



ACT MATERIALS RECOVERY FACILITY
ADDENDUM TO APPENDIX E WASTE
MANAGEMENT PLAN

Prepared for Veolia Environmental Services (Australia) Pty Ltd | 2 April 2025



existing ground level, reinstate disturbed verge areas and associated site works” was approved on 24 April 2024 and this DA included a Waste Management Plan.

Construction waste

The GHD EIS *Appendix E – Waste Management Plan* considered the management of waste in relation to construction of a building with a gross floor area (GFA) of 13,591m² and hardstand area of 13,446m². The Veolia design proposes a slightly smaller building with a GFA of 11,747m² but a larger hardstand area, with the whole development occupying a similar proportion of Block 12 Section 25 Hume. It is considered that the volume of construction waste as provided in the GHD Waste Management Plan will be similar for the Veolia design.

Due to the similar overall site development area, the approaches to waste handling and management for construction waste remain the same as do the volume and types of construction waste.

Operations waste

The revised building has been designed to process up to 115,000 tonnes per year, consistent with the volumes considered in the GHD report. As such, the proposed mitigation measures, repeated in Table 1 below, remain relevant for the revised Veolia proposal.

Table 1: Operational waste mitigation measures

Mitigation Measure	Timing
Detailed design would include measures to minimise quantities of waste requiring off-site disposal including minimising volume bulk excavations and careful procurement of construction materials to minimise excess waste materials.	Detailed design
A construction waste management plan would be prepared and implemented as part of the CEMP for the proposal. The plan would adopt the waster hierarchy principles contained in the <i>Waste Management and Resource Recovery Act 2016</i> and detail processes, responsibilities and measures to manage waste and minimise the potential impacts. This would include waste separation, handling, storage, transport and off-site reuse, licensed recycling and disposal locations.	Prior to construction
All construction waste would be classified and recycled or disposed of in accordance with the ACT ‘Environmental Standards: Assessment and Classification of Liquid and Non-Liquid Wastes 2021’ (EPSDD, 2021) and other relevant legislative and policy requirements.	Construction phase
A detailed Operational Waste Management Plan (Appendix E) would be developed and implemented to incorporate the requirements of relevant guidance documents and waste management hierarchy principles contained in the <i>Waste Management and Resource Recovery Act 2016</i> . This should include: All key waste and process residue streams and expected quantities. Waste and residue handling management and storage procedures including feedstock receipt and waste loading. Procedures for identifying and managing unacceptable and non-compliant waste types. Waste classification procedures and details of how all waste streams would be recycled or disposal of in accordance with the ACT Environmental Standards: Assessment and Classification of Liquid and Non-Liquid Wastes 2021 (EPSDD, 2021) and other relevant legislative and policies. Details of off-site recycling and disposal locations. Detailed output product sampling and validation program in accordance with agreed end use. Specifications to ensure fitness for purpose for each intended end uses. Record keeping and reporting requirements.	Prior to operation
A contingency plan would be developed prior to operation which includes management measures and procedures that manage contingencies such as: Oversupply of waste received on-site. Stockpiling of waste when/if the operation of the facility is ceased or reduced in capacity.	Prior to operation

Mitigation Measure	Timing
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Other processing disruption of the facility.

The plan would include:

Appropriate planning for planned and unplanned works including repairs and maintenance on weekends.

The prohibition of stockpiling of unprocessed material outside of the facility.

Measures to be implemented if more than three day's deliveries are accumulated which will include diverting material to an alternative facility or to landfill.

How the hardstand areas around the MRF would be used as open-area stockpiling capacity for emergency/contingency storage of baled products in the event of disruptions to scheduled removal of baled products.

Conclusions

It is concluded that the revised proposal is does not trigger any changes to *Appendix E Waste Management Plan* prepared by GHD for ACT NoWaste in 2023 and submitted with a draft EIS for a new Materials Recovery Facility (MRF) on Block 12 Section 25 Hume.



Hume Materials Recovery Facility

Waste Management Plan

Transport Canberra and City Services

15 August 2023

→ The Power of Commitment



Project name		Materials Recovery Facility Hume ACT PMCA					
Document title		Hume Materials Recovery Facility Waste Management Plan					
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Terminology

Terminology	Definition
Impact	The effect of a proposal, which can be adverse or beneficial, when measured against an existing condition
Proposal	The construction and operation of the proposed materials recovery facility in Hume, Australian Capital Territory
Proposal site	The area within which all the proposal construction and operational elements will be contained within
Study area	Consists of land in the vicinity of, and including, the proposal site. The study area is a wider area surrounding the proposal site as defined in this assessment, including land that has the potential to be indirectly impacted by the proposal
AS 4123.7-2006	Mobile Waste Container

Abbreviations and meaning

Abbreviations	Meaning
ACT	Australian Capital Territory
AFAC	Australian Fire and Emergency Service Authorities Council
CDS	Container Deposit Scheme
DCP	Development Control Plan
EIS	Environmental Impact Statement
EPSDD	Environment, Planning and Sustainable Development Directorate
FOGO	Food Organics and Garden Organics
GHD	GHD Pty Ltd
ha	Hectare
HDPE	High-density Polyethylene
HRRE	Hume Resource Recovery Estate
HSE	Health, safety and environment
IZ1	General Industry Land Zoning
L	Litre
m	Metre
MRF	Materials Recovery Facility
NUZ1	Non-Urban Broadacre
NSW	New South Wales
PET	Polyethylene terephthalate
RORO Compactor	Roll-On, Roll-Off Compactor
RMC	Resource Management Centre
t	Tonne
TCCS	Transport Canberra and City Services
TSI	Targeted Site Investigation
WMP	Waste Management Plan
WRMP	Waste and Recycling Management Plan

1. Introduction

1.1 Overview

The ACT Government is proposing to develop a new Material Recovery Facility (MRF) on Block 12, Section 25 Hume, ACT (the proposal site). The proposal site is located to the north of the Monaro Highway in an industrial and rural area located approximately 12.5 km south of Canberra City. The existing MRF was extensively damaged due to fire on 26 December 2022 and the facility is non-operational. The main shed remains standing and is currently being used as a waste transfer station to accept recyclables, sort, and store materials before being shipped to other processing facilities.

The proposal would replace the existing MRF and provide technological improvements to facilitate greater resource recovery by both increasing the quality of recycled materials and by reducing the amount of nonrecyclable residual waste generated that is currently sent to landfill. The new Hume MRF would be one of the first advanced facilities in Australia to enable separation mixed plastics. Upgraded technology would also improve the quality and therefore marketability of paper and mixed cardboard, mixed plastics and glass that would be received from the ACT and five regional NSW councils.

The proposal would be designed to process up to 115,000 tonnes per year of mixed recyclables. The proposed capacity would provide for population growth and changing consumer behaviours which are expected to contribute to increases in recoverable materials over time.

Key features of the proposal include:

- Replacement of the existing MRF.
- Additional warehouse style facilities.
- Civil works and piling to support the dynamic loads imposed by rotating and high frequency vibrating equipment.
- Expansion of hardstand space towards the west of the proposal site.
- A trade waste system to capture contaminated stormwater runoff.

1.1.1 Approval and assessment requirements

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact assessment (EIS) for the proposal. The EIS supports the application for approval of the proposal and to address the requirements provided by the ACT Department of Environment, Planning and Sustainable Development Directorate (EPSDD) dated 21 July 2022.

The proposal is subject to approval by the planning and land authority within the EPSDD.

1.2 The proposal location

The proposal would be located within the current bounds of the Hume Resource Recovery Estate (HRRE) on Block 12, Section 25 Hume, Recycling Road (see Figure 1.1). The proposal site is surrounded by industrial facilities including:

- ACT Skip Hire across Recycling Road to the east.
- Soft Landing Mattress Recycling located south-east, across John Cory Road.
- Hume Industrial Estate located to the south and east across Monaro Highway.
- Mugga Lane Landfill located approximately 200 metres (m) to the north-west.
- Proposed food organics and garden organics (FOGO) facility located to the east, across John Cory Road.

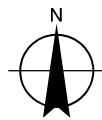
The proposed relevant built area is estimated to be 3.5 hectares (ha) which includes the loading bay, processing area, and car park. The roadways on-site would be 0.5 ha, whereas the building would be 1.05 ha. The new MRF would be accessed via Recycling Road, which is situated at the east of the proposal site.



- Legend**
- Site boundary
 - Watercourses
 - Cadastre Sy

Paper Size ISO A4
 0 25 50
 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



**Transport Canberra and City Services Directorate
 Materials Recovery Facility Hume ACT
 Waste Management Plan**

Project No. 12540460
 Revision No. A
 Date 21/03/2023

Site Location

FIGURE 1.1

1.3 Purpose of this report

This waste management plan (WMP) has been prepared to support the Environmental Impact Statement (EIS) for the proposal site development. The plan addresses waste handling during demolition, construction and operation phases for the proposed MRF and aims to provide best practice in waste management and satisfies the requirements in the *Development Control Code for Best Practice Waste Management in the ACT (TCCS Waste Code 2019)*.

1.4 Scope and limitations

This report: has been prepared by GHD for Transport Canberra and City Services and may only be used and relied on by Transport Canberra and City Services for the purpose agreed between GHD and Transport Canberra and City Services as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than Transport Canberra and City Services arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described throughout this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

GHD has prepared this report on the basis of information provided by Transport Canberra and City Services and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.5 Assumptions

The following assumptions apply to the plan:

- The construction period would be 24 months.
- Construction staff would be working up to:
 - 7:00 am to 6:00 pm Monday to Friday
 - 8:00 am to 6:00 pm Saturdays
 - 8:00 am to 6:00 pm on Sundays or Public Holidays
- There would be an average of 60 staff during construction and 60 staff during operation.
- All residual waste would be sent to the Mugga Lane Landfill site.
- The contamination rate of the incoming feedstock would be 12 percent.

2. Proposal description

2.1 Proposal site description

The proposal is located on Block 6 and 10 (recently amalgamated to Block 12), Section 25 in Hume, ACT. Mugga Lane Resource Management Centre (RMC) is to the north of the proposal area, the Mugga Lane Solar Park to the south-west, the yet-to-be-constructed FOGO facility to the north-east and general industrial area and the Monaro Highway lay to the east. The area is zoned as IZ1: General Industry. To the east, west and south the area is also zoned as General Industry. To the north, it is zoned as NUZ1: Non-Urban Broadacre.

Table 2.1 Proposal locality and description

Item	Details
Location	Block 12, Section 25 (recently amalgamated Block 6 and Block 10) 1 John Cory Circuit, Hume ACT 2620
Existing land use	Southern portion: waste transfer including storage of glass and cardboard/paper and baling of plastics. Northern portion: vacant
Land Zoning	IZ1: General Industry
Area	50,619 m ²
Proponent	ACT NOWaste

2.2 Processing capacity and input materials

The proposed MRF would comprise a number of functional units laid out to enable efficient vehicle movement and processing of recyclable materials. It is expected that, subject to detailed design, the new MRF would have capacity to initially process at least 65,000 tonnes per annum of recyclable materials, with total processing requirement potentially growing to 115,000 tonnes per annum by year 20 of operation.

2.3 Facility description

The MRF would be designed and constructed to receive, sort and process municipal kerbside-collected comingled recyclable materials and selected materials collected from commercial premises, as well as container deposit scheme (CDS) containers.

Glass that is separated from the comingled stream in the processing building would be further processed on-site via washing, crushing and screening to produce clean, dry, graded aggregate suitable for beneficial uses.

Plastic materials separated from the comingled stream would be sorted by polymer type and washed, chipped/flaked and possibly pelletised, depending on the final design, specification requirements of the target markets and offtake facilities accepting the quality-managed recovered materials.

The MRF would also receive, process, temporarily store and progressively despatch sorted bulk, bagged or baled recyclable commodities in accordance with Australasian Fire and Emergency Service Authorities Council (2022) *Fire safety in waste management facilities* (AFAC Publication No. 3095).

The MRF would operate mainly Monday to Saturday with maintenance activities carried out between shifts and/or on weekends.

2.4 Site layout

A concept layout is shown in Figure 2.1.

The concept layout and proposed footprint of the new MRF, relative to the existing MRF buildings and infrastructure, are shown in Figure 2.2.



Figure 2.1 Concept layout



SITE PLAN - FOOTPRINT
SCALE 1:500

Figure 2.2 Proposed proposal overlaid on existing MRF site arrangement

3. Context

This WMP has been developed in accordance with the *TCCS Waste Code 2019* (Transport Canberra and City Services, 2019). Table 3.1 and Table 3.2 list the submission requirements and where these requirements are addressed within this plan.

Table 3.1 *Submission requirements for commercial, public and industrial developments*

Number	Submission Requirement	Response
R1	Each development application must include a completed copy of all relevant Parts of the WRMP.	N/A
R2	Development application submission documents must include plans, elevations, sections and written descriptions or specifications for collection services, as applicable, showing:	-
R2.1	– the specific wastes and recycling likely to be generated by each of the proposed activities accommodated in the development including likely volumes, storage requirements and proposed bins.	Section 5.1
R2.2	– the location and dimensions of all individual waste and recycling storage or holding areas and waste and recycling storage facilities (including refrigerated waste storage if used) for the entire development. These must include tabulated calculations to demonstrate the adequacy of the space.	Section 5.1
R2.3	– documentation that adequately describes the method of transferring waste and recycling within the development from the point of origin to the waste and recycling storage facilities. Dimensions, clearances, gradients and any mitigation of odour and noise impacts must also be provided. A specific collection time is not permitted for the purpose of supporting a design proposal under this requirement.	Section 5.2
R2.4	– the location of the designated collection point for the collection and emptying of waste and recycling mobile garbage bins or, if hoppers are to be used, the location of the hopper pads.	Section 5.2.2
R2.5	– the path of travel for moving bins from individual storage facilities to the designated collection point, indicating dimensions, clearances and gradients.	Section 5.2.2
R2.6	– the on-site path of travel for collection vehicles indicating all clearances, travel, turning and manoeuvring paths, ramp access and pavement details.	Section 5.2.2
R2.7	– the location of waste and recycling chutes and the location and dimensions of any waste service compartments on each floor of the building associated with these. These must be accompanied by tabulated calculations to demonstrate the adequacy of the space.	N/A. Buildings in the proposed site are single storey development.
R2.8	– supporting documentary evidence on the type of compaction and associated waste and recycling plant and equipment proposed, including: manufacturer, model, compaction ratio, dimensions including maximum height at point of lift, volume, and expected weight when fully loaded at the defined compaction ratio.	N/A
R2.9	– details on the waste and recycling facilities to receive waste and recyclables where RORO compactors are to be used, as indicated in R2.8.	Section 5.2.3

Table 3.2 *Submission requirements for demolition, excavation and construction*

Number	Submission Requirement	Response
R1	A development application must include a completed copy of Section 3 of the WRMP.	N/A
R2	Development application submission documents must include site plans and written descriptions or specifications, as applicable, and must:	-
R2.1	– specify waste demolition, excavation and construction materials by type and volume.	Section 4.1 and 4.2
R2.2	– nominate reuse and recycling potential or uses of demolition, excavation and construction waste materials for either on-site or off-site use.	Section 4.3.4
R2.3	– nominate on-site areas for the sorting of demolition, excavation and construction waste materials, if applicable.	N/A. Waste would be transferred off-site for recovery or disposal
R2.4	– describe the work method practices and specific procedures that will be adopted to maximise the reuse and recycling of waste materials.	Section 4.3.1
R2.5	– identify access details for all vehicles involved in moving excavation, demolition and construction waste.	Section 4.3.2 Section 4.3.3
R2.6	– provide a draft site plan indicating the nominated on-site storage areas for demolition, excavation and construction waste materials and waste transport vehicle access locations; the site plan must also show existing regulated trees on the proposal site.	Section 4.3.2
R2.7	– supply details of waste or recycling storage containers that will be stored outside leased boundaries (i.e. on public land). Separate approval is required from Public Land Use, City Services (phone 132 281).	N/A. Waste would be stored on-site prior to removal
R2.8	– specify locations and identify the operator of approved licensed sites for the recycling or reprocessing or landfill disposal of demolition, excavation and construction materials.	Section 4.3.4

4. Demolition and construction phase

4.1 Demolition waste quantities

A demolition plan for the facility is not currently available and therefore estimation factors have been used to assess demolition waste quantities.

The existing MRF would be dismantled, and should any equipment or machinery be in a suitable condition, it would be sold for reuse if possible.

Quantity of excess spoil would be subject to detailed design and at this stage it is assumed cut and fill would be balanced and insignificant amount of spoil would be generated.

The biodiversity assessment report identified a total vegetation clearance area of less than one hectare, as the majority of the two-hectare proposal comprises of land that had been previously developed for the current Hume MRF. The vegetation clearance area consists entirely of exotic grassland, mostly introduced species with some native species scattered throughout, but has relatively low biodiversity value and low habitat value for a range of threatened species known in the ACT (GHD, 2023c).

A summary of the expected waste generated during demolition is provided in Table 4.1. The classification of any waste requiring off-site disposal would be confirmed in accordance with ACT EPA Waste Classification Guidelines (2021) prior to disposal of at a suitable licensed waste facility.

Table 4.1 Demolition waste quantities, likely classifications and potential destinations

Waste stream	Likely waste classification	Unit	Estimated quantity	Storage	Potential destination	Potential end use
Building material (metal, concrete, machinery, etc.)	General solid waste (non-putrescible)	m ³	To be confirmed during detailed design	Stockpiled	Sims Metal, Access Recycling, Canberra Concrete Recyclers / Mugga Lane RMC	Recycled/ disposed
Excess spoil	General solid waste (non-putrescible)	m ³	Nominal	Stockpiled	Reused on-site for shaping/landscaping / Mugga Lane RMC	Recycled/ disposed
Green waste / topsoil	General solid waste (non-putrescible)	m ³	17	Stockpiled	Mugga Lane RMC	Recycled/ disposed

4.2 Construction waste quantities

Construction material quantities are not currently available and therefore estimation factors have been used to assess the amount of construction waste that would be produced during the construction phase.

In the absence of an ACT specific estimation calculator, estimation factors from The Hills Shire Council Development Control Plan (DCP) (2012) Appendix A have been adopted. The DCP provides guidance on typical quantities of construction wastes for office buildings, factories and flats, broken down by material types. The estimation factors for factory and office block building types have been applied to the proposal.

Table 4.2 Estimation factors for construction waste

Building type	Timber	Concrete	Bricks	Gyprock	Sand/Soil	Metal	Other
Office Block (cubic metres per 1,000 m ²)	5.10	18.8	8.50	8.60	8.80	2.75	5.0
Factory (cubic metres per 1,000 m ²)	0.25	2.10	1.65	0.45	4.80	0.60	0.50

The relevant building type for each portion of the proposal is shown below in Table 4.3 with the estimated volume and proposed destinations shown in Table 4.4 and Table 4.5 respectively.

Approximately 84% of construction waste is expected to be recycled.

Table 4.3 Building classifications

Building	Area (m ²)	Building classification
Administration	188	Office block
Processing	5,890	Factory
Receival hall	3,033	Factory
Workshop	60	Factory
Store	75	Factory
Bale Storage	1,623	Factory
Glass recycling	1,238	Factory
Plastic recycling	543	Factory
Amenities	60	Factory
Water treatment enclosure	190	Factory
Water tanks and pump	386	Factory
Hardstand and roads	13,446	-
Total	26,731	-

Table 4.4 Construction waste estimate

Building	Area (m ²)	Estimated waste quantities (m ³)						
		Timber	Concrete	Bricks	Gyprock	Sand/Soil	Metal	Other
Administration	188	1.0	3.5	1.6	1.6	1.7	0.5	0.9
Processing	5,890	1.5	12.4	9.7	2.7	28.3	3.5	3.0
Receival hall	3,033	0.8	6.4	5.0	1.4	14.6	1.8	1.5
Workshop	60	0.0	0.1	0.1	0.0	0.3	0.0	0.0
Store	75	0.0	0.2	0.1	0.0	0.4	0.1	0.0
Bale Storage	1,623	0.4	3.4	2.7	0.7	7.8	1.0	0.8
Glass recycling	1,238	0.3	2.6	2.0	0.6	5.9	0.7	0.6
Plastic recycling	543	0.1	1.1	0.9	0.2	2.6	0.3	0.3
Amenities	60	0.0	0.1	0.1	0.0	0.3	0.0	0.0
Water treatment enclosure	190	0.1	0.4	0.3	0.1	0.9	0.1	0.1
Water tanks and pump	386	0.1	0.8	0.6	0.2	1.9	0.2	0.2
Total	-	4.3	31.1	23.2	7.5	64.5	8.4	7.5

The construction workers would also generate wastes such as food wrappings, gloves, waste food, packaging, and so on. It is assumed that there would be an average of 60 workers employed on-site, and each worker would generate 0.4 kilograms of waste and 0.25 kilograms of recyclables per day (typical generation rate in the absence of generation rates), this results in an estimated waste and recyclables quantity of 24 kilograms of waste and 15 kilograms of recyclables per day. With a 7-day working week and a 24-month construction timeframe, this would add up to 17.5 tonnes of general waste and 11.0 tonnes of recyclables. Assuming a general waste density of 0.3 t/m³ and a recyclables density of 0.1 t/m³ (Western Australia Waste Authority, 2019), this would result in a volume of 58 m³ of waste and 110 m³ of recyclables.

It is assumed that the waste would fall under other, and recyclables would fall under general recyclables in Table 4.5 respectively. Construction waste would be managed by the contractor who would engage a private waste contractor to collect and transport the waste off-site for disposal or recycling.

Table 4.5 *Likely waste classifications and potential destinations*

Waste stream	Likely waste classification	Estimated waste quantity (m ³)	Storage	Potential destination	End use
Timber	General solid waste (non-putrescible)	4.2	Stockpiled	The Green Shed, ACT Recycling	Recycled
Concrete	General solid waste (non-putrescible)	30.2	Stockpiled	ACT Recycling, Canberra Concrete Recyclers	Recycled
Bricks	General solid waste (non-putrescible)	22.6	Stockpiled	ACT Recycling, Canberra Concrete Recyclers	Recycled
Gyprock	General solid waste (non-putrescible)	7.3	Stockpiled	REGYP Canberra	Recycled
Sand/soil	VENM/General solid waste (non-putrescible)	62.7	Stockpiled	Reused on-site for shaping/landscaping	Recycled
Metal	General solid waste (non-putrescible)	8.2	Stockpiled	Sims Metal, Access Recycling	Recycled
Other waste	General solid waste (putrescible / non-putrescible)	153.3	Skip bin	Mugga Lane RMC	Disposed
General recyclables	General solid waste (non-putrescible)	438.0	Skip bin	Mugga Lane RMC	Recycled
Batteries	Hazardous waste	Nominal	Bunded and covered	Mugga Lane RMC	Recycled/ disposed
Sewerage	Liquid waste	Nominal	-	Discharge to sewer	Disposed

The area for placement and transport of construction waste would be determined by the Contractor prior to construction.

4.3 Waste handling and management

4.3.1 Approach to waste minimisation and re-use

All waste generated during demolition and construction would be managed using the waste hierarchy approach of avoidance and re-use before consideration is given to disposal. Procurement of excess materials would be avoided in accordance with relevant guidelines and policies, including use of precast building materials.

All wastes would be managed in accordance with the waste provisions contained within relevant legislative and policy requirements.

Should waste be found to be unsuitable for re-use or recycling, disposal methods would be selected based on the classification of the waste material in accordance with the 'Environmental Standards: Assessment and Classification of Liquid and Non-Liquid Wastes' (ACT Government, 2021).

The proposed approach to managing the different waste types in accordance with the waste management hierarchy, including measures to facilitate segregation and prevent cross contamination, is provided in Table 4.6.

The contractor would prepare a detailed demolition and construction environmental management plan that addresses key regulatory requirements and environmental management measures and procedures.

Table 4.6 Demolition and construction waste management measures

Waste	Hierarchy	Management measures
Spoil	Reduce	Detailed design would include measures to minimise excess spoil generation. This would include a focus on optimising the design to minimise spoil volumes and the re-use of material on-site.
	Re-use	Spoil from earthworks for the proposal would be stockpiled on-site for use as construction fill and landscaping purposed on-site if suitable.
	Recycle	Any excess spoil material would be stockpiled on-site and options to recycle the material would be investigation, where practicable.
	Dispose	Any excess spoil that is not suitable for re-use would be disposed of at a suitably licensed facility in accordance with the waste classification.
Green waste and topsoil	Avoid	The access road and MRF facility would be sited to minimise disturbance to existing vegetation and utilise already cleared land as far as practicable.
	Reduce	The construction footprint would be set out during site establishment to manage the risk of incidental clearing.
	Re-use	Cleared vegetation and topsoil material for construction would be segregated and stockpiled for re-use on-site in landscaping and finishing works.
	Dispose	Weeds would be disposed of in accordance with relevant guidelines and requirements.
General waste	Recycle	Labelled and colour coded receptacles would be provided at the construction-site office for general waste from construction personnel to ensure source separation of recyclable materials and residual landfill waste. These wastes would be collected on a regular basis by authorised and appropriately licensed waste collection contractors for off-site recycling or disposal.
	Dispose	Residual general solid waste would be transferred off-site for disposal at a suitably licensed facility.
Food waste	Dispose	Putrescible waste would be stored in designated bins and collected by an authorised contractor for disposal to a suitably licensed facility.
Wastewater	Dispose	Wastewater generated by the staff from the site office would be tankered off-site for disposal at a suitably licensed facility.
Excess construction materials	Avoid	Procurement of surplus materials would be avoided, and precast building components utilised, where practicable.
	Recycle	Any excess materials generated on-site would be segregated using separate bins for different waste and recyclable materials. The recyclable material would be removed from the proposal site for further processing or re-use at appropriately licensed facilities.
	Dispose	Residual waste that cannot be recycled would be collected and removed off-site for disposal at a suitably licensed facility.
Hazardous waste	Dispose	Minimal amounts of hazardous waste are expected to be generated during construction.

4.3.2 Waste storage locations

Demolition and construction waste would be temporarily stored on-site in an area of compacted hardstand material that would be graded to facilitate drainage (see Figure 4.11). The exact area and travel path of collection vehicles would be confirmed by the demolition and construction contractor prior to works commencing. The storage area would be bunded to contain sediment laden run off in accordance with the sediment and erosion control plan that would be developed for construction. Stockpiles would be segregated according to classification and clearly signposted to maximise the stockpile fitness for use and reduce the risk of cross contamination. Bins would also be in the storage area to temporarily store segregated segregable recyclable materials.

Waste generated by demolition and construction staff would be stored in mobile garbage bins in the construction compound designated storage areas. Signage identifying the waste storage area at the construction-site office would be prominently displayed. All waste receptacles would be clearly and correctly labelled to identify which

materials are to be placed in which bin and colour-coded in accordance with the AS 4123.7-2006: *Mobile Garbage Containers* (Standards Australia, 2008).



Figure 4.1 Potential demolition waste storage area

4.3.3 Waste collection and transport

Demolition and construction waste would be managed by the contractor who would engage appropriately licensed private waste collection contractors to collect and transport the waste off-site for disposal or recycling following source segregation on-site.

All transport vehicles would be covered, and tailgates secured prior to trucks leaving the work site. All vehicles would be appropriate for transport of the waste as classified.

Documents and records of the transport and fate of all materials removed from the proposal site would be kept as proof of correct disposal and for environmental auditing purposes.

Collection vehicles shall access the waste storage area off Recycling Road and proceed through the proposal site to exit at John Cory Road.

4.3.4 Waste recycling and disposal

The waste storage area would have stockpiles that are a maximum height of 4 m and a maximum width of 4 m (for loose materials) in accordance with ACT Government (2019), *Guideline for Stockpile Management*. Separation distances from structures in this document shall be followed.

Table 4.1 and Table 4.5 identify potential options for off-site disposal and recycling for the key demolition and construction waste streams. The destinations would be confirmed by the construction contractor and included in the construction waste management plan for the proposal prior to construction commencing.

4.3.5 Waste records

A waste management register would be maintained which identifies all waste generated on-site and subsequent management. The register would document the following:

- The type and quantity of waste (including its classification).
- Whether the waste is to be reused, recycled (on or off-site) or sent for disposal.
- Tracking information (where applicable).
- Upon removal from site: date of removal, transport contractor information and final destination.

All relevant documentation such as dockets, receipts and waste classification records would be retained with the waste management register for at least 12 months from ‘certificate for building work involving demolition’ by the contractor.

4.4 On-site management and responsibilities

4.4.1 Signage

Waste and recycling storage areas would include signage that clearly describes the types of materials that can be deposited into recycling bins and general garbage bins.

4.4.2 On-site management

On-site management and controls would include:

- Implementation of the WMP by the contractor.
- Segregating wastes generated on-site, using different bins for recycling (individual bins for each recycling stream) and general waste.
- Discussion about the proposal site’s waste management and recycling policies and practices with employees and subcontractors during site inductions and toolbox talks.
- Discussion with waste collection contractors to seek optimal waste recovery measures.
- Ensuring all waste disposal bins are clearly marked with appropriate signage and instructions.
- Keeping records of quantities of waste and recycled materials disposed of, and the destinations of these materials.
- Ensuring that wastes are only disposed to licensed facilities.

4.4.3 Roles and responsibilities

While all personnel working on the proposed facility are responsible for waste separation and correct disposal, the Contractor Project Manager would have overall responsibility for on-site waste management. The responsibilities of key roles involved in the proposal are outlined in Table 4.7.

Table 4.7 Roles and responsibilities

Roles	Responsibilities
ACT NOWaste Project Manager	Ensure the instruction of ACT NOWaste staff and contractor(s), implementation and overseeing of the WMP during induction processes.
Contractor Project Manager	Engage qualified waste service contractors(s) according to the ACT NOWaste requirements. Ensure the instruction of contractor staff, subcontractor(s) and visitors, implementation and overseeing of the WMP during induction processes.
Contractor Site Manager	Operation and general maintenance of waste equipment (bins) and storage areas. Keep records of quantities of waste and recycled materials disposed of, and the destinations of these materials as discussed in Section 4.3.5.

Roles	Responsibilities
	Provide training and induction to all its personnel including subcontractors or delegate the responsibility to a qualified staff, e.g. HSE Advisor.
Contractor HSE Advisor	Ensure waste is collected and transferred to the central collection points on a regular basis. Litter management.
All Contractor Staff and Subcontractors	Waste separation and correct disposal. Ensure rubbish is not littered outside bins or left unattended.
Waste service contractor(s)	The collection of waste from the collection point(s). Transport of the waste streams off-site for licensed disposal or further processing/recycling. Waste monitoring, reporting and audits (if required).

5. Operational phase

5.1 Waste and product quantities

5.1.1 Feedstock contaminants

Based on former MRF processing tonnages of 65,000 tonnes per year of incoming waste, it is expected that there would be approximately 8,000 tonnes per year of feedstock contaminants that would need to be managed. Common contaminants that are expected to be encountered include organics, non-recyclable plastics, paper, glass and other miscellaneous materials.

5.1.2 Operational workers waste

Estimation factors for operational workers waste has been estimated using the factors from Table A5.1 of the ACT Government *Development Control Code – For Best Practice Waste Management in the ACT 2019* which are shown below in Table 5.1.

Table 5.1 Operational waste and recycling generation rates

Premises Type	Waste (L/100 m ² /day)	Recycling (L/100 m ² /day)
Office	20	25

It is assumed that the majority of operational workers waste would be produced at the admin area. This footprint has been used to calculate waste and recycling rates as shown below in Table 5.2.

Table 5.2 Annual waste generation

Building	Premises type	Area (m ²)	Waste per year (m ³)	Recycling per year (m ³)
Admin	Office	188	11	13

Waste would be managed by the operator who would engage a private waste contractor to collect and transport the waste off-site for disposal or reuse.

5.1.3 Output products

The facility would produce the following material:

- Mixed paper and cardboard.
- PET (material would be chipped/flaked and possibly pelletised, depending on final design).
- HDPE (material would be chipped/flaked and possibly pelletised, depending on final design).
- Mixed plastics (material would be chipped/flaked and possibly pelletised, depending on final design).
- Glass (glass would be further processed to produce clean, dry, graded aggregate suitable for beneficial uses).
- Aluminium and other metals.

5.1.4 Summary

A summary of the operational wastes is shown below in Table 5.3 based on former MRF processing tonnages of 65,000 tonnes per year of incoming waste. These figures would increase as feedstock quantities increase.

Table 5.3 Operational waste summary (based on former MRF processing tonnages)

Waste stream	Likely waste classification (if applicable)	Estimated annual quantity	Storage	Potential destination	End use
Inputs					
Recyclable materials	General solid waste (non-putrescible/putrescible)	57,000 t	Stockpiled (within receival hall)	-	-
Contaminants	General solid waste (non-putrescible/putrescible)	8,000 t	Enclosed skip bin (within receival hall)	Mugga Lane RMC	Disposed/recycled
Outputs					
Mixed paper and cardboard	-	30,000 t	Baled (within bale storage area)	Various	Recycled
Mixed plastics	-	2,000 t	Stored in bulk bags, bunkers or silos (within storage area)	Various	Recycled
Glass aggregate	-	20,000 t	Stored in bulk bags, bunkers or silos (within storage area)	Various	Recycled
PET	-	1,500 t	Stored in bulk bags, bunkers or silos (within storage area)	Various	Recycled
HDPE	-	1,000 t	Stored in bulk bags, bunkers or silos (within storage area)	Various	Recycled
Aluminium and other metals	-	2,500 t	Baled (within bale storage area)	Various	Recycled
Residual waste					
Operational workers waste	General solid waste (putrescible / non-putrescible)	11 m ³	Skip bins (adjacent to administration building)	Mugga Lane RMC	Disposed/recycled
Operational workers recyclables	General solid waste (non-putrescible)	13 m ³	Skip bins (adjacent to administration building)	Mugga Lane RMC	Recycled
Batteries	Hazardous waste	Nominal	Segregated area on-site (within administration building)	Mugga Lane RMC	Disposed/recycled
Cleaning products (e.g. lubricants, oils)	Liquid waste	Nominal	Bunded area (within machinery shed)	Cleanaway	Disposed/recycled
Trade waste	Liquid waste	5,500-7,300 kL	Water tanks and water treatment enclosure	Reused on-site prior to discharged to sewer ¹	Disposed/recycled
Sewage	Liquid waste	Nominal	-	Sewer	Disposed

¹ Trade waste would be discharged to sewer periodically when total dissolved solids approach the trade waste discharge limit.

5.2 Waste handling and management

5.2.1 Approach to waste minimisation and re-use

All waste generated during operation would be managed using the waste hierarchy approach of avoidance and re-use before consideration is given to disposal. Operational waste generated by staff would be source separated to recover recyclable materials and divert wastes from landfill. Process waste including trade waste would be reduced as far as practicable through on-site treatment and re-use in processing activities.

All wastes would be managed in accordance with the waste provisions contained within relevant legislative and policy requirements.

Should waste be found to be unsuitable for re-use or recycling, disposal methods would be selected based on the classification of the waste material in accordance with the *Environmental Standards: Assessment and Classification of Liquid and Non-Liquid Wastes 2021*.

5.2.2 Waste storage locations

Waste generated by operational staff would be stored in interim waste receptacles strategically located throughout the working floors of the offices and workshop and in communal areas for source separation of garbage (general waste) and comingled recyclables (Figure 5.1). Recycling stations throughout the offices would promote further source separation of plastics and paper and cardboard. The cleaning contractor would empty the receptacles at the end of the day and transfer the waste to a waste bin storage area to await collection. The source separated waste streams would be segregated and placed into appropriate bins.

Incoming feedstock would be stored at the receivals hall with the maximum capacity for three days storage (approximately 750 tonnes).

Contamination from processing would be separated from the sorting belt to an on-site compactor and the maximum storage volumes would nominally be 20 cubic metres.

Adequate signage identifying the waste storage area would be prominently displayed. All waste receptacles would be clearly and correctly labelled to identify which materials are to be placed in which bin and colour-coded in accordance with the AS 4123: Mobile Garbage Containers (Standards Australia, 2008).

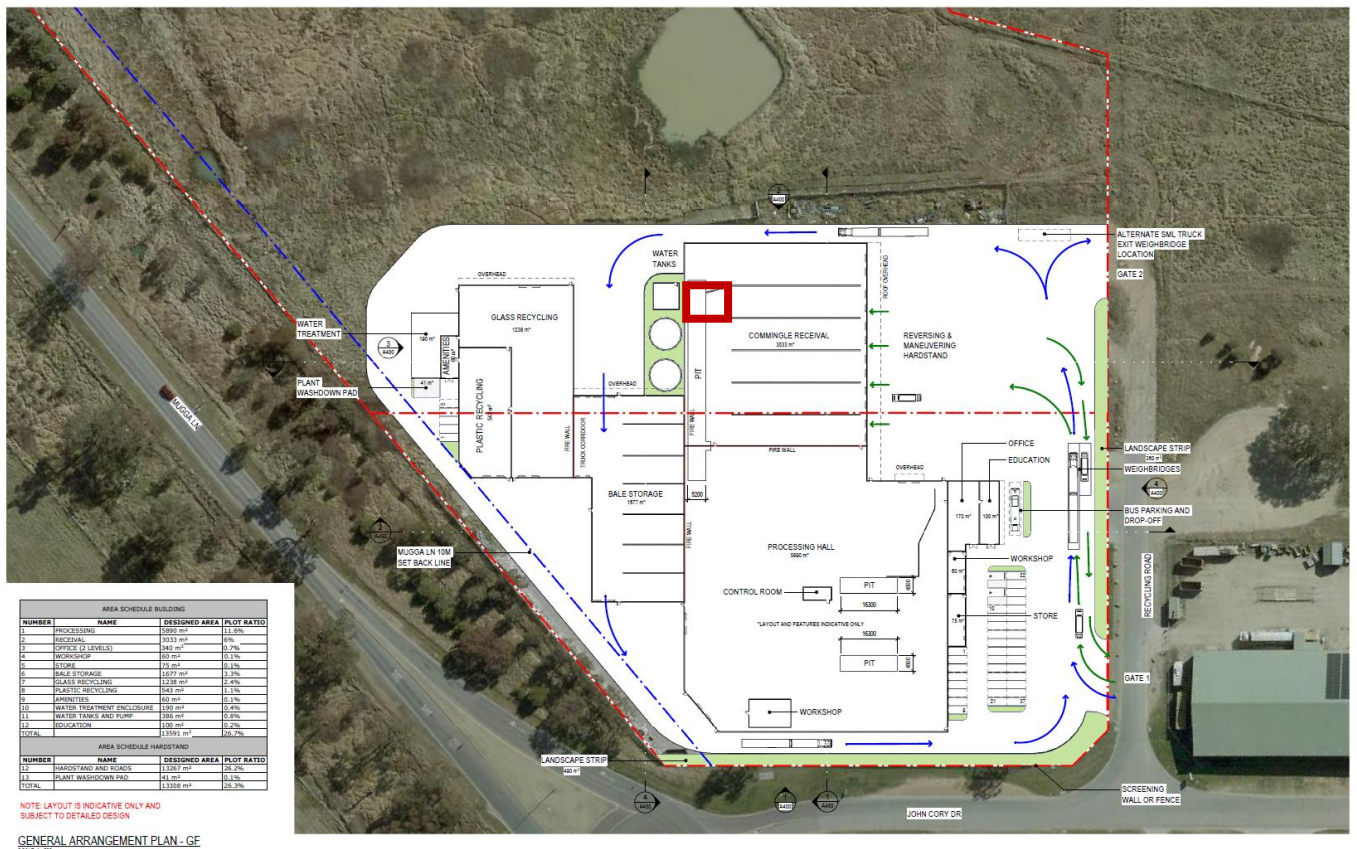


Figure 5.1 Potential operational waste storage area

5.2.3 Waste recycling and disposal

The proposed recycling and disposal measures for operational waste are listed in Table 5.4. This table also outlines the contingency measures (disposal) for wastes and residues that cannot be avoided, re-used, recycled or treated. The final destinations for all off-site recycling and disposal would be confirmed prior to operations commencing and updated throughout the life of the facility based on the availability of suitably licensed facilities.

Table 5.4 Potential off-site recycling and disposal options – operation

Waste	Hierarchy	Management measures	Recycling/disposal options
Food waste	Dispose	General waste materials would be collected and transferred off-site to a licenced waste management facility.	Licenced sites such as Mugga Lane RMC
General waste	Dispose	General waste materials would be collected and transferred off-site to a licenced waste management facility.	Licenced landfill sites such as Mugga Lane RMC
Recyclable materials	Recycle	Recyclable materials generated by the office and administration system would be source separated, collected and recycled on-site.	Recycled on-site
Contaminants from processing	Dispose	General waste materials would be collected and transferred off-site to a licenced waste management facility.	Licenced landfill sites such as Mugga Lane RMC
Batteries	Dispose	A licenced waste contractor would be engaged for collection and disposal of batteries.	Licenced landfill and recycling sites such as Mugga Lane RMC
Sewage	Dispose	Sewage from offices and amenities would be discharged to sewer.	Discharged to sewer

Waste	Hierarchy	Management measures	Recycling/disposal options
Cleaning products (e.g. lubricants, oils)	Dispose	General waste materials would be collected and transferred off-site to a licenced liquid waste management facility.	Licensed liquid waste management facility
Process wastewater	Reduce/reuse	Wastewater generated from the plastic and glass processing plants would be treated at the on-site water treatment facility and re-used in the process where possible.	Re-use on-site or discharged to sewer
	Dispose	Excess effluent would be discharged to sewer.	

5.3 Waste tracking, record keeping and quality control

Specifications for feedstock materials would be developed as part of commercial agreements with feedstock suppliers to ensure materials received at the proposal are suitable (conforming). All incoming loads would be visually inspected upon unloading and before being moved immediately into designated storage areas.

Small quantities of impurities such as organics, non-recyclable materials, etc. are expected to be received and feedstock containing these impurities would not constitute a non-conforming load as they can be handled by the sorting and separation processes.

Where a non-conforming load is identified during the initial visual inspection, the load would not be unloaded. If some of the material has been unloaded when it is identified as non-conforming, it would be managed as appropriately by the contractor. Records of the date, time, vehicle and reasons for load rejection would be maintained and reported to the Territory.

The quality control measures proposed during operation to track incoming waste and outgoing products and ensure the quality of outgoing products are listed in Table 5.5.

Table 5.5 Quality control, record keeping and waste tracking measures

Aspect	Measures
Signage at entrance	Signage at the entrance clearly identifying the permitted waste/feedstock types and non-conforming waste types.
Specifications for feedstock material	Agreed specifications for feedstock materials to control the risk of receiving non-conforming materials.
Rejected loads (non-conforming waste) register	Maintenance of a rejected loads register – including records of date, time of load rejected, registration of vehicle(s), type of waste(s) rejected and reason for rejection.
Feedstock and output/product storage	Labelling or signposting of incoming feedstock and outgoing product storage areas in a way which is clearly visible. Separation/segregation of individual separated output/product types.
Inspections	Daily inspections by trained staff of incoming and outgoing waste storage areas to ensure storage is being undertaken in accordance with the operations plan for stockpile management and implementation of any required corrections immediately. Maintenance of inspection records.
Training	Training of staff in roles which require visual inspection of loads. Maintenance of training records.
Specifications, sampling and testing of product material	Where applicable, development of specifications, sampling and testing procedures in conjunction with product/recovery stream customers.
Incoming and outgoing waste/product records	Accurate recording of all incoming and outgoing (waste and product outputs) using weighbridge data in accordance with the record keeping requirements of the facility.

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