquid food waste holding tank, which will be pumped out twice weekly and transported off-site for recycling. Ventilation and odour control systems will be considered to capture any odorous air from the de-packaging process and the liquid food waste holding tank.

Packaging separated by the de-packaging unit will be stored in a hook lift bin and transferred to the MRF for processing, separation and recycling of packaging.

A process flow chart for the operation of the Packaged Food Recycling Plant is provided in Figure 4.5.

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Figure 4.5. Process flow chart for the operation of the Packaged Food Recycling Plant.



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4.3.5. Garden Organics Primary Processing Plant

A separate part of the Tomago Resource Recovery Facility will be a dedicated Garden Organics Primary Processing area (GOPP). This facility will receive, shred and send off-site primary processed garden organics to licenced composting facilities for processing and manufacturing into compost. The Garden Organics Primary Processing Plant is expected to process up to 5,000 tonnes per year of garden organics (Table 4.2).

Collection vehicles will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording, and then will enter Building 2 for unloading (refer to Figure 3.3).

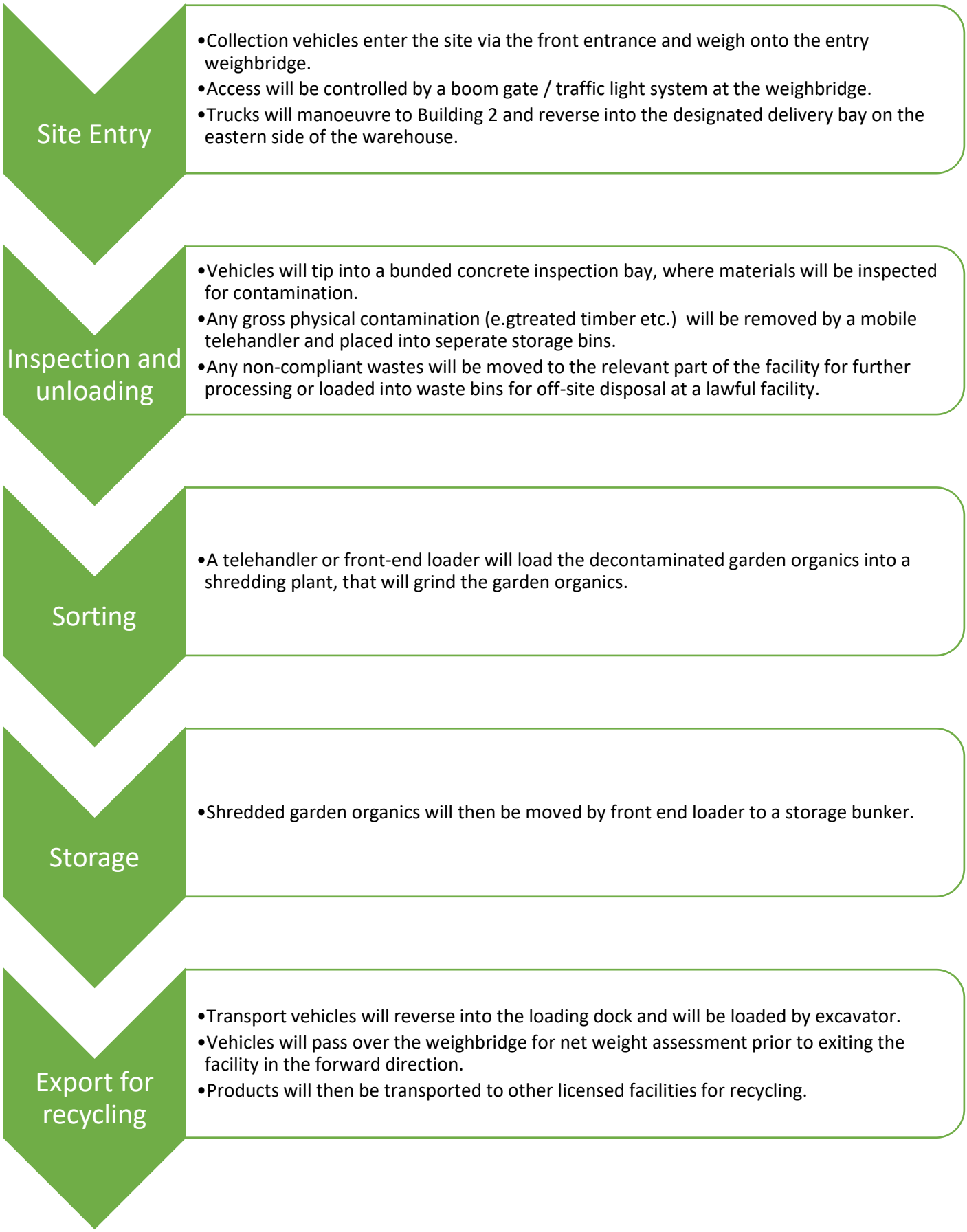
Trucks will then manoeuvre to the GOPP waste receiving area where garden organics are emptied within the concrete bunker receival area. Garden organics will be spread with a telehandler to remove any contamination prior to transfer the pre-processing storage concrete bunker. Contaminants will be separated and placed into a general waste bin for off-site disposal.

Garden organics will be processed internally in the GOPP. A telehandler or front-end loader will load the decontaminated garden organics into a shredding plant, that will grind the garden organics to <180mm in particle size. Shredded garden organics will then be moved by front end loader to a storage bunker, for regular transport via truck to a licensed composting facility for recycling. Trucks carrying shredded garden organics will pass over the weighbridge for net weight assessment, and trucks will leave the site in the forward direction.

A process flow chart for the operation of the Garden Organics Primary Processing Plant is provided in Figure 4.6.

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Figure 4.6. Process flow chart for the operation of the Garden Organics Primary Processing Plant.



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4.3.6. Hazardous Waste Recycling Facility

A range of spent solid materials and liquids containing oils and chemicals will be received, aggregated and stored according to chemical group within the Tomago Resource Recovery Facility. These materials are collected from mining and manufacturing in the Hunter. Sorting and aggregation of the materials by type enables these materials to the efficiently collected and transported to off-site processing, recycling or disposal facilities. The Hazardous Waste Recycling Facility is expected to process up to 20,201 tonnes per year of hazardous waste (Table 4.2).

The Hazardous Waste Materials Recycling (HWMR) area will be established in Building 2 (refer to Figure 3.3). Trucks will enter the facility in the forward direction, over the weighbridge for gross weight recording, and will then manoeuvre to the HWMR area. The manifest for each collection vehicle will be inspected, and solid waste materials in bins or containers will be loaded and inspected in a bunded area. Where appropriate, materials will be hand sorted and stored in bunded closed containers by material category type. This will include:

- Drained oil filters, rags and absorbent material (hydrocarbons);
- Containers & drums of controlled waste residues;
- Contaminated soils;
- Lead acid batteries;
- Batteries (Li-ion/NiCad/etc);
- Fluoro tubes;
- Gyproc;
- Used fire extinguishers and pressure vessels/rams etc; and
- E-waste.

Periodically, vehicles will enter the HWMR and collect aggregated materials for transport to other lawful facilities for processing, recycling or disposal. Trucks will pass over the weighbridge for net weight assessment, and trucks will leave the site in the forward direction.

The facility will also accept a range of trackable liquid wastes for aggregation. This will include:

- Waste Mineral Oils;
- Oily water/Coolant etc; and
- Residual Solvents/Thinners/Paints.

These liquid wastes will be transported to the Tomago Resource Recovery Facility in tankers or specialised containers on collection trucks. These trucks will enter the facility in the forward direction, over the weighbridge for gross weight recording, and will then manoeuvre to the HWMR area. Containers of trackable liquid wastes will be unloaded into a bunded storage area for assessment, classification and then decanting into holding tanks on the site. These tanks will be periodically emptied and transported in specialised containers or tanker trucks for off-site recycling or treatment. Trucks will pass over the weighbridge for net weight assessment, and trucks will leave the site in the forward direction.

A floor plan providing an overview of storage arrangements of waste materials in the Hazardous Waste Materials Recycling Facility is provided in Figure 3.4. This plan has been prepared in accordance with the *Australian Code for the Transport of Dangerous Goods by Road & Rail* (2020) to ensure that no incompatible chemicals are stored with each other.

A process flow chart for the operation of the Hazardous Waste Recycling Facility is provided in Figure 4.7.

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Figure 4.7. Process flow chart for the operation of the Hazardous Waste Recycling Facility.



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4.3.7. Copper Processing Area

The Tomago Resource Recovery Facility will also include a Copper Processing (CP) area. This area will involve the processing of electrical cabling sourced from mine sites, building and communications centre decommissioning to enable the recovery of copper wire and plastics. The Copper Processing area is expected to process up to 1,000 tonnes per year of copper wire (Table 4.2).

Collection vehicles will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording, and then will enter the eastern side of Building 2 through the Copper Processing roller door for unloading (refer to Figure 3.3).

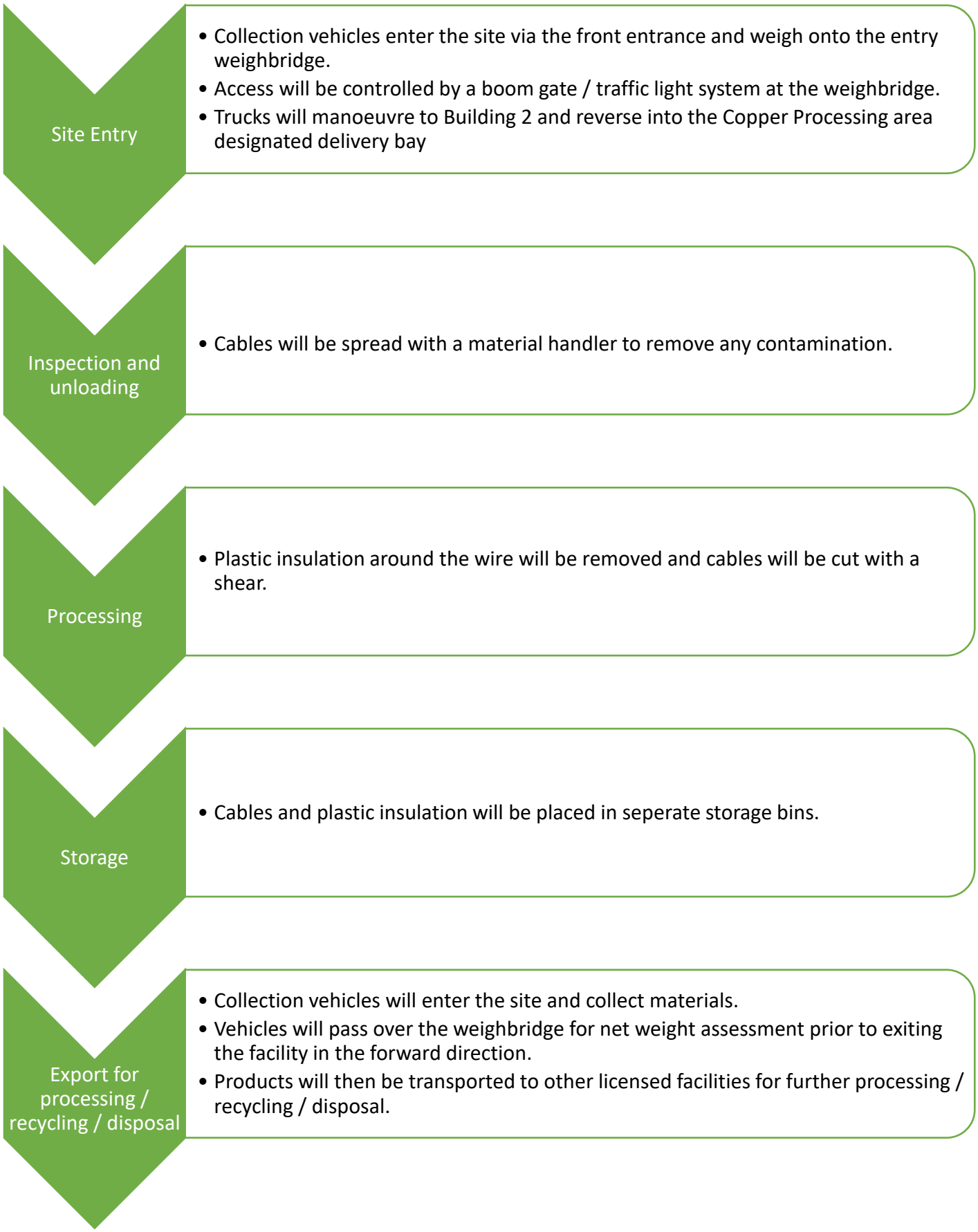
Trucks will then manoeuvre to the CP area where copper wire will be emptied within a concrete bunker receival area. Cables will be spread with a material handler to remove any contamination, then cut with a shear and placed into storage bins for off-site transport and further processing. Plastic insulation around the wire will also be stored in a bin and will be sent off site for recycling.

Trucks carrying sorted copper or plastics in bins will pass over the weighbridge for net weight assessment, and trucks will leave the site in the forward direction.

A process flow chart for the operation of the Copper Processing area is provided in Figure 4.8.

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Figure 4.8. Process flow chart for the operation of the Copper Processing area.



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4.3.8. Metals Recycling Facility

A separate part of the Tomago Resource Recovery Facility will be a dedicated Metal Recycling (MR) facility. This facility will receive, sort, cut and potentially bale ferrous and non-ferrous metals from commercial and industrial collections. The Metal Recycling facility is expected to process up to 4,000 tonnes per year of ferrous and non-ferrous metals (Table 4.2).

Collection vehicles will enter from the front of the site in the forward direction, pass over the weighbridge for gross weight recording, and then will enter the rear of Building 2 for unloading (refer to Figure 3.3).

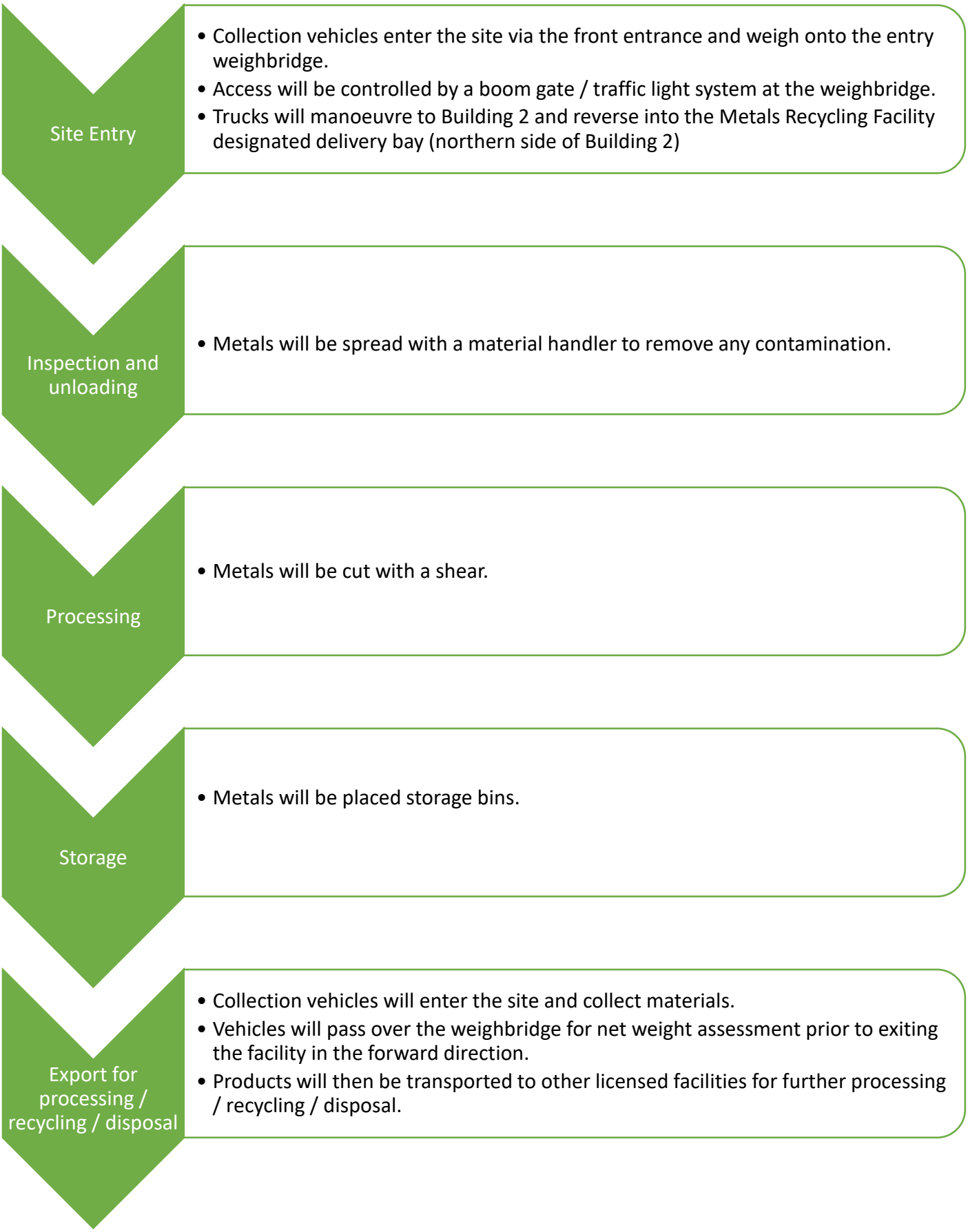
Trucks will then manoeuvre to the MR waste receiving area where metals are emptied within the concrete bunker receival area. Metals will be sorted with a magnet with the material handler to remove any contamination, then cut with a shear and placed into a baling area or directly into hook lift bins for off-site processing and recycling.

Trucks carrying baled or loose sorted metals in hook lift bins will pass over the weighbridge for net weight assessment, and trucks will leave the site in the forward direction.

A process flow chart for the operation of the Metal Recycling facility is provided in Figure 4.9.

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Figure 4.9. Process flow chart for the operation of the Metals Recycling Facility.



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4.4. Liquid waste and fuel storage

To support the truck parking depot operations and recycling operations, storage tanks for fuels, liquid wastes and waste oils will be provided. These self-bunded and secure storage tanks will be constructed outdoors, with awnings and appropriate bunding to contain any spills which can be easily cleaned. An overview of these storage facilities in provided in Table 4.3.

Table 4.3. Storage tanks for fuels, liquid wastes and waste oils.

Storage tank	Self-bunded storage tank volume (L)
Tank 1 – Waste oil	54,000
Tank 2 – Waste oil	67,000
Tank 3 – Oily water / coolant	20,000
Tank 4 – Oily water / coolant	20,000
Tank 5 – Fuel / AdBlue for refuelling vehicles and equipment	60,000
Tank 6 – Liquid food waste from Packaged Food Recycling Plant (PFRP)	20,000
Tank 7 – Drill mud liquid storage tank	50,000

4.5. Products recovered

The Tomago Resource Recovery Facility will recycle an expected 96.9% of all incoming waste (or 95,151 tonnes per annum). The remainder of the waste received will be disposed at a lawful landfill (~3,050 tonnes per annum). The major products expected to be manufactured by the facility include paper and cardboard (~28,500 tonnes per year), followed by RDF (15,500 tonnes per year), contaminated soils (12,000 tonnes per annum) and recovered fines (11,470 tonnes per annum). These five products make up ~69% of all materials sorted within the operation.

An overview of the assumptions and mass flows through the facility is given in Table 4.4.

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Table 4.4. Summary of the products / waste export forecasts for the Tomago Resource Recovery Facility.

Product or waste exported from site	Product or Waste Source	Percentage of Source	Source tonnage projections (tpa)	Product tonnage projections (tpa)	Percentage of Product tonnage projections	Suggested Destination(s)
Paper / cardboard	Cardboard Baling Facility Packaged Food Recycling Plant	95.0% 3.0%	28,500 60	28,560	29.1%	• Opal - Port Botany • Visy - Smithfield / Tumut
Plastics	Copper Processing area Packaged Food Recycling Plant	50.0% 3.0%	500 60	560	0.6%	• Visy - Smithfield • Astron Sustainability - Ingleburn
Glass	Packaged Food Recycling Plant	3.0%	60	60	0.1%	• JR Richards, Tuncurry
Ferrous metals	Materials Recovery Facility Metals Recycling Packaged Food Recycling Plant	2.0% 45.0% 3.0%	620 1,800 60	2,480	2.5%	• InfraBuild- Hexham • Sims - Kooragang • Sell & Parker - Carrington
Non-ferrous metals	Metals Recycling Packaged Food Recycling Plant	50.0% 3.0%	2,000 60	2,060	2.1%	• Sims- Kooragang • Circular Metals - Weston
RDF	Materials Recovery Facility	50.0%	15,500	15,500	15.8%	• Domestic and overseas exports
Concrete/brick/tile	Materials Recovery Facility	10.0%	3,100	3,100	3.2%	• Central Waste Station - Kurri • Benedict Recycling - Mayfield
Fines	Materials Recovery Facility	37.0%	11,470	11,470	11.7%	• Benedict Recycling - Mayfield
Engineering fill	Drill Mud Recycling Facility	50.0%	2,500	2,500	2.5%	• TBA*
Timber / wood mulch	Garden Organics Primary Processing	90.0%	4,500	4,500	4.6%	• REMONDIS Lake Macquarie Organics Resource Recovery Facility
Copper wire	Copper Processing area	50.0%	500	500	0.5%	• InfraBuild - Hexham

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Product or waste exported from site	Product or Waste Source	Percentage of Source	Source tonnage projections (tpa)	Product tonnage projections (tpa)	Percentage of Product tonnage projections	Suggested Destination(s)
Containers & drums of controlled waste residues	Hazardous Waste Recycling Facility	2.5%	500	500	0.5%	• ETS - Rutherford
Contaminated Soils	Hazardous Waste Recycling Facility	59.4%	12,000	12,000	12.2%	• Suez- Raymond Terrace / Kemps Creek
Lead Acid Batteries	Hazardous Waste Recycling Facility	2.5%	500	500	0.5%	• InfraBuild- Hexham
Waste Mineral Oils	Hazardous Waste Recycling Facility	29.7%	6,000	6,000	6.1%	• Southern Oil - Wagga Wagga
Oily water/Coolant etc	Hazardous Waste Recycling Facility	1.5%	300	300	0.3%	• Cleanaway - Kooragang
Batteries (Li-ion / NiCad / etc)	Hazardous Waste Recycling Facility	0.0%	1	1	0.001%	• ETS - Minto
Fluoro Tubes	Hazardous Waste Recycling Facility	0.2%	50	50	0.1%	• ETS - Minto
Gyproc	Hazardous Waste Recycling Facility	1.0%	200	200	0.2%	• REGYP - Kurnell
Used Fire extinguishers and Pressure Vessels / Rams etc	Hazardous Waste Recycling Facility	0.2%	50	50	0.1%	• AusSafe Metals - Gosford
Residual Solvents / Thinners / Paints	Hazardous Waste Recycling Facility	0.2%	50	50	0.1%	• ETS - Minto
E-waste	Hazardous Waste Recycling Facility	0.2%	50	50	0.1%	• InfraBuild- Hexham
Wastewater	Drill Mud Recycling Facility Packaged Food Recycling Plant	50.0% 65.0%	2,500 1,300	3,800	3.9%	• Hunter Water
Food waste	Packaged Food Recycling Plant	18.0%	360	360	0.4%	• REMONDIS Lake Macquarie Organics Resource Recovery Facility

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Product or waste exported from site	Product or Waste Source	Percentage of Source	Source tonnage projections (tpa)	Product tonnage projections (tpa)	Percentage of Product tonnage projections	Suggested Destination(s)
Residual Waste	Materials Recovery Facility Hazardous Waste Recycling Facility Metals Recycling Garden Organics Primary Processing Cardboard Baling Facility Packaged Food Recycling Plant	1.0% 2.5% 5.0% 10.0% 5.0% 2.0%	310 500 200 500 1,500 40	3,050	3.1%	• Suez - Raymond Terrace / Kemps Creek • Summerhill Landfill - Newcastle
TOTALS			**98,201**	**98,201**		
TOTAL Amount of waste processed (tonnes)						**98,201**
TOTAL Amount of waste recycled (tonnes)						**95,151**
TOTAL Amount of waste landfilled (tonnes)						**3,050**
Overall recycling rate						**96.9%**

* REMONDIS are in negotiations with licensed recycling facilities to receive these recovered products.

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4.5.1. Quality specifications and standards for manufactured products

Manufacturing products to meet the EPA's Resource Recovery Orders under the *Protection of the Environment Operations (Waste) Regulation* 2014 is critical to ensure all products can be used in a manner lawfully that protects human health and the environment. These are given in Table 4.5.

Table 4.5. Selected products to be manufactured and sold from the Tomago Resource Recovery Facility, including relevant regulatory requirements and industry specifications / standards.

Product or waste exported from site	EPA Resource Recovery Order
RDF	NSW Energy from Waste Policy Statement
Concrete/brick/tile	*Recovered Aggregate Order 2014*
Fines	*The Recovered Fines Order 2014*
Engineering Fill	*The treated drilling mud order* 2014
Timber / wood mulch	*The mulch order* 2016
Gyproc	*The recovered plasterboard order* 2014

4.6. Resource recovery criteria for energy recovery facilities

The proposed Facility has been designed to recover materials with calorific value from waste-derived materials. Energy recovery facilities may only receive feedstock from waste processing facilities or collection systems that meet the criteria outlined in Table 1 of the *NSW Energy from Waste Policy Statement*. This table has been replicated below (Table 4.6.).

The Materials Recovery Facility will receive up to 31,000 tonnes, consisting of approximately:

- 18,600 tonnes per annum of commercial and industrial mixed general solid waste (non-putrescible); and
- 12,400 tonnes per annum of construction building waste from residential and commercial construction (non-putrescible).

It has been assumed that 50% (9,300 tpa) of the commercial and industrial mixed general solid waste will be from businesses without a separate collection system for all relevant waste streams. Therefore, in accordance with Table 4.6, up to 50% by weight (4,650 tpa) of this waste stream received at the MRF is allowed for energy recovery.

It has been assumed that the other 50% (9,300 tpa) of the commercial and industrial mixed general solid waste will be from businesses with a separate collection system for all relevant waste streams. Therefore, in accordance with Table 4.6, 100% by weight (9,300 tpa) of the waste stream received at the MRF is allowed for energy recover.

In accordance with Table 4.6, 25% (3,100 tpa) of the 12,400 tonnes per annum of construction building waste received at the MRF is allowed for energy recovery.

Based on this, the total amount of residual waste received at the MRF that is allowed for energy recovery is 17,050 tpa. Remondis proposes to process up to 15,500 tpa of residual waste for energy recovery which is compliant with the *NSW Energy from Waste Policy Statement*.

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Table 4.6. Resource recovery criteria for energy recovery facilities (Table 1 of the *NSW Energy from Waste Policy Statement).*

Waste stream	Processing facility	Percentage residual waste allowed for energy recovery
Mixed municipal waste (MSW)	Facility processing mixed MSW waste where a council has separate collection systems for dry recyclables and food and garden waste	No limit by weight of the waste stream received at a processing facility
	Facility processing mixed MSW waste where a council has separate collection systems for dry recyclables and garden waste	Up to 40% by weight of the waste stream received at a processing facility
	Facility processing mixed MSW waste where a council has a separate collection system for dry recyclables	Up to 25% by weight of the waste stream received at a processing facility
Mixed commercial and industrial waste (C&I)	Facility processing mixed C&I waste	Up to 50% by weight of the waste stream received at a processing facility
	Facility processing mixed C&I waste where a business has separate collection systems for all relevant waste streams	No limit by weight of the waste stream received at a processing facility
Mixed construction and demolition waste (C&D)	Facility processing mixed C&D waste	Up to 25% by weight of the waste stream received at a processing facility
Residuals from source-separated materials		
Source-separated recyclables from MSW	Facility processing source- separated recyclables from MSW	Up to 10% by weight of the waste stream received at a processing facility
Source-separated garden waste	Facility processing garden waste	Up to 5% by weight of the waste stream received at a processing facility
Source-separated food waste (or food and garden waste)	Facility processing source- separated food or source-separated food and garden waste	Up to 10% by weight of the waste stream received at a processing facility
Separated waste streams		
Waste stream	Feedstock able to be used at an energy recovery facility	
Waste wood	Residual wood waste sourced directly from a waste generator e.g. manufacturing facility	
Textiles	Residual textiles sourced directly from a waste generator	
Waste tyres	End-of-life tyres	
Biosolids	Used only in a process to produce a char for land application	
Source-separated food and garden organics	Used only in a process to produce a char for land application	

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4.7. Waste storage, identification, and stockpile heights

All waste materials and processed products will be stored in separate concrete bays with three sides or in dedicated hook lift bins. Storage of incoming waste in dedicated areas and sorted materials and products in dedicate bays helps in inventory control, good housekeeping, reduces potential for cross contamination and is critical for quality control.

All bays and waste storage bins will be marked and identified as per the site layout plans Figure 3.2 and Figure 3.3.

Stockpiles sizes are limited by the size of dedicate bays. Similarly, stockpile heights are limited by the height of concrete bays and hook lift bins. Maximum stockpile heights for the Tomago Resource Recovery Facility are based on best practice guidelines outlined in the NSW Fire and Rescue (2020)[2] and South Australian Environmental Protection Agency (EPA SA, 2017)[3] in order manage fire, dust and odour:

- Stockpiles of waste materials in the designated waste storage area will be limited to 3m. Height guidance will be provided within the 4m height of the concrete block bays;
- Where stockpiles of sorted waste materials or residual waste are contained in hook lift bins, the height of waste in these bins will not exceed the rim of the bin;
- Cardboard bales in one tonne blocks will be stored to a maximum height of 4m in Building 1 within the dedicated cardboard bale storage area.

4.8. Maximum amount of waste and product stored on site (authorised amount)

Under Clause 10B of the *Protection of the Environment Operations (Waste) Regulation* 2014, operators of licensed resource recovery facilities are required to not exceed the storage of a certain amount of waste and processed products (from waste) on site at any one point in time. This is referred to the 'Authorised Amount'. Exceedance of the Authorised Amount triggers the requirement for payment of the Waste and Environment Levy for tonnages of waste and product held on site (above the Authorised Amount). This regulatory measure encourages operators of resource recovery facilities to manage the inventory of waste and products held on site to avoid potential risks and hazards to the environment, public safety and human health.

An assessment of the storage capacity of the site based on designated areas for waste receival, sorting, storage and manufactured products is given in Table 4.7 for Building 1 and Table 4.8 for Building 2.

The analysis found that that Building 1 can safety store, in separate designated areas, up to 1,684 tonnes (or 5,822 m^3) of waste and processed products at any one point in time (Table 4.7) and Building 2 can safety store, in separate designated areas, up to 1,817 tonnes (or 4,500m^3) of waste and processed products at any one point in time (Table 4.8).

The analysis in Table 4.7 suggests that combustible materials and products make up 1,473 tonnes or 5,627 m^3 of waste held on-site at any one point in time in Building 1. This makes up 87.4% by volume of all waste materials and products held in Building 1.

[2] NSW Fire and Rescue (2020) Fire Safety Guidelines – Fire Safety in Waste Facilities (Version 02.02 issued 27 February 2020). Published by Fire and Rescue, November 2018. Internet publication: https://www.fire.nsw.gov.au/gallery/files/pdf/guidelines/guidelines_fire_safety_in_waste_facilities.pdf

[3] EPA South Australia (2017). Guideline for stockpile management: Waste and waste derived products for recycling and reuse. Internet publication: http://www.epa.sa.gov.au/environmental_info/waste_management/solid_waste/storage_and_stockpiling

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Table 4.7. Analysis of the storage capacity for Building 1 for waste materials and processed products, based on the site operational layout in Figure 3.2.

Bay/Area	System / Waste	Floor Area (m^2)	Volume (m^3)	Density (tonnes/m^3)	Amount (tonnes)	Percentage combustible[1]	Combustible Waste (m^3)	Combustible Waste (Tonnes)
Waste Inputs								
Bay 1	MRF input	1,264	420	0.298[1]	125	78%	328	98
Area 4	OCC tipping	174	525	0.055[2]	29	100%	525	29
Area 7	Wood pallet input	177	530	0.156[2]	83	100%	530	83
Bay 7	Cardboard loose	881	640	0.055[2]	35	100%	640	35
Products								
Bay 2	Recovered fines	16	48	0.17[2]	8	0%	0	0
Bay 3	Shredded wood	1,626	35	0.25[1]	9	100%	34	9
Bay 4	Heavy	18	55	0.83[2]	46	0%	0	0
Bay 5	RDF loose	1,561	100	0.29[1]	29	100%	100	29
Bay 6	Plastics	437	130	0.17[2]	22	100%	130	22
Bin 4	PVC mixed	6	10	0.18[1]	2	100%	10	2
Area 1	Cardboard Baled Storage	264	790	0.13[2]	103	100%	790	109
Area 3	OCC BSO	434	1,300	0.60[1]	780	100%	1,300	780
Area 6	RDF loose	326	980	0.29[1]	284	100%	980	284
Area 8	Bale wrapper	87	260	0.5[2]	130	100%	260	130
Total estimated site storage capacity (tonnes)								**1,684**
Quantity of materials considered non-combustible (tonnes)								**211**
Quantity of potentially combustible materials capable of being stored (tonnes)								**1,473**

[1] Data from ACOR Consultants (WA) Pty Ltd (2020) *Fire Safety Report*. Report prepared for REMONDIS Australia Pty Ltd.
[2] Data from NSW EPA (2015) *Disposal-based audit Commercial and industrial waste stream in the regulated areas of New South Wales*.

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The analysis in Table 4.8 suggests that combustible materials and products make up 256 tonnes or 866 m^3 of waste held on-site at any one point in time in Building 2. This makes up 14.1 % by volume of all waste materials and products held in Building 2.

Table 4.8. Analysis of the storage capacity for Building 2 for waste materials and processed products, based on the site operational layout in Figure 3.3.

Bay/Area	System / Waste	Floor Area (m^2)	Volume (m^3)	Density (tonnes/m^3)	Amount (tonnes)	Percentage combustible[1]	Combustible Waste (m^3)	Combustible Waste (Tonnes)
Waste Inputs								
Area 1	Packaged food recycling plant	881	1,760	0.5[2]	905	0.5%	9	5
Area 2	Garden organics primary processing (GOPP)	367	735	0.2[2]	167	100%	735	167
Area 3	Copper processing area (CPA)	252	505	0.1[2]	70	0.5%	3	0
Area 4	Hazardous waste materials recycling (HWMR)	378	570	0.7[1]	399	21%	120	84
Area 5	Metal Recycling Facility	441	880	0.2[1]	176	0%	0	0
Area 6	Drill mud recycling facility (DMRF)	734	50[3]	2.0[4]	100	0%	0	0
Total estimated site storage capacity								**1,817**
Quantity of materials considered non-combustible								**1,561**
Quantity of potentially combustible materials capable of being stored								**256**

[1] Data from ACOR Consultants (WA) Pty Ltd (2020) *Fire Safety Report*. Report prepared for REMONDIS Australia Pty Ltd.
[2] Data from NSW EPA (2015) *Disposal-based audit Commercial and industrial waste stream in the regulated areas of New South Wales*.
[3] Based on a total capacity of 50,000L (Tank 7).
[5] Assumed density based on 100% mud.

It is therefore proposed that the facility will seek to store up to 3,500 tonnes of waste (and products) at any one point of time, and this should be considered by the NSW EPA in issuing a licence for the operation (following planning consent) under Schedule 1 of the *Protection of the Environment Operations Act* 1997.

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4.9. Waste and recycling measures - office operations

The office operations associated with the Tomago Resource Recovery Facility will generate waste from office administration and staff lunch activities. Whilst waste generation from these activities are considered minor, they need to be appropriately managed to ensure that waste is minimum and recycled in accordance with the waste hierarchy in the NSW Government's *Waste Avoidance and Resource Recovery Strategy 2014-2021* and the *Waste Avoidance and Resource Recovery Act* 2011.

The operation will generate minimal waste as part of the office operations. However, a full co-mingled recycling system will be introduced into the office. Co-mingled recycling and general waste will be stored in separate bins in the waste storage area and emptied into the on-site residual waste bins.

An overview of waste generation and recycling estimates as part of the office operations is provided in Table 4.9. Waste generation and recycling estimates are from NSW EPA (2012) *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities.* Overall, it is estimated that the office operations will recycle more than 98.5% of all waste generated.

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Table 4.9. Waste and recycling measures for waste generated by office operations.

Key Waste Stream	Volume of waste generated per day per 100m² floor area (for offices) (m³)	Weekly waste generation (based on a 7-day working week and office floor area of 600m²) (m³)	Bulk density (t/m³)*	Estimated tonnages per year (tonnes)	Segregation Areas / Containers	Reuse / Recycling / Disposal Method	Waste Type (NSW EPA Pre-classified Waste)	Suggested Receiving Facility	Recycling rate (%)
Co-mingled recycling: plastic / glass containers / metal cans / paper and cardboard	0.025	1.05	0.63	34.4	1.5m³ front lift bin (serviced weekly)	Off-site recycling	General waste (non-putrescible)	Solo Resource Recovery – Gateshead	100%
General waste (non recyclable residual waste)	0.015	0.63	1.3	42.6	660L general waste bin (serviced weekly)	Off-site disposal	General waste (non-putrescible)	Remondis Resource Recovery Facility - Tomago	97%
Food waste	0.005	0.2	0.5	5.5	240L organics waste bin (serviced weekly)	Off-site recycling	General waste (putrescible)	REMONDIS Lake Macquarie Organics Resource Recovery Facility	100%
Waste generated (tonnes per year)				82.5					
Waste recycled (tonnes per year)				81.2					
Overall recycling rate				98.5%					

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4.10. Incident management – spills

Spills on-site during the demolition and construction and operational phases likely to occur are oils, fuel, paints and primers. To better manage a spill incident , Spill Response Kits will be kept on-site, at various clearly identified locations in easily accessible areas. The MSDS will be placed within sight and near spill kits. The MSDS has clear instructions on spill response management – clean up and disposal.

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5. Environmental risk assessment

A risk assessment has been undertaken to identify the level of risk that construction and operations activities may present to waste management.

The following points summarise the key activities identified in the risk assessment relevant to waste management for demolition, construction works and operation of the Facility:

- Litter (e.g. food waste, packaging) from site amenities reaching local waterways;
- Leakage of effluent from site amenities;
- Leakage of vehicles duration site civil works;
- Excess packaging material deliveries increasing waste generated;
- Inappropriate reuse or disposal of waste items which may be hazardous;
- Fuel and oil spills during operational plant and equipment maintenance; and
- The location and storage of waste on site prior to reuse or disposal.

5.1. Environmental control measures

Table 5.1 provides the environmental control measures and safeguards that will be implemented in order to minimise waste generated during the construction and operation phases of the Facility.

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Table 5.1. Environmental control measures.

Control Measures and Safeguards	Timing	Responsibility
Waste management and minimisation will form part of the induction program (which includes environmental due diligence training). All Project and site personnel will be trained in the requirements of this document including minimising wastes, recognising which types of materials are recyclable and their obligations to use recycling facilities provided on site.	Prior to starting on site / Ongoing	Operations Manager
Clearly assign and communicate responsibilities to ensure that those involved in the construction are aware of their responsibilities in relation to the waste management plan	Prior to starting on site / Ongoing	Operations Manager
Engage and educate personnel on how the various elements of the waste management plan will be implemented	Prior to starting on site / Ongoing	Operations Manager
Specific locations for waste management (e.g. sorting area locations, recycling bin locations, material stockpile locations) will be established on site and signposted appropriately.	Weekly checks	Operations Manager
Waste management areas will be adequately managed to prevent sediment runoff and dust generation.	Daily	Operations Manager
Construction Method Statements (CMS) will include practices to minimise waste generation and to maximise recycling and reuse of materials including oils, greases, lubricants, timber, glass, and metal.	Prior to start of construction and ongoing	Operations Manager
Packaging minimisation and reuse initiatives will be implemented as part of the procurement.	Ongoing	Operations Manager
Development of an unexpected finds environmental procedure should any contamination be found during construction works.	Prior to starting on site	Operations Manager
Spill kit to be present on site in the case of any fuel leaks of plant and equipment during the construction phase of the development	Prior to start of demolition	Operations Manager
Segregated waste disposal containers for the collection and recycling/disposal of all waste streams generated during the construction and operation phases will be provided onsite. Waste disposal containers will have clear signage and instructions for use to avoid cross-contamination. No rubbish shall be disposed of on site.	Daily	Operations Manager
Waste will be disposed to an appropriate licensed facility. A Waste Management Register of all waste collected for disposal and / recycling, including amounts, data and time and details and location of disposal will be maintained at all times.	Daily	Operations Manager

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Control Measures and Safeguards	Timing	Responsibility
All waste being transported off site must be covered. The transportation must be appropriately licensed to carry that material.	Daily	Operations Manager
Storage of all hazardous substances and dangerous goods will be in accordance with SDS requirements in a bunded area. Solid and hazardous wastes will be contained and separated from inert waste.	Daily	Operations Manager
Any hazardous will be managed and handled by an appropriately licensed contractor and transported for disposal to a licensed facility approved site.	Daily	Operations Manager
Any material contaminated by spills i.e. fuel, oil, lubricants etc., including empty fuel, oil and chemical containers, will be stored in a sealed secure container within a bunded area and will be transported to a waste disposal site approved by the NSW EPA to accept such material.	Daily	Operations Manager
Incompatible wastes will not be mixed.	Daily	Operations Manager
Storage areas would be located away from waterways and the stormwater system.	Daily	Operations Manager
Biodegradable products will be used wherever practicable.	Daily	Operations Manager
Regular collection of wastes will ensure air emissions are at a satisfactory level. Inappropriate waste and wastewater management systems will be regularly inspected and audited.	Daily	Operations Manager
Conduct regular litter patrols to ensure litter is effectively controlled on site.	Daily	Operations Manager

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6. Training

All employees, contractors and utility staff working on site will undergo site induction training (which includes environmental due diligence training) and environmental training in relation to waste management issues. The induction will address:

- This management plan;
- Relevant legislation;
- Waste minimisation strategies;
- Waste recognition and recycling;
- Available recycling facilities; and
- Energy and water minimisation measures.

Records would be kept of all personnel undertaking the site induction and training, including the contents of the training, date and name of trainer/s.

Key staff will undertake more comprehensive training relevant to their position and/or responsibility. This training may be provided as “toolbox” training or specific training tailored by the Operation Manager.

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7. Monitoring and review

7.1. Inspections and monitoring

Regular monitoring will be undertaken to track waste management on site. This will be through a series of formal and informal inspections at regular intervals (Table 7.1).

Table 7.1. Waste monitoring and review schedule.

Activity	Resources	Responsibility	Frequency
Daily Site inspections (work area)	Site Diary	Operations Manager	Daily Issues recorded in Site Diary (by exception)
Weekly Environmental Inspection	Environmental Site Inspection Checklist	Operations Manager	Weekly
Waste removal activities off site	Monthly Register for Waste Materials	Operations Manager	Monthly

7.2. Auditing

Audits will be undertaken to assess the effectiveness of environmental controls and compliance with this plan and other relevant guidelines.

A schedule for internal audits providing frequencies and responsibilities is to be determine by the Operations Manager as appropriate.

7.3. Environmental management review

The effectiveness and proper implementation of the WMP will be reviewed every twelve months or sooner as necessary. Review will be undertaken by the management team. The review will comprise:

- Reviewing the results of audits;
- Evaluation of the system, which improvements and corrective actions will be sought; and
- Evaluation of the operation of the WMP.

7.4. Continual improvement

Continual improvement of this WMP will be achieved by the continual evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement. The continual improvement process will:

- At least monthly (or as incidents / non-conformances occur):
    - Determine the root cause or causes of non-conformances and deficiencies.
    - Develop and implement a plan of corrective and preventative action to address non-conformances and deficiencies.
    - Verify the effectiveness of the corrective and preventative actions.

Outcomes of these reviews shall be documented and retained for the duration of the project.

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Attachment 1 – Non-confirming waste procedure

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Scope

The procedure only applies to loads of construction waste.

Purpose of This Procedure

The purpose of this procedure is to:

- Comply with the *Standards for Managing Construction Waste in NSW* and to:
- minimise the risk of harm to human health and the environment from asbestos and other contaminants found in construction waste
- ensure operators of construction waste facilities implement appropriate processes and procedures to manage these risks
- improve industry and community confidence in the quality of resources recovered from construction and demolition waste.

Responsible Person

Operations Manager

Associated Internal Documents

Rejected Load Register and Rejected Load Certificate

External Reference Documents

Standards for Managing Construction Waste in NSW

NSW EPA *Waste Classification Guidelines* 2014

NSW *Protection of the Environment Operations Act* 1997

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Training Requirements

The following training requirements must be completed by all personnel before undertaking any task required by this procedure, including the management or supervision of any such task:

- training on the requirements of the POEO Act and its regulations (including the Waste Regulation) applicable to the operations at the C&D waste facility;

- the requirements of the environment protection licence, with reference to the waste conditions and the wastes permitted to be received; and

- the requirements of these Procedure.

All records of the training undertaken for the purpose of this Standard must be kept at the C&D waste facility and made available to an authorised officer of the EPA if requested.

Step 1 – Inspection Point 1

Inspection Point 1 is located at the weighbridge and before Inspection Point 2.

When a load arrives, inspect the entire top of the load from an elevated position or by using the weighbridge camera to determine whether or not the contains asbestos and any other unpermitted waste (i.e. putrescible waste)

Where the load is identified as containing, or is reasonably suspected to contain, any asbestos waste, reject the entire load of waste by directing the driver to immediately leave the facility and record the information required in the **rejected loads register**

Where the load is not rejected, record the details as required and direct the driver to proceed directly to inspection point 2

Step 2 – Inspection Point 2

Inspection Point 2 is the "tip and spread inspection area" which means the dedicated area located within the warehouse and after Inspection Point 1. This area is used solely for tipping, spreading, turning and inspecting each load of construction waste as required.

Inspection Point 2 must:

1. have a combined minimum surface area of 100m^2;
2. be large enough so that each load of construction waste can be tipped, spread, turned and inspected;
3. be clearly delineated from waste storage areas and other working areas; and
4. be a hardstand constructed from material that is:
    a. clearly distinguishable from any waste being tipped onto the hardstand; and
    b. capable of withstanding the tipping, spreading and scraping of waste, the load and frequency of incoming vehicles and machinery used.

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Direct the driver of the vehicle to tip the entire load on the **tip and spread inspection area**

Spread the entire load and inspect the visible surface area for any asbestos waste and any other unpermitted waste

Ensure that each load tipped does not come into contact with any other load of waste on the tip and spread inspection area, waste storage area or other working area at all times during the process

Manually turn, or direct a plant operator to turn the load and inspect the entire load for any asbestos waste and any other unpermitted waste

Where any asbestos waste is identified, reject the entire load of waste

Where any other unpermitted waste is identified, remove that waste from the load or reject the entire load of waste

Where a load is rejected ensure that the entire load is immediately re-loaded onto the vehicle in which it arrived or onto another vehicle and ensure that the vehicle with the rejected load leaves the facility within one day and immediately record the information in the **rejected loads register**

Ensure that all waste that may lawfully be received at the facility proceeds to be sorted and stored appropriately

Note:

A load of construction waste received at the facility can bypass Inspection Point 2 if, upon receipt, the load only contains waste that meets the requirements of a resource recovery order, as evidenced by a statement of compliance for that waste which has been provided and kept in accordance with the applicable resource recovery order and is current at the time of receipt. This load of waste must be immediately transferred to the appropriate waste storage area referred to in Step 4.

Step 3 – Sorting

Following completion of the inspections at Inspection Point 1 and Inspection Point 2, each load of construction waste received, which has not been rejected, must be sorted and classified into individual listed waste types (refer to Attachment 1) before being transferred to the **waste storage area** as referred to Step 4.

Note:

A load of construction waste that, upon receipt at the C&D waste facility, constitutes an individual listed waste type other than 'mixed waste' does not need to be sorted. This load of waste may be immediately transferred to the appropriate waste storage area referred to in Step 4 after being inspected in accordance with Step 1.

A load of construction waste that, upon receipt at the C&D waste facility, meets the requirements of a resource recovery order as evidenced by a statement of compliance does not need to be sorted.

This load of waste must be immediately transferred to the appropriate waste storage area referred to in Step 4.

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Step 4 – Waste Storage Area

The "Waste Storage Area" is the dedicated area with clearly labelled or signposted stockpile areas (storage bins). All construction waste received that has been inspected and sorted in accordance with Step 1 and Step 2 must be stored in accordance with the following requirements:

Waste which has been classified into an individual listed waste type, waste which meets the requirements of a resource recovery order or waste which meets the recovered fines specifications must be stored in a separate storage area for that type of waste that is clearly labelled or signposted to indicate the individual type of waste being stored in that area

Each label or signpost must be legible and clearly visible

The labels or signposts at all waste storage areas containing waste intended to meet the requirements of a resource recovery order that is awaiting compliance test results, must also contain the words 'awaiting validation'

Separate stockpiles containing the same listed waste type may touch at the base and are exempt from the three-metre separation requirement

Note:

Construction waste that has been inspected and sorted in accordance with Steps 1 and 2 are not be mixed with any other construction waste unless the other waste has been inspected and sorted in accordance with Steps 1 and 2.

Step 5 – Inspection point 3

At the waste storage area, trained personnel must do the following on each business day:

Inspect each labelled or signposted storage area to determine whether waste is being stored in accordance with above requirements

If any waste, waste which meets the requirements of a resource recovery order or waste that meets the recovered fines specifications is found in a storage area labelled or signposted with another listed waste type, immediately cause the waste to be moved to the correctly labelled or signposted storage area

Record observations, including each incidence of waste being identified in the wrong storage area, along with the date, time, the role and name of trained personnel carrying out the inspection.

Records of each inspection carried out by trained personnel in accordance with Step 5 must be kept at the facility for a period of three years from the date of the inspection.

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Step 6 – Transportation

Construction waste must not be transported from the facility unless it has been inspected, sorted and stored in accordance with these procedures and the load of waste transported from the facility consists solely of an individual listed waste type or waste that meets the requirements of a resource recovery order or the recovered fines specifications.

Note:

The step does not apply to waste that has been rejected from the facility at Steps 1 and Steps 2 and is being transported from the facility.

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Attachment 2 – Truck Turning Paths

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