ACT MATERIALS RECOVERY FACILITY

ENVIRONMENTAL IMPACT STATEMENT

Prepared for Veolia Environmental Services (Australia) Pty Ltd | 13 August 2025

element.

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13 August 2025

PR392

	Prepared by	Reviewed by
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Company	Element Environment	Element Environment
Position	Principal Planner	Director
Project Role	Project Manager	Project Director
Signature		
Date	13 August 2025	13 August 2025

Proposal aspect	Details
Name of the proposal	ACT Materials Recovery Facility
Block identifier	Block 12, Section 25, Hume
Street address	1 John Cory Road, Hume ACT 2620
Date of preparation of the EIS	19 March 2025
Proponent and applicant details	Veolia Environmental Services (Australia) Pty Ltd Level 4, 65 Pirrama Rd, Pyrmont NSW 2009
EIS author details	Element Environment Pty Ltd Level 8, 1 O'Connell Street, Sydney NSW 2000

This report is based on a previous body of work that was authored by GHD. Veolia have taken ownership of the report as part of a resubmission based on design changes during ongoing design development.

This revised report has been prepared in accordance with the scope of services set out in the contract between Element Environment Pty Ltd and Veolia.

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Document Control

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B Scoping Document Checklist

C Proponent's Environmental History

D Study Team

E Waste Management Plan

F Traffic and Transport Impact Assessment

G Landscape and Visual Impact Assessment

H Preliminary Site Investigation

I Sampling Analysis and Quality Plan

J Targeted Site Investigation

K Water Impact Assessment

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M Air Quality Impact Assessment

N Climate Change Risk Assessment

O Noise and Vibration Impact Assessment

P Preliminary Hazard Analysis

Q Report Bushfire Risk Assessment

R Cultural Heritage Assessment

S Engagement Report

EXECUTIVE SUMMARY

Overview

Veolia (Australia) Pty Ltd is proposing to develop a new Materials Recovery Facility (MRF) on Block 12, Section 25 Hume, Recycling Road with capacity to receive and process up to 115,000 tonnes per year of recyclables.

The new MRF would replace the existing facility on the site, which was extensively damaged due to fire on 26 December 2022, and provide technological improvements to facilitate greater resource recovery.

Key objectives of the proposal are to:

- Provide critical recyclable processing infrastructure to enhance recycling and implement glass processing under the recommendations of the ACT Waste Feasibility Study.
- Divert recoverable waste from landfill and reduce greenhouse gas emissions.
- Recover recyclables to create products that may be sold on for further use and thereby strengthen the Territory's circular economy.
- Support key Territory and Federal Government resource recovery and landfill diversion targets including:
  - The ACT Waste Management Strategy 2011-25 target of increasing the rate of resource recovery to over 90% by 2025, with no recoverable waste sent to landfill.
  - Develop markets for recyclable materials and strengthening regional connections.

In June 2022 GHD Pty Ltd, on behalf of ACT NoWaste, applied to the then ACT Planning and Land Authority (ACTPLA) for a Scoping Document to prepare an Environment Impact Statement (EIS) for *"upgrades to the existing Hume Materials Recovery Facility (MRF), delivering additional warehouse structures, hardstand facilities, and other associated works to augment current operations. The upgraded MRF is expected to have a capacity of 115,000 tonnes per annum".* The commencement of the research for the EIS was based on a concept site layout and operational methodology prepared by GHD. During the early period when the draft EIS was being prepared, the MRF was extensively damaged by fire. As such, the project changed from an upgrade of the existing facility to a redevelopment of the burnt-out facility.

A draft EIS was completed by GHD in late 2023 and submitted to ACTPLA for review. The draft EIS was referred to ACT Government Agencies and publicly advertised. In January 2025 Veolia was awarded the contract to construct and operate the new MRF and as a result, Veolia are now the proponent for the development, rather than ACT NoWaste. Veolia's design development process resulted in the need for changes to the GHD concept building design, site layout and operations.

This revised final EIS incorporates responses to comments received from ACT Agencies and community submissions together with additional impact assessment based on the changes to the proposal made by Veolia. This EIS outlines how the revised development proposal will impact the environment and how the impacts will be avoided, minimised or offset and includes the full project life cycle from demolition of the existing facility, planning and design of the new MRF, construction, operation and decommissioning.

Need for the proposal

The Australian Capital Territory (ACT) Government is working to reduce waste to landfill and increase resource recovery. The strategic direction for the management of waste in the Territory

is set out in the '*ACT Waste Management Strategy 2011-25*' (ACT Government, 2011). The strategy sets a target of increasing the rate of resource recovery to over 90% by 2025, with no recoverable waste sent to landfill. This will also support the ACT Government in their net-zero targets.

The new and upgraded MRF would help deliver on the ACT Government targets and commitments by increasing resource recovery rates and reducing greenhouse gas emissions. The increased capacity will also allow ACT to support recycling and reuse across the region.

The proposal would produce higher quality recycled product that adds value and reduce the amount of waste ending up in landfill. The current facility, prior to the fire, could only process 65,000 tonnes of recyclable material per year which did not allow for any increase in recycling rates for the ACT. The new MRF will have the capacity to process 115,000 tonnes, allowing for growth for the next 25 years.

The proposal

The site is located within the industrial suburb of Hume on the corner of Mugga Lane, John Cory Road and Recycling Road, to the west of the Monaro Highway. The site is 5.052ha and zoned IZ1 General Industry under the Territory Plan 2023.

Veolia Environmental Services (Australia) Pty Ltd will partner with the ACT Government to design, build and operate the new facility, with construction expected to begin in 2026 and operations to commence in 2028.

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

Key features of the new MRF building (with approximate floor areas), include:

Total building area of approximately 11,760m^2

- Receival area of 2,100m^2
- Processing area of 5,000m^2
- Glass recycling area of 1,250m^2
- Product storage area of 2,700m^2
- Workshop and staff amenities of 170m^2
- Education facility of 220m^2
- Pump room of 60m^2
- Covered water treatment area of 260m^2
- Weighbridges
- Site driveways and hardstand area
- Water tanks for roof water capture and on-site re-use
- On-site detention pond for surface water management

The facility will provide technological improvements to enable greater resource recovery by both increasing the quality of recycled materials and by reducing the amount of non-recyclable residual waste that is currently sent to landfill. The technology includes:

- Sorting: advanced laser optical sorting to better separate, identify, sort and segregate recycling to higher purity levels, reducing contaminants for better quality end market products, plus air jets to separate plastics and powerful magnets to extract metals.
- Glass recycling: glass crushing and washing facilities to provide better quality crushed glass that can be used in a wider range of products.
- Water management: wastewater leachate treatment and reuse with roof and surface water management infrastructure to achieve environmental compliance.
- Data collection: sophisticated data collection, management, and analysis systems.
- Flexibility to incorporate new innovations, improvements in technology and adapt to changing recycling priorities and materials.
- State-of-the-art fire detection, mitigation and control systems will safeguard the site from fires. These can be caused by items such as lithium batteries or gas bottles finding their way into the recycling stream.

The facility is designed to process the recycling of various materials, and in the future value add the recycling of glass by incorporating glass washing with associated leachate treatment and disposal. This EIS considers the potential impacts and proposes related mitigation measures to address the full suite of potential impacts that may arise as a result of the materials recycling facility, inclusive of glass washing.

Some aspects of the leachate treatment and disposal process are reliant on the capacity of Icon Water's sewer network and treatment parameters. As a result, glass washing would not be progressed until such time as confirmation is received from Icon Water that their sewer network is capable of receiving the volumes and quality of wastewater generated by the glass washing process.

In anticipation of Icon Water being able to accept discharge volumes in the future that would enable glass washing to occur at the facility, wastewater management infrastructure (such as underground pipes and an area for on-site water treatment) will be included in the initial development to 'future-proof' the facility. The Development Application (DA) process required to give effect to the facility (and future glass washing) would confirm the specifics of Icon Water discharge parameters and any other relevant statutory requirements.

Other trade waste generated from the proposal is from a vehicle washing bay. An oil and water separator would be provided to remove free floating hydrocarbons such as diesel, hydraulic fluid and oil as well as heavier suspended solids from the wash stream.

A new education space will also be built. This will allow the community and school groups to visit and learn about how recyclable products are processed, to be transformed into renewed items.

During the construction phase the project will create 110-120 jobs and 24-38 permanent roles as part of the facility's operations.

It is proposed to operate the MRF for up to 19 hours per day, from 3am until 10pm, for 6 days per week (Monday to Saturday), for 52 weeks each year.

Although the Scoping Document applies to the whole of Blocks 6 & 10 Section 25 Hume (now amalgamated and described as Block 12 Section 25), having an area of 5.052ha, approximately 60% of the area of Block 12 (or 30,000m^2) will be used by the new MRF with the remaining area being retained as grassland with an existing dam. This is a slight increase in the area defined by GHD in the draft EIS (which was approximately 2.3ha). However, the increase in area to be utilised by the new MRF is wholly within the site identified in the Scoping Document and mostly involves areas that have been previously used for storage of material together with a small area

comprising exotic grasses. The increased footprint area for the MRF does not introduce any new risks or impacts, which are discussed in detail throughout this EIS.

Risk assessment

A risk assessment framework has been used to assess the key impacts of the proposal and identify any residual risk following implementation of mitigation prescribed in the EIS.

The early identification of proposal risks allowed for design features and commitments for management during construction and operation to be identified and included. The risk assessment incorporated risks identified from the ACT Government Environment, Planning and Sustainable Development Directorate's (EPSDD) *Scoping Document* dated 21 July 2022, as well as other risks identified during the preparation of the EIS.

Risks have been evaluated by likelihood of occurrence and magnitude of consequence to determine the risk level and impact significance. The matrices for the 2023 draft EIS prepared by GHD were initially taken from the *Proponent's Guide to Environmental Impact Statements* (ACT Government, 2017a). However, with the introduction of the new planning system in 2023, the matrices have been modified to align with the TPA's *Fact Sheet: Making an EIS Scoping Document or ESO Application*, September 2024, and comply with AS ISO *31000:2018 Risk Management - Guidelines*.

A summary of the inherent (unmitigated) and residual (mitigated) risk rating for hazards rated medium or greater are included in Table 0.1.1. All hazards were rated to be medium or lower when mitigation measures were implemented.

Table 0.1.1: Medium or higher risk summary (inherent and mitigated)

Subject	Risk scenario	Inherent risk	Mitigated risk
Traffic	Increased heavy vehicle traffic with potential for congestion and lane closures or traffic control systems	Medium	Very Low
	Changes in existing traffic access such as increased heavy vehicle traffic associated with receiving and distributing resources	Medium	Negligible
Materials and waste	Waste generated during construction	High	Medium
	Waste and isolated contaminants generated during operation	High	Medium
Landscape and visual	Visual impacts during construction including disposable materials, heavy machinery and artificial lighting.	Medium	Very Low
	Storage and stockpiling of recyclable and non-recyclable waste at the facility.	Medium	Very Low
Soils and geology	Fuel, oil, and lubricant spills from general operation and refuelling of trucks and machinery may be a source of contamination. Manipulation and movement of contaminated materials may also be a source of contamination.	Medium	Very Low
	Earthworks and general site movements may impact soil stability and enhance erosion with further impacts on waterway turbidity and sedimentation.	Medium	Low
	Existing contaminated land may be discovered on site. Remediation may be required to mitigate human and environmental health impacts.	Medium	Low
	Unprocessed material or contaminants separated from materials during operation may be a source of contamination if uncontained.	Medium	Low
	Contaminated wastewater and stormwater may impact on surrounding land and water catchments.	Medium	Low

Subject	Risk scenario	Inherent risk	Mitigated risk
Water quality and hydrology	Contaminated wastewater and stormwater may impact on surrounding land and water catchments.	Medium	Low
Biodiversity and nature conservation	Removal of threatened flora and fauna or impacts which impact habitat quality and species resilience.	Medium	Low
Socio-economic and health	Reduction in amenity during construction (noise, visual, and dust impacts)	Medium	Very Low
	Facilities and materials may be a harbourage site for vermin and other pests with impacts on health and social amenity	Medium	Very Low
Air quality and odour	Construction activity may contribute to air pollution with dust and gas (such as carbon monoxide, hydrocarbon etc) emissions.	Medium	Very Low
	Increased processing and vehicle movements may contribute to air pollution with gas and odour emissions	Medium	Very Low
Greenhouse gas	Construction activity may contribute to air pollution with dust and gas (such as carbon monoxide, hydrocarbon etc) emissions.	Medium	Low
	Increased processing and vehicle movements may contribute to air pollution with gas and odour emissions	Medium	Low
	Contribution to increased GHG emission	NA	Medium
Climate change	Drought affects near surface ground movement, potentially causing differential settlement and expansion/contraction of soils, resulting in movement of infrastructure.	Medium	Low
	Extreme heat effects concrete temperature management for early age crack risk and for concrete curing resulting in reduced reliability and design life of concrete foundations.	Medium	N/A
	Increase in extreme heat days resulting in 'stop work' days, and greater delays to the construction program than accounted for.	Medium	N/A
	Increase in extreme heat days resulting in 'stop work' days during operations.	Medium	Low
	Extreme rainfall leading to flooding of the site and facilities leading to impact on open processing recyclables and contamination of flood water leaving the site (water quality compliance issues)	Medium	Low
	Extreme rainfall leading to flooding of the site and facilities leading to damage of facility components.	Medium	Low
	Increased frequency, severity, and duration of significant storm events including hail cause damage to the sites exposed components such as roofs and uncovered equipment.	Medium	Low
	Severe wind/ storm event has higher wind loading than designed, causing stress to site structures resulting in damage, reduced design life or safety hazard.	Medium-Low	Low
	Extreme heat generated by bushfires (greater than 300 degrees Celsius) comes in direct contact with site components causing damage.	Medium	Low
Noise and vibration	On site noise and vibration impacts during operation.	Medium	Very Low
	Operation of trucks and machinery on site may create significant sources of noise and vibration.	Medium	Very Low
Bushfire	Potential risk of bushfire during construction from sparks, heat, fuel storage, and general works	Medium	Low

Impact assessment

Assessment was undertaken of potential impacts to matters identified in the Scoping Document as well as other matters potentially relevant to the proposal.

For each matter, the following were detailed:

- Environmental conditions and values
- Investigations
- Potential impacts
- Mitigation measures
- Residual risk

Technical studies were undertaken to support the EIS as described in the following sections.

Planning and land status

The potential risk identified from a land use perspective is the sterilisation of surrounding land uses, that is, the impact the proposal would have on surrounding uses and whether it would limit existing or future uses for the surrounding businesses or residences.

The proposal site is zoned IZ1 General Industrial. The proposal is permissible and consistent with the objectives of this zone.

The proposal is located within an industrial area which is separated by over one kilometre from sensitive land uses. The MRF would implement 'Best Available Technology Economically Achievable' for the development. This would include management and mitigation measures to address potential hazards, noise and air quality impacts. It is considered that the facility would be compatible with the surrounding uses and should not result in impacts that would limit current or future uses in the surrounding area.

Therefore, from a land use context the proposal is considered to respond to the planning and land use objectives and requirements within the Territory Plan.

Traffic and transport

The construction and operation of the proposal is expected to generate minimal increase in vehicle traffic when compared to the existing traffic already in the road network. Additional traffic generated by the proposal is not expected to significantly change the vehicle composition in the road network and is not anticipated to cause changes to road safety risks.

Parking for vehicles associated with construction and operation of the proposal would be provided on-site in accordance with ACT Industrial Zones parking requirements.

Utilities

Existing utility services within the site, including gas, electricity, sewer, Telstra, NBN and stormwater, will be removed as part of implementation of a separate development approval for DA 202342289 which was approved on 4 April 2024 for "*Demolition of the existing building, pavements, structures, including disconnection of services, removal of hazardous materials, earthworks to reinstate site to match existing ground level, reinstate disturbed verge areas and associated site works in accordance with the plans, drawings and other documentation approved and endorsed as forming part of this approval*".

Temporary power, water supply, sewer and telecommunications connections for site sheds and associated amenities would be required during construction of the proposal.

Electricity, communications, water supply and sewer connections would be required for the operation of the proposal. The installation of any additional utilities, such as trade waste if required, would have appropriate controls in place to minimise potential for contamination.

Materials and waste

All waste generated during construction and operation would be managed using the waste hierarchy approach of avoidance and re-use before consideration is given to disposal.

Waste management activities are not expected to have a significant impact on the environment or human health provided that the identified controls, waste handling and management measures are implemented.

Landscape and visual

The proposal would be located within the 'Hume Industrial Estate landscape character zone'. Impacts on landscape character of this zone were deemed to be low. Impacts to other landscape character zones within the study area for the landscape and visual assessment were assessed to be negligible.

Visual impacts at the selected viewpoint locations were generally assessed to be low to negligible due to their low sensitivity and views being commonly screened or filtered by surrounding built form, topography and/or vegetation.

The concept design for the proposal is consistent with the requirements of Development Control Plan 171/09/0001. The proposal is similar to other existing developments in the area and would offer no significant extra lighting or have lighting that differs from other industrial buildings. The light design in the proposed MRF is not expected to conflict with runway lighting in its configuration or pattern and therefore the risk of pilot distraction would be minimal/rare.

Soils and geology

A Preliminary Site Investigation (PSI) was undertaken as part of the proposal under Phase 1 of the *Contaminated Land Environment Protection Policy*. As part of the recommendations in the PSI, a targeted site investigation (TSI) was undertaken to ascertain whether contamination on site was present and whether it posed a risk to human health.

The outcomes of the TSI indicated the site was low risk to human health during construction. The TSI identified measures to mitigate potential contamination risks during demolition and construction works.

Water quality and hydrology

Water quality modelling confirms that the proposed treatment strategy would achieve the requirements of the *ACT Water-sensitive Urban Design Code* (ACT Government, 2017b) and meet ACT regulations for water quality.

The building site is not impacted by flood flows, with flood waters generally confined to the north-western side of the site. Further run-on from other sites is not notable. The MRF is proposed to be located at a level higher than the 1 in 100 Annual Exceedance Probability (AEP) flood level of nearby waterways. Stormwater from local catchments is proposed to be diverted around the site, utilising existing drainage channels and infrastructure.

Hydraulic modelling has been undertaken to inform the design and ensure that the proposed facility pad level and location would not cause flooding to extend to any adjacent landholdings or result in any notable impacts on downstream waterways.

As a result of progressing the detailed design of the stormwater management system, the MRF:

- Complies with all relevant stormwater design and WSUD standards.

- Achieves all on-site detention, on-site retention, peak flow, permeability (porosity) and water quality criteria.
- Maximises stormwater retention on-site for re-use which has achieved the potable water use reduction targets; and reduced stormwater discharge to the receiving environment.
- Ensures that no erosion occurs at or downstream of the stormwater discharge point as:
  - All stormwater runoff from the impervious areas of the site drains towards and is captured in the on-site detention tanks and no stormwater drains offsite via overland flow.
  - The stormwater discharge point is into the existing 525 mm stormwater main in Recycling Road via a new manhole.
  - Peak flow rate from the site post development will be less than the peak flow rate from the site pre-development, achieved through the proposed on-site detention system.

Biodiversity and nature conservation

The proposal footprint would be approximately three hectares in area. This area mostly comprises land that has been previously developed for the existing Hume MRF hardstand and shed area. A small area of exotic grassland bordering the current facility would also need to be cleared. This would be less than one hectare in area.

No threatened flora or fauna was observed in the proposal site and there are also limited records in the immediate surrounding area. Due to the disturbed habitat present it is unlikely the construction of the proposal would impact threatened species. The proposal has the potential to temporarily affect the use of the site by fauna as a result of increased disturbance during construction.

With the implementation of safeguards, the proposal would be unlikely to substantially affect fauna near the proposal and surrounding area.

- Notwithstanding the confirmation that the potential for impact on habitat connectivity is low to negligible, additional opportunities to enhance habitat connectivity have been explored at the request of the ACT conservator for Flora and Fauna. As such, Capital Ecology undertook further assessment, which is outlined in full in the Addendum to Appendix L, and recommends:
  - Fencing off a 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam.
  - Implement a weed control program to remove Blackberry and other significant weeds, with ongoing maintenance to prevent reinvasion.
  - Planting the fenced area with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. Capital Ecology's supplementary report provides a list of suggested species of plants which would be suitable in the context of the surrounding area, the previously existing vegetation type, and the low-lying, wet conditions of the area, while at the same time not increasing bushfire risk.
  - Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat.

Socio-economic and health

Biosecurity risks would be managed during construction with the development and implementation of a construction biosecurity management plan as part of the CEMP for the proposal.

During operation comingled recyclables would be transported via recyclable material collection vehicles, which are typically enclosed or covered, for sorting and further processing. Both the receival and materials processing operations would occur within enclosed buildings.

The proposal is anticipated to result in socio-economic benefits to the community through the diversion of waste from landfill which supports a variety of ACT Government net zero emission goals. Less waste being disposed of to landfill means that there would be a reduction in the costs needed to extend the capacity of the landfill.

Air quality and odour

The air quality assessment included consideration of dust due to increased traffic and operational impacts from odour. With implementation of appropriate dust mitigation and management measures the potential for dust impacts is considered to be low.

The facility would be enclosed, would not process putrescible waste, and would have minimal processes which are considered a source of odour or particulates. The assessment found all proposed activities to be acceptable from an air quality perspective and separation distance guidelines show that receptors are outside the recommended distance where adverse air quality impacts may occur.

Greenhouse gas

The estimated annual average GHG emission for the proposal is 0.0012 Mt CO_2-e (Scope 1 and 2), which is calculated to be approximately 0.0003% of the Australian GHG emissions for the period to June 2024 and approximately 0.09% of the ACT GHG emissions for the 2022 period.

The facility design considers a range of measures to reduce GHG emissions including but not limited to:

- Design and construction of the MRF Facility to achieve an equivalent of GreenStar 4-Star rating.
- Reduction of operation emissions by provision of:
  - A substantial portion of the power requirements coming from rooftop solar. Veolia is also investigating location of a Battery Energy Storage System on site.
  - Use of Variable Speed Drives (VSDs) for process equipment shall reduce energy demand.
  - Digital project management tools: Reduce paper use and improve coordination, cutting down on rework and delays.
  - Just-in-time material delivery: Reduces storage needs and energy used in handling.
- Provision of electric vehicle ready charging infrastructure encourage staff to transition to electric or hybrid vehicles for personal use. When purchasing vehicles for their fleet, Veolia will consider purchasing an electric or hybrid vehicle.
- Installation of transparent roof sheeting to reduce lighting consumption.
- Undertake periodic reviews during the operational lifetime of technologies and abatement measures to reduce GHG emissions from the proposal (e.g. robotics and AI).
- Elimination of gas driven technologies for glass processing.
- Implement energy-efficient practices in construction processes, including:
  - Selection of site levels to minimise cut-and-fill.
  - Slab design to minimise number of trucks/pours.
  - Engineering design to optimise size of concrete and steel structures.
  - Implement efficient design and materials to minimise waste particularly on the structure.

- Optimize machinery use to reduce idling and fuel waste.
- Use electric tools where possible and battery tools, especially for smaller tasks.
- Use of cranes and lifts efficiently. Plan lifts to minimise idle time and fuel use.
- Switch to electric EWPs where possible once the concrete slab is poured.
- Regularly maintain equipment to ensure optimal fuel efficiency.
- Bulk ordering to minimise packaging and delivery trips.
- Buying local to reduce transport emissions and support local economies.

The opportunities to reduce emissions would be further investigated and considered during detailed design and planning.

Climate change

The climate change risk assessment identified four climate hazards and associated risks which were applicable to the proposal: extreme heat, extreme rainfall, storms and bushfires. Adaptation measures to address risks would be identified and considered in the design to be adopted during the construction and operation of the proposal.

There are no construction mitigation measures for climate change as the facility is located well above the flood zone and the facility is constructed in accordance with relevant Australian standards for earthquake citing, bushfire and bushfire smoke, extreme heat and extreme storm events. Further, construction shall be completed in 2028, therefore the longer term effects of climate change risk do not apply to the construction.

Noise and vibration

The noise and vibration impact assessment found that the noise levels generated at the property boundary for the MRF during the day would be compliant with the relevant noise standard limit of 65 dBA in the Noise Environmental Protection Policy (ACT EPA, 2010).

The vehicle noise from early morning deliveries would slightly exceed the ACT Noise Standard by up to 2dBA at the southern and southeastern boundaries. As there are no receivers close to the site, the minor exceedance in the noise standard is not considered to have any impact on the amenity of the area. The small exceedance of 2db(A) is due to trucks idling near the receival area and outbound weighbridge of the facility. The same trucks which cause the exceedance will be travelling down Mugga Lane causing higher sound power levels. Accordingly, Veolia intends to request a 10m exemption which the EPA have advised seems acceptable.

Construction hours would comply with Section 9.4 of the Noise Environment Protection Policy. This states that: "*In industrial areas, …. noise from building work can only exceed the noise standard between 6am and 8pm*."

Hazard and risk

Chemical supply details are not yet finalised although no chemicals are envisaged for routine operation of the MRF. Notwithstanding, any chemicals that are used on site, such as domestic cleaning products for amenities, are not expected to be hazardous chemicals that would trigger a requirement to have a manifest. Nonetheless, a register of all chemicals used during construction and operation would be kept on-site.

All hazardous materials would be stored and bunded in designated areas within site compound / facility building in accordance with AS 1940-2017 *The storage and handling of flammable and combustible liquids* (incorporating amendments 2:2021).

As the proposal site is within 10km from the Canberra Airport, potential for bird strikes was considered a potential risk. Processed recyclable material is inert, not organic and outside storage is limited to glass, metal and plastic is therefore not considered an attractant to birds. Given that the residual risk of wildlife strike at the proposal site is not increasing the risk in relation

to an existing airport, further risk mitigation measure such as Wildlife Management Programs are not considered to be required under the *National Airports Safeguarding Framework* (NASF), *Managing the Risk of Wildlife Strikes in the Vicinity of Airports* (Guideline C).

Bushfire

The proposal site is mapped as a Bushfire Prone Area by the ACT ESA. An assessment was undertaken in accordance with the ACT Bushfire Management Standards 2023 (ESA, 2023) and Method 1 of AS 3959-2018. The assessment determined that the proposal can comply with all bushfire planning requirements.

To manage the threat of fire, the design of the facility would be in accordance with the objectives of the AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020) and the current edition of the *National Construction Code* (Australian Building Codes Board, 2022).

Heritage

One previously recorded Aboriginal heritage site (NW1/PAD1) is located within the proposal site. However, this site has been subject to surface salvage and subsurface testing and no further action was required.

One Aboriginal artefact scatter (HMRF01) was recorded during the site surveys within the northeast section of the proposal site. Following approval of the Statement of Heritage Effects (SHE) by ACT Heritage, a collection survey was conducted to avoid further physical impacts to the site and its contents.

Mitigation measures

A range of mitigation measures have been developed to avoid or reduce potential impacts of the proposal. These include planning and design features, construction management commitments, and ongoing management measures during operation.

Table 0.1.2: Summary of mitigation measures

Environmental matter	ID	Recommended mitigation measure	Timing
Traffic and transport			
Construction traffic management plan	T01	A CTMP would be developed to include the following management measures: ▪ Preparation of a *Traffic Guidance Scheme*, detailing adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised. ▪ Maintain accessibility for pedestrians and cyclists.	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		▪ Indicate routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses. ▪ Implement measures to manage traffic flows around the area affected by the construction of the proposal, including, as required, regulatory and direction signposting, line marking, and variable message signs and all other traffic control devices necessary for the implementation of the construction traffic management sub-plan. ▪ Undertake consultation with the relevant road authorities during preparation of the sub-plan. Ensure the performance of the proposal traffic arrangements is monitored during construction. ▪ Ensure trucks used for the delivery for the developments on John Cory Road are unimpeded. ▪ Monitor the roads leading to and from the proposal site and take necessary steps to rectify any road deposits caused by site vehicles, to maintain the safety of road users. ▪ Where possible, offset the construction vehicle activity from peak periods of road network activity. ▪ Induct employees and contractors to raise awareness and understanding of traffic and transport mitigation measures to be implemented during construction via the CEMP.	
	T02	Construction management would be controlled by the site supervisor to ensure the efficient delivery of equipment and construction materials, and to minimise the number of trips that would need to be taken for all vehicle types.	Construction
Impacts to site access and parking	T03	All vehicles would comply with road traffic rules, particularly for any local traffic rules.	Construction and operation
	T04	All parking would be contained within the proposal site premises. Under no circumstance would personnel, company vehicles or heavy vehicles be allowed to use	Construction and operation

Environmental matter	ID	Recommended mitigation measure	Timing
		any public road for long-term parking, including leaving parked or unattended vehicles.	
	T05	Carpooling opportunities for personnel living in close proximity to one another would be explored where feasible. Opportunities for coach services to shuttle workers from the CBD or nearby public transport stations to the site shall also be explored.	Construction and operation
Safety	T06	All staff and subcontractors engaged on-site would be required to undergo site induction. The induction would outline the requirements of the CTMP, including access routes, environmental and occupational health and safety responsibilities, emergency procedures, potential carpooling/shuttle service opportunities, and vehicle height and mass restrictions, among others. Additionally, the Site Manager would discuss CTMP requirements regularly as a part of regular "toolbox talks.	Construction
	T07	Separation of internal haulage routes for light and heavy vehicle movements within the proposal site would be maintained as far as practicable.	Construction
	T08	All vehicles would move through the proposal site in an anticlockwise direction to maintain the predictability of vehicle movements and to minimise conflict points.	Construction
	T09	Separate entrances and exits for vehicles and pedestrians would be provided. Pedestrians on-site would be directed to utilise clearly-defined designated pedestrian paths.	Construction
	T10	Access for emergency vehicles would be maintained at the proposal site during the construction works, in accordance with emergency vehicle requirements. The emergency services, including fire, ambulance, and police, would be advised of all planned changes to traffic arrangements prior to the commencement of works.	Construction
Heavy vehicle access	T11	Truck drivers would be directed to follow the predetermined haulage routes. Additionally, all drivers would be required to observe posted speed limits on adjoining road networks to comply with Australian Road Rules. Drivers would be required to adjust speeds to suit the road environment and weather conditions appropriately to	Construction and operation

Environmental matter	ID	Recommended mitigation measure	Timing
		ensure the safe movement of the vehicles based on the individual vehicle configurations.	
	T12	Any oversized or overweight load would be transported in accordance with the requirements of the relevant road authority.	Construction and operation
Utilities			
Locations of utilities and services	U01	The locations of existing utility services and any unknown utilities together with changes required would be confirmed by the construction contractor during the detailed design of the proposal in consultation with the relevant utility provider.	Detailed design and prior to construction
Contamination resulting from utilities	U02	The CEMP would include appropriate water management and erosion and sediment controls to avoid contamination resulting from utility works.	Prior to construction and construction
Impacts to critical services and utilities	U03	Prior to commencing detailed design, the BYDA would be conducted again to verify the locations of the utilities and services. During the detailed design process necessary clearance distances as per AS standard, Icon Water and Evoenergy standards would be determined and provided to utility and service providers as necessary. Site supervision by the utility and service providers would be included as required during construction.	Prior to construction and construction
Operation of existing utilities	U04	Evoenergy and Icon Water would be consulted with during the detailed design phase in order to ensure the current utilities have capacity to service the proposal.	Detailed design
Materials and waste			
Excessive waste generation	MW01	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
Non-classified or incorrectly classified waste transport and disposal	MW02	A demolition and construction waste management plan should be prepared and implemented as part of the CEMP for the proposal. The plan should adopt the waste hierarchy principles contained in the *Waste Management and Resource Recovery Act 2016* and detail processes, responsibilities and measures to manage waste and minimise the potential for impacts. This should include waste separation, handling, storage,	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		transport and off-site reuse, licensed recycling and disposal locations.	
Regulatory non-compliance and/or contamination at receiving facilities	MW03	All demolition and construction waste should 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. A detailed *Operational Waste Management Plan* would be developed and implemented to incorporate the requirements of relevant guidance documents and waste management hierarchy principles contained in the *Waste Management and Resource Recovery Act 2016*.	Construction phase
Improper waste handling	MW04	The detailed OWMP would include: ▪ All key waste and process residue streams and expected quantities. ▪ Waste and residue handling, management and storage procedures including feedstock receival 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
Contingency Plan	MW05	A contingency plan would be developed prior to operation which includes management measures and procedures that manage contingencies such as:	Prior to operation

Environmental matter	ID	Recommended mitigation measure	Timing
		▪ Oversupply of waste received on-site. ▪ Stockpiling of waste when/if the operation of the facility is ceased or reduced in capacity. ▪ 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.	
Landscape and visual			
Visibility of construction activities and storage areas	LV01	All practical measures would be undertaken to ensure construction equipment, storage areas, and other visible elements are located away from key views to or from the identified sensitive visual receivers.	Construction
	LV02	General tidiness of the site would be maintained during construction.	Construction
	LV03	Conducting of works in evenings and nights would be avoided where possible, to minimise impacts from lighting.	Construction
	LV04	Where works cannot be located away from trees, tree protection would be provided to ensure they are not damaged.	Construction
	LV05	All areas disturbed by construction and ancillary works would be rehabilitated to their previous condition.	Construction
	LV06	During construction, screening measures would be employed to assist the proposal site in blending into the surrounding area. Choice of screening would be sympathetic to the existing rural setting (e.g. neutral colours or green depending on location).	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
Visual impacts during operation	LV07	The following measures would be considered during detailed design in relation to design materiality: ▪ Ensure the proposal form, material and finishes are of high quality and are in keeping with the surrounding setting, contributing positively to the existing landscape character values. ▪ The *DCP Guidelines* states that 'The roof should be of pre-coated metal of low reflectivity'. This should be taken into consideration when specifying metal roofing finishes. ▪ Avoid the use of shiny or reflective materials to minimise associated visual impacts on surrounding sensitive receivers. ▪ Consider specifying a custom-designed external cladding that complements the Indigenous cultural and rural landscape setting, for instance by printing imagery of native vegetation onto the façade, in order to mitigate visual impacts from the Tuggeranong Heritage Track. ▪ If custom-designed cladding is not possible, consider using a green colour for the roof and external Colourbond steel façade walls of the facility to ensure it is in keeping with nearby structures, reducing the landscape and visual impacts.	Prior to Construction
	LV08	The following measures would be considered during detailed design in relation to landscaping: ▪ Screen planting along the northern property boundary, to preserve the landscape character of Dog Trap Creek corridor and to minimise views from surrounding elevated areas and consistent with principles shown on DCP Drawing No. 171/08/0009. ▪ Increasing the density of planting along the site boundaries, to minimise visual impacts of the buildings, car parking, and ancillary structures and equipment, following DCP	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		171/09/0001 planting requirements. ▪ Planting screening vegetation within the site boundary along John Cory Road, to minimise visual impacts experienced from the Tuggeranong Heritage Track. ▪ Avoid the clearing of trees where possible, to retain the existing character values.	
	LV09	The following measures would be considered during detailed design in relation to signage: ▪ Minimising signage dimensions. ▪ Avoiding brightly illuminated signage. ▪ Employing high quality signage design. ▪ Locating signage on buildings rather than freestanding.	Construction and Operation
Soil and geology			
Existing contamination risks to construction workers and ecological receptors	SG01	A Contamination Management Plan (CMP) would be prepared with measures to mitigate unexpected contamination risks during construction and included in the CEMP.	Prior to construction and construction
	SG02	A hazardous building material survey would be undertaken prior to demolishing the existing MRF	Prior to construction
	SG03	An asbestos assessor would be appointed to ensure there is no ACM on the proposal site.	Construction
	SG04	Drainage on the proposal site would be improved to manage runoff towards Dog Trap Creek.	Construction
Discovery and/or disturbance of unexpected, contaminated material	SG05	A UFP and CMP would be developed and included in the CEMP.	Construction
Sediment and nutrient laden runoff from areas impacting water quality in downstream waterways	SG06	An ESCP and CMP would be prepared as part of the CEMP to identify and mitigate erosion impacts from construction activities, particularly during extreme weather.	Construction
Transport of contaminated material from the proposal site	SG07	A designated washdown area would either be provided on the proposal site or located at truck depots off-site.	Construction and operation
	SG08	Any contaminated soil removed from the proposal site would be classified in accordance with ACT EPA *'Requirements for the reuse and disposal of contaminated soil in the ACT'* (Access Canberra, 2019)	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		and disposed of at a suitable licensed waste facility.	
Spills of diesel fuel, and lubricating oils	SG09	All hazardous materials would be stored and bunded in designated areas within site compound / facility building in accordance with AS 1940-2017 *The storage and handling of flammable and combustible liquids* (incorporating amendments 2:2021).	Construction and operation
	SG10	All diesel fuels and lubricating oils would be stored in appropriate containers and in bunds and away from drainage areas.	Construction and operation
	SG11	Spills kits would be located adjacent to storage areas.	Construction and operation
	SG12	All spills would be cleaned up immediately and logged in the site incident register and notified to the EPA where the potential for harm or other obligation requires notification.	Construction and Operation
	SG13	SDS sheets would be located adjacent to storage areas.	Construction and operation
Generation of contaminated material	SG14	Appropriate storage areas would be created for batteries to ensure quarantine standards are in accordance with best practice advice issued by ACT Fire and Rescue plus fuel storage compliant with relevant standards.	Operation
Water quality and hydrology			
Water quality impacts to downstream waterways and associated aquatic ecosystems with regards to suspended solids	W01	A Water Management Plan (WMP) would be developed that details the following mitigation measures: ▪ Installation and management of sediment basin. ▪ Control of upstream run-off movement around the site disturbance area. ▪ Conveyance of site disturbance area run-off to the basin via dirty water drains. ▪ Water quality monitoring of sediment basin and discharge. ▪ Discharge parameters ▪ Rainfall monitoring. ▪ Remedial actions to be taken where water quality value exceedances occur.	Construction
Water quality impacts to downstream waterways associated with the operation of the MRF (e.g. littering)	W02	An Operational Water Management Plan (OWMP) would be developed and implemented. Some key features of proposed activities that would be specified and maintained are as follows: ▪ Materials inside trucks are not to be removed until truck	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		is fully inside the indoor receiving area. ▪ Products are to be fully repackaged before leaving indoors on instances where they are transferred off-site or between buildings. ▪ Daily visual inspection with any waste located outside to be collected. Inspections would be done by verified and authorised personnel with clearly mandated responsibilities. ▪ Maintenance of the wastewater system, including the containment and conveyance system. ▪ Emergency management procedures, such as management of uncontrolled spills, including where engineered controls of areas containing hazardous materials are required such as bunding or similar to intercept pollutants from the receiving environment. ▪ Suitable storage of fuels and other spill hazards.	
Biodiversity and conservation			
Impacts to native vegetation and habitat	BC01	A Flora and Fauna Management Plan (FFMP) would be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to avoid and mitigate impacts to flora and fauna within the study area. The FFMP will include the following measures: ▪ An approximately 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam will be fenced off. ▪ Removal of areas of native vegetation will be minimised wherever possible. ▪ No impact to any areas of habitat not marked for removal would occur. ▪ No vegetation removal or soil disturbance will occur outside the impact areas. ▪ All staff would be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. ▪ If any unexpected threatened flora or fauna not assessed in the ecological assessment are	Prior to Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		identified in the proposal site, work will cease immediately and the environmental manager will be contacted. ▪ Planting the fenced area along the northern boundary of the site with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. ▪ Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat. The quantity of rocks and course woody debris, together with the locations for placement, will be determined by Veolia in consultation with a consulting ecologist.	
Spread of weeds, pathogens and diseases	BC02	A Weed and Pest Management Plan (WPMP) would be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to prevent the establishment and/or spread of weeds within and beyond the study area. The WPMP will include the following measures: ▪ Weed management may include the following measures: - Use of herbicides. - Integrated weed management throughout the proposal site. - Implementing exclusion zones. - Weed removal and disposal prior to construction. ▪ The weed management plan would include: - A description of the weed for identification purposes, including a description of its relevance to the proposal site. - Specific function of the weed, including flowering and seeding periods. - Identified risk of spread. - Identification of specific management measures for individual weed control. - A specific weed control program to remove Blackberry and other significant weeds in the strip of exotic grassland in the northern part of the site, with	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		ongoing maintenance to prevent reinvasion. - Limits of movement during construction to reduce spread to areas of high-quality habitat. - Declared pest plants and WoNS will be identified and controlled prior to any earthworks commencing to assist in minimising spread of pest plants and WoNS. - Vehicle and machinery wash/brush downs will be required to ensure that weed species are not spread to non-infested areas. No construction vehicles or staff should enter surrounding areas to minimise weed spread. - Sediment control, such as silt fences, would assist in reducing the potential for spreading weeds downstream. - Soil disturbance will be avoided as much as possible to minimise the potential for erosion and spread of weeds. - The spread of exotic plant species within and adjacent to the proposal site would be monitored. Weed control will be undertaken if it is determined that the proposal is causing significant spread of weed species. - No machinery, light vehicle, or construction staff access to adjacent areas would occur, to minimise the risk of spread of weeds to sensitive areas. - When transporting weed waste from the proposal site to the waste facility, trucks must be covered to avoid the spread of weed-contaminated material. Disposal must be documented, and evidence of appropriate disposal must be kept. ▪ Other protocols will include: - Minimising the removal of vegetation wherever possible. – Having an ecologist/wildlife carer on site during clearing activities.	
Soil erosion, sedimentation and water quality	BC03	A SWMP would be prepared incorporating an ESCP prior to construction commencement, as	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		part of the CEMP. This would also include the following: ▪ Refuelling or maintenance of plant and machinery will not be undertaken within 50 metres of waterways or drainage lines. ▪ A rehabilitation and revegetation plan (RRP) will be prepared for areas disturbed during the works. This will identify appropriate methods for stabilising disturbed soils to resist erosion. ▪ Sediment and erosion controls downstream of the proposal site (such as the nearby creek lines outside of the study area) will be implemented before any construction commences and inspected regularly, particularly after a rainfall event, and maintenance works undertaken as needed. These controls would remain in place after construction until sufficient regeneration of vegetation to prevent erosion or sedimentation occurs. ▪ Weather forecasts would be checked daily to ensure that high risk soil and erosion activities are not undertaken immediately before or during high rainfall or wind events. Disturbed surfaces would be compacted and stabilised in anticipation of rain events to reduce the potential for erosion.	
Invasion and spread of pathogens	BC04	The weed and pest management plan will include the following: ▪ Protocols to prevent introduction or spread of pathogens like Chytrid Fungus and Phytophthora following the Hygiene guidelines for wildlife (Department of Panning, Industry and Environment (DPIE), 2020). ▪ All machinery entering the proposal site must be appropriately washed down and disinfected prior to work on site.	
Socioeconomic and health			
Biosecurity including vermin and pest animals which impacts on health	SH01	A Construction Biosecurity Management Plan (including a pest and weed management plan) would be developed and implemented as part of the CEMP and include:	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		▪ Measures to ensure controls and procedures are implemented during construction to avoid, minimise or manage potential adverse impacts on biodiversity. ▪ Measures to retain and protect existing flora and fauna habitat where possible and appropriately manage the spread of weeds and plant pathogens. ▪ Measures to minimise the potential for biosecurity risks during construction in accordance with the *Biosecurity Act 2015* and relevant ACT legislation.	
	SH02	An Operational Biosecurity Management Plan would be developed and implemented which: ▪ Clearly documents operational procedures, controls and ongoing monitoring and measurement of biosecurity risks associated with the proposal – including requirements for vehicle deliveries to be covered, delivery within the receival hall and storage of residual waste. ▪ Outlines how pest and weeds will be managed on the site and during transport. ▪ Requires Veolia to undertake routine monitoring and inspections on the operational biosecurity management plan.	Operation
Air quality and odour			
Elevated dust levels	AQ01	A dust control protocol would be prepared that forms part of the CEMP to detail management measures, a method for recording dust complaints and monitoring requirements. This would include the following: ▪ On days with forecast and actual high winds (i.e over 10 m/s) work effort would be reduced accordingly if wind blown dust is observed to be leaving the site boundary. ▪ Dust suppression would be undertaken as required using water sprays, water extension agents, soil stabilising polymers or other media on:	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		– Unpaved work areas subject to traffic or wind. – Spoil and aggregate stockpiles. – During the loading and unloading of dust generating materials. – Unpaved access tracks. ▪ On days with high background dust levels (due to fire or offsite dust events for example), dust mitigation would be increased in the form of watering or reducing dusty construction activities. ▪ Construction vehicles with potential for loss of loads (such as dust or litter) would be covered when using public roads.	
	AQ02	If the works are creating levels of dust which may significantly impact on residential amenity, the works would be modified or stopped until the dust hazard is reduced to an acceptable level.	Construction and Operation
	AQ03	A dust complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding dust are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	Operation
	AQ04	A dust collector system for the glass crusher would be implemented.	Operation
	AQ05	If required, a dust collector system would be implemented in other areas which regularly emit large amounts of dust.	Operation
	AQ06	Regular sweeping and housekeeping practices would be undertaken to maintain dust levels within the building.	Operation
Elevated levels of airborne pollutants	AQ07	Plant and equipment would be maintained in good condition to minimise ignition risk, spills and air emissions that may cause nuisance.	Construction
Release of odour to surrounding communities	AQ08	An odour complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding odour are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	Operation
	AQ09	If the works are emitting odour concentrations which may	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		significantly impact the nearby receptors, the works would be modified or stopped until the odour hazard is reduced to an acceptable level.	
	AQ10	An internal sealed site drainage system would be provided which leads to storage tanks or interceptors that can collect rainwater and any spillage.	Operation
	AQ11	Provision would be made for the segregation of odorous baled materials, and the recycling of those materials back through the MRF in the event they need further separation.	Operation
Odour and dust emissions	AQ12	Household sorting practices would be promoted.	Operation
	AQ13	Post-sort inspection of materials would be undertaken, and any potentially odorous materials would be isolated. Pick-ups and transport to landfill are frequent throughout the day thereby reducing the time any potential odorous materials are on site. Note also that the MRF doesn't generate highly odorous waste	Operation
	AQ14	The name and contact details of person(s) accountable for air quality and dust issues would be displayed on the proposal boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information would be displayed.	Operation
	AQ15	Regular inspections would be carried out to monitor compliance with the air quality management strategy. Once operational, sampling of the proposal operations would be conducted to confirm assumptions made throughout the air quality assessment.	Operation
	AQ16	An air monitoring program would be established to ensure workplace exposure limits are maintained. Sampling would be undertaken in each building biannually by a suitable professional in accordance with guidance from Safe Work Australia and relevant Australian Standards.	Operation
	AQ17	Sorted materials would be covered during transport.	Operation
	AQ18	Ventilation equipment and dust or odour control units (if required) must be operational and regularly maintained. Should any unit become faulty, production on those	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		affected lines would be halted immediately and not resumed until emission control systems are fully operational.	
Greenhouse gases			
Construction emissions	GHG1	Opportunities to reduce construction emissions would be investigated and considered during design and construction planning. This would include opportunities for: ▪ Evaluating and considering low carbon concrete alternatives, such as replacement of Portland cement in concrete with SCM. ▪ Identifying opportunities to incorporate recycled materials. ▪ Assessing construction methodologies and equipment selection to minimise diesel use and explore low-emission fuel alternatives. ▪ Using reclaimed asphalt pavement. ▪ Using steel with higher post-consumer recycled content. ▪ Locally sourced construction materials where possible to minimise transport emissions. ▪ Embedding waste minimisation and recycling strategies, together with reuse/recycling of other construction waste materials and inclusion in construction management plans, where feasible. ▪ Investigation of use of transparent roofing and/or wall materials for natural plant lighting. ▪ Veolia's design shall consider and seek to maximise overall energy efficiency.	Construction
Feedstock contamination sent to landfill	GHG2	Educational campaigns and increasing recycling awareness would be developed and implemented to help reduce feedstock contamination.	Operation
Diesel Use	GHG3	Ways to lower demand of diesel use and substitution with less emission intense fuels would be investigated and considered.	Construction and operation
	GHG4	Service and maintain all machinery, as far as reasonably practical, in accordance with original equipment	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		manufacturer recommendations for maintenance	
	GHG5	Target equipment maintenance to ensure, as far as reasonably practical, equipment remains fit for purpose over its whole life cycle	Operation
Technology	GHG6	Undertake periodic reviews of technologies and abatement measures to reduce GHG emissions from the Project, including whether these measures are reasonable and feasible to implement at the Project	Operation
Climate change			
Increase in extreme heat days resulting in 'stop work' days during operations.	CCR01	WHS management plan and procedures would be regularly updated to adjust to conditions.	Operation
Extreme rainfall leading to flooding of the site	CCR02	While the floor level of the building is well above the 1% flood level, additional protection structures (e.g. bunding etc.) would be considered during detailed design.	Detailed design and operation
Severe wind/storm event has higher wind loading than designed, causing stress to site structures resulting in damage, reduced design life or safety hazard.	CCR03	Ongoing monitoring would be undertaken of site components and maintenance if deficiencies are identified. The Facility shall be designed in accordance with Australian Standards or equivalent for wind loading and earthquake loading	Operation
Noise and vibration			
Noise disturbance to sensitive receivers	NV01	Construction hours would comply with Section 9.4 of the Noise Environment Protection Policy. This states that: "*In industrial areas, …. noise from building work can only exceed the noise standard between 6am and 8pm.*"	Construction
Night-time operational noise beyond site boundaries	NV02	That should the minor departure of 2dB(A) over the night-time noise standard at the sight boundary create issues within the John Cory road reserve, then an Operational Noise Management Plan will be considered at the detailed design stage	Detailed Design
Hazard and risk			
Facility fire	HR01	A *Fire Management Plan* would be prepared for construction and operation.	Construction and operation
	HR02	Smoke detectors, fire extinguishers, fire blankets, fire hose reels and sprinklers would be appropriately placed within buildings. Early detection technologies such as CCTV, Thermal imaging equipment (TIE) using IR on stockpiles and product storage, zones identified to areas of risk,	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		alert triggers, and 24h remote security monitoring.	
	HR03	An *Emergency Management Plan* would be prepared, including locations and sizes of combustible material stockpiles and management of ignition sources and provision of access in line with ACT ESA requirements.	Operation
	HR04	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020).	Detailed design
	HR05	Separate gates would be provided for site access (delivery/pickup heavy vehicles and staff/visitors cars). The main entry gate includes the enclosure/box with the EMP, and directions to FIP and booster. Fire separation (between the receival hall and the processing area; and the storage area and the processing area) consistent with national construction code fire resistance level and the overall fire strategy of the Facility, including appropriately rated fire walls, doors, alarm, and suppression devices.	Operation
Hazardous/ dangerous chemicals	HR06	Each chemical would have appropriate labelling, and appropriately sized bunds and stored within designated work areas.	Operation
	HR07	SWMS and procedures would be implemented for the handling of all chemicals including transfer, storage, spill prevention and clean up requirements.	Operation
	HR08	A SDS library would be located on-site that covers all chemicals used and/or stored on-site.	Operation
	HR09	Appropriate PPE would be provided for users of chemicals.	Operation
Wildlife strike	HR10	Organic material would not be stored on-site.	Operation
	HR11	Guideline C of NASF, Managing the Risk of Wildlife Strikes in the Vicinity of Airports would be adhered to.	Operation
	HR12	Waste would be stored and processed in buildings or vessels.	Operation
	HR13	The proposal site would be kept clean and tidy.	Operation
	HR14	Waste from office and administration activities would be stored in appropriate bins (with lids).	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
	HR15	A *Waste Management Plan* would be created for the proposal site to continuously manage and monitor waste.	Operation
	HR16	Any unwanted putrescible waste sources would go into waste bins to be taken to landfill.	Operation
Failure of critical infrastructure	HR17	A regular maintenance schedule would be developed and undertaken by qualified personnel.	Operation
	HR18	Adequate training would be provided on operating machinery.	Operation
	HR19	The following plans would be developed to manage critical infrastructure: ▪ Business Continuity Plan. ▪ Asset Management Plan.	Operation
Bushfire			
Bushfire	BR01	A bushfire prevention and response plan would be prepared as part of the CEMP, providing relevant information for fire and emergency service responders and project personnel. The plan would include the following requirements: ▪ Plant and equipment to be maintained in accordance with manufacturers recommendations and best practice. ▪ Seasonal and daily fire hazard warnings issued by the ACT ESA to be observed. ▪ No hot works on days of Severe, Extreme or Catastrophic Danger Rating. ▪ Vehicles to be kept on formed roads and paths, and away from long grass where possible. ▪ Appropriate parking areas to be provided for personnel that are away from long grass and other ignition sources. ▪ All vehicles on-site to be equipped with fire extinguishers. ▪ Fire prevention and fire control instructions to be included in site inductions. ▪ Hot works not to be undertaken outside designated workshop areas. ▪ Job Safety Analyses to incorporate fire ignition risk assessment and controls for prevention of grass fire ignition where relevant.	Construction and operation

Environmental matter	ID	Recommended mitigation measure	Timing
		▪ Job Safety Analyses for activities involving hot works to incorporate hot works risk assessment and controls.	
	BR02	An APZ would be provided in accordance with *ACT Bushfire Management Standards* (ESA, 2023). Appropriate fire shielding, such as a colourbond fence would be installed to supplement the APZ.	Detailed design
	BR03	Primary access would be provided to meet the following requirements: ▪ Minimum vertical clearance to a height of 4.2 metres above access at all times. ▪ Road widths (minimum 3.5 metres for one way and 6.5 metres for two way). ▪ Road capacity (25 tonnes minimum). ▪ Minimum inner radius six metres for curves and minimum distance between inner and outer curves is six metres. ▪ Crossfall of roads not exceeding six percent.	Detailed design
	BR04	APZ landscaping would comply with the *ACT Bushfire Management Standards* (ESA, 2023) fuel management standards and be guided by the fuel management principles. These would be managed by the site operator.	Operation
	BR05	An *Emergency Management and Evacuation Plan* would be prepared for the proposal in compliance with the requirements set out in the *ACT Bushfire Management Standards* (ESA, 2023) and updated prior to construction, operation and occupancy of the MRF. The plan would: ▪ Clearly identify bushfire preparedness actions, bushfire response actions, evacuation plans and procedures (for on-site and off-site evacuation), and on-site refuge locations. ▪ Include locations and sizes of combustible material stockpiles as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020) and management of ignition sources. A copy of the *Emergency Management and Evacuation Plan* would be provided to ESA for its	Construction and operation

Environmental matter	ID	Recommended mitigation measure	Timing
		information prior to occupation of the MRF.	
	BR06	The provision of shielding (non-combustible fencing) to the perimeter of the block would be considered in detailed design to assist with prevention of fire travel into the facility from grassland hazard in the event of a bushfire.	Detailed design
Facility Fire	BR07	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020). This would include: ▪ Limiting each internal (combustible) stockpile to 1,000 cubic metres. ▪ Ensuring a minimum of six metres unobstructed access is maintained on each accessible side of each internal (combustible) stockpile. ▪ Concrete storage bunkers limited to a height of 5m. This provides separation with 1m freeboard above 4m maximum pile height	Operation
Heritage			
Impacts to known heritage sites NW1/PAD 1 and HMRF01	H01	Long-term management outcomes for all artefacts collected in association with HMRF01 would be developed in consultation with the RAOs following completion of the assessment for the adjacent proposed FOGO facility.	Following completion of assessment for the proposed FOGO facility
	H02	All proposal personnel, including contractors, would be made aware of the heritage status of the NW1/PAD 1 and HMRF01 sites prior to impacts.	Prior to construction and construction
Impacts to unknown heritage sites	H03	The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 6 of the CHA) would be adopted and complied with during construction activities involving ground surface disturbance and excavation.	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		[redacted]	

Community and stakeholder consultation

Consultation was undertaken with relevant stakeholders, including the ACT Government, local landowners, the local community, nearby businesses, community groups, volunteer conservation, landcare groups and Representative Aboriginal Organisations, during the preparation of the EIS. Matters raised by these stakeholders have been considered when assessing potential impacts and developing management measures.

Key Findings

The key findings resulting from the preparation of this EIS are summarised as follows:

- The new MRF will provide significant community benefits including:
  - State-of-the-art technology to sort and process recyclable material.
  - Providing critical infrastructure to support ACT Circular Economy Strategies and Zero Emission targets.
  - Support achievement of ACT Government targets and commitments for resource recovery and diversion of waste from landfill.
  - Ongoing employment opportunities.
- Risk assessment of impacts and analysis of likelihood and consequence confirms that all potential impacts have a risk rating of medium or lower.
- The development of the proposal site for a MRF, incorporating recommended mitigation measures can be achieved:
  - Without any impact on threatened species or endangered ecological communities.
  - Without any impact on heritage sites or artefacts.
  - No significant visual impact or effect on landscape character.
  - With minimal increase in vehicle traffic and effect on intersection capacity.
- The operation of the facility in the early morning period will result in a minor exceedance of the ACT Noise Standard. This is estimated to be 3dB(A) and affects a small area of the road reserves of Mugga Lane and John Cory Road. There are no sensitive receptors within this area.
- The bushfire mitigation requires an Asset Protection Zone that extends slightly into the road reserves. However, the vegetation density and distances to the MRF building do not require any additional management of the vegetation in the road reserve which can be retained for visual screening of the building.

Justification and conclusion

This EIS has considered matters raised in the Scoping Document (Application Number 202200011) prepared by the ACT Government to identify and assess potential environmental impacts of the proposal.

The assessment of all matters concluded that, provided the committed mitigation measures are implemented, the proposal would be unlikely to cause a significant adverse environmental impact.

GLOSSARY AND ABBREVIATIONS

Term	Definition
AAQMS	Ambient Air Quality Monitoring Station
ACAT	ACT Civil and Administrative
ACM	Asbestos containing material
ACT	Australian Capital Territory
AEP	Annual Exceedance Probability
AHD	Australia Height Datum
APEC	Area of potential environmental concern
APZ	Asset Protection Zones
BAU	Business as usual
BoM	Bureau of Meteorology
BYDA	Before-You-Dig-Australia
CCRA	Climate Change risk assessment
CCTV	Closed circuit television
CDS	Container Deposit Scheme
CED	City and Environment Directorate
CEMP	Construction Environment Management Plan
CHA	Cultural Heritage Assessment
Climate Change Strategy	ACT Climate Change Strategy 2019-2025
CMP	Contamination Management Plan
COAG	Council of Australian Government
Conservator	Conservator for Flora and Fauna
CTMP	Construction Traffic Management Plan
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, the Environment, Energy and Water
DCP	Development Control Plan
DCS	Distributed control system
DoS	Degree of Saturation
EF	Emissions Factors
EIS	Environmental Impact Statement
Element	Element Environment Pty Ltd
EMP	Environmental Management Plan
EP Act	Environment Protect Act 1997
EP Regulation	Environmental Protection Regulation 2005
EPA	Environment Protection Authority
EPBC Act	Environmental Protection and Biodiversity Act 1999 (Clth)
EPSDD	(Former) Environment, Planning & Sustainable Development Directorate
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
EY	Exceedance per Year
FOGO	Food organics and garden organics
GHD	GHD Pty Ltd
GHG	Greenhouse Gas
GWP	Global Warming Potential
ha	Hectare

Term	Definition
HDPE	High density polyethylene
Heritage Act	Heritage Act 2004
HPS	Heritage Protection Service
HRRE	Hume Resource Recovery Estate
HV	High voltage
IAQM	Institute of Air Quality Management
Infrastructure Plan	Canberra's Living Infrastructure Plan: Cooling the City
IPCC	Intergovernmental Panel on Climate Change
LCZs	Landscape character zones
LoS	Level of Service
LV	Low Voltage
LVIA	Landscape and Visual Impact Assessment
LW	Sound power level
MLRMC	Mugga Lane Resource Management Centre
MNES	Matters of national environmental significance
MRF	Materials Recovery Facility
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NASF	National Airport Safeguarding Framework
NC Act	Nature Conservation Act 2014
NCA	National Capital Authority
NCC	National Construction Code
NCP	National Capital Plan
NEPC	National Environment Protection Council
NGER	National Greenhouse and Energy Reporting
NOHC	Navin Officer Heritage Consultants
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
ONMP	Operational Noise Management Plan
OWMP	Operational water management plan
PD Act	Planning and Development Act 2007
PD Regulation	Planning and Development Regulation 2008
PET	Polyethylene terephthalate
Planning Strategy	ACT Planning Strategy 2018
PLC	Programmable logic controllers
PM_{10}	Particulate matter less than 10 µm in aerodynamic equivalent diameter
$PM_{2.5}$	Particulate matter less than 2.5 µm in aerodynamic equivalent diameter
PRA	Preliminary Risk Assessment
PSI	Preliminary Site Investigation
RAO	Representative Aboriginal Organisation
RAP	Remediation Action Plan
RRP	Rehabilitation and Revegetation Plan
SBMP	Strategic Bushfire Management Plan
SCADA	Supervisory control and data acquisition
SCM	Supplementary Cementitious Materials
SHE	Statement of Heritage Effects
SLL	Striped Legless Lizard
SPLi	The internal average reverberant sound pressure level in a building

Term	Definition
SWMP	Soil and Water Management Plan
TCCS	(Former) Transport Canberra and City Services
TEC	Threatened ecological community
Territory Plan	Territory Plan 2008
TIA	Transport Impact Assessment
TP Act	Tree Protection Act 2005
TPA	Territory Planning Authority
tpa	Tonnes per annum
TSP	Total suspended particulate matter
TTIA	Traffic and transport impact assessment
UF Act	Urban Forest Act
UFP	Unexpected Finds Protocol
UTR	Utilities Technical Regulator
Veolia	Veolia Environmental Services (Australia) Pty Ltd
VENM	Virgin Excavated Natural Material
VOC	Volatile organic compound
Waste Strategy	ACT Waste Management Strategy 2011-2025
WIA	Water Impact Assessment
WM Act	Waste Management and Resource Recovery Act 2016
WR Act	Water Resources Act 2007
WSUD	Water Sensitive Urban Design
WWL	Waterway Works License

CHAPTER 1
INTRODUCTION

1 INTRODUCTION

1.1 Background

The ACT Government has adopted a range of strategies aimed to reduce waste to landfill and increase resource recovery. The over-arching strategic direction for the management of waste in the Territory is set out in the '*ACT Waste Management Strategy 2011-25*' (ACT Government, 2011). The strategy promotes a shift from thinking of unwanted materials as waste, to thinking of them as resources. The strategy commits the ACT Government to redirecting waste from landfill and recovering recyclable resources. It also sets a target of increasing the rate of resource recovery to over 90% by 2025, with no recoverable waste sent to landfill. This will also support the ACT Government in achieving its net-zero targets.

The existing ACT Materials Recovery Facility (MRF) was extensively damaged due to fire on 26 December 2022. The main shed remains standing and is currently being used as a waste transfer station to accept, sort and store recyclable materials before being shipped to other processing facilities.

The proposal is to construct a new MRF on Block 12, Section 25 Hume, ACT (the subject site) that provides technological improvements to facilitate greater resource recovery by increasing the quality of recycled materials and reducing the amount of non-recyclable residual waste generated that is currently sent to landfill.

1.2 Proposal overview

The site is located within the industrial suburb of Hume on the corner of Mugga Lane, John Cory Road and Recycling Road, to the west of the Monaro Highway. The subject site is 5.052ha and zoned *IZ1 General Industry under the Territory Plan 2023*.

Veolia Environmental Services (Australia) Pty Ltd will partner with the ACT Government to design, build and operate the new facility, with construction expected to begin in 2026 and operations to commence in 2028.

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

Key features of the new MRF building (with approximate areas), include:

Total building area of approximately 11,760m^2

- Receival area of 2,100m^2
- Processing area of 5,000m^2
- Glass recycling area of 1,250m^2
- Product storage area of 2,700m^2
- Workshop and staff amenities of 170m^2
- Education facility of 220m^2
- Pump room of 60m^2
- Covered water treatment area of 260m^2
- Weighbridges

- Site driveways and hardstand area
- Water tanks for roof water capture and on-site re-use
- On-site detention pond for surface water management

The facility will provide technological improvements to enable greater resource recovery by both increasing the quality of recycled materials and by reducing the amount of nonrecyclable residual waste that is currently sent to landfill. The technology includes:

- Sorting: advanced laser optical sorting to better separate, identify, sort and segregate recycling to higher purity levels, reducing contaminants for better quality end market products, plus air jets to separate plastics and powerful magnets to extract metals.
- Glass recycling: glass crushing and washing facilities to provide a higher quality product glass that can be used in a wider range of products.
- Water management: wastewater leachate treatment and reuse with roof and surface water management infrastructure to achieve environmental compliance.
- Data collection: sophisticated data collection, management, and analysis systems.
- Flexibility to incorporate new innovations, improvements in technology and adapt to changing recycling priorities and materials.
- State-of-the-art fire detection, mitigation and control systems will safeguard the site from fires. These can be caused by items such as lithium batteries or gas bottles finding their way into the recycling stream.

A new education space will also be built. This will allow the community and school groups to visit and learn about how recyclable products are processed, to be transformed into renewed items.

During the construction phase it will create 110-120 jobs and 24-38 permanent roles as part of the facility's operations.

It is proposed to operate the MRF for up to 19 hours per day, from 3.00am until 10pm, for 6 days per week (Monday to Saturday), for 52 weeks each year.

Although the Scoping Document applies to the whole of Blocks 6 & 10 Section 25 Hume (now amalgamated to be described as Block 12 Section 25), approximately 60% of the area of Block 12 (or 30,000m^2) will be used by the new MRF with the remaining area being retained as grassland with an existing dam. This is a slight increase in the area defined by GHD in the draft EIS (which was approximately 2.3ha). However, the increase in area to be utilised by the new MRF is wholly within the site identified in the Scoping Document and mostly involves areas that have been previously used for storage of baled material together with a small area comprising exotic grasses. The increased footprint area for the MRF does not introduce any new risks or impacts, which are discussed in detail throughout this EIS.

Figure 1.1
Proposal Location

ACT Materials Recovery Facility
Environmental Impact Statement

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1.3 The proponent

A draft Environmental Impact Statement (EIS) prepared by GHD Pty Ltd (GHD) was publicly exhibited in September-October 2023 and identified ACT NoWaste as the proponent for the development. Since that time ACT NoWaste has selected Veolia Environmental Services (Australia) Pty Ltd (Veolia) as its industry partner after a competitive procurement process.

As such Veolia is now nominated as the proponent for this development.

Due to the change in the proponent for the EIS, ACT NoWaste advised that GHD are not in a position to complete the EIS and as such passed the responsibility to finalise the EIS to Veolia, who in turn has engaged Element Environment Pty Ltd (Element) to undertake this work.

1.4 Purpose of this report

The purpose of this EIS is to inform the Territory Planning Authority (TPA, formerly the ACT Planning and Land Authority (ACTPLA)) and other ACT Government Agencies about the impacts of the proposal and address matters specified within the ACT Government Environment, Planning and Sustainable Development Directorate's (EPSDD) Scoping Document requirements dated 21 July 2022 (Application Number 202200011), in accordance with Section 212 of the (former) *Planning and Development Act 2007* (PD Act) and other relevant legislation.

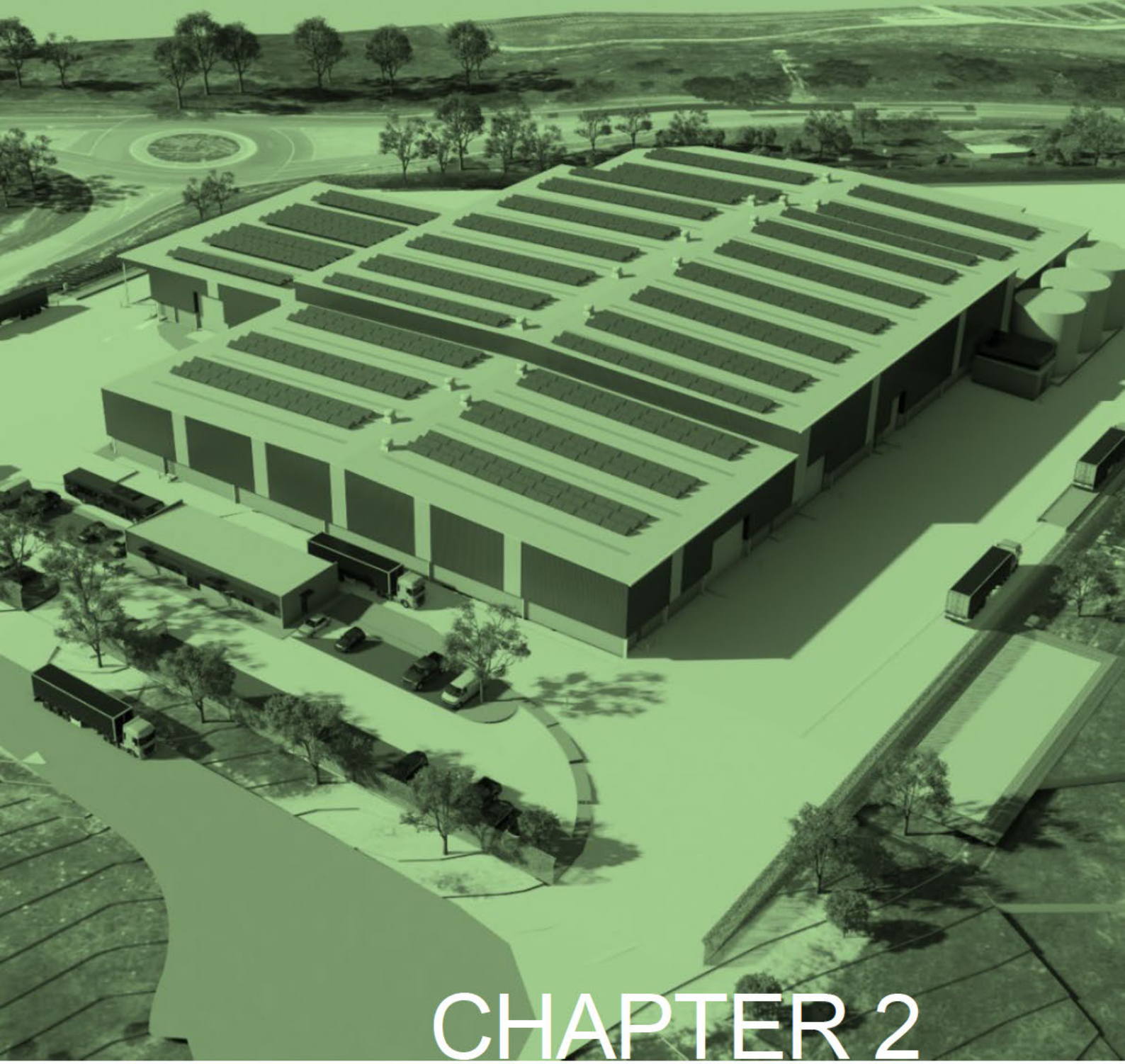
As a public document the EIS will also inform the public of the scope, potential impacts and mitigation measures to be implemented.

A draft EIS was prepared in 2023 in accordance with the PD Act and the *Territory Plan 2008*. At that time, those were the main legislative instruments that governed the ACT development assessment and approval process. This revised final EIS has been prepared by Element on behalf of Veolia and amends the draft EIS prepared by GHD on behalf of ACT NoWaste.

1.5 Scoping Document

This EIS has been prepared in accordance with a 'Scoping Document' issued under the PD Act for the proposed development (refer to Appendix A). The Scoping Document outlines the key environmental issues that need to be assessed in the EIS for the proposed development. It provides details on the level of investigation, including potential impacts, risks and mitigation strategies for each aspect of the project.

Appendix B provides a checklist detailing the sections of this EIS where the requirements of the Scoping Document are addressed.



CHAPTER 2
PROPOSAL DESCRIPTION

2 PROPOSAL DESCRIPTION

2.1 Regional context

The proposal site is located within the Hume Resource Recovery Estate on Block 12, Section 25 Hume, Recycling Road (refer Figure 1.1). The site is adjacent to existing industrial facilities including:

- ACT Skip Hire across Recycling Road to the north-east.
- Soft Landing Mattress Recycling located east, across John Cory Road.
- Hume Industrial Estate located to the south and east across Monaro Highway.
- Mugga Lane Resource Management Centre and Landfill located approximately 200 metres to the north-west.

The nearest ACT residential premises are approximately 1.8km to the south-west within Macarthur. New dwellings are being constructed within South Jerrabomberra NSW, approximately 1.2km east.

There are also several major developments proposed in the surrounding region, including:

- A food organics and garden organics (FOGO) facility proposed to be located on Block 5, Section 26 Hume, to the north-east of the subject site, across John Cory Road which will cater for up to 70,000 tonnes of household organic material per year.
- Monaro Highway safety improvements and intersection upgrades are proposed including the Mugga Lane, Lanyon Drive, Isabella Drive, Tralee Street and Sheppard Street intersections.
- A proposed new cemetery, the Southern Memorial Park, to be located approximately 700m to the west of the subject site.

The proposal site is within the Hume Resource Recovery Estate and as such, the proposed recycling facility land use is consistent with existing and proposed developments such as the Mugga Lane Resource Management Centre, Skip Hire, Mattress Recycling, plus the proposed FOGO development. The interaction of existing and proposed developments is detailed in Chapter 5 (Planning and Land Status), with additional assessment of interaction also considered Chapter 6 (Traffic and Transport), Chapter 9 (Landscape and Visual) and Chapter 14 (Air Quality and Odour).

Table 2.1 provides a description of the proposal site and Figure 2.1 shows the regional context within which the proposed MRF sits.

Table 2.1: Proposal locality and description

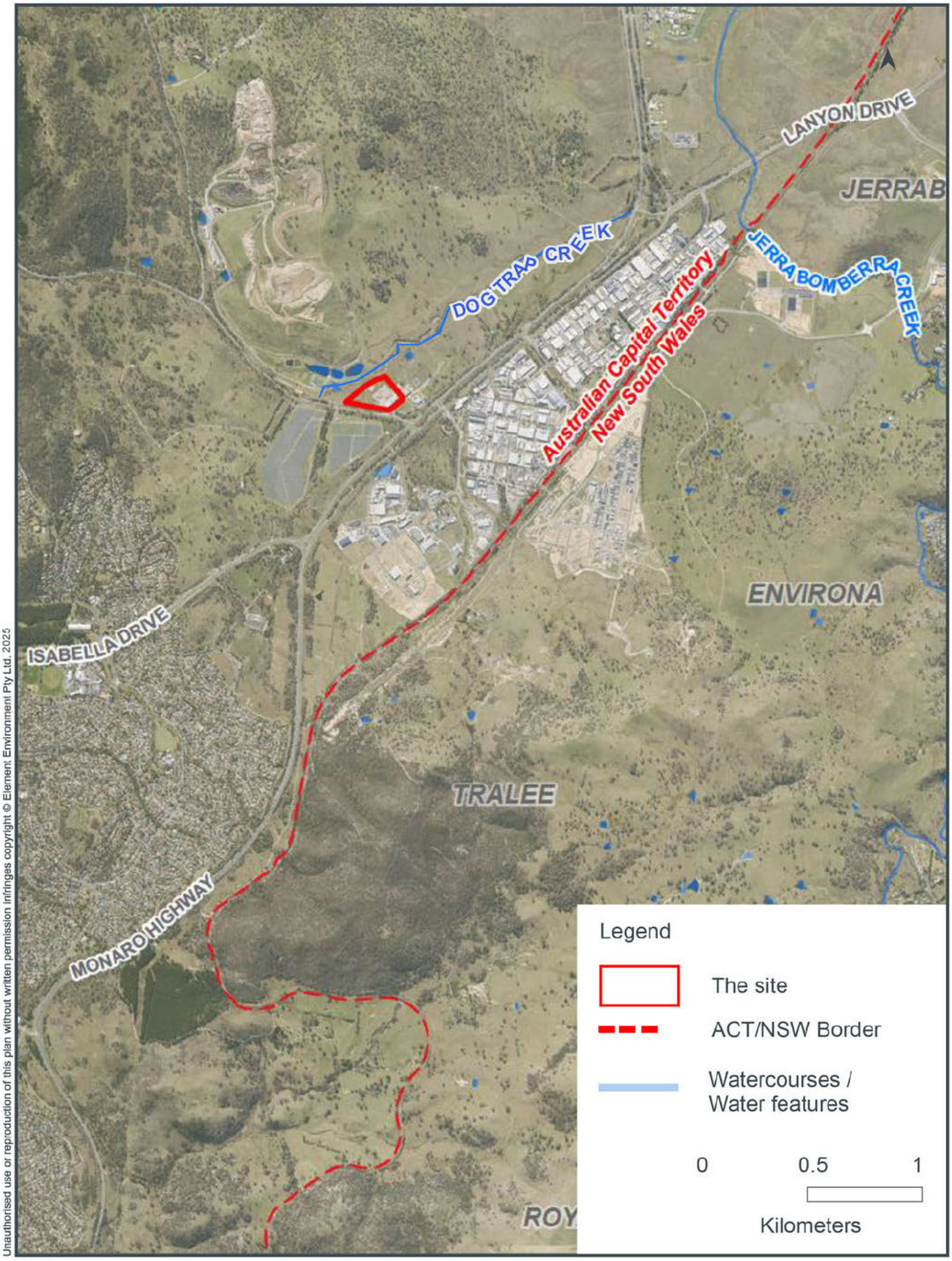
Item	Details
Location	Block 12, Section 25 Hume, Recycling Road
Leased land	ACTMAPi Land Custodian Records indicate the site as being a "Private Lease". However, the land is managed under the custodianship of Transport Canberra and City Service (TCCS) and leased to ACT NoWaste. As such, any lease would be an Executive Lease held by Transport Canberra and City Services (TCCS).

Item	Details
Lessee/Land Custodian	TCCS / ACT NoWaste (proposed to be sub-leased to Veolia)
Existing land use	Southern portion: Existing MRF Northern portion: Vacant land
Intended land use	Recycling Facility
Zone	IZ1: General Industry
Block area	50,617m^2
Proposal area	Approximately 30,000m^2
Buildings area	Approximately 11,800m^2

The regional topography is mostly flat in the south with a slight fall towards the north. The western grassy area has a small dip of roughly three metres. Surface water follows the local topography and generally flows northwards towards Dog Trap Creek. Dog Trap Creek is a site of significant cultural heritage where evidence of early interactions between Aboriginal and European people has been found. Additionally, the creek plays a role in the Tuggeranong Heritage Track, which highlights the area's history.

Figure 2.1
Regional Context

ACT Materials Recovery Facility
Environmental Impact Statement



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Source
GHD - 20240613 Updated Draft MRF EIS June 2024 - Redacted

2.2 Proposal justification and objectives

The key objectives of the proposal are to:

- Provide critical recyclable processing infrastructure to enhance recycling and implement glass processing to achieve the recommendations within the *ACT Waste Feasibility Study*.
- Divert recoverable waste from landfill and reduce greenhouse gas emissions.
- Recover recyclables to create products that may be sold on for further use and thereby strengthen the Territory's circular economy.
- Support key Territory and Federal Government resource recovery and landfill diversion targets including:
  - The *ACT Waste Management Strategy 2011-25* target of increasing the rate of resource recovery to over 90% by 2025, with no recoverable waste sent to landfill.
  - Develop markets for recyclable materials and strengthening regional connections.

The ACT is working towards a target of reducing emissions by 50-60% by 2025 and reaching net zero emissions by 2045 (ACT Government, 2019c). To meet this target, and play its part in tackling climate change, the ACT Government needs to address all sources of emissions.

The new and upgraded MRF will help the ACT deliver on these targets by increasing resource recovery rates and reducing greenhouse gas emissions. The increased capacity may also allow ACT to offer services to additional regional councils and strengthen connections within New South Wales (NSW).

As a global leader and advocate of ecological transformation, Veolia implement world leading technology to make this materials recovery facility one of the most advanced in Australia and produce the highest purity materials for recycling and resource recovery.

The new technology will facilitate increased local recycling capacity, reduce transport emissions by sorting recycled items locally in Canberra rather than sending them interstate and provide more jobs for the ACT's growing circular economy.

2.3 Key features

2.3.1 Overview of process

The proposal involves the construction and operation of a new MRF with capacity to receive and process up to 115,000 tonnes per year of comingled recyclable materials. The proposed site layout is shown in Figure 2.2 with artists impressions shown in Figure 2.3 to Figure 2.7.

Recyclable material is received from municipal kerbside collection as well as from recycling drop off centres, Mugga and Mitchell Transfer Stations, commercial recycling as well as regional Councils. Vehicles delivering recyclable materials enter the site at the end of Recycling Road and weigh-in on the inbound weighbridge before travelling to the hardstand apron area at the south-western side of the building. Vehicles would then reverse into one of four receival compartments within the building, deposit their load and then exit the building. These vehicles would then weigh-out on the exit weighbridge.

The four receival bays within the building are each of approximately 250m^2 and with 5m high concrete 'push walls'. A push wall is a reinforced wall designed to withstand the pressure of large volumes of material being pushed against it during operations. The material is then placed into hoppers and transferred onto conveyor belts, which transports it into the processing area. At this

point items that are not recyclable are removed. The remaining materials are transported via conveyer belt to disk screens, which separate glass and cardboard from the stream.

Metal and aluminium are separated with electromagnets, to remove ferrous metals, then with eddy current separators to remove the non-ferrous metals like aluminium.

The paper and plastic material are separated further by ballistic separators. The plastics are separated by polymer type, using infrared laser optical sorting technology. Infrared light reflects differently off different polymer types which once identified, a jet of air shoots the plastic into the appropriate bin.

The paper, cardboard, plastics, metal, and aluminium are baled and stacked by forklift in the storage area for collection and further processing at other facilities.

The glass is transferred to a glass receiving area via conveyor. The glass undergoes further processing onsite via washing, de-labelling, crushing and screening to produce clean, dry, graded product suitable for a range of uses. This part of the facility incorporates a wet circuit for glass washing to remove residual sugars and labels.

Cleaned and graded products are temporarily stored in bunkers and loaded out via loader.

An on-site water treatment facility would clean water for reuse in the washing circuits of the glass processing plant, and excess effluent would be disposed to sewer.

2.3.2 Site layout

The main feature of the site layout is a new MRF building of approximately 11,719m^2, including:

- Receival area of 2,073m^2
- Processing area of 4,990m^2
- Glass recycling area of 1,254m^2
- Product storage area of 2,700m^2
- Workshop and staff amenities of 170m^2
- Mezzanine storage area of 170m^2
- Pump room of 59m^2
- Covered area of 260m^2 for a future water treatment plant

* *Areas approximate only.*

In addition to the MRF building the site will include:

- Access roads and hardstand areas
- Education facility of 213m^2
- ‘Hot Load’ drop off area
- Above ground fuel storage tanks
- Roof water/stormwater storage tanks
- EV charging stations
- Staff car parking
- Weighbridges

- Bio-retention pond
- Chain wire fence, 2.4m high
- Landscaping

2.3.3 Traffic flows

Traffic flows for heavy vehicles, including B-doubles, would be generally anticlockwise. Interaction between trucks delivering recyclables and trucks collecting the processed material is minimised as delivery vehicles can exit the site via the driveway nearest to John Cory Road. All heavy vehicles would enter the site via a new driveway at the end of Recycling Road and, depending on whether they are delivering or collecting can exit the site via one of two driveways.

Access to employee and visitor car parking is via a separate driveway ensuring no conflict between heavy vehicles and passenger vehicles.

2.3.4 Service connections

Existing utility services within the site, including gas, electricity, sewer, Telstra, NBN and stormwater, will be removed as part of implementation of a separate development approval for DA 202342289 which was approved on 4 April 2024 for "*Demolition of the existing building, pavements, structures, including disconnection of services, removal of hazardous materials, earthworks to reinstate site to match existing ground level, reinstate disturbed verge areas and associated site works in accordance with the plans, drawings and other documentation approved and endorsed as forming part of this approval*".

The MRF would require new connections for electricity, potable and fire service water, and sewer services.

Temporary power, water supply, sewer and telecommunications connections for site sheds and associated amenities would be required during construction of the proposal.

These would need to be transitioned to permanent connections for operations of the facility, including the addition of a fixed landline emergency phone or satellite capable communications device

These services are currently available to the site. However, it is anticipated that upgrading of connections, including a new pad-mount electrical substation will be required. The need for upgrading of utility service connections would be resolved at detailed design stage through the development assessment process.

2.3.5 Fire prevention and management

Fire is a significant risk in recycling facilities, particularly given the increasing prevalence of electrical products and appliances incorporating rechargeable lithium-ion batteries. Other ignition sources can include incorrectly disposed emergency flares, reactive chemicals, solvents, butane cylinders, and non-empty aerosol cans containing flammable propellants. Recycling facilities also involve the handling and storage of significant quantities of combustible recyclable materials including plastics, paper and cardboard.

The incidence of serious fires in waste management and recycling facilities has been increasing, and mitigation strategies have been developed to prevent, contain and manage fires in these facilities. These include early detection technologies such as intelligent monitoring and control systems incorporating infra-red cameras for stockpile monitoring and localised hot-spot detection and extinguishing systems to contain the spread of fires before they take hold.

Other strategies include compartmentation of combustible material storage areas and separation of stockpiles by distance and/or fire-rated walls. Automatic sprinkler systems also form part of the engineering controls included in best practice design for these facilities.

The internal water reticulation network will achieve a minimum 20Lps for 90 min with static water storage tanks, ring main, and hydrants outlets. The overall design for firefighting water availability uses duration and flow rates that meet codes and Brigade requirements for high hazard and waste facilities for both sprinklers and hydrants.

The site layout includes a designated area designed to receive 'hot loads'. A hot load is a truckload of recyclables that catches on fire, smoulders, spontaneously combusts, or becomes toxic as a result of incompatible waste mixing in the load-holding compartment of the truck. Hot loads are mostly the result of improper disposal of lithium-ion batteries or hazardous materials.

Usually, trucks are not aware that they have a hot load and will proceed to the weighbridge as normal, and that is where the hot load is identified by site staff. The following procedure refers to situations such as this:

1. Divert truck to specified hot load area.
2. Truck to eject load if safe to do so.
3. Deploy watercart to area and/or appropriate machines to cover material with inert material such as sand.
4. Divert waste trucks and non-essential machines away from this area.
5. ACT Fire & Rescue to be notified to determine integrity of extinguished fire and requirement for monitoring.

ACT Fire and Rescue, together with ACT NoWaste, contributed to the recent publication of a new guideline for members of the Waste Contractors & Recyclers Association of NSW (WCRA). The publication "*Fire in Waste Collection Vehicles – Guidance Material, 21 February 2025*" details responsibilities for vehicle operators, supervisors, managers and maintenance staff in the event of a fire in a waste vehicle. The guidelines also outline appropriate procedures to respond to such an event. Veolia will commit to staff training on the Guidance Material an ensure the responsibilities are met and procedures implemented.

WCRA Hot Loads Procedure will be applied in operations where relevant. On site infrastructure for hot load management includes external hardstand and quarantine bay area with high pressure water for extinguishing, and contained storage for firewater capture.

The facility would also be designed to conform with relevant provisions of the *National Construction Code (NCC)* (Australian Building Codes Board, 2022).

2.3.6 Educational facility

An educational facility is proposed adjacent to the main MRF building. The education facility includes small conference/meeting areas and offices. This building is approximately 213m^2 and located to ensure that any visitors to the site enter this building rather than attempting to access the main area of the site unsupervised.

Figure 2.2
Proposed Site Layout

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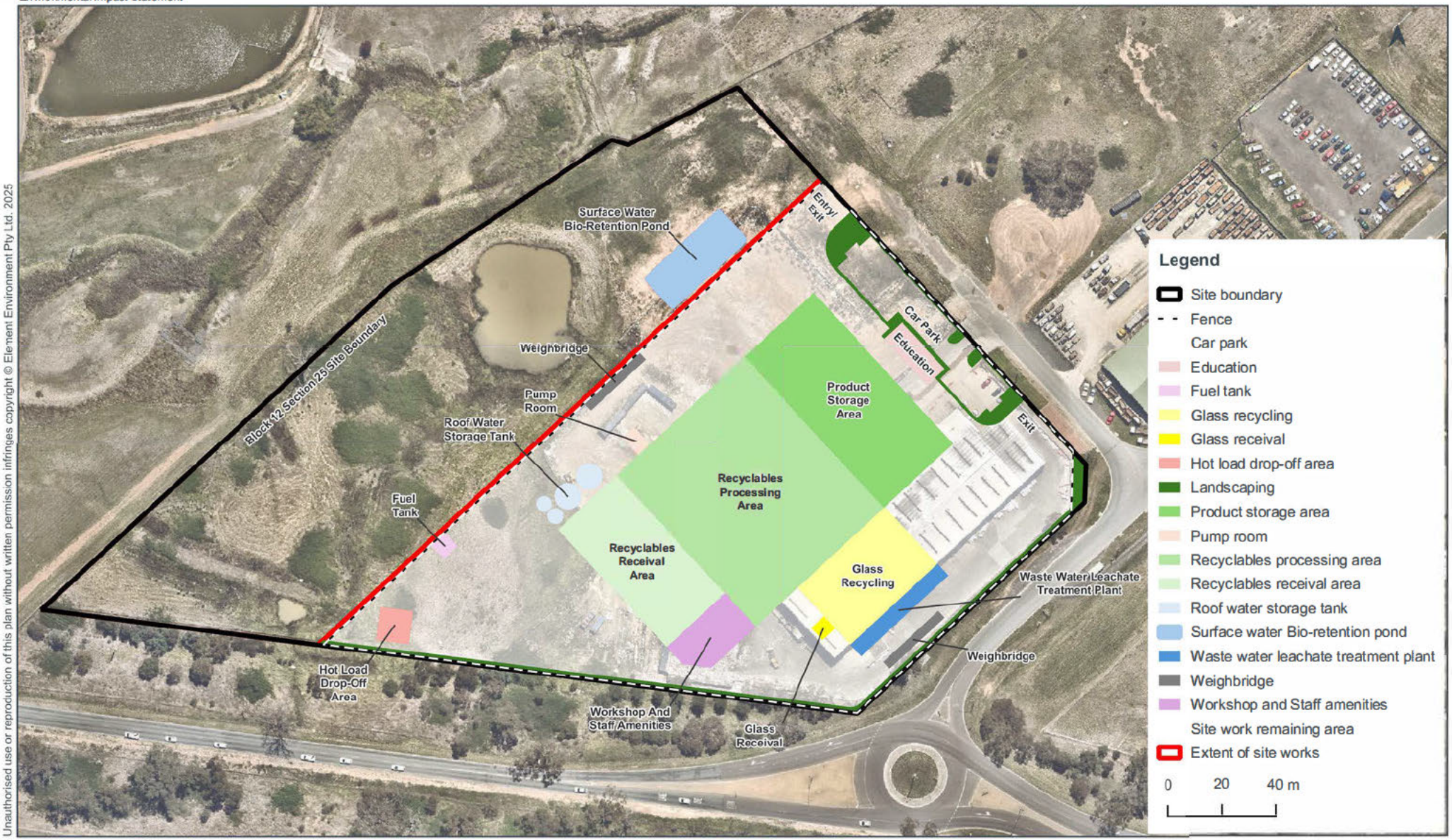

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Figure 2.3
Artist's Impression - Bird's Eye View

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Figure 2.4
Artist's Impression - Front Entrance

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Figure 2.5
Artist's Impression - Northeast Perspective

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Figure 2.6
Artist's Impression - Northwest Perspective

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Figure 2.7
Artist's Impression - Southern Ground-Level View

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2.4 Construction

2.4.1 Overview

Veolia is a global leader in the design, construction, and operation of Material Recovery Facilities (MRFs), with over 100 facilities worldwide. In Australia alone, Veolia successfully operates four MRFs located in Bibra Lake (WA), Springfarm (NSW), Spreyton (TAS), and Echuca (VIC). This extensive operational experience is complemented by a strong corporate function, which provides comprehensive technical expertise and project management support to the project and operations. This combination of Veolia's local market knowledge and global resources ensures the delivery of industry-leading recycling solutions tailored to regional needs

Subject to final design, construction activities are expected to include:

- Site preparation and establishment of temporary ancillary construction infrastructure including:
- Site offices and amenities.
- Secure fencing and gates fit for purpose.
- A temporary main switchboard and electrical riser to provide power during construction.
- Bulk earthworks for site levelling.
- Pouring concrete foundation slab, footings, hardstand and slabs for the main buildings.
- Construction of pavement areas for car park, hardstand and access roads.
- Construction of weighbridges and weighbridge office.
- Installation of steel truss frameworks for structures.
- Erection of pre-cast concrete panels for external and internal partition walls and metal roof for site buildings.
- Installation of processing equipment within the building.
- Installation of associated facilities including weighbridges, pad-mount substation, on-site detention pond.
- Installation of firewater tanks, fuel storage tanks and pump room.
- Installation of fencing and signage.

2.4.2 Construction environmental management plan

The construction of the proposal would be undertaken in accordance with the construction environmental management plan (CEMP) to be developed for the proposal. The plan would detail mitigation measures to manage risks associated with generation of dust, noise, and other environmental impacts during construction as identified in this EIS and conditions of approval.

2.4.3 Construction workforce

The construction workforce is likely to include a maximum of 112 staff working across the entire span of the proposal delivery. The peak workforce is expected during major concrete pours, up to 25 people.

2.4.4 Construction traffic

Vehicles associated with the construction of the proposal would include staff light vehicles and heavy vehicles delivering construction plant and equipment and materials to the proposal site.

Construction of the proposal is expected to generate up to 80 vehicle trips during both the AM and PM peaks. This would comprise 60 light vehicle trips as well as 10 inbound and 10 outbound heavy vehicle movements.

Further details on construction traffic are provided in Chapter 6 and Appendix F.

2.4.5 Plant and equipment

Typical plant and equipment required for construction of the proposal is expected to include:

- 5 tonne excavator
- 20 tonne excavator
- Dozers
- Trucks
- Compaction equipment
- Paver machine
- Bobcats
- Forklift
- Mobile concrete pump
- Concrete vibrators
- Concrete saw
- Welders
- Boom lifts
- Mobile crane
- Elevated working platform
- Mini loader

2.5 Operation

The MRF would accept comingled recyclable materials delivered to the facility via recyclable material collection vehicles. The MRF would also accept deliveries from ACT recycling drop off centres, Mugga and Mitchell Transfer Stations, commercial recycling and regional councils.

2.5.1 Process control

The process would be centrally controlled via a combination of supervisory control and data acquisition (SCADA) systems incorporating programmable logic controllers (PLC's) and distributed control system (DCS) architecture.

The data system incorporates systems instrumentation, data collection, measurement, identification, quantification, monitoring, and reporting of:

- Inbound and outbound materials.
- Waste processing plant and equipment.
- Real time data streaming access to receival area, feedstock processing, outbound to land fill, and outbound bulk, processed and refined materials, bale count and conveyor speeds.

A closed-circuit television (CCTV) system enables real-time visual monitoring of relevant operational areas, and this is streamed to the administration office.

2.5.2 Staffing levels

Staffing of the facility would include administration staff including weighbridge/gate attendant, supervisor, plant and machinery operators including wheel loader and forklift drivers, baler attendants, quality controllers and maintenance fitters. The number of staff required would be subject to detailed design and commensurate with the level of automation integrated within the design of the facility.

Initial operation is expected to employ up to approximately 24 staff, and as operational capacity needs to be increased to accommodate additional recyclable materials over time, the number of staff employed at the facility would likely grow potentially up to around 38 staff in total, again, subject to detailed design, level of automation and maintenance support requirements.

2.5.3 Hours of operation

The facility would receive deliveries of recyclable materials from municipal kerbside collections Monday to Friday (during the day) and some loads of commercial recyclables and CDS materials on weekdays and Saturdays.

It is proposed to operate the MRF from 3.00am until 10pm, for 6 days per week (Monday to Saturday), for 52 weeks each year.

Facility maintenance would typically be carried out during periods when the facility is not actively processing materials, and this may therefore be occurring during evenings and/or on weekends.

2.5.4 Waste streams

The likely nature, sources and quantities of waste streams resulting from the proposal are outlined in Table 2.2. For further detail, refer to Chapter 8.

Table 2.2: Indicative Waste Streams

Nature	Source or endpoint	Estimated annual quantity 2020	Estimated annual quantity at full capacity
Inputs			
Recyclable materials	Recyclable materials from kerbside collection points.	57,000 t	105,000t
Feedstock contaminants	Contaminants in recycling bins from kerbside collection points.	8,000 t	10,000t
Sub-total		65,000 t	115,000
Outputs			
Mixed paper and cardboard	Recyclables materials that are produced by the MRF would be transported elsewhere for re-use.	30,000 t	55,000 t
Glass aggregate		20,000 t	38,000 t
PET		3,000 t	5,000 t
HDPE		1.500 t	3,000 t
Aluminium and other metals		2,500 t	4,000 t
Sub-total		***57,000 t***	***105,000 t***
Residual waste			
Trade Waste	Trade waste from cleaning recyclables to be re-used on site prior to being discharged.	N/A	87,000 kL

Nature	Source or endpoint	Estimated annual quantity 2020	Estimated annual quantity at full capacity
Operational workers waste	Designated bins for workers to use in administration area or as required. This would be delivered to landfill.	11 m^3	11m^3
Operational workers recyclables	Designated bins for workers to use in administration area or as required. This would be recycled internally or transported to appropriate facilities.	13 m^3	13m^3
Batteries	Batteries arising from community incorrectly recycling batteries would be segregated and removed off-site.	Nominal	Nominal
Cleaning products (e.g. lubricants, oils)	Cleaning products used to maintain the facility would be disposed of as appropriate. Where possible, re-use bottles or containers.	Nominal	Nominal
Sewage	Sewage from workers bathroom and kitchen facilities and washing of equipment.	Nominal	Nominal

2.5.5 Energy requirements

The energy requirements of the facility are likely to exceed the energy requirements of the former MRF due to the upgraded technology used to sort recyclable material streams and the glass processing and washing circuit. Veolia has undertaken preliminary maximum demand calculations which indicate an average 2MW demand in continuous operation (including the glass plant). Veolia shall install rooftop solar which will target approximately 1.2MW of onsite production. Veolia shall also investigate energy efficiency and energy management solutions through detailed design (e.g. inclusion of variable speed drives (VSDs) in order to drive down the facility energy demand.

2.5.6 Water supply and wastewater

The facility is designed to process the recycling of various materials, and in the future value add the recycling of glass by incorporating glass washing with associated leachate treatment and disposal. This EIS considers the potential impacts and proposes related mitigation measures to address the full suite of potential impacts that may arise as a result of the materials recycling facility, inclusive of glass washing.

Operation of the facility, particularly the washing of recycled glass requires significant volumes of water. The water demand for glass washing is estimated at 35m^3/hr, which equates to 87ML per year. About 8ML will come from recycled roof water and about 30% of total water demand will be able to be re-used for glass washing after on-site treatment. Apart from the glass washing process, operation of the facility has very little demand for reticulated water. Staff amenities and kitchen would be connected to the potable water supply

The on-site leachate treatment plant would need to discharge wash-water to sewer when water quality diminishes to the point it cannot be used for glass washing. Some aspects of the leachate treatment and disposal process are reliant on the capacity of Icon Water's sewer network and treatment parameters. As a result, glass washing would not be progressed until such time as confirmation is received from Icon Water that their sewer network is capable of receiving the volumes and quality of wastewater generated by the glass washing process.

In anticipation of Icon Water being able to accept discharge volumes in the future that would enable glass washing to occur at the facility, wastewater management infrastructure (such as underground pipes and an area for on-site water treatment) will be included in the initial

development to ‘future-proof’ the facility. The Development Application (DA) process required to give effect to the facility (and future glass washing) would confirm the specifics of Icon Water discharge parameters and any other relevant statutory requirements.

2.5.7 Stormwater management

A stormwater management system will direct surface water to the on-site detention pond (OSD) for treatment of surface stormwater. Overall management of stormwater consists of:

- Rainwater tanks to allow for the collection and re-use of roof-water runoff.
- Fire-fighting water tanks to allow for the storage of water on-site for fire suppression.
- Grading of the hardstand and pad falling to the north-west and to allow drainage around structures and surface water to flow to the OSD.
- Drainage infrastructure (e.g., pits, pipes, and overland flow paths) to convey storm water safely around the site.
- Stormwater retention infrastructure (including tanks and OSD).
- The OSD sized to comply with the following reduction targets:
  - 90% reduction of gross pollutants
  - 60% reduction of suspended solids
  - 45% reduction of total phosphorous
  - 40% reduction of total nitrogen
- Operational measures such as not storing waste materials outdoors, would be implemented so that rainfall-derived leachate would not be generated and only stormwater would be generated.

2.6 Decommissioning

The proposed MRF has an estimated life of approximately 25 years.

Should a decision be made to decommission the MRF sometime thereafter, a decommissioning EMP would be prepared prior to any decommissioning works commencing. This plan would include details on all relevant legislative and regulatory requirements, potential environmental risks associated with decommissioning and measures to mitigate and manage risks. The plan would also include details of the proposed waste classification, demolition waste stockpiling, storage, handling and re-use, recycling and disposal requirements.

Any demolition work would be undertaken by a suitably qualified and experienced contractor in accordance with legislative requirements.

2.7 Consideration of alternatives

The Scoping Document requires consideration of alternatives to the proposal including a description of:

a. Any alternatives to the proposal and provide reasons for selecting the preferred option with an analysis of site selection as an attachment to the EIS.
b. The criteria used for assessing the performance of any alternative to the proposal considered.
c. Any matters considered to avoid or reduce potential impacts prior to the selection of the preferred option; and

d. Details of the consequences of not proceeding with the proposal.

The following criteria were adopted in the assessment of the design options:

- Cost to Territory and community.
- Environmental and heritage impacts.
- Resource recovery outcomes.
- Broader community benefits
- Potential risks
- Efficiency and serviceability.
- Worker's safety.

2.7.1 Option 1 – Do nothing

In December 2022 the MRF in Hume was destroyed by fire. Since the fire, the ACT Government has been transporting the ACT's recycling material to a number of materials recovery facilities in Western Sydney and Victoria for processing. Approximately 229 tonnes per day is being transported to interstate processing facilities, which is an average of nine trucks per day. This is unsustainable in the long term as it has substantial cost, environmental consequences and is dependent on the capacity of interstate facilities to be able to receive and process the material.

The do-nothing option is therefore not considered acceptable.

2.7.2 Option 2 – Alternative site

The proposal is defined under the Territory Plan as a 'Recycling Facility'. This land use is prohibited in all land use zones except for IZ1 General Industrial, IZ2 Mixed Use and TSZ2 Services.

The sites zoned TSZ2 are generally small sites located within suburban areas usually developed as electrical substations or Telstra exchange buildings. None of these sites, particularly located among residential neighbourhoods, are suitable for the proposed MRF.

Sites zoned IZ2 Mixed Use are located within the central part of Hume and Mitchell, together with much of Fyshwick. These industrial mixed use areas are generally developed as multi-unit tenancies to accommodate a range of commercial and light industrial activity. Locating a MRF within such mixed use precincts is not considered appropriate. While the land use 'Recycling Facility' is a permitted use, it is considered this would be best limited to small-scale facilities, and are not suitable for a MRF of the scale proposed

Sites zoned IZ1 General Industrial could be considered suitable for a MRF. The northern and southern parts of Mitchell, together with most of Hume are zoned IZ1. Some small areas in Fyshwick and Symonston are also zoned IZ1. However, due to the diversity of land uses in Fyshwick, Symonston and Mitchell, it would be a significant challenge to establish a MRF of the scale proposed. Previous proposals involving waste management on sites at Fyshwick have led to substantial community opposition.

The subject site is within the Hume Resource Recovery Estate (HRRE), an industrial estate specifically established to accommodate land uses that receive, process and distribute recyclable materials. The proposed site is immediately adjacent to compatible land uses including a skip hire business, mattress recycling and proposed FOGO facility.

It is considered that developing the MRF on the existing site is a far better option than seeking an alternative site.

2.7.3 Option 3 – New addition to existing MRF

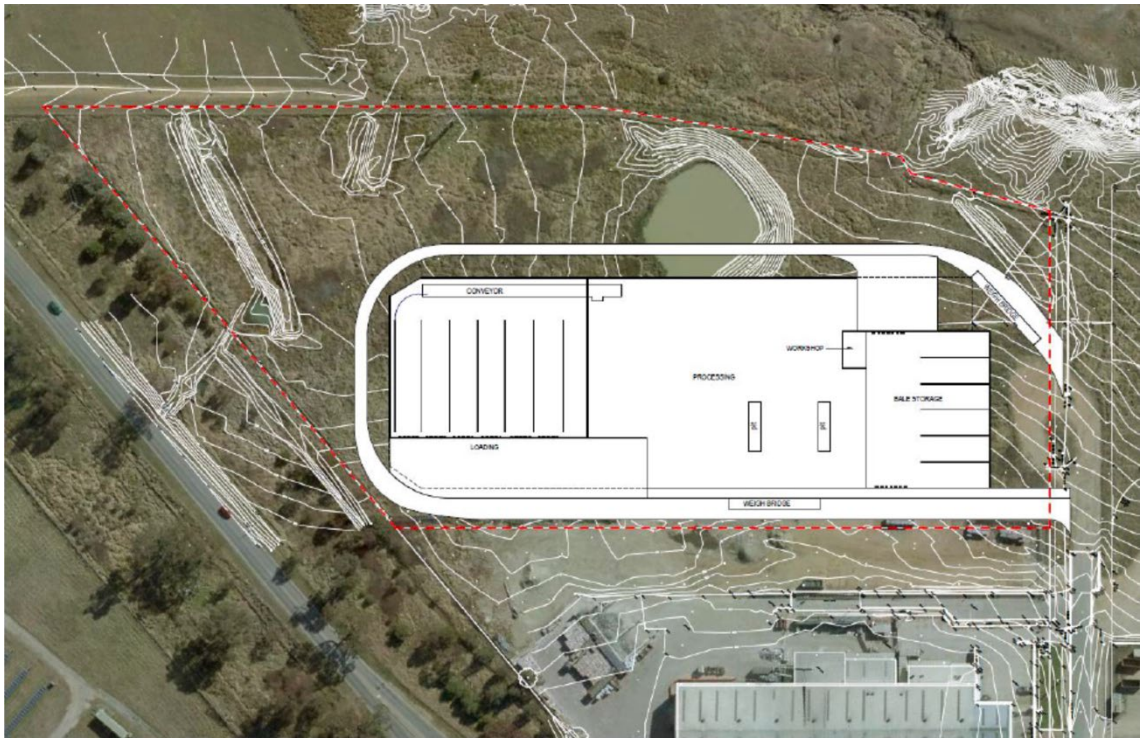
Prior to the fire damage to the existing MRF building in December 2022, an option exploring the feasibility of maintaining the existing MRF and building a new, second, MRF building in the vacant area in the north of the proposal site, refer Figure 2.8.

Since the fire this option was modified to consider the location of a new MRF in the western part of the site, with the area currently occupied by the burnt MRF building rehabilitated to provide an area for external storage and parking.

The following key issues were identified with this option:

- The land identified for the siting of the MRF building in Option 3 is extremely boggy and unstable and would require significant cost to stabilise.
- The building may intrude into, and potentially impact, heritage areas.
- The building may potentially influence flow into Dog Trap Creek, contribute to erosion and require more extensive mitigation measures.

Figure 2.8: Option 3 – Concept layout



2.7.4 Option 4 – Two buildings

Option 4 involved the demolition of the existing MRF building and the development of two separate buildings with an area designated for an educational facility to the north of the existing hardstand, adjacent to Recycling Road, refer Figure 2.9. The education facility would require its own services and water and the proposed location on the proposal site is unstable which would require added cost to stabilise the land. The following key issues were identified with this option:

- The educational facility may influence flow into Dog Trap Creek and contribute to erosion and therefore require more extensive mitigation measures.
- The educational facility would require stabilisation of land, which would add additional cost.
- The educational facility access would introduce safety risks associated with parking and movement of pedestrians.
- The glass processing proposed to be in a separate building from the main receival and processing building. This would require the separated materials to be transported via forklift across a vehicle lane between the buildings. This was deemed a safety issue.

Figure 2.9: Option 4 – Concept layout

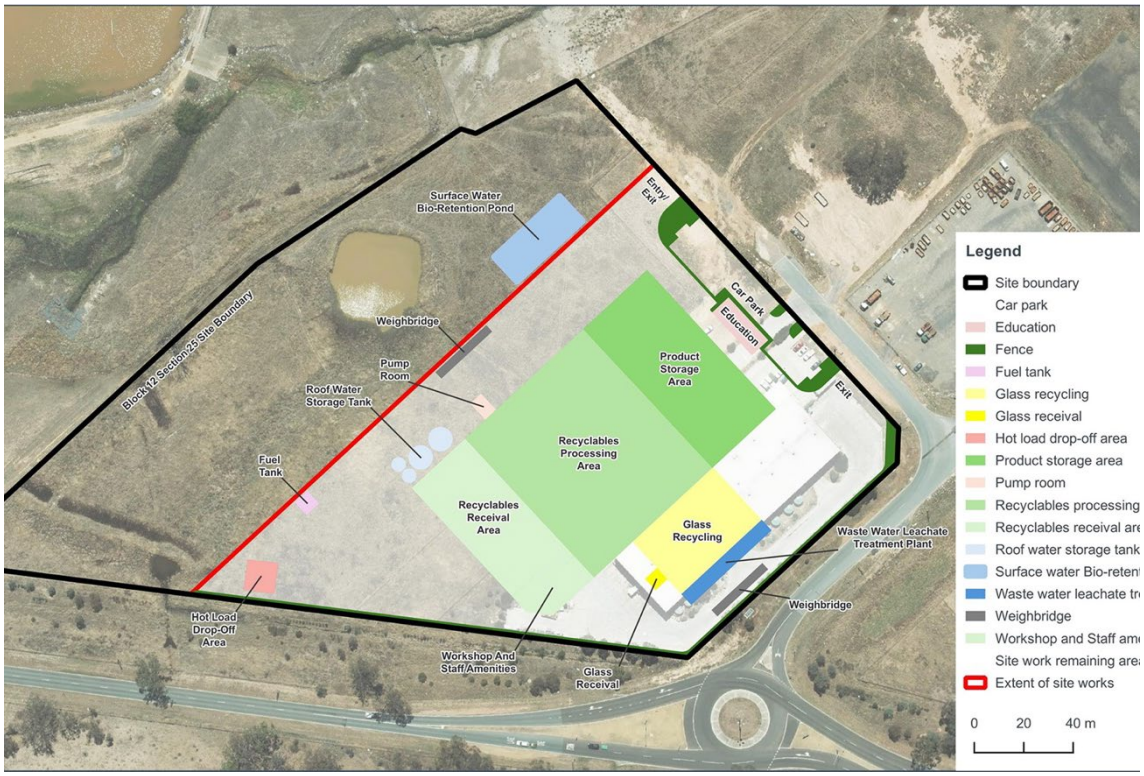
2.7.5 Option 5: Preferred option – Integrated Facility

Option 5 is the result of further design development undertaken by Veolia, based on their international experience in operating state-of-the-art MRFs. This option involved the demolition of the existing MRF building and joining the two processing buildings in Option 4 to create one large processing building with a discrete education facility separate to the main facility, refer Figure 2.10. This would address heritage and erosion concerns by keeping the MRF predominantly within the existing footprint with only minor extensions to the north.

It would also mitigate safety risks associated with forklift movement between the buildings in Option 4 and fire risks associated with direct connection of the main facility to the education building. The fully enclosed building would allow separated glass to be conveyed within the building. This would not only be safer but also provide opportunity to maintain the conveyor belt undercover. This option would also minimise traffic disturbance associated with the education facility as parking would be nearby, and the same services may be able to be utilised to support the education facility and the office area.

This was selected as the preferred option and forms the basis of the proposal subject to this EIS.

Figure 2.10: Option 5: Preferred option – Concept layout



2.7.6 Assessment of alternatives

The proposal meets several ACT Government policies and goals to minimise waste being sent to landfill. This includes the *Waste Management and Resource Recovery Act 2016* and *Waste Management Strategy 2011-2025* as well as multiple climate policies, as outlined in Chapter 3.

The HRRE is planned and designed for waste management and resource recovery purposes. The selected block is considered an ideal location given its position within the HRRE and the existing use of the site as a recycling facility prior to the fire in December 2022. Alternative sites were therefore not considered appropriate outside of the HRRE.

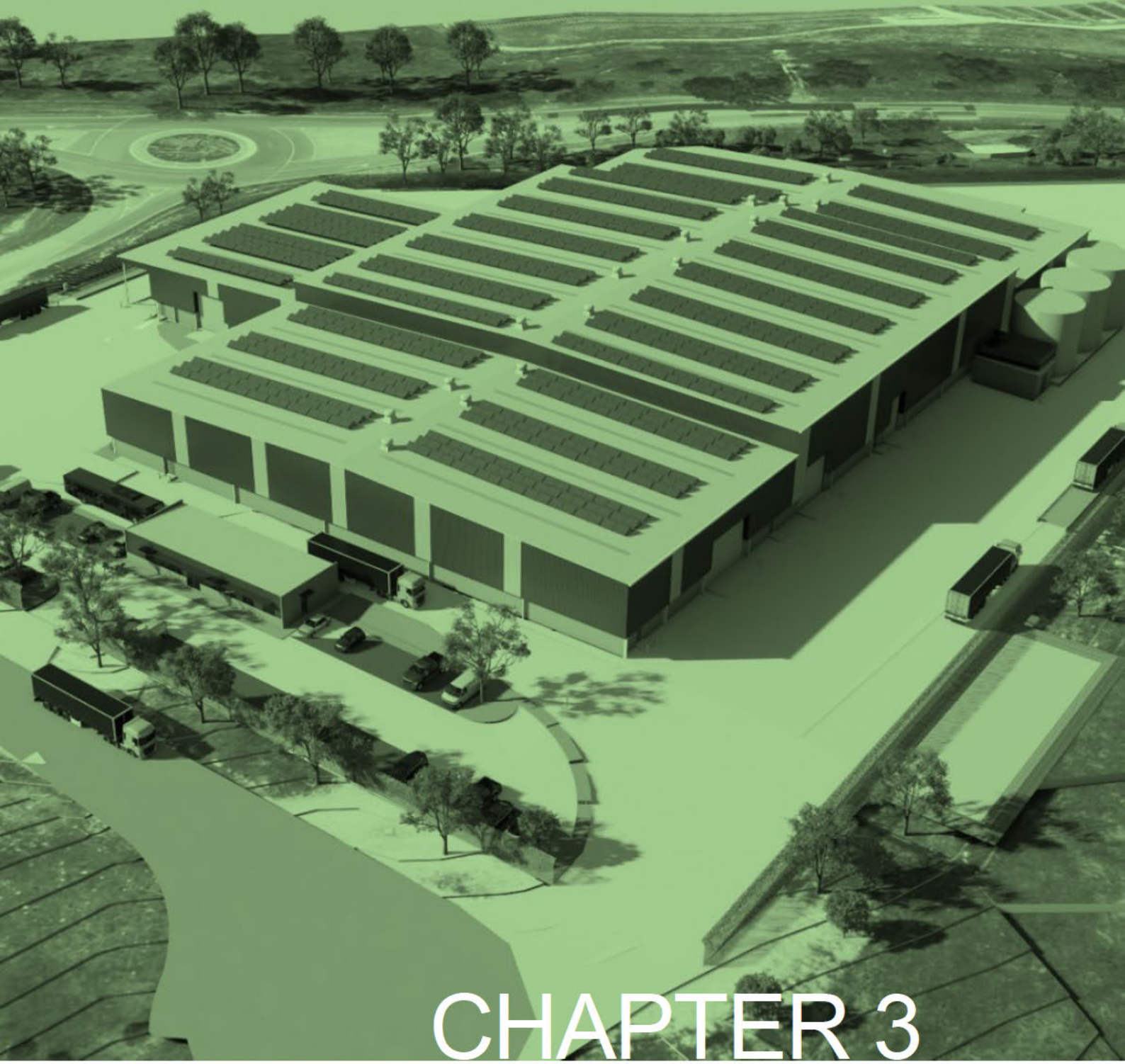
The design options were assessed against the criteria listed at the start of Chapter 2.7. A summary comparison of the options is provided in Table 2.3.

In summary, Option 5 was selected as the preferred option based on:

- Lower cost to the Territory and community by:
  - Providing a suitable site with little to no stabilisation costs.
  - Eliminating the continued need to send recyclables interstate.
- Reduced potential for environmental and heritage impacts by ensuring the design is away from the creek as far as practicable and utilising existing hardstand areas.
- Increased resource recovery outcomes for the growing ACT community.
- The location being an efficient and serviceable location within the HRRE.
- Safer design including:
  - Unidirectional traffic ensuring pedestrian access to buildings with minimal needs to cross paths with operational traffic, and
  - Eliminating the need for transfer of material between buildings across a roadway via forklift.

Table 2.3: Summary of assessment of alternatives

	Do-nothing	Alternative Site	Option 3	Option 4	Option 5
Cost to Territory and community	✗	✗	✗	✓	✓
Minimise environmental and heritage impacts	✗	✗	✗	✓	✓
Resource recovery outcomes	✗	✓	✓	✓	✓
Efficient and serviceable location	✗	✗	✓	✓	✓
Safety of facility to workers	✗	✓	✓	✗	✓



CHAPTER 3

LEGISLATION AND STRATEGIC CONTEXT

3 LEGISLATION AND STRATEGIC CONTEXT

This chapter provides an overview of the relevant legislative context for the proposal, including the EIS triggers, statutory requirements and assessment against relevant strategic priorities for the ACT, as summarised below:

- Environmental legislation – has considered all appropriate approvals associated with noise, vibration and water resources.
- Territory Plan – is consistent with the Industrial Zones Policy and District Policy.
- Strategic – consistent with the objectives of the ACT Planning Strategy and District Strategy.
- Waste – consistent with the objectives of the ACT Waste Management Strategy and supporting Federal government waste reduction targets.
- Climate change – acknowledges the ACT Climate Change Strategy and the role the proposal can play in minimising emissions generated from landfill and in minimising the ACT's overall emissions.
- Ecologically Sustainable Development – is consistent with the precautionary, intergenerational equity, conservation of biological diversity and ecological integrity.

3.1 Commonwealth legislation

3.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Commonwealth Government's primary legislation for the protection of Matters of National Environmental Significance (MNES). It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. The EPBC Act also regulates actions on or impacting on Commonwealth land, or actions by Commonwealth agencies.

Parts 7, 8 and 9 of the EPBC Act consider and assess the potential impacts of individual actions on MNES. Part 10 of the EPBC Act provides for assessment of impacts of actions over a larger area, such as a landscape scale, or longer timeframe.

Approvals under the EPBC Act are additional to any approvals required under Territory Legislation.

If a proposal is not likely to have a significant impact on any MNES, no action is required. Where there is potential for a significant impact, then referral to the Commonwealth is required. The Commonwealth will determine whether the proposal is:

- A controlled action meaning the proposal will, or is likely to have, a significant impact on protected matters and further detailed assessment is required.
- Not a controlled action, meaning the proposal is unlikely to have a significant impact on protected matters. It may be subject to particular approval conditions but no further assessment is required.

A biodiversity assessment, refer Chapter 12 and Appendix L, has been undertaken as part of the EIS and this proposal is not expected to have impacts to any MNES.

3.2 ACT legislation

3.2.1 Planning Act 2023

The Scoping Document and draft EIS were prepared in accordance with the former *Planning and Development Act 2007* (PD Act). Although the PD Act has been repealed and replaced with the *Planning Act 2023*, this revised final EIS will still be considered by the ACT Government under the former legislation due to the transitional provisions which apply to this proposal.

This revised final EIS has been structured to comply with the provisions of both the former PD Act and the current *Planning Act 2023*. This is to ensure that any subsequent Development Application (DA) lodged under the current *Planning Act 2023* will be supported by the EIS prepared under the former PD Act.

Specifically, Section 636 of the *Planning Act 2023* states:

> 636 EIS processes commenced but not completed before commencement day
>
> (1) This section applies if, before the commencement day—
>
> (a) the proponent of a development proposal applied to the planning and land authority under the repealed Act, section 212; and
>
> (b) an EIS or s 125-related EIS has not been completed in relation to the development proposal.
>
> (2) The repealed Act, chapter 8 (other than division 8.2.1) continues to apply in relation to the development proposal despite its repeal.

Section 123 of the former PD Act outlined 'triggers' for circumstances where a development proposal must be considered under the 'Impact Track' assessment pathway and therefore is required to be supported by a completed EIS. The Impact Track triggers are listed in Table 3.1.

Table 3.1: Impact track triggers

Item	Applicability
The relevant development table states that the impact track applies	Not applicable.
The proposal is a kind mentioned in schedule 4	Applicable – the proposal is of a kind mentioned in Schedule 4.
The Planning Minister makes a declaration under s124 (that impact track applies)	Not applicable – The Minister has not made a declaration that impact track applies to the proposal.
s125 (Health Minister makes a declaration) or s132 (innominate use) apply	Not applicable – The Minister for Health has not made a declaration that impact track applies to the proposal. The development is not a development that is 'not otherwise provided for'.
The Commonwealth Minister responsible for administering the Environment Protection and Biodiversity Conservation Act 1999 (Cth) advises the Minister in writing that the development proposed- (i) is a controlled action under that Act, section 76; and (ii) does not require assessment under that Act, part 8 (Assessing impacts of controlled actions) because a bilateral agreement between the Commonwealth and the Territory under that Act allows the proposal to be assessed under this Act.	Not applicable.

The provisions of Section 105 of the *Planning Act 2023* are effectively the same as the former requirements of Section 123 of the PD Act. The proposal meets the requirements listed in

Schedule 4, Part 4.2, Item 10 of the former PD Act, as well as Schedule 1 of the current Planning Regulation, requiring an EIS to be prepared.

As listed above in Table 3.1 the *Planning Act 2023* introduced a refined development assessment pathway through replacing the former Impact Assessment track, with "Significant Development" for proposals that require any of the following:

- A subdivision design application.
- Consultation with the National Capital Design Review Panel.
- An EIS.

As an EIS is required, this proposal is a significant development.

3.2.2 Planning Regulation 2023

The former PD Act referred to detailed development proposals in Schedule 4 of that Act. However, the *Planning Act 2023* refers to the relevant schedule in the *Planning Regulation 2023*.

Clause 12 (Part 4, Division 4.2) of the *Planning Regulation 2023* requires any development proposal listed in schedule 1, part 1.2, column 2 to be supported by an EIS.

Of the 25 development proposals or activities listed in Schedule 1, the proposal triggers two of these, being Items 13 & 14 confirming an EIS is required as detailed in Table 3.2.

Table 3.2: Schedule 1 triggers

Part	Trigger	Comment
Item 13	Proposal for a waste transfer station or recycling facility that sorts, consolidates or temporarily stores solid waste (including city waste) for transfer to another site for disposal, storage, reprocessing, recycling, use or reuse, if the transfer station— (a) is intended to handle more than 30kt of waste each year; or (b) will be less than 1km from the boundary of a residential block or residential unit in a residential or commercial zone; but (c) is not a small-scale waste management facility, on or near a residential block or near a residential unit, consisting of wheelie bins, small hoppers, or other small waste management bins or enclosures for the use of people living on the residential block or in the residential unit.	Applies as the proposal is for a MRF which fits under the definition of recycling facility in the Territory Plan. The facility will process up to 115,000 tonnes per year.
Item 14	Proposal for expansion of an existing waste transfer station or recycling facility that sorts, consolidates or temporarily stores solid waste (including city waste) for transfer to another site for disposal, storage, reprocessing, recycling, use or reuse, if the transfer station— (a) is intended to handle more than 30kt of additional waste each year; but (b) is not a small-scale waste management facility, on or near a residential block or near a residential unit, consisting of wheelie bins, small hoppers, or other small waste management bins or enclosures for the use of people living on the residential block or in the residential unit	The proposal expands the scale and capacity of the former MRF from 65,000 tonnes to 115,000 tonnes per year.

3.2.3 Waste Management and Resource Recovery Act 2016

The *Waste Management and Resource Recovery Act 2016* (WM Act) provides the regulatory framework to manage waste, support innovation and investment in waste management, promote responsibility for waste reduction and promote best-practice waste management. The WM Act is responsible for setting out conditions for the licencing of the facility.

Under this, the operator of the proposed facility must hold a waste facility licence.

The objects of the WM Act are to manage waste according to the hierarchy of minimisation, recovery and re-use of resources, to support innovation and investment in waste management and to promote responsibility for waste reduction and best practice management.

The WM Act was designed to help the ACT meet the longer-term resource recovery objectives of the *ACT Waste Management Strategy 2011-2025* of minimising the generation of waste and maximising the recovery of resources. It responds to a range of concerns about the Territory's capacity to manage waste and resource recovery, and to reduce the amount of waste going to landfill.

The WM Act establishes a comprehensive regulatory framework for waste industry operators and provides guidance for the industry and broader community on the appropriate storage, treatment and disposal of waste. The regulatory framework established by the Act is intended to facilitate and reward good practice in waste collection, transportation, recovery and reuse, and to discourage the disposal of waste into landfill.

This ACT defines a number of key terms for its purpose including waste, waste management business, waste transporter, waste facility and waste facility licence.

The Act defines waste to include the following:

a. *any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment;*
b. *any discarded, rejected, unwanted, surplus or abandoned substance, whether or not intended for sale, recycling, reprocessing, recovery or purification by a separate operation from that which produced it; and*
c. *any other substance declared by regulation to be waste.*

Therefore, the recyclables received at the MRF would be considered waste by this definition.

The Act defines waste activity to include the following:

a. *means any of the following activities carried out by a waste management business:*
    i. *collecting waste;*
    ii. *transporting waste;*
    iii. *storing, sorting, treating, processing, or disposing of waste; and*
b. *for part 9 (Codes of practice)—includes the generation of waste.*

Therefore, the MRF would be considered a waste activity.

In this Act a waste facility:

a. *means a site used by a waste management business for the storage, sorting, treatment, processing, or disposal of waste; but*
b. *does not include a reverse vending machine.*

The MRF would be considered a waste activity and waste facility which would require a licence under section 22 of the WM Act. Waste transporters are also required to be registered under this Act.

Part 10A of the WM Act provides details of the CDS in the ACT and provides other provisions for codes of practice, reporting, exemptions and enforcement under this Act. Any relevant requirements of this Act would be met as part of the proposal.

3.2.4 Environment Protection Act 1997

The ACT *Environment Protection Act 1997* (EP Act) provides the regulatory framework to protect and enhance the environment, to prevent environmental degradation and reduce and eliminate the discharge of pollutants to the air, land and water. The EP Act also provides for the identification and remediation of contaminated land, management of waste and pesticides.

The EP Act establishes the Environment Protection Authority (EPA) as the statutory decision maker for environmental regulation and policy.

Parts 7 and 8 outline requirements for Environmental Protection Agreements and Environmental Authorisations. Certain activities that pose environmental risk require an environmental authorisation issued by the EPA.

An Environmental Authorisation or Environmental Protection Agreement is required under the EP Act for the conduct of Class A activities or Class B activities identified in Schedule 1 of the EP Act or certain other situations determined by the EPA.

The proposal would meet the definition of a Class A activity under Schedule 1 Item 45 of the EP Act for:

> *'the operation of a waste transfer station receiving 30 000t or more of waste each year'.*

Under the EP Act, a waste transfer station means:

> *'a facility that sorts, consolidates or temporarily stores solid waste (including municipal waste) for transfer to another site for disposal, storage, reprocessing, recycling, use or reuse'.*

Under this Act there will be requirements for the MRF to be managed in accordance with an Environmental Authorisation. It is an offence under Sections 137, 138 and 139 of the Act to cause environmental harm, likely serious environmental harm, material environmental harm, likely material environmental harm, or likely environmental harm.

This EIS has been prepared to assess the environmental impacts of the proposal and identifies the management and mitigations measures to avoid impacts to the environment.

3.2.5 Environment Protection Regulation 2005

The *Environmental Protection Regulation 2005* supports the EP Act (EP Regulation). Part of the EP Regulation identifies offences relating to emissions to air, noise and water.

Part 8A details the requirements for erosion and sediment control measures for development sites. An approved erosion and sediment control plan (ESCP) will be required to manage and prevent impacts during construction.

Schedule 2 provides noise zones and standards which have been considered in the noise assessment. The proposal will meet the regulatory targets set out under the EP Regulation (refer to details outlined in Chapter 17 and Appendix O).

The EP Regulation does not specify guidelines or criteria for odour or air impacts, but an Air Quality and Odour Impact Assessment (Chapter 14 and Appendix M) has been prepared in

accordance with relevant NSW Guidelines and frameworks and the National Environment Protection Measures.

3.2.6 Urban Forest Act 2023

The *Urban Forest Act 2023* replaced the *Tree Protection Act 2005* with the aim of protecting and enhancing the urban forest to contribute to biodiversity in urban areas; and to support a target of the tree canopy covering 30% of the Territory's urban areas.

The Act applies to subject site, being industrial zoned land, and the associated road reserves. The Act outlines provisions for 'protected trees' which include 'Registered' trees and 'Regulated' trees.

A registered tree is one that is registered or provisionally registered under *Part 4 - Registration of trees* - of the Act.

A regulated tree is one that is at least 8m high or has a canopy at least 8m wide. There are a number of other provisions, such as trunk diameter, age of tree, trees planted under a development approval or dead native trees where a tree could be determined to be a regulated tree.

There are three trees on the site boundary adjacent to John Cory Road that meet the specifications of a regulated tree under the Act. There are also a number of trees within the Mugga Lane road reserve that are regulated trees. One large dead tree exists at the western boundary of the site. This is presumably a remnant eucalypt and would also be considered a regulated tree.

Each of these trees are protected under the Act and will require the approval of the Conservator to remove or damage. However, the proposed development will ensure the retention of all these trees.

3.2.7 Heritage Act 2004

The *Heritage Act 2004* (Heritage Act) applies to any heritage objects in the ACT, and to any places located on Territory land. The Heritage Act establishes a system for the recognition, registration and conservation of natural and cultural heritage places and objects, including Aboriginal places and objects. The ACT Heritage Council provides for Heritage Agreements and establishes enforcement and offence provisions to provide greater protection for heritage places and objects. It provides a system integrated with land planning and development to consider development applications having regard to the heritage significance of places and to Heritage Guidelines.

Where development may diminish the heritage significance of a registered place or object, or damage an Aboriginal place or object, approval under the *Heritage Act* from the ACT Heritage Council is required.

Chapter 20 and Appendix R of this EIS addresses heritage and considers the requirements within the *Heritage Act*.

3.2.8 Nature Conservation Act 2014

The object of the *Nature Conservation Act 2014* (NC Act) is to protect, conserve and enhance the biodiversity of the ACT. It establishes a formal process for the identification and protection of threatened species and ecological communities and biodiversity in the ACT. The NC Act requires the Conservator of Flora and Fauna to prepare an action plan in response to each declaration of a threatened species, ecological community or threatening process.

The NC Act identifies offences under the Act to protect native species and the requirement for approvals or licences to authorise activities that would otherwise be an offence under this Act, such as to injure or endanger a native animal or plant, or to clear native vegetation or plants in a reserve.

Chapter 12 and Appendix L addresses ecology and the natural environment.

3.2.9 Water Resources Act 2007

The *Water Resources Act 2007* (WR Act) aims to ensure the use and management of the Territory's water resources are sustainable while protecting the ecosystems that depend on the waterways. It is also designed to protect waterways and aquifers from damage.

The proposal is not expected to involve construction of a water resource as defined in the WR Act. As such, a Waterways Works License is unlikely to be required by the construction contractor for the works.

3.2.10 Public Health Act 1997

The *Public Health Act 1997* is the primary legislation in the ACT to manage public health. The objectives of the *Public Health Act 1997* are the protection of the population from public health risks including those associated with facilities, equipment, products and activities through the monitoring of health indicators, to provide the public with information about the health of the population and to design and implement appropriate policies and programs for the maintenance and improvement of the population's health. The policy also allows for provision of rapid response in the event of a Public Health Risk.

The Minister may declare an activity that may result in the transmission of disease, or that may otherwise adversely affect the health of individuals in the context of the wider health of the community, to be a public health risk activity.

Given the existing MRF operated under an EPA licence, the Minister is unlikely to declare the activity a Public Health Risk provided an EPA licence is sought by Veolia as the future operator of the proposal site.

3.2.11 Utilities (Technical Regulation) Act 2014

The objects of *Utilities (Technical Regulation) Act 2014* (Utilities Act) are to ensure the safe, reliable and efficient delivery of regulated utility services and the safe and reliable operation and maintenance of regulated utility networks to protect the public, and people working on regulated utility networks, property and the environment.

Part 2 defines a regulated utility service for this Act, which includes:

1(f) in relation to water - owning, leasing or subleasing a registrable dam.

Part 8 of the Utilities Act provides for the regulation of the safety of dams. The Act requires owners of registrable dams to provide specific information to the technical regulator so that a determination can be made as to whether a dam could have a significant adverse effect on community interests. The technical regulator must then determine under section 69 of the Act whether a dam should be designated as a listed dam based on the risk of significant adverse effects on the community in the event of failure of the dam.

In this part, a dam:

a. *means an artificial barrier, and incidental or related works, constructed for the storage or control of water, other liquids, or other material within a liquid; but*

b. does not include a concrete and steel ring tank that is reliant on hoop stress for structural stability.

A registrable dam is:

a. a dam, or proposed dam, in the Territory that –

i. is more then 5m high; or
ii. has a water storage capacity of more than 250ML; and

b. Googong dam.

The dam located on the proposal site does not qualify as a registerable dam and therefore does not need to be considered further.

It is recommended that sampling be undertaken at the dam to ensure the proposal does not contribute to any contamination and the detailed design phase would address any specific requirements.

3.2.12 Climate Change and Greenhouse Reductions Act 2010

This Act promotes the development of policies and practices to address climate change, sets targets to reduce greenhouse gas emissions and provides for monitoring and reporting in relation to the targets.

This Act supports the development of relevant policy encouraging the better management of waste, but it does not provide waste specific regulations.

3.2.13 Work Health and Safety Act 2011

The *Work Health and Safety Act 2011* (WHS Act) together with the *Work Health and Safety Regulation 2011* gives effect to the Territory's commitment under the Inter-Governmental Agreement for Regulatory and Operational Reform in OHS to implement the model work health and safety laws in the ACT.

The main object of this Act is to provide for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces by:

a. protecting workers and other persons against harm to their health, safety and welfare through the elimination or minimisation of risks arising from work or from specified types of substances or plant; and
b. providing for fair and effective workplace representation, consultation, cooperation and issue resolution in relation to work health and safety; and
c. encouraging unions and employer organisations to take a constructive role in promoting improvements in work health and safety practices, and assisting persons conducting businesses or undertakings and workers to achieve a healthier and safer working environment; and
d. promoting the provision of advice, information, education and training in relation to work health and safety; and
e. securing compliance with this Act through effective and appropriate compliance and enforcement measures; and
f. ensuring appropriate scrutiny and review of actions taken by persons exercising powers and performing functions under this Act; and
g. providing a framework for continuous improvement and progressively higher standards of work health and safety; and

h. maintaining and strengthening the national harmonisation of laws relating to work health and safety and to facilitate a consistent national approach to work health and safety in the ACT.

3.3 Other Statutory Provisions

3.3.1 National Capital Plan

The *National Capital Plan* (NCP) is the Commonwealth Government's strategic Plan for Canberra and the Territory and is administered by the National Capital Authority (NCA). The NCP maintains broad oversight of planning in the Territory and importantly an interest in the planning, design and development of those areas having the special characteristics of the National Capital.

At its broadest level the NCP prescribes land use controls across the whole of the Territory and includes more detailed planning provisions for areas where the Commonwealth has a specific interest. These are identified in the NCP as Designated Areas. It also has jurisdiction over areas of National Land and may set out special requirements for development of any area. The NCP takes precedence over the Territory Plan where any inconsistencies arise.

The General Policy Plan within the NCP sets the broad framework for land use in the Territory and shows the areas which are planned for urban development and those that are not to be developed for urban use. Under the General Policy Plan, the proposal area is identified as Urban Area. The range and nature of uses permitted in Urban Areas includes those uses compatible with residential, commercial, community, cultural, recreational and industrial activity, other than uses not permitted in the Territory Plan.

In the NCP the Designated Areas include the Main Avenues and Approach Routes between the ACT border and the Central National Area. The Monaro Highway adjacent to the subject site is an Approach Route and the road reserve is Designated Area.

Special requirements apply to development on land which fronts directly onto the Approach Routes and is not more than 200 metres from their middle lines and Development Controls Plans (DCP) apply to new land use proposals. DCP *171/09/0001 Hume West Industrial Area* applies to the site and immediate surrounds. The DCP establishes planning and urban design provisions including building scale, setback, landscape character, access and parking for the site. Details of the Special Requirements in the DCP are provided in Chapter 5.

3.3.2 Territory Plan 2023

The *Territory Plan 2023* (Territory Plan) is the key statutory planning document for Territory land in the ACT, providing the policy and statutory framework for the administration of planning in the ACT. The purpose of the Territory Plan is to manage land use change and development in a manner consistent with strategic directions set by the ACT Government, Legislative Assembly and the community. It must not be inconsistent with the NCP.

The *2023 Territory Plan* introduced a different structure to the previous Territory Plan that applied at the time the draft EIS was prepared and reviewed by ACT Agencies and the general public. The *2023 Territory Plan* is centred on an outcomes focus for development assessment.

The proposed development will be assessed in accordance with the requirements of the Territory Plan. A detailed discussion on the Territory Plan and land use context is provided in Chapter 5.

Supporting material, such as design guides, technical specifications and other material do not form part of the Territory Plan but may be "called up" by policies within the Territory Plan.

District and Zone Policies each with specific Policy Outcomes, Assessment Outcomes and Assessment Requirements incorporate maps and a land use table that determines the uses permitted in each zone or district and the baseline standards and desired outcomes. Further details are included in Chapter 5.

3.3.3 Planning Strategies

ACT Planning Strategy 2018

The *ACT Planning Strategy 2018* (the Strategy) states the long-term planning policy and goals for the ACT, an overarching spatial vision, and strategic directions and desired future planning outcomes.

The vision for Canberra under the Strategy is:

> *"to be a sustainable, competitive and equitable city that respects Canberra's unique legacy as a city in the landscape and the National Capital, while being responsive to the future and resilient to change."*

The Strategy identifies five themes with accompanying strategic directions, supported by actions that the government would report against annually. These themes are as follows:

- Compact and efficient city.
- Diverse.
- Sustainable and resilient.
- Liveable.
- Accessible.

Strategic direction 2.4 is to recognise and protect existing industrial areas and service trades areas as important elements of a diverse economy. This proposal would support this direction by replacing and improving the existing MRF on existing industrial land and minimising the footprint expansion to ensure industrial land remains available to the back of the proposal site.

Strategic direction 3.6 is to reduce waste, improve resource efficiency and decrease our ecological footprint. This proposal would support this direction in improving resource efficiency and reducing the amount of waste produced overall.

The proposal is consistent with the Strategy, given that it would support a more sustainable and resilient Territory by replacing and improving the Territory's recycling capability of up to 115,000 tonnes per year.

However, Chapter 37 of the *Planning Act 2023* states that the Strategy is not a relevant consideration for any decision by the Territory Planning Authority, the Minister or another entity made under the Territory Plan in relation to a development proposal, including significant developments and Territory priority projects.

District Strategy

District strategies state the long-term planning policy and goals for districts, consistent with the Planning Strategy (Section 38 of the *Planning Act 2023*).

The Territory Plan gives effect to the District Strategy through the district policies contained in Part D of the Territory Plan (refer to Chapter 5 for more details).

The subject site in Hume is within the East Canberra district. East Canberra has an ACT-wide strategic role for employment as well as serving parts of the wider Canberra Region in NSW.

The East Canberra District Strategy identifies that the urban function will be largely centred around its critical economic role. It is the primary location for aviation, freight and other business activities serving a city-wide and regional function. Opportunities for economic development will take advantage of major transport corridors such as the Monaro Highway.

3.3.4 ACT Climate Change Strategy 2019-2025

The ACT *Climate Change Strategy 2019-2025* brings together emission reduction, resilience and adaptation measures as part of a holistic response to climate change.

The strategy identifies how the ACT will transition to a net zero emission city by 2045 and to prepare and adapt to the global challenge of climate change. The strategy has a focus on reducing emissions from transport and gas following the achievement of a 100 per cent renewable electricity supply in 2020.

The priorities of the strategy include:

- Support community leadership and a just transition of programs for the community.
- Government leadership through emissions reduction and zero emissions passenger vehicle fleet.
- Increases in public transport use and active travel.
- Waste avoidance and management.
- Energy use, buildings and urban development improvements, through improved energy performance, climate change resilience and living infrastructure.
- Land use and biodiversity improvements.

The strategy highlights the crucial role that waste avoidance and management plays towards achieving a successful transition to net zero emissions.

This proposal would play an important role in assisting the ACT Government goals around lowering greenhouse gas emissions and waste avoidance and management by reducing waste sent to landfill. Goal 6A in the Strategy is to Reduce waste generation. Actions under this goal include:

> *6.2 Implement the Act smart programs and household waste education programs to reduce waste generation and increase recycling.*

The development of a new MRF with improved technology and recycling capability would encourage education within the community about reducing household waste and increase recycling within the ACT community. The MRF would also assist in avoiding the generation of greenhouse gas emissions by both reducing the production of raw materials and diverting waste away from landfill. The proposal directly aligns with the goals and actions identified in the Climate Change Strategy and would be a significant contributor to assist the ACT Government in reducing greenhouse gas emissions and waste generation.

Additionally, the proposal will implement ACT Government leadership goals under the strategy. The facility will be designed to be consistent with 4-star Green Star Building v1.1. (Design and As-Built) from the Green Building Council of Australia although certification to this rating is not a requirement and it is not proposed to seek formal rating certification.

This EIS has considered the likely climate change and air quality impacts and the reductions and contributions to emissions resulting from the proposal in Chapters 14, 15 and 16. Measures are provided to reduce emissions during construction where possible.

3.3.5 Canberra's Living Infrastructure Plan: Cooling the City (2019)

Canberra's *Living Infrastructure Plan: Cooling the City* 2019 (The Plan) sets out the ACT Government's commitment to increase community resilience and adaptiveness to the effects of climate change by sustaining and enhancing living infrastructure on public and private land. Living infrastructure includes trees, wetlands and soil systems which can help keep Canberra cool and liveable in the changing climate. Living infrastructure provides a range of additional benefits including lower building energy demand, improved stormwater management and improved health and amenity.

The Plan includes targets to achieve 30 percent tree canopy cover (or equivalent) and 30 percent permeable surfaces by 2045 within the urban footprint. The Plan identifies 15 actions to meet the goals set in the Plan and these are being introduced through a variety of mechanisms.

The MRF will have landscaping incorporated into development and there is a maximum 50 percent site coverage requirement in the DCP which limits overall coverage of development on the site to provide for green space.

3.3.6 Separation Distance Guidelines for Air Emissions (2018)

The *Separation Distance Guidelines for Air Emissions* (November 2018) is the primary ACT document which considers and guides land use interface in the ACT for air emissions.

These guidelines provide recommended separation distances between various emitters and sensitive land uses. They are applied to ensure incompatible land uses are located in a way that minimises the impacts of odour and polluting air emissions in the assessment of new development applications. While these guidelines assist in the siting of new developments, they may also be used to ensure industrial activities in appropriate zones are protected from encroachment by residential and other sensitive land uses that would have a negative effect on the viability of industry.

These guidelines apply to new industries/activities and redevelopment of existing industries/activities for which a development application is required under the PD Act.

The guidelines demonstrate how separation distances should be applied to development and provide indicative recommended separation distances which should be applied between certain activities and sensitive land uses. *The Separation distance guidelines for air emissions* (ACT Government, 2018) have been considered as part of the air quality impact assessment (refer to Chapter 14).

3.3.7 ACT Waste Management Strategy 2011-2025

The *ACT Waste Management Strategy 2011-2025* (ACT Government, 2011) (WM Strategy) sets the direction for the management of waste in the ACT towards 2025. It encompasses wastes from a range of sources, household, commercial construction and demolition. The goal of the WM Strategy is to ensure that the ACT leads innovation to achieve full resource recovery and a carbon neutral waste sector. This goal is supported by four key outcomes, and it identifies 29 strategies that will enable the achievement of these outcomes. The outcomes are:

- Outcome 1: less waste generated.
- Outcome 2: full resource recovery.

- Outcome 3: clean environment.
- Outcome 4: carbon neutral waste sector.

The WM Strategy identifies that approximately 30 to 40 percent of commercial waste going to landfill comprises readily recyclable materials such as paper, plastics and glass. Additionally, 10 to 20 percent of household waste comprised of readily recyclable materials such as aluminium cans and glass that has not be correctly sorted into the yellow top bin. Diverting this waste from landfill to recycling markets is the most cost effective option for increasing resource recovery in the ACT.

Under Outcome 1 of the WM Strategy the government recognises that avoiding or minimising the generation of waste means less waste to manage. This, in turn, leads to reduced costs associated with transporting, sorting and recycling materials and ultimately less waste sent to landfill. Strategy 1.1 is awareness, education and action. The proposal would support this strategy by providing a future development area to provide education services on household recycling. A new and upgraded MRF would provide an additional avenue to advertise the existing program and redevelop it to better support the WM Strategy.

Under Outcome 2 of the WM Strategy, the government commits to increase the rate of resource recovery. Strategy 2.1 aims to increase the ACT rate of resource recovery from over 70 percent to over 80 percent by redirecting readily recyclable waste from landfill to recycling markets. The improved technology within the new MRF would produce materials that are market ready. Strategy 2.5 aims to promote education and active recycling. The proposal would support this action by providing positive publicity on actions the government has taken to re-establish the MRF and offer new opportunities to educate the public and get them more involved in recycling.

Strategy 2.9 is to develop markets for recyclable materials and strengthening regional connections. The existing MRF accepted recyclables from five surrounding Councils; the upgraded capacity of the new facility to 115,000 tonnes per year (an additional 50,000 tonnes) means that the ACT can accept more recyclables from surrounding areas to enhance the sustainability of south-east NSW, while offsetting the cost of new waste facilities for Canberra residents and businesses.

Strategy 3.3 is for the development of the HRRE. The strategy identifies that new major waste infrastructure will primarily be located in the HRRE. The proposal is remaining on a largely similar footprint and supports this strategy.

Under Outcome 4, Strategy 4.4 the government will increase recycling to avoid greenhouse gas emissions. Recycling avoids the generation of greenhouse gas emissions by both reducing the production of raw materials and diverting waste away from landfill. Recycling can also reduce water and energy usage.

Strategy 4.5 aims to ensure energy efficient waste collection and transport solutions. Sorting of mixed waste through materials recovery facilities can reduce greenhouse gas emissions associated with transportation of waste. Separation of waste at the source of the waste generation supported by pick-up may increase the value of waste materials for recycling.

In reducing the amount of recyclables to landfill and supporting the re-use of raw materials, the proposal would reduce greenhouse gas emissions. Chapter 15 addresses greenhouse gases and the quantum of generation and reduction expected as a result of the proposal.

3.3.8 ACT Waste Feasibility Study

The *Waste Feasibility Study* (ACT Government, 2018a) (the Study) identifies how waste management in the ACT can be improved to align with best practice. The Study proposed initiatives that respect the 'waste hierarchy' principle. The key output from the Study is a Roadmap

of initiatives designed to take the ACT closer to its 90 per cent resource recovery target through best practice waste management. The Study estimated that the initiatives proposed could divert over 170,000 tonnes of waste from landfill and lift the resource recovery rate from 70 per cent to 87 per cent.

Recommendations in Group 1 of the roadmap were to enhance recycling and implement glass fines processing.

Enhanced recycling has a focus on large waste streams such as paper and cardboard, metals, rubber, plastics and textiles. Recycling leads to material streams that can be upcycled (purified of contaminants), remanufactured (converted back into their original product) or down-cycled (blended with other materials to produce a lower grade product). By upgrading and replacing the existing MRF, the proposal would support this recommendation by offering new technologies such as glass crushing as well as offering additional capacity to support ACT's growing population.

Potential markets for glass include aggregates for use in road base, and as a sand replacement in sand blasters and pool water filters.

3.3.9 ACT Circular Economy Strategy and Action Plan 2023-2030

The ACT Circular Economy Strategy and Action Plan 2023-20230 seeks to transition the ACT towards a more circular economy by setting the high-level ambition with actions to drive the initial steps. The Strategy includes Action Plans with a focus on the following:

1. Procurement, skills, innovation and governance

2. Food and organics

3. Built environment

4. Consumer goods

5. Emerging and problematic waste streams

6. Creating space to showcase our commitment to the circular economy.

The Action Plans seek to create opportunities for greater extended producer responsibility, grow markets for recovered materials and goods and circular business models, create high-value jobs and attract innovative new enterprises.

The Action Plan to "Creating space to showcase our commitment to the circular economy action plan" aims to take a regional approach to grow a circular economy that encourages cross-border collaboration and identifies land for enterprises to establish and innovate close to the source of waste generation in the ACT and wider region. The benefits of creating space for the circular economy include:

- Ensuring that space is reserved for circular economy activities and services
- Opportunities for cross-border collaboration and the scaling of circular economy initiatives within the region
- Providing space to scale up, collect and store small amounts of feedstock and manage the safe processing of waste resources to develop a strong regional economy.

One specific action includes: "*Build a new Materials Recovery Facility (MRF) to improve the quality and capacity of recycling in the ACT. New technology will deliver the capacity to sort, separate, and process materials for the whole Canberra region, creating higher quality resources with higher value uses, including remanufacturing*."

3.3.10 Environmental Protection Guidelines for Construction and Land Development in the ACT

The purpose of the *Environment Protection Guidelines for Construction and Land Development in the ACT* (the Guidelines) is to provide clear guidance and practical advice to land developers, builders and anyone carrying out or supervising civil construction and building works.

The primary environmental issue addressed in the Guidelines is the impacts from erosion and sediment. The guidelines briefly discuss the environmental issues of noise, air emissions, waste management, land contamination, biodiversity and climate change. The Guidelines cover a range of issues:

- Erosion and sediment control measures
- Noise
- Air quality
- Waste management
- Hazardous substances
- Contamination
- Biodiversity
- Climate change

These are assessed in the relevant chapters of the EIS.

A CEMP would be developed as part of the construction phase. This would include mitigation measures proposed within this EIS.

3.3.11 Contaminated Sites Environment Protection Policy 2017

Environment Protection Policies (EPPs) are policies and guidelines issued under the EP Act, which help to explain and apply the EP Act and the EP Regulation made under that Act.

The Contaminated Sites EPP provides guidance on meeting the legislative requirements of the EP Act and the EP Regulation as they apply to contaminated land, including the need to adopt the general environmental duty to prevent or minimise environmental harm.

Contaminated land is defined in the EPP as land (including buildings and structures impacted by contaminated land and surface and underground water) on and/or in which:

- a substance is present at a concentration which exceeds that normally present (i.e. commonly referred to as the background level).
- the presence of which presents, or would be likely to present, a risk of harm to human health and/or a risk of environmental harm.

A site assessment would normally be required where there is a change to the lease purpose, or land use where the past use of the land may have caused contamination. Given the proposal site is an existing MRF, it is associated with contaminated land. The proposal site is adjacent to a landfill and is also considered contaminated under the precautionary principle.

The purpose of a contaminated site assessment is to determine whether site contamination poses an actual or potential risk to human health and/or the environment, either on or off site, of sufficient magnitude to warrant remediation, or management for the current or proposed uses.

A Preliminary Site Investigation (PSI) has been undertaken as part of the proposal under Phase 1 of the Contaminated Land EPP. As part of the recommendations in the PSI, a targeted site investigation (TSI) was undertaken to ascertain whether contamination on site was present and whether it posed a risk to human health.

The outcomes of the TSI indicated the site was low risk to human health during construction. This is summarised in Chapter 10.

3.3.12 Ecologically sustainable development

Chapter 2 of the *Planning Act* 2023 outlines the object, principles and key elements to enhance the Territory's liveability and prosperity, protect its natural environment, and promote the well-being of residents. This includes a definition of *ecologically sustainable development,* which means:

> *"… development involving the effective integration of the following principles:*
>
> *a. the protection and enhancement of ecological processes and natural systems at local, territory and broader landscape levels;*
> *b. the achievement of economic prosperity;*
> *c. the maintenance and enhancement of cultural, physical and social wellbeing of people and communities;*
> *d. the precautionary principle;*
> *e. the inter-generational equity principle".*

The proposal has been assessed against these ecologically sustainable development principles in the following sections.

Ecological processes and natural systems

A Biodiversity Assessment Report was prepared to understand the existing values of the proposal site and identify appropriate measures to avoid or manage potential impacts of the proposal on biodiversity. A range of proposal and location specific design and mitigation measures are proposed to be implemented to minimise impacts upon biodiversity and maintain ecological integrity. An assessment of the impact of the proposal on biodiversity values is provided in Chapter 12.

The subject site is highly disturbed given its existing use as a waste transfer station and past use as a MRF. The proposal would largely be developed in an area that is mostly hardstand. The design has been developed to avoid entering native vegetated areas. Only a small area of exotic grassland bordering the existing facility would need to be cleared to facilitate construction. However, based on field survey undertaken by Capital Ecology in January 2025 (refer Appendix L), this area is considered to have no conservation significance. Mitigation measures to prevent harm to any fauna that may be in the proposal site prior to construction have been developed to further mitigate risk of environmental harm. As such, it is unlikely that the proposal would have a significant impact on ecological processes and natural systems.

The supplementary Capital Ecology assessment presented recommendations to improve fauna connectivity in the short term to achieve long-term local benefits. An area within the subject block that is not to be developed for the MRF will be planted with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. In addition, rocks and coarse woody debris will be placed in suitable locations to provide additional fauna habitat.

Economic prosperity

The proposal optimises the valuation and pricing of the land resources within the HRRE with minimal environmental impact by maximising the efficient use of a brownfield resource. The proposal is largely on developed land and would replace an existing facility.

The value of the proposal to the community is continued accessibility to recycling and supporting the local community jobs.

The development of the MRF facility on an existing site previously used for this purpose results in a short-term benefit as it avoids the need to expand the urban footprint with associated servicing costs and impact on greenfield areas. The ongoing employment opportunities and increased recycling opportunities through the operation of a material recovery facility provides a long-term positive outcome contributing at both the local and national scales.

The precautionary principle

The precautionary principle deals with reconciling scientific uncertainty about environmental impacts with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

The decision-making process for the design and environmental impact assessment processes has been transparent and followed the precautionary principle in the following respects:

- Relevant government authorities with authority over the land were consulted (ACT NoWaste, TCCS and the NCA) which enable comment on potential impacts and proposed management procedures.
- The community has been consulted as part of the EIS process with multiple in-person events available and letterbox drop completed. These enabled members of the community to vocalise their concerns regarding the environmental and social impacts so they could be managed through design or considered them as appropriate.
- The EIS assessment has been undertaken based on the best available scientific information regarding the proposal site. Where uncertainty in the data used in the assessment has been identified, a worst-case analysis has been undertaken and best practice mitigation measures have been identified to manage that uncertainty.
- All supporting technical reports are based on careful evaluation of the proposed impacts on the environment through measures such as analysis of existing documentation and databases, field surveys and technical modelling. Based on this evaluation, management and mitigation measures have been formulated based on best practice and in accordance with relevant policies and guidelines to avoid serious or irreversible damage to the environment.

The environmental assessment process involving ACT Agencies together with specialist technical research facilitates short-term decision-making processes based on the precautionary principle allowing for long-term local benefits.

Inter-generational equity

Social equity is concerned with the distribution of economic, social and environmental costs and benefits. Inter-generational equity introduces a temporal element with a focus on minimising the distribution of costs to future generations.

The proposed MRF would provide the ACT with the capability to recycle materials within the Territory. The current social and environmental cost of having an inoperable MRF means that

funds are being used to transport recyclables inter-state for processing at a considerable cost to the Territory. The redevelopment of the proposed MRF would provide and promote the following benefits for future generations:

- New employment generation and interest in recycling in the ACT through promotion of a state-of-the-art new MRF.
- Creating better access to recycling for the community and increasing environmental awareness.
- Support ACT goals of reaching a carbon neutral waste sector.
- Utilising an existing industrial space to avoid depletion of new industrial areas which are already scarce in the ACT.

As such, it would be unlikely that the proposal would result in any impacts that are likely to adversely impact on the health, diversity or productivity of the environment for future generations, but is likely to enhance the wellbeing of future generations.

3.3.13 Heavy Vehicle National Law

The Heavy Vehicle National Law (HVNL) regulates the use of heavy vehicles that have a gross vehicle mass of more than 4.5 tonnes. The HVNL comprises the Heavy Vehicle National Law and five sets of supporting regulations:

- Heavy Vehicle (General) National Regulation
- Heavy Vehicle (Fatigue Management) National Regulation
- Heavy Vehicle (Mass, Dimension and Loading) National Regulation
- Heavy Vehicle (Vehicle Standards) National Regulation
- Heavy Vehicle (Registration) National Regulation.

Most heavy vehicles accessing the site will be greater than 4.5 tonnes and will therefore need to comply with the HVNL.

3.3.14 National Airport Safeguarding Framework

The *National Airports Safeguarding Framework* (NASF) aims to enhance the current and future safety, viability and growth of aviation operations, improve community amenity by minimising aircraft noise-sensitive developments near airports; and improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

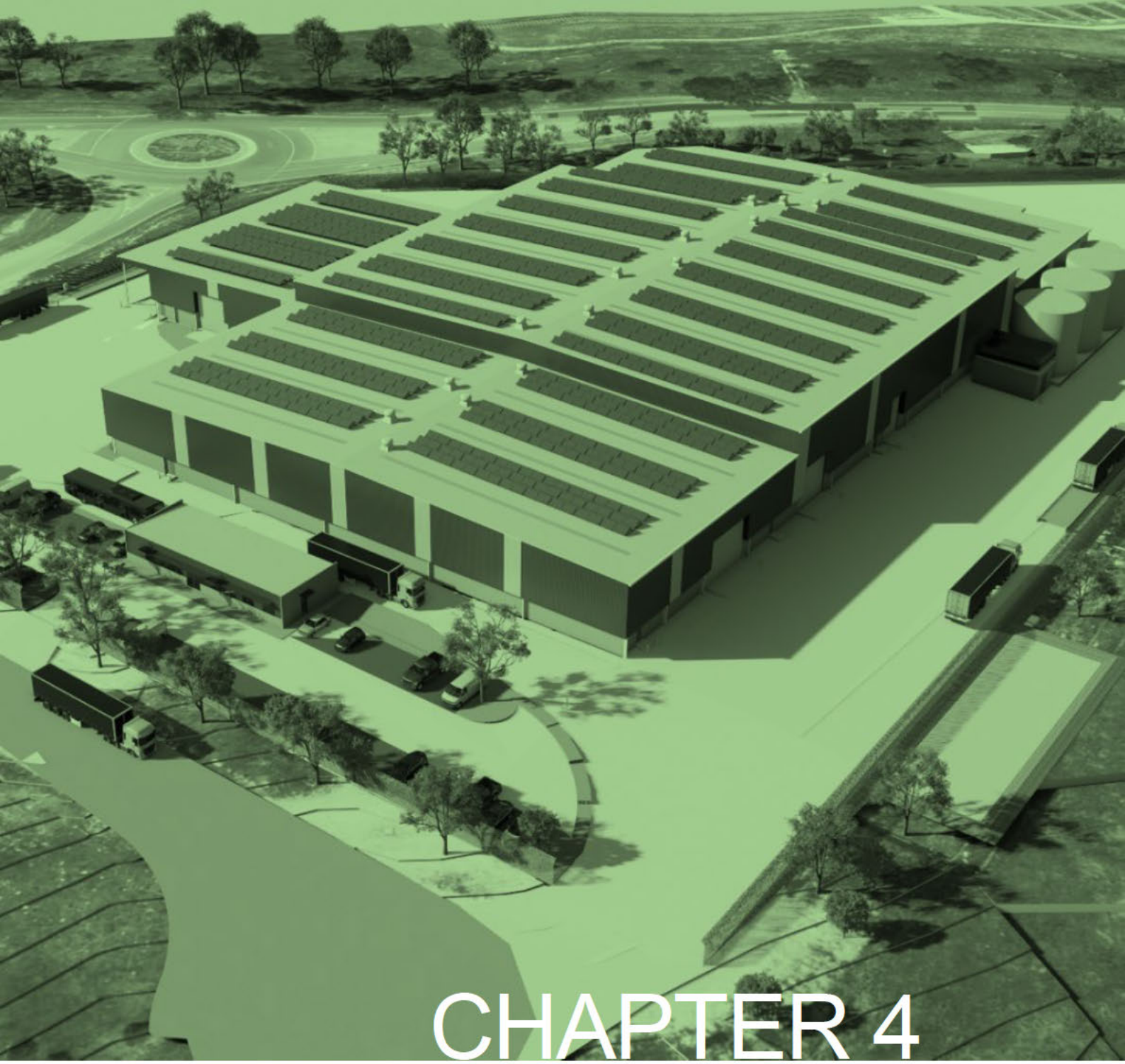
Under the NASF, the site is within a 10 kilometre radius of the airport (Area B). Guideline C provides information on managing the risk of wildlife strikes in the vicinity of airports.

The MRF building will be fully enclosed and there will be no open waste stored outside the MRF building unless it is containerised in waterproof shipping containers: thereby negating the risk of attracting more birds in the area.

Consultation with Canberra Airport as part of review of the draft EIS confirmed that the focus is on the safe and efficient operation of aircraft arriving and departing Canberra Airport.

Based on the proposed mitigation measures, Canberra Airport advised that it has no objection to the proposal, subject to further review at DA stage, to be reassured that bird attraction risk is appropriately mitigated when the MRF is operational.

Given the nature of the facility and the likelihood of receiving recyclables with some small amounts of food or beverage residues, the proposal would have a low risk of attracting native and exotic bird species as well as ground-dwelling fauna. This has been assessed in Chapter 18.



CHAPTER 4

RISK ASSESSMENT

4 RISK ASSESSMENT

4.1 Preliminary risk assessment for the Scoping Report

A *Preliminary Risk Assessment* (PRA) was undertaken as part of the *Scoping Report* (GHD, 2022) submitted with the request for the Scoping Document to determine the unmitigated significance of the impacts of the proposal. The PRA was conducted to provide a consistent framework to identify, assess and mitigate environmental and social impacts associated with the proposal. The PRA is reproduced in Table 4.1.

Table 4.1: PRA undertaken for the scoping document

Identified risk	Likelihood	Consequence	Risk rating	Where addressed in this EIS
Planning and land status				
None identified				Chapter 5
Traffic and transport				
Increased heavy vehicle traffic with potential for congestion and lane closures or traffic control systems	Likely	Minor	Medium	Chapter 6
Changes in existing traffic access such as increased heavy vehicle traffic associated with receiving and distributing resources	Almost certain	Minimal	Medium	Chapter 6
Utilities				
None identified				Chapter 7
Biodiversity and nature conservation				
Impact to listed threatened ecological communities	Unlikely	Moderate	Low	Chapter 12
Removal of threatened flora and fauna or impacts which impact habitat quality and species resilience.	Unlikely	Moderate	Low	Chapter 12
Facilitation of weed, pest and pathogen dispersal.	Possible	Moderate	Medium	Chapter 12
Heritage				
Direct or indirect impact to Aboriginal archaeological potential or places with high Aboriginal cultural values	Unlikely	Moderate	Low	Chapter 20
Waste				
Waste generated during construction	Almost certain	Minor	High	Chapter 8
Waste and isolated contaminants generated during operation	Almost certain	Minor	High	Chapter 8
Landscape and visual				
Visual impacts during construction including disposable materials, heavy machinery and artificial lighting.	Likely	Minor	Medium	Chapter 9

Identified risk	Likelihood	Consequence	Risk rating	Where addressed in this EIS
Storage and stockpiling of recyclable and non-recyclable waste at the facility	Possible	Minor	Low	Chapter 9
Transport of material to the site may result in spread of litter	Possible	Minor	Low	Chapter 9
Soils and geology				
Fuel, oil and lubricant spills from general operation and refuelling of trucks and machinery may be a source of contamination. Manipulation and movement of contaminated materials may also be a source of contamination.	Likely	Minor	Medium	Chapter 10
Earthworks and general site movements may impact soil stability and enhance erosion with further impacts on waterway turbidity and sedimentation.	Likely	Minor	Medium	Chapter 10
Existing contaminated land may be discovered on site. Remediation may be required to mitigate human and environmental health impacts.	Possible	Moderate	Medium	Chapter 10
Unprocessed material or contaminants separated from materials during operation may be a source of contamination if uncontained.	Possible	Moderate	Medium	Chapter 10
Water quality and hydrology				
Contaminated wastewater and stormwater may impact on surrounding land and water catchments.	Possible	Moderate	Medium	Chapter 11
Changes to water management infrastructure (dams, ponds) may impact hydrological regimes of surface water and ground water in regard to volume and temporal discharge.	Possible	Minor	Low	Chapter 11
Air quality and odour				
Construction activity may contribute to air pollution with dust and gas (such as carbon monoxide, hydrocarbon etc) emissions.	Likely	Minor	Medium	Chapter 14
Increased processing and vehicle movements may contribute to air pollution with gas and odour emissions	Likely	Minor	Medium	Chapter 14
Socio-economic and health				
Reduction in amenity during construction (noise, visual, and dust impacts)	Likely	Minor	Medium	Chapter 13

Identified risk	Likelihood	Consequence	Risk rating	Where addressed in this EIS
Facilities and materials may be a harbourage site for vermin and other pests with impacts on health and social amenity	Possible	Moderate	Medium	Chapter 13
Noise and vibration				
On site noise and vibration impacts during operation	Likely	Minor	Medium	Chapter 17
Operation of trucks and machinery on site may create significant sources of noise and vibration.	Likely	Minor	Medium	Chapter 17
Hazard and risk				
Potential risk of bushfire during construction from sparks, heat, fuel storage, and general works	Possible	Moderate	Medium	Chapter 19
Potential impact of bushfires affecting operation of the facility	Unlikely	Moderate	Low	Chapter 19

4.2 Risk assessment for the EIS

4.2.1 Approach

Risks have been evaluated by likelihood of occurrence and magnitude of consequence to determine the risk level and impact significance. The matrices for the draft EIS were initially taken from the *Proponent's Guide to Environmental Impact Statements* (ACT Government, 2017a). However, with the introduction of the new planning system in 2023, the matrices have been modified to align with the *TPA's Fact Sheet: Making an EIS Scoping Document or ESO application, September 2024*, and comply with *AS ISO 31000:2018 Risk Management - Guidelines*.

Any residual risks associated with the proposal are identified in the relevant sections in Chapter 5 to 21 of this EIS.

4.2.2 Evaluating likelihood

Likelihood is the probability of an impact occurring that affects the environment. It ranges in scale from remote, where an event occurs only in exceptional circumstances, to almost certain, where an event is expected to occur (Table 4.2). Best practice dictates where there is scientific uncertainty, a precautionary approach is warranted and a higher level of risk should be assigned.

Table 4.2: Evaluating likelihood (ACT Government, 2024)

Likelihood	Description	Probability	Community attitude
Remote	May occur in exceptional circumstances	<1%	Few people interested
Unlikely	Not expected to occur in most circumstances	1-20%	Some people affected
Possible	May occur	21-49%	Many people affected
Likely	Probably will occur	50-85%	Most people affected
Almost certain	Expected to occur	>85%	Almost everyone affected

4.2.3 Evaluating consequence

Risk consequence refers to the outcome of an event or situation expressed in terms of its potential or actual impact, ranging from minimal to catastrophic. Risk consequence has been evaluated in the EIS using the elements of magnitude, temporal, ecological, social and economic against general criteria (Table 4.3) and proposal specific criteria (Table 4.4).

Table 4.3: Evaluating consequence – general criteria (ACT Government, 2024)

Elements	Criteria	Description
Magnitude	Spatial	The area over which the impact will occur, from square metres to square kilometres.
	Intensity	The level of impact within the spatial area, from minor disruption to total destruction. A low intensity impact over a large area could be worse than a high intensity impact in a small area, depending on other elements.
Temporal	Duration	The length of time of the impact, from a single event to a permanent change.
	Timing	Short term events may create significant impacts if they occur often. They may also coincide with particularly sensitive times in the receiving environment such as breeding cycles.
Ecological	Values	The quality of the receiving environment, generally identified through the declaration of conservation areas, identification of protected species and other features of natural conservation value.
	Sensitivity	The capacity of the receiving environment to regenerate or adapt to the impact (resilience). The sensitivity of an environment to a potential impact will require informed judgement.
Social	Number of people	The number of people directly or indirectly affected through lost opportunities for enjoyment or other values such as equity or existence values.
	Heritage	The impact on known or possible items of heritage or cultural value.
	Political	The measure of the likely political implications or level of community interest.
Economic	Economic	The financial cost of the impact through lost productivity or the cost of remediation.

Table 4.4: Evaluating consequence – proposal specific (ACT Government, 2024)

Consequence	Minimal	Minor	Moderate	Major	Catastrophic
Magnitude					
Spatial	A single pool	A reach of river or part of a catchment	Multiple reaches or whole catchment	Multiple catchments	Whole of basin
Intensity	Low level behavioural, lifespan or condition effect	Acute impacts on some species	Moderate impacts on growth, recruitment or survival rates	Lethal impacts on some species	Lethal for individuals or communities
Temporal					
Duration	Single incident or transient event	Short term impact, single generation	Medium term	Long term, multiple generations	Permanent

Consequence	Minimal	Minor	Moderate	Major	Catastrophic
Timing	Occurs outside breeding times	Occasional interruption of feeding or breeding	Interrupts one life cycle	Regularly interrupts life cycle	Permanent interruption of life cycle
Ecological					
Values	Previously disturbed areas	Parkland	Nature conservation area	Conservation area, listed species or other conservation feature of ACT significance	Wilderness, nationally threatened species or other conservation feature of national significance
Sensitivity	Will recover completely	Will recover with some changes	Moderate change to ecosystem functioning	Significant change to ecosystem functioning	Will not recover
Social					
Number of people	Some people indirectly impacted	Some people directly impacted or several indirectly	Several people directly impacted or many indirectly	Large number of people directly impacted	Loss of life
Heritage	Impact on item of minimal significance	Impact on multiple items of low significance	Impact on significant item	Impact on multiple significant items	Major impact on protected item
Political	Single negative press article	Multiple negative press articles	Significant public interest	Leads to an inquiry	Change of government
Economic					
Economic	Minimal losses	Several thousand dollars in lost revenue or remediation costs	Half million dollars in lost revenue or remediation costs	One million dollars in lost revenue or remediation costs	Several million dollars in lost revenue or remediation costs

4.2.4 Risk rating level

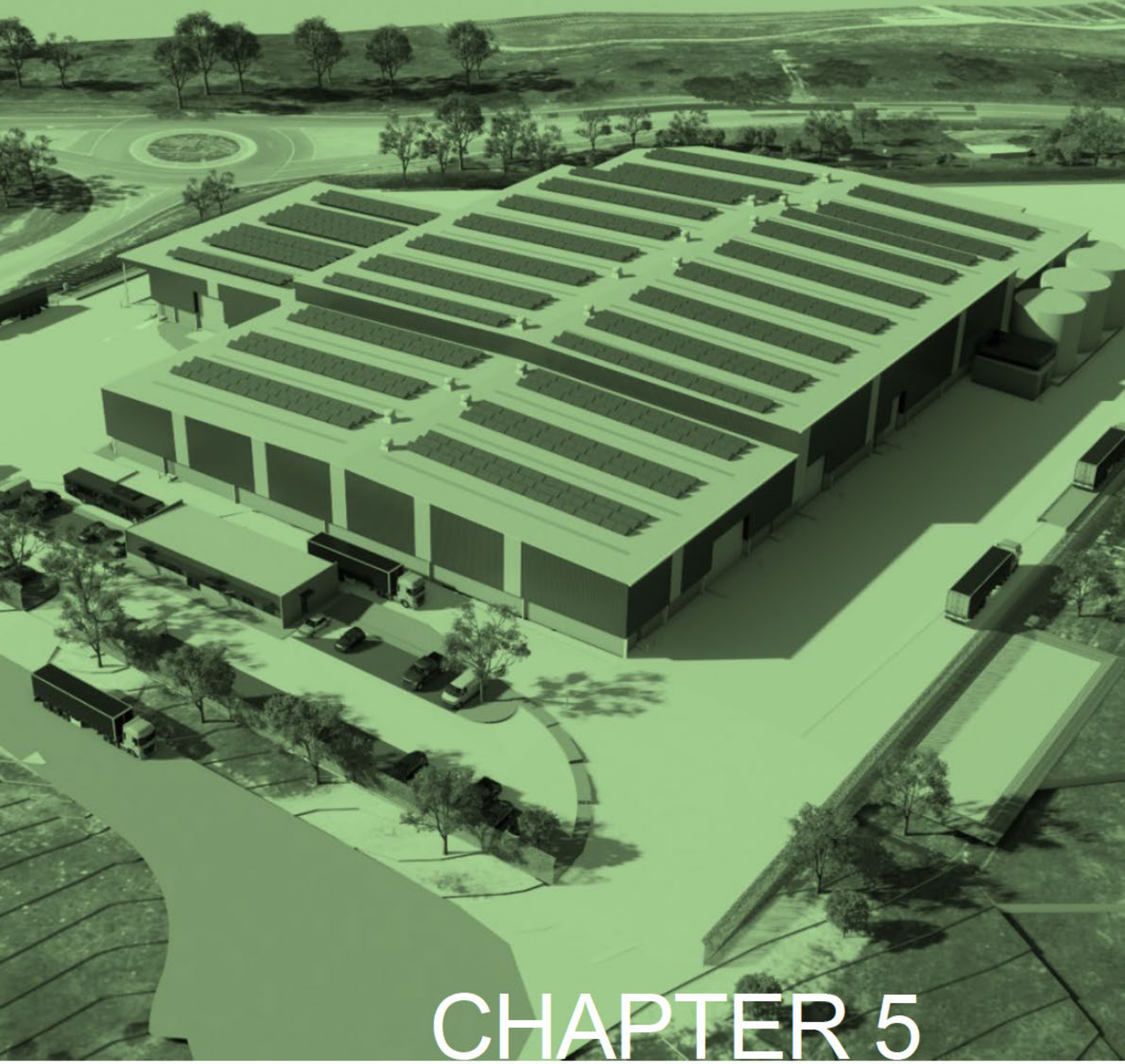
The risk rating level is determined by cross-referencing the likelihood and consequence of each risk as shown in Table 4.5.

Table 4.5: Risk rating matrix (ACT Government, 2024)

Likelihood	Consequence				
	Minimal	**Minor**	**Moderate**	**Major**	**Catastrophic**
Remote	Negligible	Negligible	Very Low	Low	Medium
Unlikely	Negligible	Very Low	Low	Medium	High
Possible	Very Low	Low	Medium	High	Very High
Likely	Low	Medium	High	Very High	Significant
Almost certain	Medium	High	Very High	Significant	Significant

4.2.5 Residual risk

Chapters 5 to 21 of this EIS assesses the impacts of the proposal on the risks identified in Table 4.5. Mitigation and management measures are provided for each theme assessed in Chapter 22. An additional assessment of residual risk is also undertaken (as required in the Scoping Document) to assess the risk for each theme with the implementation of proposed mitigation. A residual risk rating of medium or higher will be subject to further consideration during the development of the detailed design.



CHAPTER 5
PLANNING AND LAND STATUS

5 PLANNING AND LAND STATUS

5.1 Requirements

This chapter addresses the following planning and land status requirements of the Scoping Document:

- Include a description of planning context of the area where the project will be located.
- Describe planning and development status of any land or project relevant to the proposal.
- Describe land use of the proposed land and any land to be affected (including, but not limited to, zoning, lessee(s) or custodian of the land, the permissibility of the proposed use defined in the Territory Plan).
- Investigate the impact the proposal will have on surrounding uses and whether the proposal will limit existing or future uses for the surrounding businesses/residences.

5.2 Environmental conditions and values

5.2.1 Planning context

The MRF is located on Territory land which is under the planning and development jurisdiction of the ACT Government. Development is to be assessed in accordance with the requirements of the *Planning Act 2023* and the *Territory Plan 2023*.

In addition, the NCA has identified Special Requirements for this area in *DCP Number 171/09/000 Hume West Industrial Area* (Australian Government National Capital Authority, 2009). These are addressed below.

5.2.2 Site location and custodianship

The proposal is located on Block 12 Section 25 Hume which fronts Recycling Road and John Cory Road. The block is under the custodianship of TCCS and leased to ACT NoWaste. The land would be subleased as appropriate to Veolia as the future operator. Recycling Road and John Cory Road are unleased road reserves in the custodianship of TCCS Roads ACT.

5.2.3 Zoning

The site is zoned IZ1 General Industrial in the Territory Plan and the immediately surrounding area is also zoned IZ1. Non-Urban NUZ1 Broadacre areas are located further to the north and west and on the southern side of Mugga Lane as shown in Figure 5.1.

The general objectives for industrial development are outlined in Table 5.1 and the IZ1 General Industrial Zone objectives are provided in Table 5.2, along with how the proposal responds to these objectives.

Table 5.1: General Industrial Objectives

Objectives	Proposal response
1. The industrial zones are primarily for industrial developments but permit other development that complements and supports industrial uses and development.	Proposal is for an industrial development.

Objectives	Proposal response
2. Support the diversification and expansion of the ACT's industrial base and employment growth.	The proposal involves the development of a new MRF with value-adding processes. The proposal would divert up to 115,000 tonnes per year of recyclables from landfill. It would expand the industrial activities in the ACT and surrounding areas in NSW and contribute to employment growth. Indicative staffing for the facility is expected to be in the order of 24 direct employees (operations and maintenance, management and supervision), subject to detailed design.
3. Facilitate investment in a wide range of industrial and related activities, with efficient land utilisation and provision of infrastructure.	The proposal represents a substantial investment in a facility designed to divert waste from landfill as a key action to achieve resource recovery and emissions reduction targets in the ACT.
4. Development should be of a scale and nature that recognises and responds to the zone hierarchy.	Proposal is of a scale necessary to operate the facility and is appropriate for the higher-order IZ1 zone.
5. Promote development along major approach routes and major roads that meets appropriate standards of urban design.	While the proposal site does not directly front a major approach route, development would be subject to the requirements of the *NCA DCP Number 171/09/0001* as described below.
6. Encourage the design and construction of industrial and commercial buildings that are energy efficient, functional and flexible.	As well as meeting the functional requirements, the buildings and facility would be designed to include solar photovoltaic technology to support energy requirements and reduce reliance on the grid supply electricity. The design would consider incorporating features that maximise the use of natural light without contributing significantly to heat buildup within the buildings. Stormwater collected from building rooftops would be captured for storage in onsite rainwater tanks and would be available for reuse within the facility.
7. Promote industrial development that achieves high environmental standards of cleaner production, waste disposal, noise and air quality.	The MRF would be fully enclosed which would minimise noise and air quality pollution. To achieve cleaner production, glass separated in the processing building would undergo further processing onsite via washing, de-labelling, crushing and screening to produce clean, graded aggregate and/or other products suitable for beneficial uses. Separated plastic materials would be sorted by polymer type. Residual waste is aimed to be less than 3% which is considered best practice. This EIS includes assessments of noise and air quality to ensure that it meets relevant standards and appropriate mitigation measures are proposed.

Table 5.2: IZ1 objectives

Objectives	Proposal response
1. Provide convenient access for ACT and regional residents to industrial goods, services and employment opportunities	The proposal site is located within the HRRE, at the location of the previous MRF, with convenient access to major transport routes with the ACT and the surrounding region via the Monaro Highway and Mugga Lane.
2. Provide for transport-related businesses in locations accessible to major road, rail and air links	The proposal is not a transport related business.
3. Encourage the clustering of industrial activities according to the principles of industrial ecology	The facility would be co-located with other waste and recycling infrastructure within the HRRE which includes the proposed FOGO facility, mattress

Objectives	Proposal response
	recycling facility, and the Mugga Lane Waste Management Facility. Additionally, municipal depots such as the depot at 11 Alderson Place which house the waste collection trucks are located within the Hume Industrial area.
4. Provide for manufacturing, warehouse and transport land uses requiring large land areas accessible to main interstate road and rail connections.	The facility is not for manufacturing, warehouse or transport uses.
5. Protect the use of the land for predominantly industrial purposes that is not jeopardised by the uncontrolled development of higher rent commercial uses such as retailing and offices.	The proposed use is not for a commercial or higher order retail or office use. The facility has been co-located with other waste and recycling infrastructure within the HRRE.
6. Provide small-scale services to meet the needs of the local workforce.	The proposal does not include other small-scale services.

5.2.4 Use

The proposed use as defined in the Territory Plan is for a recycling facility which means:

> *the use of land for depositing, storing, separating, dismantling, salvaging, treating, renovating, or redistributing discarded materials and scrap goods for use as recycled materials, such as paper, glass, plastics, timber, garden and food waste, metals, manufacturing off-cuts, household goods and oils.*

A recycling facility is a permissible use in the IZ1 General Industrial zone.

Figure 5.1
Territory Plan Zones

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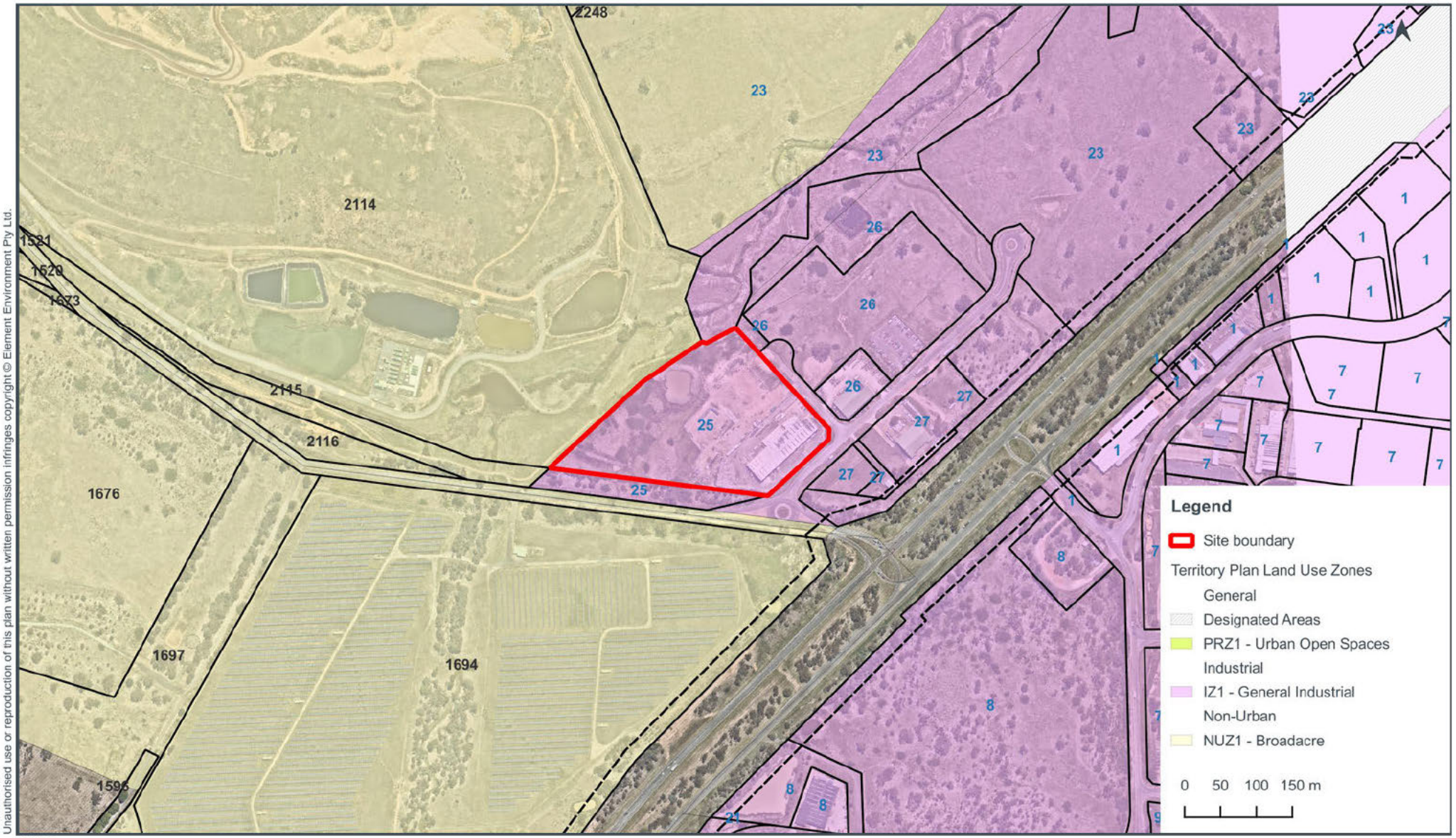

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ACTmapi

5.3 Overlays and special requirements

The proposal site is in an area subject to special requirements under the NCP as it is within the area subject to the *NCA DCP Number 171/09/0001* for Hume West Industrial Area. This applies to Part Section 23, Sections 25, 26 and 27 Hume, as shown in the DCP Drawing at Figure 5.2. Section 2.2 of the DCP states that the National Capital Authority's primary interest in the area is to ensure that an appropriate landscape character will be established on the Monaro Highway frontage, including extensive landscaping at the corner of the Highway and Mugga Lane. This will require effective landscaping both within the verge and on the sites of adjacent developments. Landscaping of roads and public spaces within the HRRE is also required to both reinforce the Highway landscaping and break up the visual expanse of the HRRE.

The DCP contains a number of objectives and requirements for development within the area subject to the DCP. The development application for the facility will be assessed against the requirements.

Table 5.3: DCP criteria

No.	Objective/Requirement	Proposal response
5	Planning and Urban Design 5.1 Development along the Monaro Highway is required to contribute to the architectural quality and amenity of the industrial estate. 5.2 Buildings shall be of a high standard in terms of building form, material and finishes. 5.3 Building envelopes will be designed to enhance the visual amenity of the estate, particularly through the provision of generous landscaped external spaces. 5.4 A consistency in architectural styles, colours and materials in required throughout the industrial estate.	The architectural concept design is for an industrial building which would be compatible with other developments in the area. Detailed design would refine the details of the building and landscaping.
6	Building Height 6.1 Building height should be appropriate for building function. To minimise visual impact of buildings on the highway, buildings will be limited to a maximum height of 30 metres (to the top of the roof line) above natural ground level and to a maximum height of 12 metres above natural ground level on blocks less than 5 hectares in area. 6.2 Minor building elements (such as lift overruns) extending above the roof line will only be permitted where a visual impact assessment demonstrates that these elements do not have an adverse impact on the surrounding character and landscape of the area.	The proposal site is over 5 hectares and the maximum building height does not apply.
7	Setbacks 7.1 Buildings should be located to reinforce the significance of the Monaro Highway, with a minimum setback of 10 metres from the property boundaries along the Monaro Highway. Building shall also be setback a minimum of 10 metres from the property boundaries along Mugga Lane.	The proposal site fronts Mugga Lane. Buildings have been setback 10 metres from the property boundary.
8	Site coverage The area to be covered by building on any block created within the estate is not to exceed 50 per cent of the total block area.	Site coverage based on the concept design is currently at approximately 30 per cent.
9	Materials/colours	

No.	Objective/Requirement	Proposal response
	9.1 External walls should be generally masonry or pre-coated metal-cladding of low reflectivity. The roof should be of pre-coated metal of low reflectivity. 9.2 Reflective window glass and coatings will not be permitted. Exposed air conditioning equipment will not be permitted unless screened to the satisfaction of the Territory. 9.3 All graphics and external colours are to be considered as an integral part of the appearance of the development, and should be sympathetic to the area's rural landscape setting.	Materials and colours would be determined at development application stage, but the design would be developed to meet these requirements.
10	Fences 10.1 Fences built along the external road frontage are to be set back behind landscape screens. A consistent standard of fencing of black wire mesh, with a minimum height of 1.8 metres, is to be provided along the Monaro Highway and Mugga Lane frontages.	The proposal site fronts Mugga Lane. Appropriate fencing would be selected in the development application stage.
11	Signs 11.1 Signs are to be in accordance with the Signs General Code of the Territory Plan. Signs are to address internal roads only. A single main entry sign, of high quality design, may be erected adjacent to the Mugga Lane entry to the site. No other signs will be permitted in road verges. Roof signs visible from Monaro Highway will not be permitted.	Any signage would be considered at the development application stage to address these and the Territory Plan requirements.
12	Storage, Service Areas and Car Parking 12.1 Storage and service areas are to be suitably screened an in particular are not to be visible from the Monaro Highway.	The proposal site would not be readily visible from Monaro Highway, and the concept design does not include any unscreened storage areas.
13	Access 13.1 The major access and estate entry is to be from Mugga Lane in the locations identified on *DCP Drawing No. 171/09/0001*. Vehicular access from the Monaro Highway is not permitted.	Site access would be from Recycling Road via John Cory Road.
14	Landscape 14.1 The *National Capital Plan* identifies the Monaro Highway corridor, which bisects the Hume Industrial Area, as a Designated Area. Development along this route should enhance the rural character and landscape of land adjoining the area before the road enters the urban area. Landscape of a high standard is to be designed and constructed as an integral part of the development, and is to conform with the principles shown on *Development Control Plan Drawing No. 171/09/0001*. A Landscape Master Plan is to be submitted to the Territory for approval as part of the Development Application documentation. 14.2 The objectives of the Landscape Master Plan are to: minimise the visual impacts of buildings, car parking, open activities and storage areas viewed from the Monaro Highway and Mugga Lane; retain existing trees wherever possible, in particular the yellow box and red gum communities and individual trees considered to have moderate to high conservation value;	A detailed Landscape Plan would be required to be submitted as part of the Development Application in accordance with these DCP requirements (as relevant to the site).

No.	Objective/Requirement	Proposal response
	ensure consistency of street planting and landscaping; encourage appropriate on-site landscaping; and revegetate the edges to Dog Trap Creek. 14.3 Landscaping on blocks fronting the Monaro Highway is to be carried out in accordance with an approved Landscape Master Plan. Existing trees, in particular the yellow box, red gum and other mature native trees are to be retained where possible. The areas between the buildings and the Monaro Highway and Mugga Lane are to be used generally for planting, as a part of an integrated on-site and off-site landscape screen. The minimum width of the combined on-site and off-site buffer is to be 25 metres. 14.4 Effective screen planting is required along the north eastern boundary, and along the Dog Trap Creek corridor, consistent with principles shown on *DCP Drawing No. 171/08/0009*. 14.5 Existing screen planting in the Monaro Highway and Mugga Lane verges is to be supplemented by additional planting, both within the estate and in the road verges, in accordance with *DCP Drawing No. 171/09/0001* and an approved Landscape Master Plan. The purpose of the landscaping is to provide an effective screen along external road frontages. 14.6 A double row of eucalyptus trees is to be planted along the spine road in accordance with *DCP Drawing No. 171/09/0001*. 14.7 Comprehensive implementation of the landscape screening and spine road plantings, as per the master plan, must be completed in conjunction with individual block developments.	

The concept design for the EIS demonstrates that the proposal would be able to appropriately respond to these requirements, with further detail provided and addressed as part of the development application. The proposal would be able to be developed in accordance with NCA's special requirements and would therefore be consistent with the NCP.

Figure 5.2
DCP Drawing No. 171/09/0001

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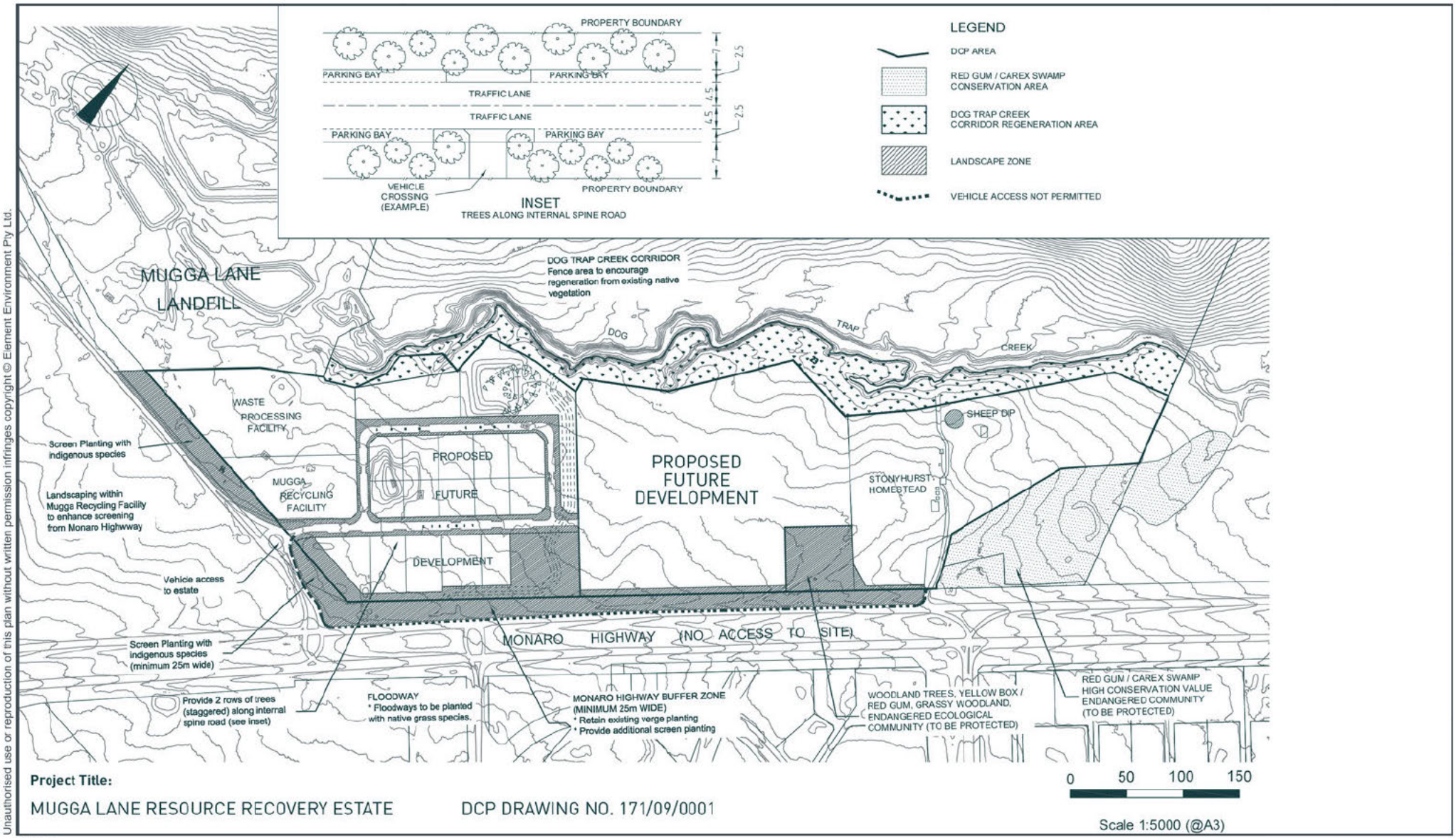

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Source
National Capital Authority

5.3.1 Surrounding uses and development

The proposal site is within the western part of the Hume Industrial area which is all zoned IZ1 General Industry. Table 5.3 identifies the surrounding blocks and the current uses and developments.

Table 5.4: Surrounding uses

Block and Section	Use	Tenure	Development
Block 5 Section 26 Majura		Custodianship of TCCS ACT NoWaste	Currently undeveloped Proposed FOGO Facility currently in planning phase.
Block 3 Section 26 Majura	Municipal depot	Private Lease	ACT Skip Hire
Block 7 Section 26 Majura		Unleased Custodianship of TCCS ACT NoWaste	Currently undeveloped
Block 4 Section 27 Majura	Recycling Facility	Private Lease	Mattress recycling facility
Block 7 Section 27 Majura	NA	Unleased Custodianship of TCCS ACT NoWaste	Currently undeveloped
Block 28 Section 23 Majura	NA	Leased to Canberra Data Centres Proprietary Limited	Currently undeveloped
Block 29 Section 23	NA	Unleased Custodianship of EPSDD Parks and Conservation	Currently undeveloped
Block 21 Section 23 Majura	NA	Unleased Custodianship of TCCS City Presentation	Currently undeveloped
Block 2114 Jerrabomberra	Landfill site, recycling facility	Leased to TCCS ACT NoWaste	Developed for the Mugga Lane Resource management Centre
Block 1694 Jerrabomberra	Mugga Lane Solar Park	Leased	Developed as a Solar farm

Block 5 Section 26 to the east is the site of the proposed FOGO facility which is currently in the planning phase. The FOGO facility is expected to compost up to 70,000 tonnes per year from the ACT and surrounding NSW councils.

Other uses in the western part of the Hume Industrial area are private leases for ACT Skip Hire and a mattress recycling facility. Land to the north-east is leased to Canberra Data Centres but is currently undeveloped.

Further north-west is the Mugga Lane Resource Management Centre and Landfill. The Mugga Lane Solar Park is located approximately 220 metres to the south.

The eastern side of the Hume Industrial area, across the Monaro Highway, contains a variety of industrial uses and services and include a storage warehouse for the National Library of Australia, scaffolding hire company, automotive businesses, construction businesses, a petrol station, transport businesses and the like.

The closest residential development is located in Tralee, NSW approximately 1.2 kilometres to the south-east. Residential development in the ACT is approximately 1.8 kilometres to the south-west in Macarthur.

5.4 Impacts

A desktop review of the existing and future land uses, statutory requirements, planning policy and management plans was undertaken to consider the potential planning and land use impacts associated with the construction and operation of the proposal.

The key objective of the proposal is to provide a new and upgraded facility to divert recyclable material from landfill as a key action to achieve both resource recovery and emissions reduction targets in the ACT. The upgraded facility would also offer new offtake streams for crushed and washed glass to be directly saleable to the market.

The potential risk identified from a land use perspective is the sterilisation of surrounding land uses, that is, the impact the proposal would have on surrounding uses and whether it would limit existing or future uses for the surrounding businesses or residences.

As described in the sections above, the proposal site and facility has been co-located with other waste and recycling infrastructure within the HRRE which is zoned IZ1 General Industrial. The use for a recycling facility or recyclable materials collection is a permissible use in the zone, and the proposal is considered to be consistent with the objectives of this zone.

This area also includes other related uses such as the mattress recycling facility and the Mugga Lane Resource Management Centre and Landfill which potentially contribute to cumulative impacts. On this basis the proposed use is appropriately located with other similar and related uses.

This EIS assesses the range of potential issues and impacts that might affect other uses in the surrounding area from construction and operation, and assessments have been undertaken to address key impacts. The proposal would be located within an industrial area which is separated by over one kilometre from sensitive uses.

The hazard assessment (Chapter 18) has identified and rated potential hazards and considered likely off-site impacts. The assessment concludes that the potential hazards can be appropriately managed to an appropriate level of risk.

The noise and vibration impact assessment (see Chapter 17) found that in general, the noise levels generated at the property boundary for the MRF during the day would be compliant with the relevant noise standard limit of 65 dBA in the *Noise Environmental Protection Policy* (EPA, 2010).

The air quality assessment (see Chapter 14) included consideration of dust and particulates due to construction and the potential for operational impacts from odour and particulates. The assessment confirmed that proposed activities would be acceptable from an air quality perspective and separation distance guidelines show that receptors are outside the recommended distance where adverse impacts may occur.

It is considered that the facility would be compatible with the surrounding uses and should not result in impacts that would limit current or future uses in the surrounding area. Therefore, from a land use context the proposal is considered to respond to the planning and land use objectives and requirements within the Territory Plan.

5.5 Mitigation measures

No mitigation measures are considered to be required given the low risk of the proposal.

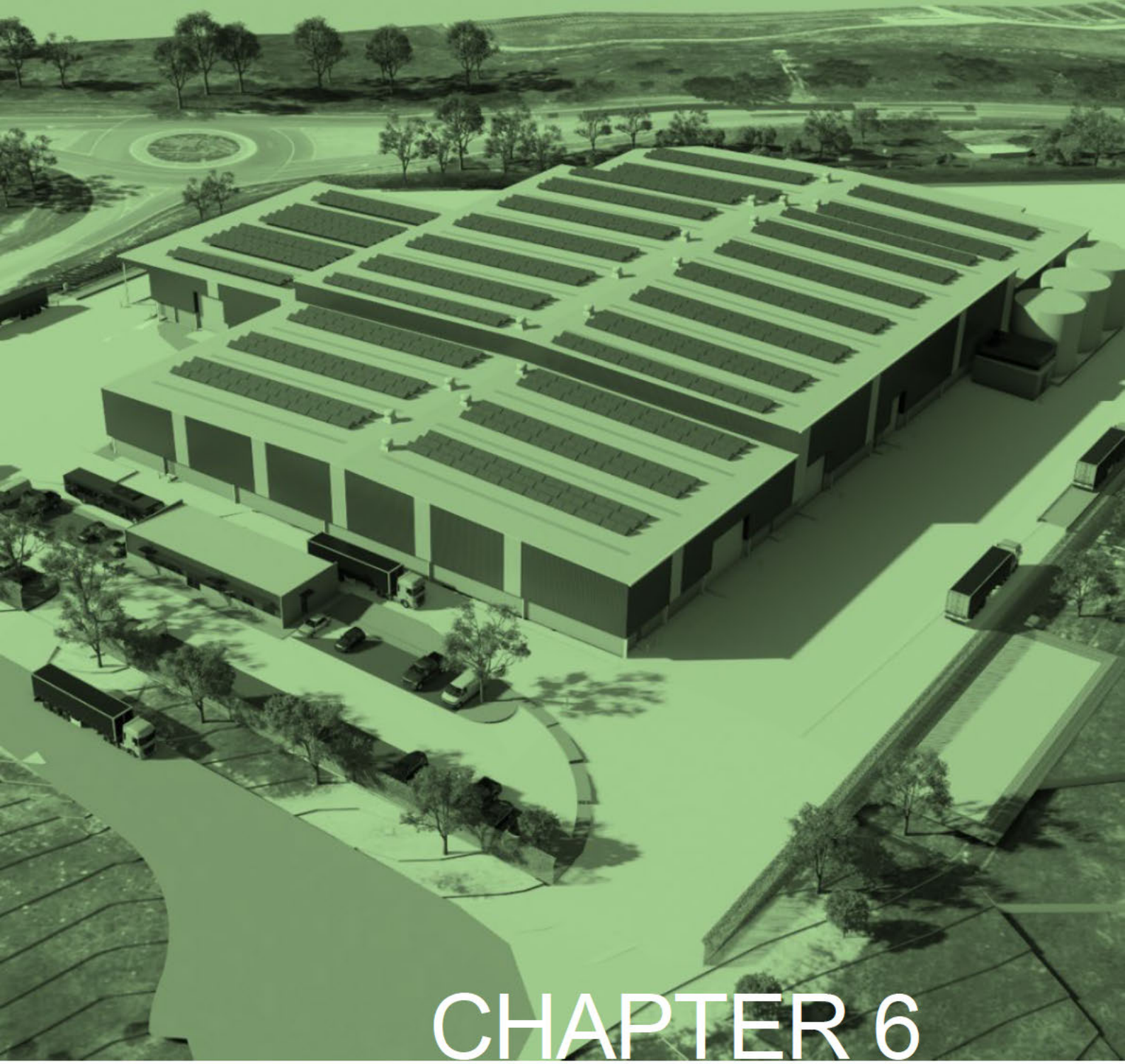
However, it is the intention of Veolia and ACT NoWaste to implement ongoing consultation with surrounding businesses and stakeholders to keep them informed during the planning and construction phase.

5.6 Residual impact

An assessment of the residual planning and land status risk associated with the proposal has been considered in Table 5.4.

Table 5.5: Planning and land status – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
None identified.				
Additional risks				
Sterilisation of surrounding land uses.		Remote	Minimal	Negligible



CHAPTER 6

TRAFFIC AND TRANSPORT

6 TRAFFIC AND TRANSPORT

6.1 Requirements

This chapter addresses the following traffic and transport requirements of the Scoping Document:

- Investigate the traffic impacts of the construction and operation of the facility on Mugga Lane and the Monaro Highway including consideration of whether continued safe and efficient movement of vehicles accessing the facility, relating to other activities such as the Mugga Landfill or the materials recycling facility, is not impeded by road network arrangements.
- Undertake a *Transport Impact Assessment* (TIA) in accordance with Transport Canberra and City Services (TCCS) *Transport Impact Assessment Guidelines* which is available at: https://www.cityservices.act.gov.au/__data/assets/pdf_file/0009/991989/TCCSTransport-Impact-Assessment-Guidelines.pdf.
- The TIA must include intersection analysis of the nearby roads.
- The TIA should also describe short-term parking arrangements for the existing facility whilst the new materials recovery facility is being constructed and long-term parking arrangements once the new facility is operational.
- Describe how hazardous materials will be transported to and from the site.

The transport of potentially hazardous materials is addressed in Chapter 18.

6.2 Environmental conditions and values

6.2.1 Road hierarchy

The road classifications used in the ACT are as follows:

- Arterial Roads: predominantly serve longer distance travel within a district and through traffic from one district to another and form the principal avenues of communication for metropolitan scale traffic movements.
- Major Collector Roads: collect and distribute traffic within residential, industrial, and commercial areas and form the link between the primary network and the roads within local areas and should carry only traffic originating or terminating in the area.
- Minor Collector Roads: collect and distribute traffic from access streets, linking to the major collector roads within the neighbourhood, and provide secondary connections direct to the external arterial road network.
- Local Access Streets: provide access but do not accommodate traffic generated by sites in other streets, excluding rear lanes.

A map of the road classifications in proximity to the proposal site is shown in Figure 6.1. Primary access to the proposal site is via Recycling Road, John Cory Road, Mugga Lane, and Monaro Highway.

Figure 6.1
Classification of Key Roads

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Active Travel Infrastructure Practitioner's Tool; modified by Element

6.3 Investigations

A Traffic and Transport Impact Assessment (TTIA) was undertaken to assess the potential traffic impacts during the construction and operation of the proposal. The TTIA included:

- Review of the existing road and transport conditions, adjacent developments, traffic volumes and crash data.
- Assessment of current traffic performance using the SIDRA 9 Intersection modelling software.
- Review of the construction/operation of the proposal and its access arrangements.
- Review of the proposed new MRF operations.
- Assessment of the potential impacts of the proposed construction/operation and the performance of key intersections during construction and operation using the SIDRA 9 intersection modelling software.
- Assessment of the potential impacts of the construction/operation to public transport movement, active transport facilities, parking, property access, and emergency vehicle access.
- Formulation of suitable mitigation measures to minimise the impacts.

This chapter provides a summary of the assessment findings. The full TTIA is provided in Appendix F.

6.3.1 Existing road characteristics

Monaro Highway

The Monaro Highway serves as the primary connection between Canberra Central and the ACT's eastern suburbs and provides access to industrial areas surrounding the proposal site. The ACT Government identifies the Monaro Highway as being part of key freight routes (PBS Level 1) and B-double networks. The section of Monaro Highway located in Hume also forms part of ACT's Tourist Drive 5. The speed limit is 80 kilometres per hour.

Mugga Lane

Mugga Lane is a rural road that provides an alternate link from the Central ACT to the districts of Jerrabomberra and Tuggeranong. Mugga Lane runs approximately 7.4 kilometres across Jerrabomberra, beginning at the intersection with Hindmarsh Drive in the north and terminating at the intersection with Monaro Highway in the south. The section of Mugga Lane in proximity to the proposal site serves as the southern boundary of Jerrabomberra and the suburb of Hume. The ACT Government identifies Mugga Lane as being part of key freight routes (PBS Level 1) and B-double networks. The speed limit is 80 kilometres per hour.

John Cory Road

John Cory Road is a local access (cul-de-sac) street to the northwest of Monaro Highway. It has a length of approximately 500 metres, and its southern end intersects Mugga Lane at a roundabout. John Cory Road provides access to the light industrial areas to the northwest of Monaro Highway. The speed limit is 50 kilometres per hour.

Recycling Road

Recycling Road is also a local access street (cul-de-sac) off John Cory Rd. It has a length of approximately 100 metres. Recycling Road provides access to the proposal site. The speed limit is 50 kilometres per hour.

6.3.2 Public and active transport

The closest bus routes to the site are Route 182 peak service and route 902 AMC shuttle, but they do not have any stops within 800 metres of the proposal site and are not considered as accessible for the MRF.

There is an on-road cycling lane on the Monaro Highway shoulder delineated by lane markings however no pedestrian facilities are located along the Highway.

Mugga Lane and John Cory Road have no pedestrian facilities such as footpaths or crossings or cycling paths.

6.3.3 Freight routes

The ACT Government identifies the Monaro Highway and Mugga Lane as being part of key freight routes (PBS Level 1) and B-double networks.

6.3.4 Crash review

Road crashes and their locations within ACT are recorded based on the reports of the police and the public through the Australian Federal Police Crash Report Form. Since January 2016, 445 crashes have been reported within a two-kilometre radius of the site, as summarised in Table 6.1. The five-year data indicates that approximately nine per cent of the reported crashes resulted in injuries and fatalities.

Table 6.1 Reported crashes within a two kilometre radius of the proposal site

Year[a]	Total number of crashes reported	of which resulted in 'Fatality'	of which resulted in 'Injury'	of which resulted in 'Property Damage Only'
2016	77	-	4	73
2017	92	-	8	84
2018	87	1	10	76
2019	79	-	9	70
2020	72	-	6	66
2021[b]	38	1	2	35
Total	445	2	39	404

a From 01st January to 31st December of each year, except for 2021
b As of end of July 2021

6.3.5 Road upgrades

The ACT Government has upgrading works to the Monaro Highway to reduce travel times and improve safety (see Figure 6.2), which includes works in proximity to the proposal site. The proposed upgrades that would impact how vehicles access/egress the MRF include:

- Right turns into and out of Mugga Lane from Monaro Highway would be banned.

- A flyover would be provided on Monaro Highway over Isabella Drive.
- A flyover would be constructed over the Monaro Highway connecting Mugga Lane and Tralee Street.
- A grade separated left turn lane would be provided on Mugga Lane that would connect to the flyover and merge onto northbound traffic lanes on the Monaro Highway.
- Tralee Street would be extended to the southeast, where it would merge onto southbound traffic lanes on the Monaro Highway.
- Sheppard Street (to the north of Tralee Street) of Tralee Street would be left in/left out only.

Under this arrangement:

- Left turns into and out of Mugga Lane from the Monaro Highway would be maintained.
- Vehicles seeking to turn right from Mugga Lane onto Monaro Highway would:
  - Undertake a left turn on the grade separated left turn lane from Mugga Lane.
  - Turn right onto the Tralee Street flyover.
  - Travel southbound on the Tralee Street extension and merge onto the Monaro Highway.
- Vehicles seeking to turn right from Monaro Highway onto Mugga Lane would:
  - Turn left onto Sheppard Street from the Monaro Highway.
  - Turn right onto Tralee Street.
  - Turn right onto the Tralee Street flyover.
  - Use the flyover to access Mugga Lane.

Figure 6.2
Proposed Monaro Highway Intersection Upgrade

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Source
ACT Government, City Services, cityservices.act.gov.au/

6.3.6 Traffic performance

Traffic volumes

Existing traffic volumes were determined based on peak hour intersection traffic counts conducted on 9 November 2022 at four locations. The data indicates that the weekday morning traffic peak hour occurs between 8 am and 9 am and afternoon peak hour between 4.15 pm and 5.15 pm. It is noted that the MRF was operational during the traffic surveys prior to its damage in a fire in December 2022.

A summary of the midblock traffic volume counts is provided in Table 6.2.

Table 6.2: Midblock traffic volume count summary (2022)

Road name	Direction	AM peak (vph)			PM peak (vph)		
		LV	HV	Total	LV	HV	Total
Monaro Highway (north of intersection with Mugga Lane)	Northbound	3,257	97	3,354	1,362	101	1,463
	Southbound	1,345	136	1,481	3,303	74	3,377
Monaro Highway (south of intersection with Mugga Lane)	Northbound	2,980	71	3,051	1,042	55	1,097
	Southbound	1,103	100	1,203	2,884	60	2,944
Mugga Lane (west of roundabout)	Eastbound	582	50	632	532	51	583
	Westbound	544	60	604	638	18	656
Mugga Lane (east of roundabout)	Eastbound	584	48	632	540	54	594
	Westbound	549	58	607	639	22	661

Note: LV = light vehicles HV = heavy vehicles vph = vehicles per hour

Mid-block analysis

A midblock assessment is an approach for assessing the road network operations between intersections based on hourly traffic volumes along a road and lane capacity limits. The capacity of the road network to accommodate additional traffic generated by the construction and operation of the proposal was determined based on mid-block volume to capacity ratio (VCR) of the impacted roads before (i.e. existing/baseline conditions) and after the construction and operation of the proposal (see Table 6.3).

This analysis indicates that presently Mugga Lane is operating within its mid-block capacity during peak periods of road network activity while the Monaro Highway is operating with volumes that exceed its capacity during peak periods of road network activity.

Table 6.3: Existing mid-block volume to capacity ratio (VCR) - key roads (2022)

Road name	Direction	Number of lanes	Capacity per lane	Existing traffic (2022) (pcu)		VCR (2022)	
				AM peak	PM peak	AM peak	PM peak
Monaro Highway (north of intersection with Mugga Lane)	Northbound	3	1,200	3,451	1,564	0.959	0.434
	Southbound	3	1,200	1,617	3,451	0.449	0.959
Monaro Highway (south of intersection with Mugga Lane)	Northbound	2	1,200	3,122	1,152	1.301	0.480
	Southbound	2	1,200	1,303	3,004	0.543	1.252
Mugga Lane	Eastbound	1	900	682	634	0.758	0.704
	Westbound	1	900	664	674	0.738	0.749

Road name	Direction	Number of lanes	Capacity per lane	Existing traffic (2022) (pcu)		VCR (2022)	
				AM peak	PM peak	AM peak	PM peak
(west of roundabout)							
Mugga Lane (east of roundabout)	Eastbound	1	900	680	648	0.756	0.720
	Westbound	1	900	665	683	0.739	0.759

Intersection performance

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network.

The *TCCS Draft Guidelines* for SIDRA Analysis indicate Level of Service (LoS) better than "E" as the acceptable level of service. The LoS criteria is provided in Table 6.4.

Table 6.4: LoS criteria for intersections

LoS	Average delay per vehicle (seconds/veh)	Traffic signals, roundabouts
A	<14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity, at signals, incidents will cause excessive delays, roundabouts require other control modes
F	>70	Over capacity, unstable operation

The SIDRA model outputs for the intersections, based on their current road geometry, traffic volumes and signal phasing, are presented in Table 6.5.

Table 6.5: Existing operating conditions - base case (2022)

ID	Intersection name	AM peak (08:00 - 09:00)				PM peak (16:15 – 17:15)			
		DoS	Ave Delay (s)	LoS	95th % Queue (m)	DoS	Ave Delay (s)	LoS	95th % Queue (m)
1	Mugga Lane / John Cory Road	0.125	11	B	2	0.201	11	B	3
2	Mugga Lane / Monaro Highway NB	1.109	125	F	832	0.787	21	C	73
3	Mugga Lane / Monaro Highway SB	0.195	7	A	95	0.392	26	D	5

Notes:
The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
Average delay is given in seconds per vehicle.

The SIDRA analysis of existing intersection performance indicates that:

- The roundabout joining Mugga Lane and John Cory Road, which is the primary access to the proposal site, operates at LoS B with minimal delays and queueing for both AM and PM peak periods.
- During the AM peak, the signalised intersection between Mugga Lane and the northbound carriageway of the Monaro Highway operates over capacity at LoS F. Better operations are observed during the PM peak, with an LoS of C.

6.4 Impacts

6.4.1 Direct impacts

Construction

Traffic generation

Construction of the proposal is expected to generate up to 80 vehicle trips in total during both the AM and PM peak. As shown in Table 6.6, this would comprise 60 light vehicle trips as well as 10 inbound and 10 outbound heavy vehicle movements.

Table 6.6: Construction traffic

Vehicle type	AM peak (vph)			PM peak (vph)		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Heavy vehicles	10	10	20	10	10	20
Light vehicles	60	-	60	-	60	60
Total	70	10	80	70	10	80

Note: vph = vehicles per hour

For the purpose of the assessment, it was assumed that the proposal and the proposed FOGO facility would be constructed at the same time (with construction of both facilities finalised in 2027) and that the FOGO facility would generate the same amount of construction vehicle activity as the proposal.

Intersection performance

The traffic impact of construction of the proposal (and proposed FOGO facility) was determined by comparing the future performance of key intersections "with" and "without" the proposal activities. Summaries of the SIDRA results with and without the proposal are provided in Table 6.7 and Table 6.8 respectively.

Table 6.7: Future intersection performance – 2027 without construction (background growth only)

ID	Intersection name	AM peak (08:00 - 09:00)				PM peak (16:15 – 17:15)			
		DoS	Ave Delay (s)	LoS	95th % Queue (m)	DoS	Ave Delay (s)	LoS	95th % Queue (m)
1	Mugga Lane / John Cory Road	0.128	11	B	2	0.207	11	B	3
2	Mugga Lane / Monaro Highway NB	1.145	147	F	929	0.808	22	C	76

ID	Intersection name	AM peak (08:00 - 09:00)				PM peak (16:15 – 17:15)			
		DoS	Ave Delay (s)	LoS	95th % Queue (m)	DoS	Ave Delay (s)	LoS	95th % Queue (m)
3	Mugga Lane / Monaro Highway SB	0.200	7	A	105	0.417	31	D	5

Notes:
The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
Average delay is given in seconds per vehicle.

Table 6.8: Future intersection performance – 2027 with construction

ID	Intersection name	AM peak (08:00 - 09:00)				PM peak (16:15 – 17:15)			
		DoS	Ave Delay (s)	LoS	95th % Queue (m)	DoS	Ave Delay (s)	LoS	95th % Queue (m)
1	Mugga Lane / John Cory Road	0.142	11	B	2	0.154	11	B	2
2	Mugga Lane / Monaro Highway NB	1.180	197	F	918	0.867	26	C	74
3	Mugga Lane / Monaro Highway SB	0.337	9	A	183	0.781	75	F	52

Notes:
The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
Average delay is given in seconds per vehicle.

The results of the SIDRA modelling in Table 6.7 and Table 6.8 indicate:

- With construction activities associated with both facilities, the roundabout of Mugga Lane and John Cory Road (proposal site access) is expected to continue operating at LoS B with minimal delays.
- Intersections with the Monaro Highway are expected to operate between LoS A and F in the AM peak, with high delays and long queues in the northbound lane. In the PM peak, both northbound and southbound lanes experience poor levels of service from LoS D to F, with delays ranging from 37 to 75 seconds.
- The LoS for the key intersections are generally expected to remain the same with or without the construction activities associated with the proposal, except for the Monaro Highway at Mugga Lane (southbound) which would experience an LoS increase from D to F during the PM peak.

It should be noted that access routes to and from Monaro Highway are considered to already be operating over capacity during the AM and PM peak periods. This means that the performance of these roads could decrease significantly even with a minimal increase in traffic, as there is no longer enough capacity to accommodate demand.

Traffic generated by the construction activities are not expected to have a significant impact on the operation of the road network, which is already operating near or over capacity. Additional heavy vehicles generated by the construction activities are not expected to change the composition of the existing traffic already on the road network.

Parking

Parking for construction vehicles can be accommodated on-site. As such, vehicle parking demand generated by the proposal during construction would have no impact on parking spaces or roads surrounding the proposal site.

Road Safety

The construction of the proposal is expected to generate minimal increase in vehicle traffic when compared to the existing traffic already in the road network. Additional traffic generated by the proposal is not expected to significantly change the vehicle composition in the road network and is not anticipated to cause changes to road safety risks.

Notwithstanding this, a Construction Traffic Management Plan (CTMP) would be prepared to maintain road safety and mitigate any potential impacts of the traffic generated by the proposal.

Operation

Traffic generation

Based on an annual capacity of 115,000 tonnes per year, the proposal is expected to generate 131 inbound and 131 outbound heavy vehicle movement per day, approximately 65 more (in either direction), compared to the existing situation. Based on the MRF operating for 19 hours per day, on average, this equates to 3 additional inbound and outbound heavy vehicle movements per hour.

It is expected that the proposal would also employ up to an additional 24 staff, who would typically access the proposal site in the morning and depart in the afternoon.

For the purpose of the assessment it was conservatively assumed that the proposal would generate up to 31 vehicle trips (heavy and light) in the AM and PM peak hours, as shown in Table 6.9.

Table 6.9: Operation traffic

Vehicle type	AM peak (vph)		PM peak (vph)	
	Inbound	Outbound	Inbound	Outbound
Heavy vehicle	8	8	8	8
Light vehicle	15	-	-	15

Note: vph = vehicles per hour

It was assumed that the proposed FOGO facility would be operating concurrently and would generate up to 40 vehicle trips in the peak periods (i.e. in each of the AM and PM peaks). This would comprise 10 inbound and 10 outbound heavy vehicle movements and 20 light vehicle trips.

Intersection performance

The traffic impact of the operation of the proposal and proposed FOGO facility was determined by comparing the future performance of key intersections "with" and "without" the proposal activities.

A summary of the results of the SIDRA modelling for the ten-year horizon (2033) with and without the operation of the proposal (and proposed FOGO facility) are provided in Table 6.10 and Table 6.11 respectively.

Table 6.10: Future intersection performance – 2033 without operation (background growth only)

ID	Intersection name	AM peak (08:00 - 09:00)				PM peak (16:15 – 17:15)			
		DoS	Ave Delay (s)	LoS	95th % Queue (m)	DoS	Ave Delay (s)	LoS	95th % Queue (m)
1	Mugga Lane / John Cory Road	0.142	11	B	2	0.229	11	B	3
2	Mugga Lane / Monaro Highway NB	1.327	295	F	1,463	0.883	28	C	98
3	Mugga Lane / Monaro Highway SB	0.223	7	A	123	0.543	480	F	7

Notes:
The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
Average delay is given in seconds per vehicle.

Table 6.11: Future intersection performance – 2033 with the operation (proposal and proposed FOGO facility)

ID	Intersection name	AM peak (08:00 - 09:00)				PM peak (16:15 – 17:15)			
		DoS	Ave Delay (s)	LoS	95th % Queue (m)	DoS	Ave Delay (s)	LoS	95th % Queue (m)
1	Mugga Lane / John Cory Road	0.142	11	B	2	0.229	11	B	3
2	Mugga Lane / Monaro Highway NB	1.327	295	F	1,463	0.883	28	C	98
3	Mugga Lane / Monaro Highway SB	0.223	7	A	123	0.543	480	F	7

Notes:
The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
Average delay is given in seconds per vehicle.

The SIDRA results indicate that:

- With the operation of the proposal and FOGO facility, the roundabout joining Mugga Lane and John Cory Road (proposal site access) is expected to continue operating at LoS B with minimal delays.
- The LoS of key intersections are expected to remain the same with or without the operation of the facilities.

Even without the operation of the proposal and proposed FOGO facility, the Monaro Highway at Mugga Lane is expected to be already operating over capacity during the AM and PM peak periods. This means that the performance of these roads could decrease significantly even with minimal increase in traffic as there is no longer enough capacity to accommodate demand.

Capacity upgrades would be necessary to allow the intersections to operate at acceptable levels of service.

In particular, the road upgrades described in Chapter 6.3.3 would be required to support an acceptable LoS at the intersection of the Monaro Highway and Mugga Lane. The Monaro Highway Upgrade program has undertaken traffic modelling that identified that the proposed upgrades to the Monaro Highway at Mugga Lane would support a good LoS in the 2031 and 2041 horizon years.

The planned Monaro Highway upgrades will improve the existing traffic peaks and improve the level of service. These works will mitigate in the longer term the traffic conditions in this area. The anticipated traffic impacts from the proposal are considered minor and would be unlikely to trigger upgrades in isolation. The results of the SIDRA reflect the underlying traffic condition and the poor existing capacity.

Parking

Parking for all vehicles associated with operation of the proposal can be accommodated on-site. As such, vehicle parking demand generated by the proposal during operation would have no impact on parking spaces or roads surrounding the proposal site.

Road safety

The proposed operation of the proposal is expected to generate minimal increase in vehicle traffic when compared to the existing traffic already in the road network. Additional traffic generated by operation of the proposal is not expected to significantly change the vehicle composition in the road network and is not anticipated to cause changes to road safety risks.

6.4.2 Indirect impacts

Public and active transport

The construction and operation of the proposal is not expected to impact public or active transport routes given there are no major stops or facilities located near the proposal site access.

Emergency vehicle access

Emergency vehicle access would be maintained throughout construction and operation of the proposal.

6.5 Mitigation measures

Table 6.12 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to traffic and transport.

Table 6.12: Traffic and transport impact mitigation measures.

Potential impact	ID	Mitigation measure	Timing
Construction traffic management plan (CTMP)	T01	A CTMP would be developed prior to construction. This would include, at a minimum, the following management measures: ▪ Preparation of a Traffic Guidance Scheme, detailing adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised.	Prior to construction and construction

Potential impact	ID	Mitigation measure	Timing
		▪ Maintain accessibility for pedestrians and cyclists. ▪ Indicate routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses. ▪ Implement measures to manage traffic flows around the area affected by the construction of the proposal, including, as required, regulatory and direction signposting, line marking, and variable message signs and all other traffic control devices necessary for the implementation of the construction traffic management sub-plan. ▪ Undertake consultation with the relevant road authorities during preparation of the sub-plan. Ensure the performance of the proposal traffic arrangements is monitored during construction. ▪ Ensure trucks used for the delivery for the developments on John Cory Road are unimpeded. ▪ Monitor the roads leading to and from the proposal site and take necessary steps to rectify any road deposits caused by site vehicles, to maintain the safety of road users. ▪ Where possible, offset the construction vehicle activity from peak periods of road network activity. ▪ Induct employees and contractors to raise awareness and understanding of traffic and transport mitigation measures to be implemented during construction via the CEMP	
Impacts to site access and parking	T02	Construction management would be controlled by the site supervisor to ensure the efficient delivery of equipment and construction materials, and to minimise the number of trips that would need to be taken for all vehicle types.	Construction
	T03	All vehicles would comply with road traffic rules, particularly for any local traffic rules.	Construction and operation
	T04	All parking would be contained within the proposal site premises. Under no circumstance would personnel, company vehicles or heavy vehicles be allowed to use any public road for long-term parking, including leaving parked or unattended vehicles.	Construction and operation
	T05	Carpooling opportunities for personnel living in close proximity to one another would be explored where feasible. Opportunities for coach services to shuttle workers from the CBD or nearby public transport stations to the site shall also be explored.	Construction and Operation
Safety	T06	All staff and subcontractors engaged on-site would be required to undergo site induction. The induction would outline the requirements of the CTMP, including access routes, environmental and occupational health and safety responsibilities, emergency procedures, potential carpooling/shuttle service opportunities, and vehicle height and mass restrictions, among others. Additionally, the Site Manager would discuss CTMP requirements regularly as a part of regular “toolbox talks.”	Construction
	T07	Separation of internal haulage routes for heavy vehicle movements with car parking via separate access.	Construction
	T08	Separate entrances and exits for vehicles and pedestrians would be provided. Pedestrians on-site	Construction

Potential impact	ID	Mitigation measure	Timing
		would be directed to utilise clearly-defined designated pedestrian paths.	
	T09	Access for pedestrians from the car park is separate to the access and internal routes for heavy vehicles.	Construction
	T10	Access for emergency vehicles would be maintained at the proposal site during the construction works, in accordance with emergency vehicle requirements. The emergency services, including fire, ambulance, and police, would be advised of all planned changes to traffic arrangements prior to the commencement of works.	Construction
Heavy vehicle access	T11	Truck drivers would be directed to follow the predetermined haulage routes. Additionally, all drivers would be required to observe posted speed limits on adjoining road networks to comply with Australian road rules. Drivers would be required to adjust speeds to suit the road environment and weather conditions appropriately to ensure the safe movement of the vehicles based on the individual vehicle configurations.	Construction and operation
	T12	Any oversized or overweight load would be transported in accordance with the requirements of the relevant road authority.	Construction and operation

6.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual traffic and transport risks associated with the proposal has been considered in Table 6.13.

Table 6.13: Traffic and transport – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Increased heavy vehicle traffic with potential for congestion and lane closures or traffic control systems.	Medium	Unlikely	Minor	Very Low
Changes in existing traffic access such as increased heavy vehicle traffic associated with receiving and distributing resources.	Medium	Unlikely	Minimal	Negligible

CHAPTER 7
UTILITIES

7 UTILITIES

7.1 Requirements

This chapter addresses the following utility requirements of the Scoping Document:

- Describe current utilities on and surrounding the site.
- Provide details of new connections and any proposed relocation.
- Provide details of any proposed discharge of liquid trade waste required.
- Information must be provided regarding utility works that are required as part of the proposal and mitigation measures proposed to avoid contamination.

7.2 Environmental conditions and values

DA202242289 for *"Demolition of the existing building, pavements, structures, including disconnection of services, removal of hazardous materials, earthworks to reinstate site to match existing ground level, reinstate disturbed verge areas and associated site works"* was approved on 24 April 2024, subject to conditions. The DA approval included conditions to comply with the requirements of the relevant utility service provider in regards to disconnection of each utility service.

Gas

There are Before-You-Dig-Australia (BYDA) records that indicate that underground assets/pipes are present in the vicinity of and/or surroundings of the proposal site.

A secondary gas main is "in use" and connects to a service near Monaro Highway. It is metered and connects to the proposal site on the southern end.

This service will be disconnected during demolition of the existing building and the new MRF will not be connected to gas services.

Electricity

There is electrical connection to the proposal site.

An overhead low voltage (L V) electric line with transmission poles runs along Recycling Road to the east of the proposal site. This is connected via an overhead service line to a service point.

A kiosk is located in the south-eastern corner of the proposal site and is connected to an underground LV electric line (> 50 millimetres), underground service line (< 50 millimetres) and two underground high voltage (HV) electric lines. All are recorded as being in service.

A conduit is located along proposal site boundary and John Cory Road which connects to John Cory Road and extends northwards and southwards.

Water supply

A reticulation main is connected to the proposal site in the same position as the sewer main connection. The main extends southwards down Recycling Road and follows John Cory Road to the west. It connects to the Mugga Lane distribution main.

Sewer

A sewer reticulation main extends northwards along Recycling Road before extending to the east near the proposed FOGO facility site. It is connected to a point in the southern portion of the proposal site and an additional point in the northern portion of the site.

Telecommunications

A Telstra service in a shared utility trench and an above ground pillar or cabinet are located on the proposal site. An aerial cable also extends from the north, from Dog Trap Creek, into the proposal site.

7.3 Investigations

A Before-You-Dig-Australia (BYDA) search was undertaken as part of the PSI, as outlined in Appendix H, to identify existing utilities on and surrounding the proposal site. A suitably qualified services locator also conducted a site walkover on 3 July 2023.

The demolition DA (202342289) for the existing MRF included a plan for decommissioning of services. The approval dated 24 April 2024 included conditions to be implemented as part of the demolition process.

Chapter 11 and Appendix K provide relevant details on stormwater collection and treatment as well as wastewater. The removal or relocation of utilities, need for discharge of liquid trade waste and stormwater treatment will be subject to detailed design.

7.4 Impacts

7.4.1 Direct impacts

Construction

Temporary power, water supply, sewer and telecommunications connections for site sheds and associated amenities would be required during construction.

There is potential for the proposal to damage existing infrastructure not identified in the BYDA search or other unidentified utilities. However, services would be located by a suitably qualified person prior to construction works beginning to verify previous investigations and minimise the potential for impacts to utilities including powerlines.

Operation

- Electricity - Consultation with Evoenergy would be undertaken during detailed design to ensure the existing electrical connections have capacity to service the proposed facility. It is expected that a pad-mount substation and new feeder will be required, and this is proposed to be located within the site near the corner of John Cory Rd and Recycling Rd. Further consultation would be undertaken with Evoenergy during detailed design to determine zone substation capacity and connection requirements.
- Telecommunications - Existing telecommunications connection via Telstra exist for the current MRF. Consultation would be undertaken during detailed design to determine whether services would be impacted by the construction and operational phases.
- Water supply - There is an existing water connection to the site. Consultation with Icon Water would be undertaken during detailed design to determine whether water supply

services would be adequate for the operational phase. Subject to detailed design, additional water may be supplied via a new water supply connection to the existing reticulation mains. A series of meetings between ICON Water, iCBR, ACT NoWaste and Veolia has been undertaken in late 2024 & early 2025 to discuss the intended volumetric and discharge limits of the glass washing process and MRF more broadly. Veolia has presented the discharge characteristics and ICON have advised what constraints apply. A pathway to align the discharge requirements and network capacity is subject to ongoing discussion with iCBR, ICON and V

- Wastewater – This EIS assesses the potential impacts and mitigation measures related to glass washing and associated leachate treatment. The leachate treatment is described in order to ensure wastewater from glass washing operations complies with ICON water's publicly available discharge requirements. This includes reticulated water and trade waste connections to ICON's network.

  However, implementation of this aspect of the proposal is subject to an Icon Water trade waste agreement which would specify the volumes and quality of wastewater generated by the glass washing process that can be discharged to the sewer.

  A series of meetings between ICON Water, iCBR, ACT NoWaste and Veolia has been undertaken in late 2024 & early 2025 to discuss the intended volumetric and discharge limits of the glass washing process and MRF more broadly. Veolia has presented the discharge characteristics and ICON have advised what constraints apply. A pathway to align the discharge requirements and network capacity is subject to ongoing discussion with iCBR, ICON and Veolia.

  These matters would be subject to further detailed analysis of wastewater composition and leachate treatment via a Dissolved Air Flotation (DAF) process at the Development Application (DA) stage.

  In the interim, basic wastewater management infrastructure, such as underground pipes and an area for on-site water treatment, will be included in the initial development to 'future-proof' the facility allowing installation of glass washing facilities at a later date, subject to Icon sewer discharge requirements and any other relevant statutory requirements.

  Other trade waste generated from the proposal includes washdown from a vehicle washing bay. An oil and water separator would be provided to remove free floating hydrocarbons such as diesel, hydraulic fluid and oil as well as heavier suspended solids from the wash stream. The proposal would also produce wastewater from kitchens and staff amenities.

- Stormwater – Roof water will be directed to on-site storage tanks and used to supplement water supply for toilets and landscaping and ultimately to supplement glass washing. In the rare event that the tanks overflow, this will be directed to the street drainage system. Surface water will be directed to an on-site detention pond via a gross pollutant trap. This water will be directed downstream (refer Chapter 11).

7.4.2 Indirect impacts

The indirect impacts associated with connections to utility services relate to ancillary activities that may be required for network connections. Potential indirect impacts from treatment of wastewater and stormwater are addressed in Chapter 11.

7.5 Mitigation Measures

Table 7.1 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts.

Provided that the mitigation measures are implemented, residual impacts are not anticipated.

Table 7.1: Utilities mitigation measures

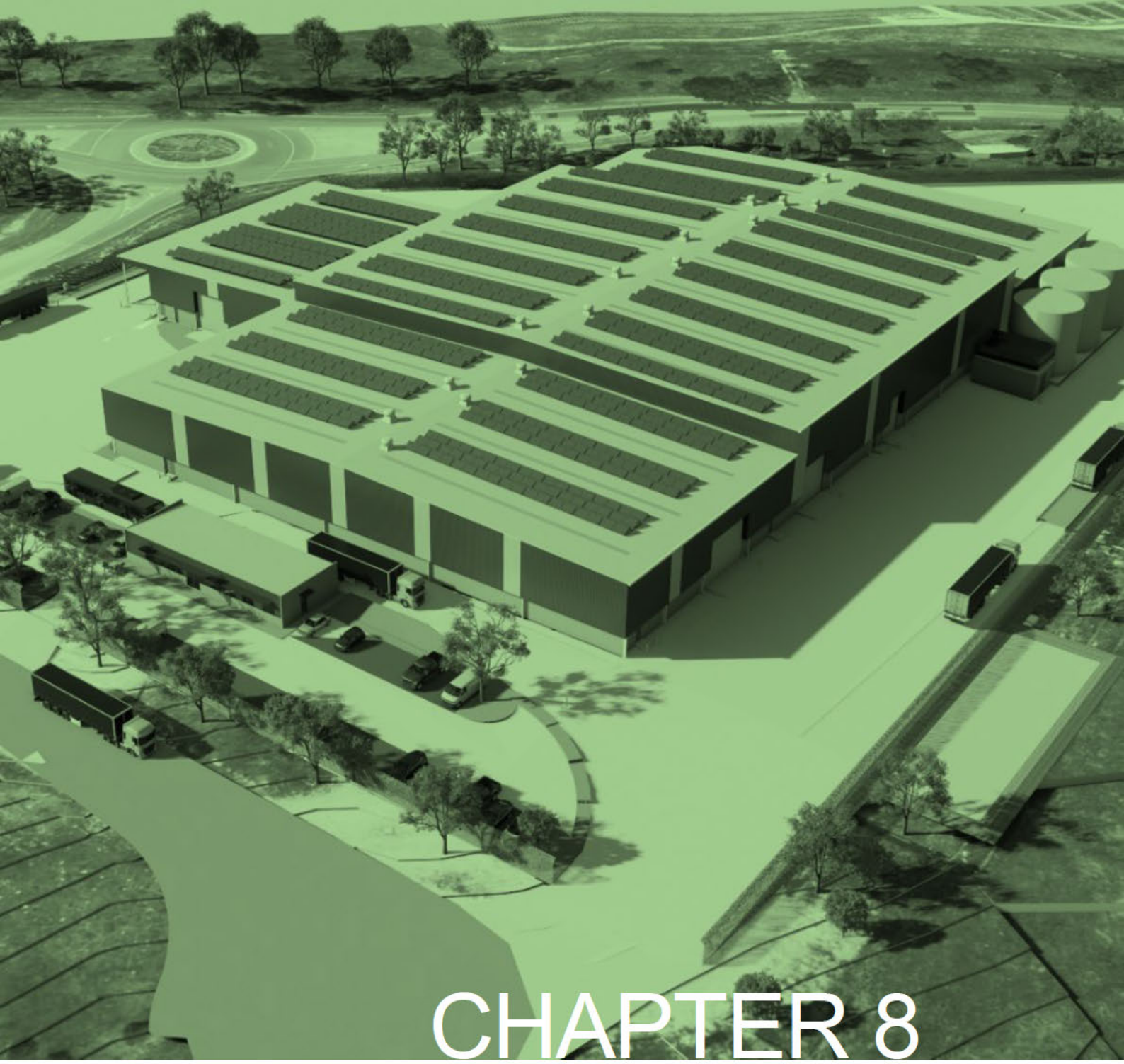
Potential impact	ID	Mitigation measure	Timing
Locations of utilities and services	U01	The locations of existing utility services and any unknown utilities together with changes required would be confirmed by the construction contractor during the detailed design of the proposal in consultation with the relevant utility provider.	Detailed design and prior to construction
Contamination resulting from utilities	U02	The CEMP would include appropriate water management and erosion and sediment controls to avoid contamination resulting from utility works.	Prior to construction and construction
Impacts to critical services and utilities	U03	**Prior to commencing detailed design, the BYDA would be conducted again to verify the locations of the utilities and services.** **During the detailed design process necessary clearance distances as per AS standard, Icon Water and Evoenergy standards would be determined and provided to utility and service providers as necessary.** Site supervision by the utility and service providers would be included as required during construction.	Prior to construction and construction
Operation of existing utilities	U04	Evoenergy and Icon Water would be consulted during the detailed design phase in order to ensure the current utilities have capacity to service the proposal.	Detailed design

7.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual utility risks associated with the proposal has been considered in Table 7.2.

Table 7.2: Utilities – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Impact to the current utility services and infrastructure on site during construction	Low	Unlikely	Minor	Very Low
Additional risks				
Impacts on existing utilities and infrastructure.	NA	Unlikely	Minor	Very Low
Impacts from required upgrades to existing utilities and infrastructure.	NA	Unlikely	Minor	Very Low



CHAPTER 8

MATERIALS AND WASTE

8 MATERIALS AND WASTE

8.1 Requirements

This chapter addresses the following materials and waste requirements of the Scoping Document:

- Describe the nature, location, and quantities of all materials (including any hazardous wastes) to be handled on the site, including the assessment, storage, stockpiling, processing and disposal of materials and waste.
- Provide details of expected material and waste volumes, including residual waste to landfill.
- Outline management procedures in case of oversupply and/or stockpiling of materials and waste and any consideration of measures to be implemented when/if the facility ceases operation.
- Prepare an Operational Waste Management Plan in accordance with TCCS Waste Code.

The following materials and waste requirements associated with storage and transport of hazardous materials are addressed in Chapter 18.

- Describe any hazardous materials and dangerous chemicals to be used or stored on site during construction and operation.
- Identify any Schedule 11 hazardous chemical, as per *Work Health and Safety Regulation 2011* (WHS Regulation).
- Provide details of maximum storage capacities for any hazardous chemicals.
- Provide safety data sheets for any hazardous chemicals.
- Identify whether any Schedule 11 hazardous chemicals meet the placard quantity as per the WHS Regulation.
- Describe how any potential hazardous materials will be transported to and from the site.

Material use and waste management would be undertaken in accordance with the *ACT Waste Management Strategy 2011-2025* (ACT Government, 2011) and *Waste Management and Resource Recovery Act 2016*. The objectives of the Act that are applicable to the proposal are:

- To manage waste according to the following hierarchy:
- Minimise the generation of waste.
- Maximise the recovery and re-use of resources.
- Minimise the amount of waste that goes to landfill.
- Support innovation and investment in waste management.
- Promote responsibility for waste reduction.
- Promote best practice waste management.

8.2 Environmental conditions and values

Australian legislation and guidelines applicable to the waste management assessment include:

- Waste Management and Resource Recovery Act 2016 (WM Act)

- Environment Protection Act 1997 (EP Act)
- Planning Act 2023
- Environmental Protection Regulation 2005 (EP Regulation)
- ACT Waste Management Strategy 2011-2025 (WM Strategy)
- ACT Waste Feasibility Study 2015
- Development Control Code for best practice waste management in the ACT 2019 (TCCS, 2019)
- Environmental Standards: Assessment and classification of liquid and non-liquid waste (EPSDD, 2021).
- Environment Protection Contaminated Sites Information Sheet 4: Requirements For The Reuse And Disposal Of Contaminated Soil In The ACT
- Environment Protection Information Sheet 12: Requirements for the beneficial reuse of waste in the ACT

A summary of what is covered by the relevant ACT legislation is presented in Table 8.1.

Table 8.1: Waste management legislation summary

Instrument	Description
Waste Management and Resource Recovery Act 2016 (WM Act)	Regulatory framework to manage waste, support innovation and investment in waste management, promote responsibility for waste reduction and promote best-practice waste management. The WM Act is responsible for setting out conditions for the licencing of the facility. Under this, Veolia as the operator of the proposed facility must hold a waste facility licence.
Environment Protection Act 1997 (EP Act)	Regulatory framework to protect and enhance the environment, to prevent environmental degradation and reduce and eliminate the discharge of pollutants to the air, land and water.
Environmental Protection Regulation 2005 (EP Regulation)	The *Environmental Protection Regulation 2005* (EP Regulation) supports the EP Act, and sets provisions on emissions into the air, noise, water-controlled waste and sampling and analysis of pollutants.
Former Planning and Development Act 2007 (PD Act)	Under Section 212 of the PD Act, the Planning and Land Authority prepared the Scoping Document dated 21 July 2022. The document outlines the matters that are to be addressed by an EIS in relation to the development proposal. Relevant requirements for waste management included: ▪ Describe the nature, location, and quantities of all materials (including any hazardous wastes) to be handled on the site, including the assessment, storage, stockpiling, processing and disposal of materials and waste. ▪ Provide details of expected material and waste volumes, including residual waste to landfill. ▪ Outline management procedures in case of oversupply and/or stockpiling of materials and waste and any consideration of measures to be implemented when/if the facility ceases operation. ▪ Prepare an Operational Waste Management Plan in accordance with TCCS Waste Code.
Planning Act 2023	The transitional provisions of the *Planning Act 2023* that result in the matters described above under the *Planning and Development Act 2007* remain relevant to the proposal.
ACT Waste Management Strategy 2011-2025 (WM Strategy)	The *ACT Waste Management Strategy 2011-2025* (ACT Government, 2011) outlines the strategic direction of the ACT

Instrument	Description
	Government on waste issues and sets targets for improving waste management. These include achieving more than 90 per cent resource recovery by 2025 and a carbon neutral waste sector by 2020.
ACT Waste Feasibility Study 2015	The Waste Feasibility Study was established in mid-2015 to identify a pathway towards achieving the ACT's waste management targets. A key output of this study was a roadmap approach to waste management with the objective of increasing waste diversion from landfill quickly, reliably, and efficiently, and in a relatively low risk, cost effective manner.
Transport Canberra and City Services Development Control Code for best practice waste management in the ACT 2019 (DCC)	The code outlines mandatory requirements for excavation and construction as well as for commercial, public and industrial developments. The goals of the DCC are to ensure: ▪ waste infrastructure is designed to provide the effective storage and collection of waste and recyclable material for all residential, commercial and industrial premises. ▪ developments are constructed to accommodate the appropriate levels of waste and recyclable material and meet standardised servicing requirements. ▪ construction activities result in the maximum recycling of recyclable material and minimum possible waste to landfill.
ACT Environmental Standards: Assessment and Classification of Liquid and Non-Liquid Wastes 2021	Guidance document to classify waste within the ACT. The document is modelled on the NSW EPA 2014, *'Waste Classification Guidelines Part 1: Classifying Waste'*.
Environment Protection Contaminated Sites Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT	This Information Sheet outlines the Environment Protection Authority's requirements for the classification of known and potentially contaminated soil for reuse and disposal in the ACT
Environment Protection Information Sheet 12: Requirements for the beneficial reuse of waste in the ACT	This Information Sheet outlines the Environment Protection Authority's (EPA) requirements for the beneficial reuse of waste in the Australian Capital Territory (ACT). The beneficial reuse of waste is supported provided it is managed in accordance with EPA's guidance and the requirements of the Environment Protection Act 1997 (the Act), including the need to adopt the general environmental duty under the Act to minimise environmental harm

8.3 Investigations

A waste management assessment was prepared to quantify the waste generated by the proposal during construction and operation and address the potential environmental impacts associated with waste handling, storage and disposal.

The assessment included:

- Desktop review of proposed construction and operational activities and materials to identify the key waste generating activities and key waste streams.
- Review of the regulatory framework for waste management as it applies to the construction and operation of the proposal.
- Development of a description of the sources, classes, quantities, and composition of incoming and residual waste streams.
- Identification of appropriate management, recycling, recovery and disposal options for the key waste streams.

- Development of mitigation measures to manage any potential impacts from the storage and processing of waste and supply of contingency measures to be implemented if inappropriate waste materials are identified in the incoming waste stream, if the facility ceases operation or in the case of oversupply of incoming materials.
- Development of details on how compliance with the EPA's record keeping and reporting requirement would be met.
- Quantification and classification of expected outgoing material streams.
- Development of management measures for expected outgoing material streams.
- Preparation of an Operational Waste Management Plan in accordance with the *TCCS* (2019) *Waste Code* describing the outcomes of the construction and operational waste management assessment.

This chapter provides a summary of the assessment findings. Further details are provided in the Operational Waste Management Plan, which is provided in Appendix E.

8.3.1 Waste generating activities

Demolition waste

DA 202342289 for demolition of the existing MRF building was approved on 24 April 2024. This DA included a *Waste Management Plan* covering the re-use, recycling or disposal of materials currently on the site.

Construction waste quantities

A detailed construction waste management plan will be prepared as part of documentation for the DA. However, based on review of recent Waste Management Plans prepared for large scale industrial buildings it is estimated approximately 250m^3 of construction waste will be generated. The estimated volumes and proposed destinations of construction waste is shown in Table 8.2.. The likely waste classifications are also identified. The classification of any construction waste requiring off-site disposal or recycling would be confirmed in accordance with *ACT EPA Waste Classification Guidelines* (2021) prior to being transported to a suitable licensed waste facility.

The construction workers would also generate wastes such as food wrappings, gloves, waste food, packaging, and so on.

Table 8.2: Estimated construction waste quantities, likely classifications and potential destinations

Waste stream	Likely waste classification	Estimated waste quantity (m3)	Storage	Potential destination	End use
Timber	General solid waste (non-putrescible)	10	Stockpiled	ACT Recycling	Recycled
Concrete	General solid waste (non-putrescible)	30	Stockpiled	ACT Recycling, Canberra Concrete Recyclers	Recycled
Bricks	General solid waste (non-putrescible)	20	Stockpiled	ACT Recycling, Canberra Concrete Recyclers	Recycled
Plaster board	General solid waste (non-putrescible)	20	Stockpiled	REGYP Canberra	Recycled

Waste stream	Likely waste classification	Estimated waste quantity (m3)	Storage	Potential destination	End use
Sand/soil	General solid waste (non-putrescible)	60	Stockpiled	Reused onsite for shaping/landscaping	Recycled
Metal	General solid waste (non-putrescible)	10	Stockpiled	Sims Metal, Access Recycling	Recycled
Mixed waste	General solid waste (putrescible / non-putrescible)	100	Skip bin	MLRMC *	Recycled / Disposed
Batteries	Hazardous waste	Nominal	Bunded and covered	MLRMC	Recycled / disposed
Sewerage	Liquid waste	Nominal	-	Discharge to sewer	Disposed

** Mugga Lane Resource Management Centre*

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

8.3.2 Construction waste handling and management

Approach to waste minimisation to re-use

All waste generated during 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, as outlined in Chapter 8.2.

Should waste be found to be unsuitable for on-site re-use, recycling or disposal, methods would be selected based on the classification of the waste material in accordance with the '*ACT Environmental Standards: Assessment and Classification of Liquid and Non-Liquid Wastes 2021*' (EPSDD, 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, are provided in Table 8.3.

The contractor would prepare a detailed environmental management plan as part of the CEMP that addresses key regulatory requirements and environmental management measures and procedures.

Table 8.3: Construction waste management measures

Waste	Hierarchy	Management measures
Excess 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 existing stockpiles and earthworks for the proposal would be stockpiled on site for use as construction fill and landscaping purposes on site if suitable.
	Recycle	Any existing stockpiles and excess spoil material would be stockpiled on-site and options to recycle the material would be investigated, where practicable.

Waste	Hierarchy	Management measures
	Dispose	Any existing stockpiles and 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 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 for 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 offsite 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.
Sewage	Dispose	Sewage generated by the staff from the site office would be discharged to sewer.
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 site for further processing or re-use at appropriately licensed facilities.
	Dispose	Residual waste that cannot be recycled would be collected and removed offsite for disposal at a suitably licensed facility.
Hazardous waste	Dispose	Any hazardous waste identified on-site would be appropriately disposed of by a licensed contractor.

Waste storage locations

Construction waste would be temporarily stored on-site in an area of compacted hardstand material. 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 recyclable materials.

Waste generated by 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).

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

Off-site recycling and disposal

Table 8.2 and Table 8.3 identify potential options for off-site disposal and recycling for the key 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.

Collection of construction waste would be on an as needed basis depending on the phase of the proposal. General waste and recyclables from construction staff would be collected at least once per week.

Collection vehicles would access the waste storage area off Recycling Road and proceed through the proposal site to exit back on Recycling Road.

8.3.3 Operational waste generating activities and quantities

Processing capacity and input materials

The existing MRF was receiving 65,000 tonnes per year from the ACT and surrounding NSW local Government areas. The facility design is intended to allow for a processing capacity of up to 115,000 tonnes per year of recyclable materials.

The MRF would accept comingled recyclable materials delivered to the facility via recyclable material collection vehicles, as well as beverage containers collected via the ACT's CDS, and recyclable paper and cardboard collected from businesses in the region for baling at the MRF.

A description of each of the key process elements is provided in Chapter 2.5.

Waste and product quantities

During operation, the following key wastes and products are expected to be generated based on former MRF processing tonnages:

- Up to 8,000 tonnes per year of feedstock contaminants.
- About 11 cubic metres of waste and 13 cubic metres of recyclables from workers.

Common contaminants that are expected to be encountered include organics, non-recyclable plastics, paper, glass and other miscellaneous materials. Non-recyclable waste would be collected and transported off site for disposal.

The facility would produce the following material/products:

- Mixed paper
- Cardboard
- PET
- HDPE
- PP
- Glass
- Aluminium and other metals

A summary of the operational wastes is shown below in Table 8.4 based on the MRF processing tonnages of 100,000 tonnes per year of incoming waste. It is estimated that these figures would

increase proportionately as the feedstock quantities increase up to the maximum facility capacity of 115,000 tonnes.

Table 8.4: Operational waste summary (based on former MRF processing tonnages)

Material 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)	-	-
Feedstock contaminants	General solid waste (non-putrescible/ putrescible)	8,000 t	Baled or in skip bin (within bale storage area)	MLRMC	Disposed/ recycled
Outputs					
Mixed paper and cardboard	-	30,000 t	Baled (within bale storage area)	Various	Recycled
Glass	-	20,000 t	Stored in, bunkers (within storage area)	Various	Recycled
PET	-	3,000 t	Baled (within bale storage area)	Various	Recycled
HDPE	-	1,500 t	Baled (within bale storage area)	Various	Recycled
Aluminium and other metals	-	2,500 t	Baled (within bale storage area)	Various	Recycled
Residual waste	General Waste	8,000 t	Covered Bins	MLRMC	Landfill
Operational workers waste	General solid waste (putrescible / non-putrescible)	11 m^3	Skip bins (adjacent to administration building)	MLRMC	Disposed/ recycled
Operational workers recyclables	General solid waste (non-putrescible)	13 m^3	Skip bins (adjacent to administration building)	MLRMC	Recycled
Batteries	Hazardous waste	Nominal	Segregated area on-site (within administration building)	MLRMC	Disposed/ recycled
Cleaning products (e.g. lubricants, oils)	Liquid waste	Nominal	Bunded area (within machinery shed)	Cleanaway	Disposed/ recycled
Trade waste	Liquid waste	Nominal	N/A	Discharged to sewer	Disposed
Sewage	Liquid waste	Nominal	-	Sewer	Disposed

8.3.4 Operational waste handling and management

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, as outlined in Chapter 8.2.

Recycling and 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* (EPSDD, 2021).

The measures for operational waste proposed to align with the waste management hierarchy are listed in Table 8.5 including disposal or recycling locations. This table also outlines the contingency measures (disposal) for wastes and residues that cannot be avoided, re-used, recycled or treated.

Table 8.5: Operational waste management measures

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 MLRMC or future FOGO site
General waste	Dispose	General waste materials would be collected and transferred off-site to a licenced waste management facility	Licenced landfill sites such as MLRMC
Recyclable materials	Recycle	Recyclable materials generated by the office and administration system would be source separated, collected and recycled on-site	Recycled on-site
Feedstock contaminants	Dispose	General waste materials would be collected and transferred off-site to a licenced waste management facility	Licenced landfill sites such as MLRMC
Batteries	Dispose	A licenced waste contractor would be engaged for collection and disposal of batteries	Licenced landfill and recycling sites such as MLRMC
Sewage	Dispose	Sewage from offices and amenities would be discharged to sewer	Discharged to sewer
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/re-use	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	Discharged to sewer
	Dispose	Sludge from leachate treatment process	Licenced Landfill

Waste-storage locations

Waste generated by operational staff would be stored in waste receptacles located throughout the site for source separation of garbage (general waste) and comingled recyclables.

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 baler 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 relevant provisions of *AS 4123: Mobile Garbage Containers* (Standards Australia, 2008), including:

- AS 4123.1:2024 Mobile waste and recycling containers - Containers with two wheels and a capacity up to 400 L for lifting devices - Dimensions and design
- AS 4123.2:2024 Mobile waste and recycling containers - Containers with four wheels and a capacity from 500 L to 1 200 L with flat lid(s), for lifting devices - Dimensions and design
- AS 4123.3:2008 Mobile waste containers - Containers with four wheels with a capacity from 770 L to 1300 L with dome lid(s), for trunnion and/or lifting devices - Dimensions and design
- AS 4123.4:2008 Mobile waste containers - Containers with four wheels with a capacity from 750 L to 1700 L with flat lid(s), for wide trunnion or BG and/or wide comb lifting devices - Dimensions and design
- AS 4123.5:2024 Mobile waste and recycling containers - Performance requirements and test methods
- AS 4123.6:2024 Mobile waste and recycling containers - Health, safety and environment
- AS 4123.7:2024 Mobile waste and recycling containers - Colours, markings and designation requirements

Contingency management

The facility would develop 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
- Other processing disruption of the facility

The facility would be designed to accommodate weekly, monthly and seasonal variations in material quantities and characteristics and the current design would allow a maximum of three days' storage capacity for unprocessed material to mitigate fire risks, unless the operations plan presents suitable risk mitigations to limit fire risk for larger quantities. The design of the facility would be in accordance with relevant fire safety guidelines including *Australasian Fire and Emergency Service Authorities Council - Fire safety in waste management facilities* (AFAC, 2022) and the current edition of the *National Construction Code* (Australian Building Codes Board, 2022).

The majority of the material deliveries would only occur daily from Monday to Friday, which would reduce the chance of backlog of material if there were any processing disruption. Planned and unplanned works including repairs and maintenance would be able to be carried out during weekends to ensure a high level of processing continuity assurance and reduce the risk of stockpiling from oversupply or backlog of material.

If more than three day's deliveries were accumulated, contingency measures may need to be implemented to reduce the potential environmental impacts associated with extended accumulation of material (e.g. rodents, vermin, fire, debris, litter, odour, material decomposition, etc). These would include diverting material to an alternative facility, or to landfill. Use of an

alternative facility may depend upon a prior business continuity plan being in place. This would be considered in contingency management for the facility.

Processed material in bales would be removed off-site as per EPA nominated stockpile requirements. The storage area would be separated from the processing building by a fire-rated wall, unless otherwise designed to comply with the requirements of the AFAC *Fire safety in waste management facilities* (AFAC, 2022) guideline. The hardstand areas around the MRF would serve as open-area stockpiling capacity for emergency/contingency storage of baled products in the event of disruptions to scheduled removal of baled products. Contingency planning would prohibit stockpiling of unprocessed material outside of the facility.

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 8.6.

Table 8.6: 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.

8.4 Impacts

8.4.1 Direct impacts

Construction

Potential impacts associated with aspects of waste generation during construction are summarised in Table 8.7.

Table 8.7: Potential Impacts associated with waste management during construction

Aspect of waste management	Potential impacts
Generation of excess spoil material during excavation	▪ generation and migration of dust during earthworks ▪ erosion and sedimentation due to runoff from disturbed areas ▪ uncontrolled sediment laden runoff from disturbed areas ▪ disturbance of potentially contaminated fill material during excavation works
Stockpile management	▪ migration of dust from uncovered stockpiles ▪ erosion and sedimentation due to runoff from stockpiling areas ▪ uncontrolled sediment laden runoff from stockpiling areas
Storage and segregation of waste	▪ cross contamination of wastes due to improper segregation ▪ odour from waste storage area ▪ attract disease vectors
Waste transportation	▪ dust generation from loading and unloading activities ▪ migration of wheel generated dust on haul roads ▪ litter and tracking waste on local roads
Non-compliant waste classification	▪ regulatory non-compliance ▪ contamination of receiving facility
Unlicenced waste contractors or facilities handling waste	▪ regulatory non-compliance ▪ potential illegal dumping of waste from construction activities

Potential impacts associated with water quality are assessed in chapter 11. Sediment and erosion control measures proposed to be implemented during construction would manage potential environmental impacts to surface water and groundwater quality associated with earthworks and stockpiling. Waste management activities are not expected to have a significant impact on soil and water provided that the control measures identified in Chapter 11 are implemented.

Chapter 14 provides an assessment of the potential impacts associated with air quality and dust generation during construction of the proposal, including earthworks, stockpiling and transport. Management measures identified in the technical report for dust suppression and stockpile management would be implemented to manage environmental impacts to air quality during construction in line with air quality criteria.

Chapter 8.3.2 describes the proposed handling and management of waste, including waste classification, how waste would be segregate and stored to avoid cross-contamination, maximise re-use and resource recovery and to reduce the potential for odour and attraction of disease vectors.

Waste management activities are not expected to have a significant impact on the environment or human health provided that the controls measures identified in Chapter 11 and 14, the waste handling and management measures described below and mitigation measures outlined in Chapter 8.5 are implemented.

Operation

Potential impacts associated with aspects of waste generation during operation are summarised in Table 8.8.

Table 8.8: Potential impacts associated with waste management during operation

Aspect of waste management	Potential impacts
Acceptance of non-conforming waste	▪ cross contamination of wastes ▪ attract disease vectors ▪ exposure to potentially hazardous materials ▪ impact to facility performance causing shut-down
Storage and segregation of waste	▪ cross contamination of wastes due to improper segregation ▪ exceedance of storage capacity ▪ fire risk
Waste transportation	▪ dust generation or litter from loading and unloading activities ▪ migration of wheel generated dust on roads ▪ litter and tracking waste on local roads
Unlicenced waste contractors or facilities handling waste	▪ regulatory non-compliance ▪ potential illegal dumping of waste from construction activities

Fire risks from storage/stockpiling waste are discussed in Chapter 18 (Hazard and risk). All stockpile dimensions, separating walls and clearance requirements for potentially combustible wastes and the proposed fire protection equipment would be in accordance with *Fire safety in waste management facilities* (AFAC, 2022).

An assessment of the potential operational air quality and odour impacts of the proposal has been undertaken and a summary of the results of the assessment is provided in Chapter 14. It considered potential dust during the construction phase and odour during the operational phase. Dust associated with the construction was identified as low risk, and negligible risk due to the small-scale operations required and the distance to the nearest receptors. Predicted odour concentrations comply with the criteria specified in the Technical Framework at all residential sensitive receptors. Odour and dust mitigation measures are outlined in Chapter 14.5.

Chapter 8.3.4 describes the proposed approach to the management of operational wastes, waste storage and off-site recycling and disposal. This includes how waste would be segregated and stored to avoid cross-contamination and maximise reuse and resource recovery.

Operational waste management activities are not expected to have a significant impact on the environment or human health provided that the waste handling and management measures described below and mitigation measures outlined in Chapter 8.5 are implemented.

Waste tracking, record keeping and quality control measures that would be implemented during operation and how non-conforming waste would be dealt with are also described below.

8.4.2 Indirect impacts

No indirect materials and waste impacts from construction or operation are anticipated.

8.5 Mitigation measures

Table 8.9 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential materials and waste impacts.

Provided that the mitigation measures are implemented, residual impacts are not anticipated.

Table 8.9: Materials and waste – mitigation measures

Potential Impact	ID	Mitigation Measure	Timing
Excessive waste generation	MW01	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
Non-classified or incorrectly classified waste transport and disposal	MW02	A demolition and construction waste management plan would be prepared and implemented as part of the CEMP for the proposal. The plan would adopt the waste hierarchy principles contained in the *Waste Management and Resource Recovery Act 2016* 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
Regulatory non-compliance and/or contamination at receiving facilities	MW03	All demolition and 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. 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 *Waste Management and Resource Recovery Act 2016*	Construction phase
Improper waste handling	MW04	The detailed OWMP would include: ▪ All key waste and process residue streams and expected quantities. ▪ Waste and residue handling management and storage procedures including feedstock receival 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
Contingency plan	MW05	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. ▪ Other processing disruption of the facility.	Prior to operation

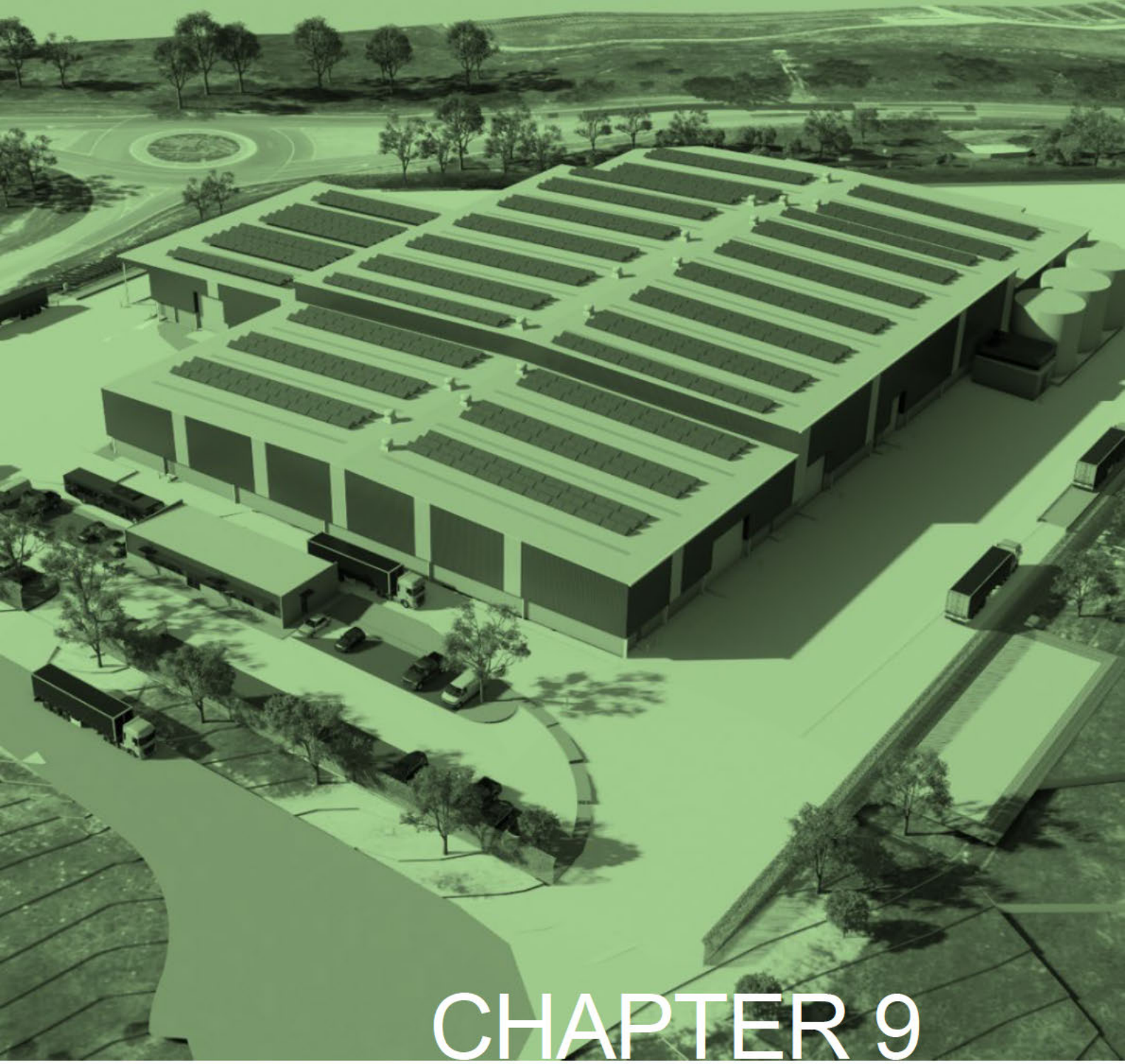
Potential Impact	ID	Mitigation Measure	Timing
		▪ The plan would include: ▪ Appropriate planning for planned and unplanned works including repairs and maintenance on weekends. ▪ The prohibition of stockpiling of unprocessed material outside of the facility. ▪ Measures to be implemented if more than three 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.	

8.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual material and waste risks associated with the proposal has been considered in Table 8.10.

Table 8.10: Materials and waste – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Waste generated during construction	High	Almost certain	Minimal	Medium
Waste and isolated contaminants generated during operation	High	Almost certain	Minimal	Medium



CHAPTER 9
LANDSCAPE AND VISUAL

9 LANDSCAPE AND VISUAL

9.1 Requirements

This chapter addresses the following landscape and visual requirements of the Scoping Document:

- Undertake a visual assessment of the site and surrounds to describe the current landscape character of the area.
- Describe the predicted impacts the facility and its operations (such as incoming waste and material, potential stockpiling, artificial lighting) may have on the landscape character of the site and surrounds.
- Provide perspectives and/or a visual analysis of the proposal from local vantage points.
- Consider visual impact to the Monaro Highway and consistency with *Development Control Plan 171/09/0001*.
- Consider lighting impacts in relation to pilot distraction.

9.2 Environmental conditions and values

9.2.1 Land use and built form

The proposal site is in the ACT, within the industrial suburb of Hume. It is zoned as General Industry (IZ1). For the purpose of assessing the overall landscape and visual characteristics, a study area approximately two kilometres from the site boundary was selected based on the visual catchment of the proposal.

The proposal site is surrounded by General Industry to the east, south and west, with Non-Urban Broadacre located to the north. The study area is made up of industrial and non-urban land uses, with the residential areas of Macarthur, Gilmore and soon South Jerrabomberra Village in the west and further east.

The Monaro Highway, which is identified as a major approach route to the city, bisects the industrial estate and is 'designated' land under the NCP. In the west of the study area, Wanniassa Hills Nature Reserve and Wanniassa Hills Special Purpose Reserve are also zoned as 'designated' land.

Built form in the immediate surrounds of the site is mostly industrial including large sheds and warehouses within the Hume Industrial Estate. The Mugga Lane Solar Park is located 100 metres south-west of the proposal site. There are a few rural residential dwellings within the study area, most notably the Woden Homestead which is approximately two kilometres north-east of the site. The homestead was built in 1832 and was one of the earliest rural properties in the Canberra region.

9.2.2 Topography and hydrology

The study area is generally characterised by undulating plateaus with rounded hills and peaks. Meandering streams with a chain of ponds and tributaries drain the valley. The proposal site sits in a one to two-kilometre-wide, relatively flat valley bounded by Dog Trap Creek to the north-west and the ACT/NSW border (railway line) to the south-east. The elevation on the proposal site slopes downwards gently towards the north, where Dog Trap Creek has cut a six metre deep but

relatively narrow channel along the side of the valley. A permanent man-made dam is located on site.

Within the study area, north of the industrial estate, the hills of the West Jerrabomberra Nature Reserve form prominent peaks. Outside of the study area, the terrain rises to form a series of hills and mountains such as Isaac's Ridge, Mt Wanniassa, Tralee Hill and Environa Hills, providing a scenic backdrop to the study area.

9.2.3 Vegetation

The study area falls within the South-Eastern Highlands bioregion and has been extensively cleared and disturbed since European settlement due to intermittent livestock grazing. The northern portion of the proposal site features grassland in poor condition.

North of the proposal site, the West Jerrabomberra Nature Reserve is protected due to its endangered status as a remnant Natural Temperate Grassland. It features areas of grassland and woodland in good condition.

9.2.4 Indigenous cultural values

The elevated terraces within the study area are known to contain many Aboriginal Places with high artefact densities (*ACT Heritage Council*, 2020). John Cory Road, on which the existing MRF is located, marks the start point of the Tuggeranong Heritage Track, where an information plaque informs visitors of the history and Indigenous cultural significance of the area.

The proposal site is in close proximity to three Aboriginal Places to the north of the proposal site boundary. This is further discussed in Chapter 20.

9.3 Investigations

9.3.1 Overview

A Landscape and Visual Impact Assessment (LVIA) was undertaken for the proposal to assess potential for visual impacts on the proposal site and surroundings during construction and operation. The LVIA included:

- A review of key planning designations, policies and guidance was undertaken in relation to landscape and visual amenity within the study area.
- Undertaking of desktop analysis and review of visual resources.
- Zone of theoretical visibility mapping, a computer-generated analysis which identifies land from which it is theoretically possible to view the components of the proposal.
- A site inspection undertaken by two suitably qualified consultants.
- An assessment of the existing landscape and visual environment was undertaken to determine the existing natural, cultural, and visual features within the study area.

The LVIA was prepared in accordance with the *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (Landscape Institute and Institute of Environmental Management & Assessment, 2013).

The study area for the assessment was approximately two kilometres from the proposal boundary (as shown on Figure 9.1). It was selected based on the proposal description, potential visual catchment of the proposal and a review of similar assessments.

This chapter provides a summary of the assessment findings. The full LVIA report is provided in Appendix G.

9.3.2 Assessment of landscape character impacts

Potential impacts on landscape character were determined based on the sensitivity of the existing landscape and the magnitude of change that is likely to occur. The sensitivity and magnitude of landscape effects considers the following specific criteria:

- The landscape value (refer Table 9.1).
- The landscape's susceptibility to change (refer Table 9.2).
- The magnitude of change (refer Table 9.3).

Table 9.1: Landscape value criteria

Landscape value	Definition
High	Landscape character elements in good or above average condition and/or that make a strong positive contribution to landscape character. May include nationally important features.
Medium	Landscape character elements in reasonably good condition and/or that make an average contribution to the local character, which may include locally important landscape features.
Low	Landscape character elements in below average condition and/or that are not particularly distinctive local features.

Table 9.2: Landscape susceptibility to change criteria

Landscape susceptibility	Definition
High susceptibility to change	The type of development proposed could have a detrimental effect on the landscape character, condition, or value. Mitigation measures are unlikely to reduce the impacts of the change.
Moderate susceptibility to change	Any change caused by the type of development would be unlikely to have a significant adverse effect on the landscape character, condition or value that could not be mitigated.
Low susceptibility to change	Development of this type is unlikely to have an adverse effect on the landscape character, condition, or value. Mitigation measures would be effective in neutralising adverse effects.

Table 9.3: Magnitude of change criteria (landscape)

Rating	Criteria
High	A substantial/obvious change to the landscape character due to total loss of, or change to, elements, features or characteristics of the landscape. Would cause a landscape to be permanently changed and its quality diminished.
Moderate	Discernible changes in the landscape character due to partial loss of, or change to elements, features or characteristics of the landscape, however, has potential to be partly mitigated. The change would be out of scale with the landscape character, and at odds with the local pattern and landform and would leave an adverse impact on the landscape character.
Low	Minor loss or alteration to one or more key landscape character elements, features or characteristics, or the introduction of components that may be new but may not be uncharacteristic within the existing landscape character.
Negligible	Almost imperceptible or no change in the landscape character as there is little or no loss of/or change to the elements, features or characteristics of the landscape.

The study area was classified into the following three LCZs, as shown on Figure 9.1:

- LCZ1: Hume Industrial Estate
- LCZ2: Undulating farmland
- LCZ3: Undulating residential.

The three LCZs have different associated sensitivities to potential changes as a result of the proposal. The LCZs and their sensitivities are described in Table 9.4.

Figure 9.1
Landscape Character Zones

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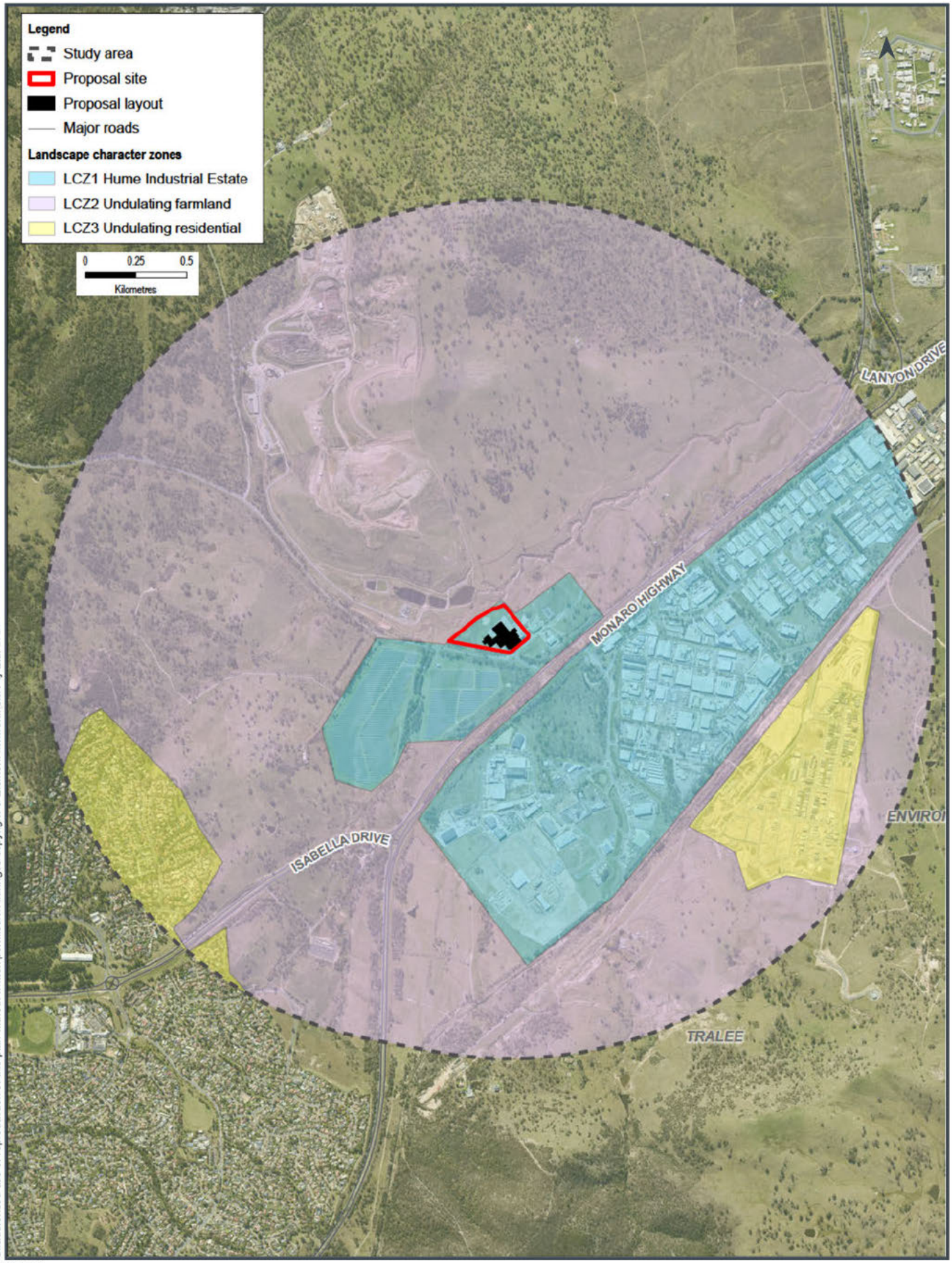

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Table 9.4: Landscape character zones

Landscape character zone	Description	Key characteristics	Associated values	Landscape Value
Landscape character zone 1: Hume Industrial Estate (LCZ1)	Located in in the south-east of the study area. The NSW border forms the south-eastern boundary of LCZ1, and the Monaro Highway runs through the centre.	– Built form is characterised by large scale industrial buildings, the Mugga Lane Solar Park, signage and advertising, material stockpiles, car parks and loading bays. – The Monaro Highway runs through the centre of the LCZ in a north-easterly direction. – Vegetation consists of occasional rows of native and non-native trees on roadsides. – Within the industrial estate, views are open due to wide roads and wide building setbacks. – Between the industrial buildings, the surrounding hills and mountains provide a scenic backdrop. – Businesses are typically building and construction suppliers, goods wholesalers and similar. – In the centre of the estate is Hill Station Homestead which was built in around 1862 and now abandoned. – Dog Trap Gully runs north-to-south through LCZ1 and is partially culverted under roads in sections. It is in a very degraded condition.	– Hill Station is heritage listed as it is a significant example of a 19th century rural station, with strong links to early settlement in the ACT and its later association with members of parliament. Despite its historical significance it is now in poor condition. – The Tralee Slab Hut is also on the ACT heritage register as it is an example of a distinctive building technique from the late 1800s characterised by vertical and horizontal slab construction. – The Monaro Highway is a recognised 'designated area' in the NCP, meaning 'development along this route should enhance the rural character and landscape of land adjoining the area before the road enters the urban area' (ACT Government, 2009).	Low
Landscape character zone 2: Undulating rural (LCZ2)	The predominant landscape within the study area. It features broad parcels of land which have historically been cleared for livestock grazing, resulting in a degraded landscape. However, its rural	– Topography is characterised by undulating plateaus with rounded hills and peaks. – Entrenched meandering streams with a chain of ponds and tributaries flow through the landscape, most significantly Dog Trap Creek which has cut a deep but narrow channel through the landscape. – The West Jerrabomberra Nature Reserve and Wanniassa Hill Special	– Nature reserves are protected by the *Nature Conservation Act 2014*. – The Woden Homestead, Rose Cottage, Tralee and Couranga Homesteads are all heritage-listed sites significant for their cultural history and building styles. – The Monaro Highway is a recognised 'designated area' in the NCP, meaning 'development along this route should enhance the rural	Medium

Landscape character zone	Description	Key characteristics	Associated values	Landscape Value
	features and undulating hills provide a scenic backdrop that is typical on the outskirts of Canberra.	Purpose Reserve feature grassland and woodland vegetation in good condition. – The Gilmore and MacArthur horse holding paddocks are located in the southwest of LCZ2 and host designated riding areas and equestrian trails, which feature distant open views to Isaacs Pines and Wanniassa Hill Nature Reserve. – Walking tracks which meander through the nature reserves and provide recreational opportunities, including the Canberra Centenary Trail which passes through the Wanniassa Hills Nature Reserve. – Scattered rural residential properties, including Rose Cottage and the heritage-listed Woden Homestead. – The Rose Cottage estate is situated approximately 1km southwest of the site on Isabella Drive. It was built in 1870 as part of the Tuggeranong Station. Lately operating as pub and function space, with an outdoor entertainment space. – The local road network comprises bi-directional sealed roads, long gravel driveways and the Monaro Highway which runs in a north-easterly direction through the study area towards Canberra. – Some large plots are occupied by industrial and commercial activities, including the MLRMC site and the Corkhill Bros landscaping supply facility. – Fencing is mostly standard post and wire fencing around paddocks and property boundaries	character and landscape of land adjoining the area before the road enters the urban area' (ACT Government, 2009). – In the west of the study area Wanniassa Hills Nature Reserve and Wanniassa Hills Special Purpose Reserve are also recognised as designated areas and form part of the National Capital Open Space System. – Ecological values are associated with riparian vegetation along Dog Trap Creek Gully, as well as grassland and woodland vegetation in nature reserves. – A small area of zone 'NUZ3: Hills, ridges and buffer areas' occupies the west of the study area, policy states that such areas 'are to remain substantially undeveloped in order to protect the symbolic role and Australian landscape character of the hills and ridges as the scenic backdrop to the city and to maintain the visual definition and physical containment of the surrounding towns' (ACT Government, 2008). – The area around Dog Trap Creek is on the ACT Heritage Register due to a number of artefacts found here from before and after European settlement, showing early evidence of interaction between Aboriginal and European people. It marks the start of the Tuggeranong Heritage Track.	

Landscape character zone	Description	Key characteristics	Associated values	Landscape Value
Landscape zone 3: Undulating residential (LCZ3)	Located to the south-west and south-east of the study area. It includes the residential suburbs of MacArthur and Gilmore in the ACT, and the South Jerrabomberra Village development in NSW.	– The undulating topography within MacArthur has a consistent, gradual fall towards the southwest. – The topography within the LCZ3 allows for partially concealed views towards surrounding reserves including Wanniassa Hills Nature Reserve and West Jerrabomberra Nature Reserve. – Residential areas predominantly comprise 1-2 storey detached dwellings. The character of these residential neighbourhoods is generally consistent, typically following a curvilinear subdivision pattern. – Dwellings were mostly constructed between 1980 to 2000. They are predominantly made from brick with the occasional weatherboard structure, located on spacious allotments in garden settings, due to wide side and rear setbacks from property boundaries. – Two linear reserves are nestled within the MacArthur residential area, featuring the Merriman Playground, open lawn and mature trees. Both reserves join the MacArthur ovals and playground just outside of the study area. – The South Jerrabomberra Village, located 1.2km southeast of the proposal is being developed over the next 10 years and comprises a mix of detached single dwellings, terraced houses, townhouses and community amenities.	– Cultural value associated with Jackie Howe Crescent, Merriman Crescent and Carson Street which formed the Macarthur Park circuit between 1978 and 1982, used for motorcycle races organised by the Canberra Road Racing Club. The undulating nature of the course made it one of the most attractive road courses in south-east Australia. A sign in the nearby pines explains the short history of the circuit and the riders that rode it. – Scenic value is associated with the undulating topography allowing for long, scenic views, high-quality dwellings, and established planting along streets and within residential properties. – Ecological value is associated with diverse, established, multi-storey vegetation within private gardens, along streets and within linear reserves.	Medium

9.3.3 Assessment of visual impacts

Viewpoint locations were selected for assessment that were representative of sensitive visual receiver locations. To best illustrate the likely visual impacts of the proposal, viewpoint locations chosen for assessment aim to represent a balance of:

- Publicly accessible visual receivers
- The most sensitive visual receivers
- A range of visual receiver types
- A range of distances from the proposal
- A range of view directions towards the proposal within the study area

The evaluation of potential impacts on visual amenity was based on the sensitivity of the viewpoint (and the visual receiver it represents) to change, and the magnitude of change that is likely to occur. The sensitivity and magnitude of visual effects addresses the following specific criteria:

- The sensitivity of the viewpoint to proposed change (refer Table 9.5).
- The magnitude of change to views and visual amenity (refer Table 9.6).

Table 9.5: Sensitivity to change criteria (visual)

Rating	Criteria
High	Occupiers of residential properties, at home or going to and from, with long viewing periods, within proximity of the proposed development. Communities that place value upon the landscape and enjoyment of views of their setting.
Moderate	Outdoor workers who have a key focus on their work who may also have intermittent views of the study area. Viewers at schools, or similar, when outdoor play and recreation areas are located within proximity but viewing periods are limited. Occupiers of residential properties with long viewing periods, at a distance from or screened from the study area.
Low	Road users in motor vehicles, trains or on transport routes that are passing through or adjacent to the study area and therefore have short term views. Viewers indoor at their place of work, schools or similar.
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short. Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the study area and have partially screened views and short viewing times.

Table 9.6: Magnitude of change criteria (visual)

Rating	Criteria
High	A substantial/obvious change to the existing view due to total loss of, or change to, elements, features, or characteristics of the view that would cause a view to be permanently changed and its quality diminished.
Moderate	Discernible changes in the existing view due to partial loss of, or change to elements, features, or characteristics of the view, however, has potential to be partly mitigated. The change would be out of scale with the existing view and would leave an adverse impact on the view.
Low	Minor loss or alteration to one or more key view elements, features, or characteristics, or the introduction of components that may be visible but may not be uncharacteristic within the existing view.

Rating	Criteria
Negligible	Almost imperceptible or no change in the view as there is little or no loss of/or change to the elements, features, or characteristics of the view.

9.3.4 Key visual features

The key visual features in the study area were identified as follows:

- The Hume Industrial Estate, which is prominent within the landscape, characterised by many large sheds, warehouses, large buildings, storage areas and car parks.
- Extensive open plains and undulating hills containing native grassland and woodland vegetation.
- An information plaque at the start of the Tuggeranong Heritage Track on John Cory Road.
- Dog Trap Creek, which has cut a deep and narrow gully through the landscape.
- Meandering streams with chain of ponds tributaries.
- The Monaro Highway, a dual-lane asphalt road which is a key access route to Canberra from the south.
- The Mugga Lane Solar Park, with many rows of solar panels covering a large area.

Key views are typically achieved from elevated areas within the study area. Of particular note are the following:

- Views from the West Jerrabomberra Nature Reserve across the surrounding landscape and distant ridgelines.
- Views from the Wanniassa Hills Special Purpose Reserve and Natural Reserve.
- Views from John Cory Road and Mugga Lane towards the gentle hills of the West Jerrabomberra Nature Reserve, rising to the north-west beyond Dog Trap Creek.
- Framed views of surrounding hills and mountains through trees and industrial buildings in the study area.
- Views from Macarthur and Gilmore towards the proposal site and surrounds.

9.3.5 Proposal viewshed and sensitive visual receivers

Zone of theoretical visibility mapping undertaken for the proposal is presented in Figure 9.2. The site inspection suggested the actual viewshed for the proposal, when vegetation and built forms are accounted for, would likely be confined to areas within close proximity to the proposal site, such as road users on John Cory Road, Recycling Road and Mugga Lane, or elevated areas within the study area, such as Wanniassa Hills Nature Reserve in the west and West Jerrabomberra Nature Reserve to the north.

9.3.6 Viewpoints

The viewpoint locations selected for the visual impact assessment are shown on Figure 9.3 and described in Table 9.7.

Figure 9.2
Zone of Theoretical Visibility

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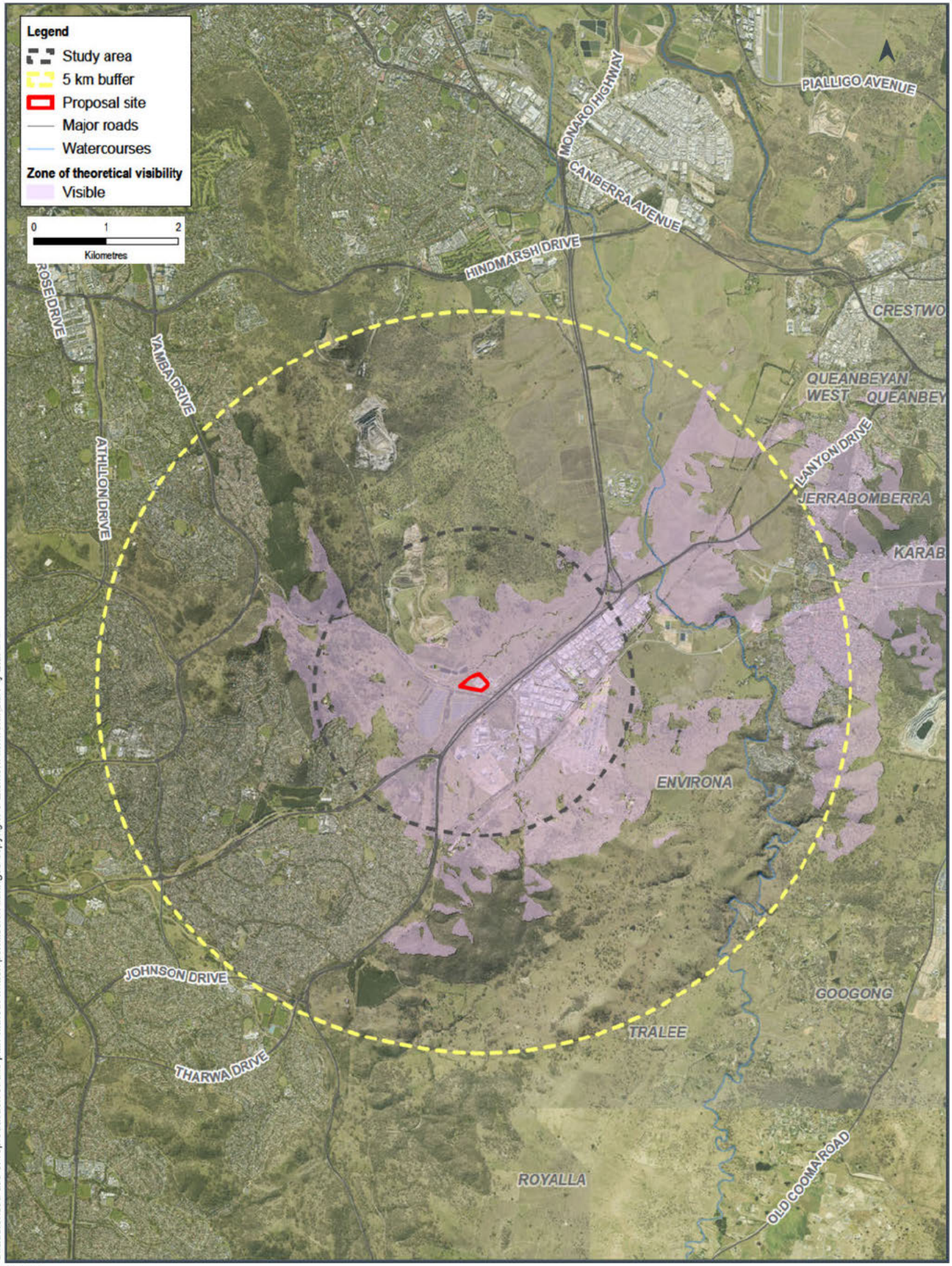

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Figure 9.3
Viewpoint Locations

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Environmental Impact Statement

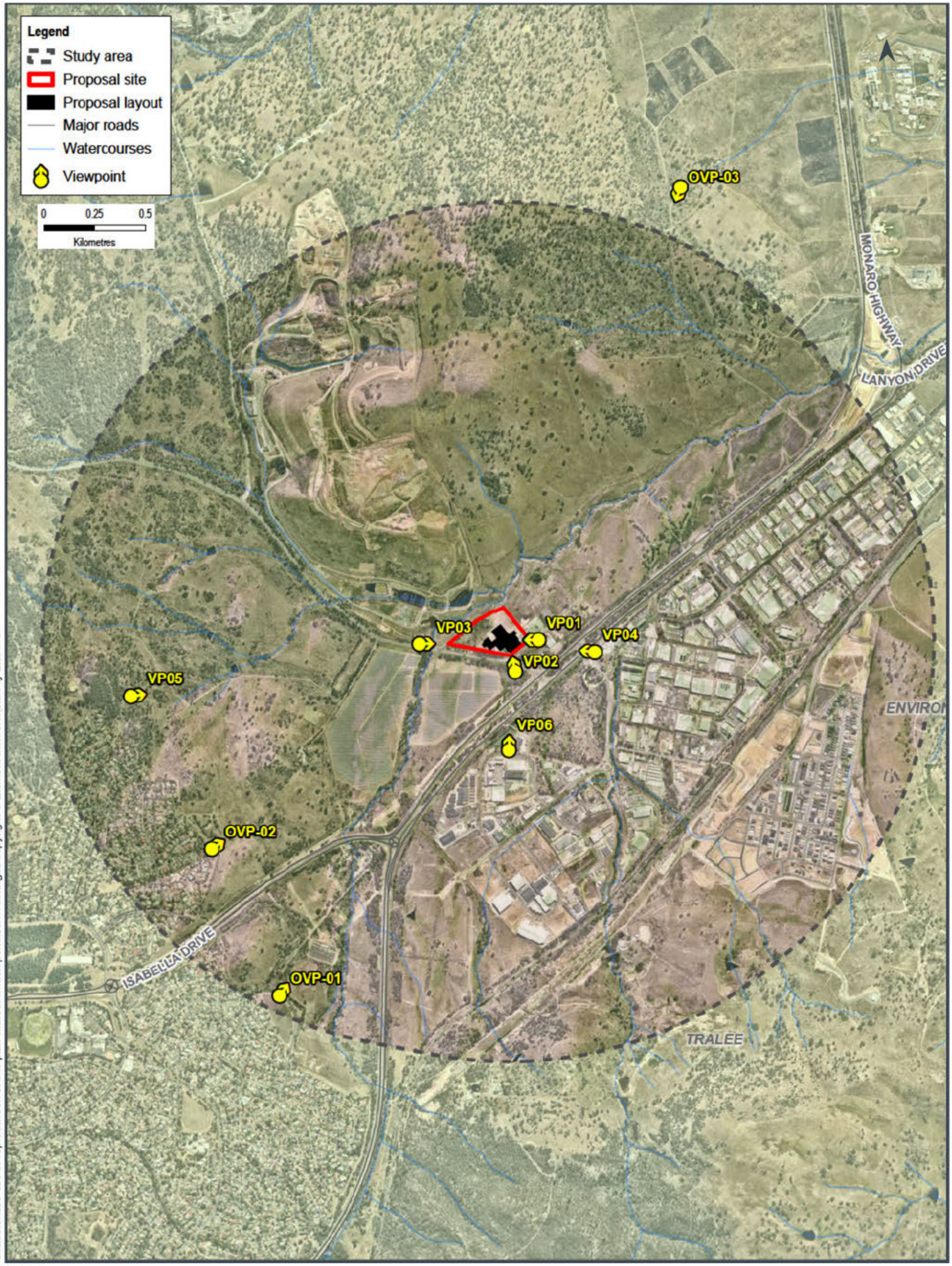

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Table 9.7: Viewpoint locations

Viewpoint	Description
Viewpoint location 1 - John Cory Road	VP01 is situated approximately 30 metres from the proposal, at the intersection of John Cory Road and Recycling Road, and faces in a southwest direction. **Photo 9.1 Viewpoint location 1: John Cory Road - existing view** John Cory Road extends away from the view, lined with a wide mown grassed verge and concrete kerb. The verge is interrupted by existing driveways, utilities and street signs. Looking across John Cory Road is the existing corrugated iron shed of the MRF, partially screened by black wire fencing and vegetation. Also present is an industrial shed with a green, steel corrugated façade. The grassy undulating hills of Isaacs Pines are partially visible between the industrial sheds with rows of established native trees concealing views to the solar park.
Viewpoint location 2 - Mugga Lane (east)	VP02 is situated approximately 50 metres from the proposal and is facing north. **Photo 9.2 Viewpoint location 2: Mugga Lane (east) – existing view** Central to the view is a grassed roundabout, located at the intersection of Mugga Lane and John Cory Road. Both roads have wide grassed verges and are lined with streetlights and road signs. The existing MRF lies beyond the roundabout, behind perimetral wire fencing. Views to the grassy undulating topography of the background are partially concealed by the recycling facility and mature trees lining Mugga Lane.
Viewpoint location 3 - Mugga Lane (west)	VP03 is situated approximately 60 metres from the western corner of the proposal and is facing east. **Photo 9.3 Viewpoint location 3: Mugga Lane (west) – existing view** Mugga Lane and the grassed road reserve extend to the right of the view, with rows of established, native trees on the right side and scattered medium size trees to the left that restrict views beyond. To the left is a gently inclined grassy plain which extends into the background from behind a wire fence. Beyond the plain, the existing MRF is visible. In the left of the background are numerous canopy trees, and behind them a faded ridgeline is visible in the distance.

Viewpoint	Description
Viewpoint location 4 - Monaro Highway	VP04 is situated approximately 350 metres from the proposal and is facing in a northwest direction. **Photo 9.4 Viewpoint location 4: Monaro Highway – existing view** The dual-carriageway Monaro Highway extends left to right across the field of view. On the near side, is a wide road reserve with tall, dry grasses and a row of established native trees. The highway median is dominated by mown grass and another row of established buffer trees. Street signs and utility infrastructure are visible along nearby Tralee Street and the highway. Partially concealed views of the MRF steel frame industrial sheds and the mattress recycling centre are visible beyond the highway. To the right, behind the tree buffer, lie filtered views to the surrounding undulating grassy hills.
Viewpoint location 5 - Wanniassa Hills Reserve	VP05 is situated approximately 1.8 kilometres from the proposal and is facing east. **Photo 9.5 Viewpoint location 5: Wanniassa Hills Nature Reserve – existing view** The Wanniassa Hills Nature Reserve presents a relatively open woodland setting. Scattered to heavily vegetated patches of native forest cover the grassed slopping topography which extends into a low-lying area in the distance. Here the Hume Industrial Estate and existing MRF are partially visible, though views are filtered by the vegetation. Also present among the vegetation are electricity poles and powerlines. In the background beyond the industrial estate, views comprise undulating topography with vegetated ridge lines and no development on the upper landscapes.
Viewpoint location 6- Couranga Crescent	VP06 is situated approximately 500 metres from the proposal and is facing north. **Photo 9.6 Viewpoint location 6: Couranga Crescent - existing view** The foreground consists of an industrial pond with aquatic grasses and mix of bordering native and exotic vegetation. Beyond the pond are tall streetlights and native trees associated with the Monaro Highway corridor. Views to the existing MRF are almost entirely screened by the bushy shrubs and mature canopy trees lining the Monaro Highway. A rounded, vegetated hill is also visible in the background. To the right of the view is a two-storey shed made from corrugated

Viewpoint	Description
	steel, glass and red brick. It is surrounded by black wire fencing and a grassed verge. The shed obstructs long views to the right of the background.

9.4 Impacts

9.4.1 Direct impacts

Landscape character impacts

Table 9.8 provides an outline of the potential direct impacts to LCZ1 for the proposal.

As the proposal site is located within LCZ1, the impacts were considered Direct Impacts, whereas changes to the landscape character of LCZ2 and LCZ3 would be indirect and are separately detailed in Section 9.4.2 below.

Anticipated changes to landscape character during construction works include the delivery of materials, in-situ concrete pouring and construction of new structures, as well as temporary storage areas, fencing and signage.

During operation, the main processing building would be concrete and metal clad construction in Colorbond finish.

Impacts on LCZ1 were deemed low, as it is anticipated that the proposal would not be out of character within the industrial area.

Table 9.8: Landscape Character Zone 1 - direct impacts

Landscape character zone	Impact assessment
Landscape character zone 1: Hume Industrial Estate (LCZ1)	**Anticipated change to landscape character** The proposal site is located within LCZ1. Anticipated changes to landscape character during construction works include the delivery of materials, in-situ concrete pouring and construction of new structures, as well as temporary storage areas, fencing and signage. During operation, the main processing building would be steel framed and metal clad construction in Colorbond finish, subject to detailed design. Roads and hardstand areas would be associated with the one-way traffic road for large scale commercial trucks and small-scale vehicles within the proposal site; proposed weighbridges, processing areas adjacent to buildings and a proposed carpark. All vehicles would enter via John Cory Road and exit via John Cory or Recycling Road. During operation, trucks and light vehicles would be present traveling to and from the proposal site through LCZ1. At the 20-year processing capacity, the number of truck movements have been estimated at 665 inbound and 665 outbound per week. This is an increase of 290 truck movements per week when compared to estimated existing truck movements. The hardstand areas around the MRF would be kept clear for heavy vehicle and maintenance access. These areas would also serve as open-area stockpiling capacity for emergency/contingency storage of baled products in the event of disruptions to scheduled removal of baled products. Plastic and glass facilities are proposed to the northwest of the proposal site and water tanks to the north behind the main building. The proposed built works would be visible and would add new elements to the area. However, the area includes existing examples of industrial infrastructure, including the existing MRF in the proposal site, and therefore has capacity for the changes proposed. **Assessment findings** The susceptibility to change is **Low,** as the industrial estate has low landscape value and change caused by the type of development would be unlikely to have a significant adverse effect on the landscape character, condition or values that

Landscape character zone	Impact assessment
	could not be mitigated. Mitigation measures would be effective in neutralising adverse effects. The sensitivity of the landscape would be **Low**, as the landscape value is Low and the susceptibility to change is Low. The magnitude of change would be **Low**, as the introduction of components may be new but would not be uncharacteristic within the existing landscape character. New movement of people and vehicles would be in keeping with existing industrial activities. Construction impacts are short-term and therefore do not significantly impact the magnitude. The significance of impact would be **Low**.

Visual Impacts

Table 9.9 provides a summary of potential visual impacts for the proposal.

Visual impacts at the selected viewpoint locations were generally assessed to be low to negligible due to their low sensitivity and views being commonly screened or filtered by surrounding built form, topography and/or vegetation. Furthermore, the proposed infrastructure components are similar in scale, height, and character to the existing MRF and surrounding existing infrastructure.

The highest visual impacts would be experienced from Viewpoints 1 and 5 due to sensitive receptors on the Tuggeranong Heritage Track and Canberra Centenary Trail. Due to their moderate sensitivity rating, Viewpoints 1 and 5 were assessed as having a Moderate-Low overall impact rating.

Table 9.9 Summary of Visual Impacts

Viewpoint	Impact assessment
Viewpoint location 1- John Cory Road	During construction, visual impacts may be associated with earthworks, in-situ concrete pouring and the establishment of new structures. Construction vehicles, machinery and a work crew may be temporarily visible travelling to and from the proposal site. During this time, storage, stockpile and laydown areas, administration buildings, fencing, barricades, and lighting may also be visible. There may be additional dust generated as a result of construction works which may also have a visual impact. During operation in the centre of the midground the corrugated steel façade of the processing building, and main parking would be visible, as well as the main entry gate, administration building and other ancillary structures and vehicles. As the introduced components would have a similar materiality and character to the existing MRF, they would not be uncharacteristic within the existing view. The sensitivity to change is Moderate, as pedestrians on the Tuggeranong Heritage Track are located proximal to the proposal, however viewing periods are limited and the key focus is away from the site. Road users on John Cory Road have short-term, passing views of the proposal site. The magnitude of change is Low as the MRF would not be uncharacteristic within the existing view. The significance of impact is Moderate-Low.
Viewpoint location 2- Mugga Lane (east)	During construction, visual impacts would be associated with earthworks, in-situ concrete pouring and the establishment of new structures. Construction vehicles, machinery and a work crew may be temporarily visible on and travelling to and from the proposal site. During this time, storage, stockpile and laydown areas, administration buildings, fencing, barricades, and lighting may also be visible. There may be additional dust generated as a result of construction works which may also have a visual impact. During operation, a group of large metal-clad buildings would be visible to the left of the existing MRF. Waste collection trucks and smaller vehicles may also be visible on site and on Mugga Lane, travelling to and from the facility. As the introduced components would have a similar materiality, size, and character to the existing MRF, they would not be uncharacteristic within the existing view.

Viewpoint	Impact assessment
	The proposal illustrated in the photomontage is at concept design stage. It will be reviewed during the detailed design stage and may be subject to change. Photo 9.7 Photomontage showing proposed view from Mugga Lane (east) The sensitivity to change is Low, as road users have passing, distant views of the proposal site. The focus of the road users is away from the proposal site. The magnitude of change is Low, as although the MRF would be visible, it would not be uncharacteristic within the existing view. The significance of impact is Low.
Viewpoint location 3- Mugga Lane (west)	During construction, visual impacts would be associated with earthworks, in-situ concrete pouring and the establishment of new structures. Construction vehicles, machinery and a work crew may be temporarily visible on and travelling to and from the proposal site. During this time, storage, stockpile and laydown areas, administration buildings, fencing, barricades, and lighting may also be visible. There may be additional dust generated as a result of construction works which may also have a visual impact. During operation in the centre of the background the main building, would be visible as well as other ancillary structures and vehicles. No access road or gates are proposed on Mugga Lane, and all existing vegetation on the Mugga Lane verge would be maintained. As the introduced components would have a similar materiality and character to the existing MRF, they would not be uncharacteristic within the existing view. Proposed buildings would be set back a minimum of 10 metres from the boundary adjacent to Mugga Lane, in line with the DCP requirements. The proposal illustrated in the photomontage below is at concept design stage. It will be reviewed during the detailed design stage and may be subject to change. Photo 9.8 Photomontage showing proposed view from Mugga Lane (west) The sensitivity to change is Low, as road users have passing, distant, filtered views of the proposal site. The focus of the road users is away from the proposal site. The magnitude of change is Low, as although the MRF would be visible, it would not be uncharacteristic within the existing view. The significance of impact is Low.
Viewpoint location 4- Monaro Highway	During construction, visual impacts may be associated with in-situ concrete pouring and the establishment of new structures. Construction vehicles, machinery and a work crew may be temporarily visible travelling to and from the proposal site. During this time, filtered views of storage, stockpile and laydown areas, administration buildings, fencing, barricades and lighting may also be visible. There may be additional dust generated as a result of construction works which may also have a visual impact. During operation, filtered views of the main processing metal-clad buildings of the new waste facility may be achieved in the centre of the background, as well as ancillary structures and vehicles including waste collection trucks, and smaller vehicles. Views of new components would be significantly screened by the existing Soft Landing Mattress Recycling facility and the rows of established trees in the Monaro Highway central median and verge. The sensitivity to change is Low, as road users on the Monaro Highway have very brief, indirect, filtered views of the site. The magnitude of change is Low, as the introduced structure would be a minor alteration to the existing view and would be significantly filtered by the two rows of buffer vegetation. The significance of impact is Low.
Viewpoint location 5- Wanniassa Hills Reserve	During construction, visual impacts may be associated in-situ concrete pouring and the establishment of new structures. Construction vehicles and machinery may be temporarily visible within the proposal site. During this time, filtered views of storage, stockpile and laydown areas, administration buildings, fencing, barricades, and lighting may also be visible. There may be additional dust generated as a result of construction works which may also have a visual impact. During operation, filtered views of the main processing metal-clad buildings of the new waste facility may be achieved in the centre of the background, as well as ancillary structures and vehicles including water tanks, bale storage building, waste collection trucks, and smaller vehicles. Views of new components would be significantly screened by foreground and midground vegetation.

Viewpoint	Impact assessment
	The sensitivity to change is Moderate, as the Canberra Centenary Trail is a popular cycling and walking route in the region and is experienced by local and regional tourists. The magnitude of change is Low, as the introduced structure would be a minor alteration to the existing view and would be significantly filtered by existing vegetation. The significance of impact is Moderate-Low.
Viewpoint location 6- Couranga Crescent	It is unlikely that the construction and operation of the proposal would cause any changes to the view from this location, due to the existing vegetation significantly screening the view. Any changes to the view would be almost imperceptible through the foliage and among the cluster of other buildings within the industrial estate. The sensitivity to change is Negligible, as from this location the proposal site is almost entirely screened by vegetation. Views would be short-term, heavily screened and at a significant distance. The magnitude of change is Negligible as there is no change to the key elements, features, or characteristics of the existing view. The significance of impact is Negligible.

The proposed built works would be visible and would add new elements to the area. However, the area includes existing examples of industrial infrastructure, including the existing MRF in the proposal site, and therefore has capacity for the changes proposed.

Assessment findings

The susceptibility to change is Low, as the industrial estate has low landscape value and change caused by the type of development would be unlikely to have a significant adverse effect on the landscape character, condition or values that could not be mitigated. Mitigation measures would be effective in neutralising adverse effects.

The sensitivity of the landscape would be Low, as the landscape value is Low and the susceptibility to change is Low.

The magnitude of change would be Low, as the introduction of components may be new but would not be uncharacteristic within the existing landscape character. New movement of people and vehicles would be in keeping with existing industrial activities. Construction impacts are short-term and therefore do not significantly impact the magnitude.

The significance of impact would be Low.

Visual impacts

Visual impacts at the selected viewpoint locations were generally assessed to be low to negligible due to their low sensitivity and views being commonly screened or filtered by surrounding built form, topography and/or vegetation. Furthermore, the proposed infrastructure components are similar in scale, height, and character to the existing MRF and surrounding existing infrastructure.

The highest visual impacts would be experienced from Viewpoints 1 and 5 due to sensitive receptors on the Tuggeranong Heritage Track and Canberra Centenary Trail. Due to their moderate sensitivity rating, Viewpoints 1 and 5 were assessed as having a Moderate-Low overall impact rating.

Consistency with Development Control Plan 171/09/0001

The concept design for the proposal is consistent with the DCP requirements.

The proposed buildings would be limited to a maximum height of 13.5 metres and would be set back a minimum of 10 metres from the boundary adjacent to Mugga Lane in line with the DCP. Proposed façade materials and colours comply with DCP relevant guidelines. Main vehicle access routes would be located on Recycling Road and John Cory Road, complying with the DCP access requirements.

Potential for lighting impacts in relation to pilot distraction

The proposal is located on the site of a previously operating MRF. As such, the proposal is not expected to change the existing risk profile of pilot distraction from lighting, which is considered minimal given the proposal is located within existing suburban areas located around and between the MRF and the airport.

The MRF would also be similar to other developments in the area and would offer no significant extra lighting or have lighting that differs from other industrial buildings.

Canberra airport is 14 kilometres away, which is more than twice the six-kilometre radius zone for lighting to be subject to the provisions of regulation 94 of CAR (*Civil Aviation Regulations*) *1988*.

Finally, the light design in the facility is not expected to conflict with runway lighting in its configuration or pattern and therefore the risk of pilot distraction would be minimal/rare.

9.4.2 Indirect impacts

Landscape character impacts

Table 9.10 provides a summary of potential indirect landscape character impacts for the proposal.

Indirect impacts on LCZ2 and LCZ3 were assessed to be negligible.

Table 9.10: Indirect landscape character impacts - LCZ2 & LCZ3

Landscape character zone	Impact assessment
Landscape character zone 2: Undulating rural (LCZ2)	The anticipated change to the landscape character of LCZ2 would be indirect and relates to modifications of the landscape character within LCZ1. The undulating terrain within LCZ2 limits many views of the proposal site. During construction, views of the proposal site compounds and administration buildings, storage areas, fencing, signage, cranes, and other machinery associated with construction may be achieved. During operation, views of buildings, vehicles and infrastructure associated with the proposal may be achieved. **Assessment findings** The susceptibility to change is Low, as it is unlikely that this development would have an adverse effect on the landscape character, condition, or value. Mitigation measures such as appropriate screening and siting of storage areas would be effective in neutralising adverse effects and impacts of construction would be short-term. The sensitivity of the landscape would be Low, as although the landscape value is Medium, the susceptibility to change is Low and the development is not within LCZ2. The magnitude of change would be Negligible, as there would be no change to existing landscape character as the proposal is outside of LCZ2. Any new movement of trucks in this character zone would be in keeping with existing activities and would not be out of character. Though views to the construction and operation of the proposal may be achieved, views to LCZ1 are not a key feature of LCZ2 and therefore the anticipated changes do not significantly impact the landscape character. The significance of impact would be Negligible.

Landscape character zone	Impact assessment
Landscape zone 3: Undulating residential (LCZ3)	The proposal would occur outside LCZ3 and therefore would not directly impact the landscape character. During construction and operation distant, filtered views of the proposal may be achieved from South Jerrabomberra Village. **Assessment findings** The susceptibility to change is Low, as the anticipated change would be unlikely to have a significant adverse effect on the landscape character, condition or value that could not be mitigated. The sensitivity would be Low, as the susceptibility to accommodate the proposed change is considered Low, the landscape value is medium, and the development is not within LCZ3. The magnitude of change would be Negligible, as there would be no change to existing landscape character as the proposal is outside of LCZ3. Although views to the construction and operation of the proposal may be achieved, views to LCZ1 are not a key feature of LCZ3 and therefore the anticipated changes do not significantly impact the landscape character. The significance of impact would be Negligible.

9.5 Mitigation measures

Table 9.11 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential landscape and visual impacts.

Provided that the mitigation measures are implemented, residual impacts are anticipated to be low or very low.

Table 9.11: Landscape and visual – mitigation measures

Potential impact	ID	Mitigation measure	Timing
Visibility of construction activities and storage areas	LV01	All practical measures would be undertaken to ensure construction equipment, storage areas, and other visible elements are located away from key views to or from the identified sensitive visual receivers.	Construction
	LV02	General tidiness of the site would be maintained during construction.	Construction
	LV03	Conducting of works in evenings and nights would be avoided where possible, to minimise impacts from lighting.	Construction
	LV04	Where works cannot be located away from trees, tree protection would be provided to ensure they are not damaged.	Construction
	LV05	All areas disturbed by construction and ancillary works would be rehabilitated to their previous condition.	Construction
	LV06	During construction, screening measures would be employed to assist the proposal site in blending into the surrounding area. Choice of screening would be sympathetic to the existing rural setting (e.g. neutral colours or green depending on location).	Construction
Visual impacts during operation	LV07	The following measures would be considered during detailed design in relation to design materiality: ▪ Ensure the proposal form, material and finishes are of high quality and are in keeping with the surrounding setting, contributing positively to the existing landscape character values. ▪ The DCP Guidelines state that 'The roof should be of pre-coated metal of low reflectivity'. This should be taken into consideration when specifying Colourbond metal roofing finishes.	Detailed design

Potential impact	ID	Mitigation measure	Timing
		▪ Avoid or minimise the use of shiny or reflective materials to minimise associated visual impacts on surrounding sensitive receivers. ▪ Consider specifying a custom-designed external cladding that complements the Indigenous cultural and rural landscape setting, for instance by printing imagery of native vegetation onto the façade, in order to mitigate visual impacts from the Tuggeranong Heritage Track. ▪ If custom-designed cladding is not possible, consider using a green colour for the roof and external Colourbond steel façade walls of the facility to ensure it is in keeping with nearby structures, reducing the landscape and visual impacts.	
	LV08	The following measures would be considered during detailed design in relation to landscaping: ▪ Screen planting along the northern property boundary, to preserve the landscape character of Dog Trap Creek corridor and to minimise views from surrounding elevated areas and consistent with principles shown on *DCP Drawing No. 171/08/0009*. ▪ Increasing the density of planting along the site boundaries, to minimise visual impacts of the buildings, car parking, and ancillary structures and equipment, following *DCP 171/09/0001* planting requirements. ▪ Planting screening vegetation within the site boundary along John Cory Road, to minimise visual impacts experienced from the Tuggeranong Heritage Track. ▪ Avoid the clearing of trees where possible, to retain the existing character values.	Construction
	LV09	The following measures would be considered during detailed design in relation to signage: ▪ Minimising signage dimensions ▪ Avoiding brightly illuminated signage ▪ Employing high quality signage design ▪ Locating signage on buildings rather than freestanding	Detailed design

9.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual landscape and visual risks associated with the proposal has been considered in Table 9.12.

Table 9.12: Landscape and visual – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Visual impacts during construction including disposable materials, heavy machinery and artificial lighting.	Medium	Unlikely	Minor	Very Low
Storage and stockpiling of recyclable and non-recyclable waste at the facility	Medium	Unlikely	Minor	Very Low
Transport of material to the site may result in spread of litter	Low	Unlikely	Minor	Very Low

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Additional risks				
Consider visual impact to the Monaro Highway and consistency with *Development Control Plan 171/09/0001*.	NA	Possible	Minimal	Very Low
Lighting impacts in relation to pilot distraction Pilot lighting distraction	NA	Remote	Major	Low

CHAPTER 10
SOILS AND GEOLOGY

10 SOILS AND GEOLOGY

10.1 Requirements

This chapter addresses the following soils and geology requirements of the Scoping Document:

- Describe the soil and geology features of the area.
- Provide an environmental assessment of potential existing contamination from previous and adjacent land uses at the development site undertaken by a suitably qualified environmental consultant.
- Discuss any contamination impacts that are present at the site (soil and groundwater), and how the site will be remediated (if required).
- Describe the potential impacts of contaminant spills on the local soils.

10.2 Environmental conditions and values

10.2.1 Topography and drainage

The proposal site area varies between 612-620m AHD, according to ACTMAPi topographic data. The part of the site adjacent to the existing MRF building is generally RL618, with a gentle fall to the north-west with the open storage area at RL616. The western grassy area has a small dip of roughly three metres.

Surface water is expected to follow the local topography and generally flow northwards towards the small dam and Dog Trap Creek.

10.2.2 Soils and geology

According to the *Atlas of Australian Soils* (CSIRO, Digital Version 3) the proposal site is within the Williamsdale Landscape. This unit is characterised by Kandosols which are associated with yellow leached earths in intermediate drainage areas and hard neutral and/or alkaline yellow mottled soils in poorly drained areas. Within the one-kilometre site buffer, the Disturbed Terrain Landscape is present in the north-west and Burra landscape in the north.

The proposal site area falls under acid sulphate soils Class C, and therefore the proposal would have an extremely low probability of encountering acid sulphate containing soils (CSIRO, 2011).

The proposal site is situated on Silurian aged Deakin Volcanics – Rhyodacitic ignimbrite and minor volcaniclastic and argillaceous sediments (NSW Department of Industry, 2014).

10.2.3 Hydrogeology

The proposal site and surrounding area is located on extensive fractured or fissured aquifers described to have low to moderate productivity. It is on the Symonston Hydrogeological Landscape which is characterised by low land salinity, with moderate salt store and mobility. There is no available information from boreholes on or within one kilometre of the proposal site.

10.3 Investigations

A PSI was completed in general accordance with the ACT Government's *'Information Sheet 7'* and guidelines endorsed by the EPA as detailed in the *'Contaminated Sites Environment*

Protection Policy' (ACT Government, 2017c). To support the investigation a Lotsearch report was acquired which consolidated many of the environmental searches.

The investigation included:

- Searches and review of:
  - Historic aerial photographs
  - Contaminated Land Search of records held by the EPA
  - Groundwater bore records
  - Current and former uses of the proposal site through desk-based searches
  - Dangerous substances storage at the proposal site
  - Soils, geology, hydrology, hydrogeology, and borehole logs
- A site inspection conducted on 15 March 2023
- Preparation of a preliminary conceptual site model
- Provision of conclusions and recommendations (as required) in the context of redevelopment of the proposal site.

This chapter provides a summary of the assessment findings. The full PSI is provided in Appendix H.

10.3.1 Historic aerial photographs

Historical aerial photographs show that the proposal site remained undeveloped until 2004, when the existing MRF was established. In 2019, the MRF hardstand area expanded to the north and is used as storage area. There is also a small hard portion extending to the western site boundary by 2019 and appears to also be used as an uncovered storage area.

10.3.2 Contaminated land register

The proposal site is recorded in the EPA's contaminated land database given its location adjacent to the MLRMC but it is not recorded on the ACT's Register of contaminated sites.

10.3.3 Hazardous substances

A Hazardous Materials survey was undertaken in May 2021 to assess the extent and condition of hazardous materials and document safe management procedures in accordance with current legislation at the time.

No hazardous materials were recorded to be present at the proposal site at the time of the investigation however the report recommended that a licensed Asbestos Assessor attend the site to observe the demolition process, advise as necessary and in the event of previously inaccessible hazardous materials being located, assist with assessing the extent, type and removal or abatement of materials as required.

10.3.4 Spills

There was a diesel spill on the proposal site in January 2022 at the existing weighbridge area. The operator claimed the spill was cleaned up however this was not confirmed by the EPA. However, it is understood that the EPA would only be involved if the spill was a notifiable incident defined under the EP Act 1997.

It is possible that some residue from spills of recyclable materials (e.g. broken glass, metal etc) from previous operations will remain embedded into the soil after demolition of the existing MRF. These are not expected to be hazardous materials but are currently undergoing testing and will be considered as part of the CEMP.

10.3.5 Areas of potential environmental concern

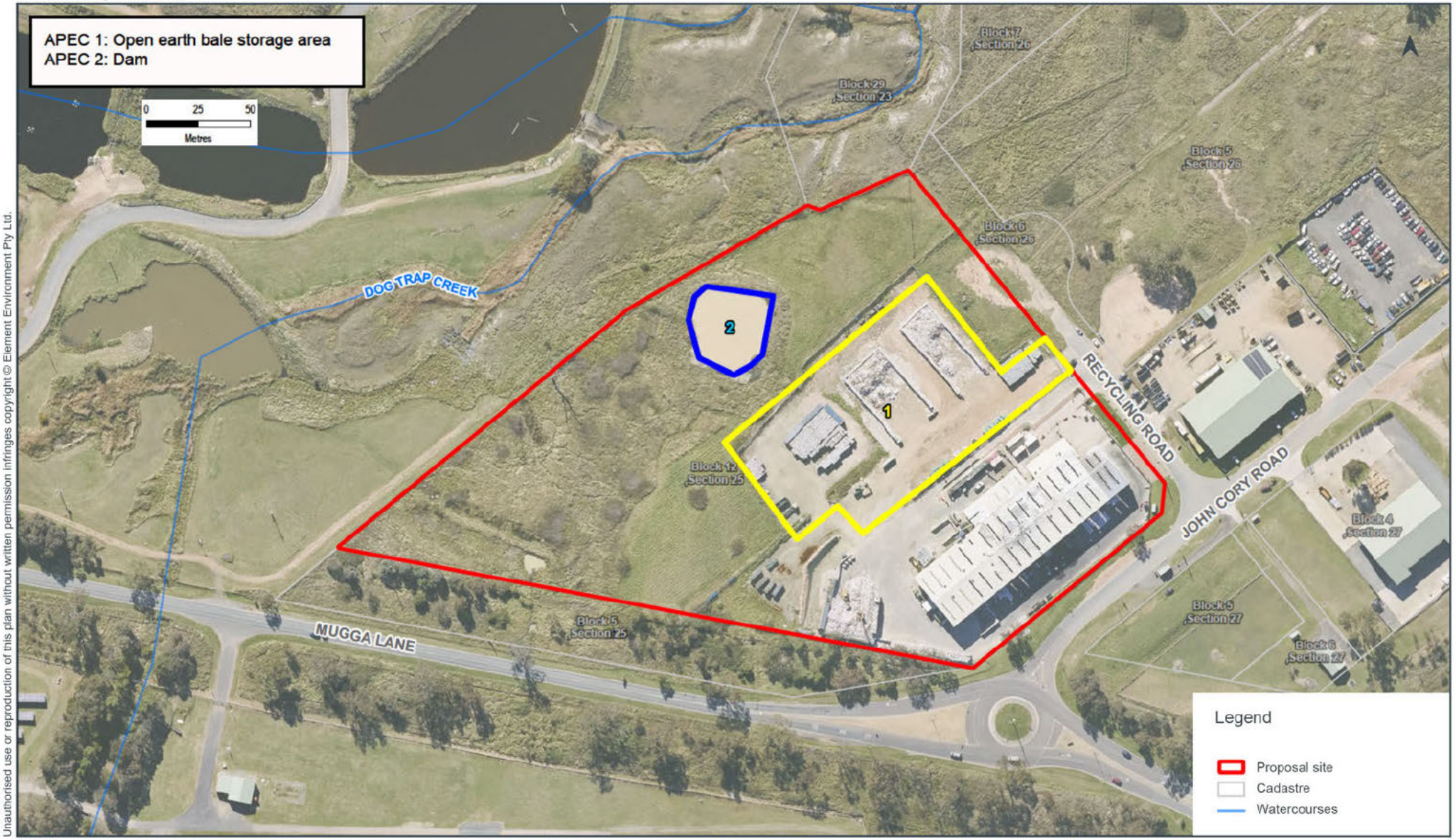
There is potential for contamination to be present within the proposal site. The identified areas of potential environmental concerns (APECs) are listed in Table 10.1 and shown in Figure 10.1.

Table 10.1: List of APECs

APEC ID	APEC name details	Rationale	Relation to the proposal site
1	Open earth bale storage area	Given the area is not undercover, rainwater may flow into the bales and onto the soil. The bales may still be contaminated with PFAS or fuel leakage from machinery used to transport bales.	Within proposal site boundary.
2	Dam	The runoff from the southern portion of the proposal site is expected to have been flowing towards the dam since operation of the facility. Given the dam has been a receptor for the last 25 years, it is also considered a source of contamination given the history of the proposal site.	Within proposal site boundary.

Figure 10.1
Areas of Potential Environmental Concern

ACT Materials Recovery Facility
Environmental Impact Statement



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Source
GHD - 20240613 Updated Draft MRF EIS June 2024 - Redacted

10.4 Impacts

10.4.1 Direct impacts

Construction

Preliminary conceptual site model

A preliminary conceptual site model was developed, as summarised in Table 10.2.

Table 10.2: Preliminary conceptual site model

Sources	Contaminant of potential concern	Pathway	Receptor	Potentially or complete exposure pathway
APEC 1: Open earth bale storage area	Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc). Petroleum hydrocarbons including TRH, BTEX, PAH, phenols. Per- or polyfluoroalkyl substances	Direct contact or inhalation with contaminated soil, fill materials or groundwater. Vapour inhalation. Ingestion of soils and dust. Direct contact with groundwater.	Human Construction workers Future MRF employees (including intrusive/extrusive maintenance workers and site visitors)	Likely complete
		Migration of surface water towards down gradient receptors. Migration of groundwater towards down gradient receptors. Discharge of groundwater to surface water bodies.	Ecological Aquatic ecological receptors (within Dog Trap Creek and dam within the proposal site) Soils (in the vacant area to the north of the proposal site)	
APEC 2: Dam	Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc). Organochlorine pesticides Organophosphate Petroleum hydrocarbons including TRH, BTEX, PAH, phenols. Per- or polyfluoroalkyl substances	Migration of surface water towards down gradient receptors. Migration of groundwater towards down gradient receptors. Discharge of groundwater to surface water bodies.	Ecological Aquatic ecological receptors (within Dog Trap Creek and dam within the proposal site) Soils (in the vacant area to the north of the proposal site)	Likely complete

The preliminary conceptual site model suggested that the proposal site is likely to pose a contamination risk to future construction workers. A targeted site investigation (TSI) was therefore undertaken to further investigate the potential for contamination risk.

Targeted site investigations

A targeted site investigation was undertaken in July 2023. The sampling analysis and quality plan is presented in Appendix I.

Key findings of the TSI were as follows:

- The soil profile at the boreholes comprised of fill followed by natural residual soil. The fill predominantly comprised of clayey sand with a thickness between 0.1 and 0.6 metres, with some crushed glass. The residual soil consisting of grey, brown to tan or mottled orange sandy clay or clayey sands.
- Groundwater was encountered at 2.6 m bgl at BH01 and 2.5 m bgl at BH02.
- No visual or olfactory evidence of contamination was encountered during the soil sampling. The landfill odour was likely due to the existing MRF and the landfill to the north and not linked to the soil samples.
- No suspected ACM was encountered at ground surface and surrounding sampling locations.
- Asbestos was not detected in any of analysed soil samples.
- Concentrations of COPCs in analysed soil samples were below adopted health screening criteria.
- Concentrations of heavy metals, BTEX and TRH in dam water sample (sampled by client in 2020) were below adopted health screening criteria (direct contact pathway).
- Concentrations of heavy metals, BTEX and TRH in dam water samples were reported below the adopted ecological criteria with exception of copper. Copper concentration was reported at 0.004 mg/L exceeded the criterion of 0.0018 mg/L.

The TSI recommended the following:

- A hazardous building material survey should be undertaken prior to demolishing the existing MRF.
- A Contamination Management Plan (CMP) should be prepared, including an unexpected contamination finds procedure, prior to the commencement of construction work.
- Any soil removed from the site during the proposed development should be classified in accordance with *ACT EPA Waste Classification Guidelines* (2021) and disposed of at a suitable licensed waste facility.
- Given the relative shallow groundwater levels, groundwater investigation should be considered if the construction works will interfere with groundwater.

Chapter 10.5 identifies other proposed measures to mitigate potential contamination risks during construction works.

Contamination and spills

Potential impacts of contamination associated with construction of the proposal include:

- Increased waste from improper practices such as poor fill management.
- Contaminated or hazardous waste not being correctly disposed of.
- Release of contaminants from construction plant and equipment into underlying soils and groundwater.

- Movement of contaminated sediments from chemical spills into waterways.

The contamination risk from uncontrolled fill would be appropriately managed with the use of an Unexpected Finds Protocol (UFP) during construction. This would be included in the CEMP.

Construction activities would require on-site use and storage of diesel fuel, and lubricating oils. Incorrect management of these materials could result in accidental spills. Safeguards for the transport, storage, use and disposal of these substances would be developed and implemented during construction, to minimise the risk of impacts from these substances on soil and water. All hazardous materials would be stored and bunded in designated areas within site compounds in accordance with *AS 1940-2004 The storage and handling of flammable and combustible liquids* (Standards Australia, 2004).

Spoil

Spoil from the excavation is planned to be reused on-site for filling and compaction. Excavation works would be carried out using excavators and borer machines.

To assess the reuse or disposal options for excavated materials as backfill, a risk-based approach would be applied. If the excavated material is of suitable properties for use as backfill then in most cases, it would be reused for that purpose on-site. Where there is surplus of excavated material that cannot be reused on-site then it would be necessary to undertake soil classification tests to identify reuse or disposal options.

In the event that excavated material is assessed as not appropriate for reuse on-site, it may be necessary to import additional material to make up any identified deficit. If required, material would be sourced from a local quarry as certified Virgin Excavated Natural Material (VENM).

Stockpiled material can also cause impacts when materials are mixed. For example, mixing of suitable and unsuitable or contaminated material can lead to materials that would have ordinarily been reused being rendered as waste. Improper management and handling of stockpiled materials may lead to the need to dispose of materials rather than being able to reuse them during construction.

Operation

Contamination and spills

Potential impacts of contamination associated with operation of the proposal include:

- Contaminated or hazardous waste not being correctly disposed of.
- Release of contaminants from operation plant and equipment into underlying soils and groundwater.
- Movement of contaminated sediments from chemical spills into waterways.

Operation activities may require on-site use and storage of diesel fuel, and lubricating oils. Incorrect management of these materials could result in accidental spills. Spill kits would be appropriately placed around the proposal site during operation and materials would be stored away from drains. All materials would be stored on bunds or as appropriate and safety data sheets (SDS) stored nearby at all times. Safeguards for the transport, storage, use and disposal of these substances would be developed as part of the detailed design and implemented during operation, to minimise the risk of impacts from these substances on soil and water. This would include designated storage areas, storage in bunds and in appropriate containers. All hazardous materials should be stored and bunded in designated areas in accordance with *AS 1940-2004 The storage and handling of flammable and combustible liquids* (Standards Australia, 2004).

MRF feedstock contaminants would be managed in accordance with procedures outlined in Chapter 8.

The storage of potentially hazardous chemicals and other substances has been outlined in Chapter 18.

10.4.2 Indirect impacts

Construction

Erosion and sedimentation

During construction, there would be potential for sediment and nutrient laden runoff from areas disturbed by construction to impact water quality in downstream waterways. Areas which would present a high risk of soil erosion include locations where both surface gradients and slope lengths combined increase the erosive potential of stormwater runoff.

Activities which have the highest risk of sedimentation and erosion impacts include:

- Works near creeks and stormwater drainage lines.
- Vegetation removal.
- General earthworks, including stripping of topsoil, excavation of material or filling of material.
- Stockpiling of topsoil and vegetation.
- Transportation of uncovered materials.
- Movement of heavy vehicles across exposed earth.
- Mobilisation of unconsolidated materials if disturbed surfaces are not stabilised or successfully revegetated following construction.

An ESCP would be prepared as part of the CEMP to identify and mitigate erosion impacts from construction activities, particularly during extreme weather.

Operation

No indirect impacts from operation are anticipated.

10.5 Mitigation measures

Table 10.3 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to soils and geology.

Table 10.3: Soil and geology mitigation measures

Potential impact	ID	Mitigation measure	Timing
Existing contamination risks to construction workers and ecological receptors	SG01	A Contamination Management Plan (CMP) would be prepared with measures to mitigate unexpected contamination risks during construction and included in the CEMP.	Prior to construction and construction
	SG02	A hazardous building material survey would be undertaken prior to demolishing the existing MRF	Prior to construction
	SG03	An asbestos assessor would be appointed to ensure there is no ACM on the proposal site.	Construction

Potential impact	ID	Mitigation measure	Timing
	SG04	Drainage on the proposal site would be improved to minimise runoff towards Dog Trap Creek.	Construction
Discovery and/or disturbance of unexpected, contaminated material	SG05	An UFP and CMP would be developed and included in the CEMP.	Construction
Sediment and nutrient laden runoff from areas impacting water quality in downstream waterways	SG06	An ESCP and CMP would be prepared as part of the CEMP to identify and mitigate erosion impacts from construction activities, particularly during extreme weather.	Construction
Transport of contaminated material from the proposal site	SG07	A designated washdown area would either be provided on the proposal site or located at truck depots off-site.	Construction and operation
	SG08	Any contaminated soil removed from the proposal site would be classified in accordance with ACT EPA *'Requirements for the reuse and disposal of contaminated soil in the ACT'* (Access Canberra, 2019) and disposed of at a suitable licensed waste facility.	Construction
Spills of diesel fuel, and lubricating oils	SG09	All hazardous materials would be stored and bunded in designated areas within site compounds/facility buildings in accordance with *AS 1940-2004 The storage and handling of flammable and combustible liquids* (Standards Australia, 2004).	Construction and operation
	SG10	All diesel fuels and lubricating oils would be stored in appropriate containers and in bunds and away from drainage areas.	Construction and operation
	SG11	Spills kits would be located adjacent to storage areas.	Construction and operation
	SG12	All spills would be cleaned up immediately and logged in the site incident register and notified to the EPA where the potential for harm or other obligation requires notification.	Construction and Operation
	SG13	SDS sheets would be located adjacent to storage areas.	Construction and operation
Generation of contaminated material	SG14	Appropriate storage areas would be created for batteries to ensure quarantine standards are in accordance with best practice advice issued by ACT Fire and Rescue plus fuel storage compliant with relevant standards.	Operation

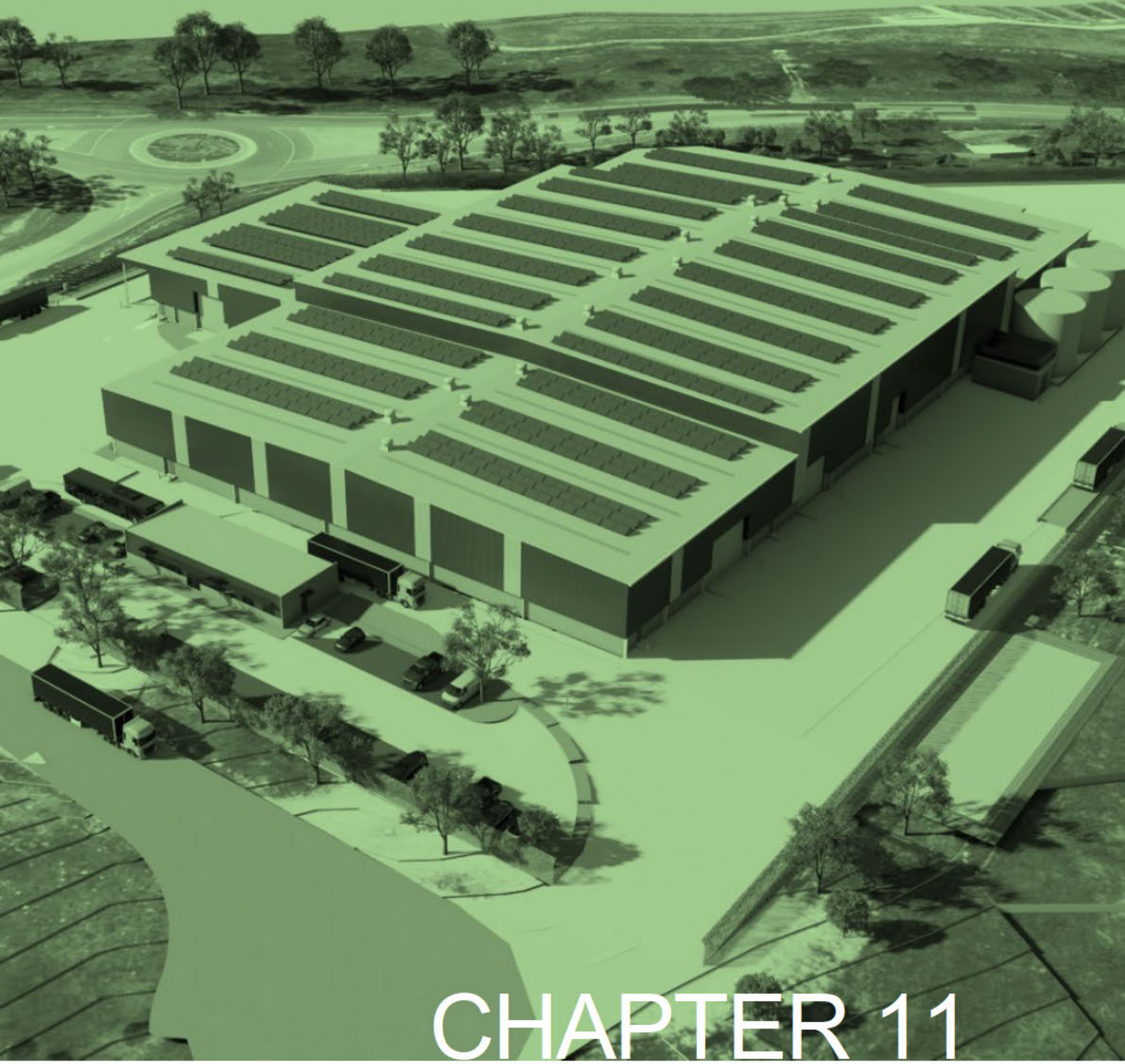
10.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual soils and geology risks associated with the proposal has been considered in Table 10.4.

Table 10.4: Soils and geology – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Fuel, oil, and lubricant spills from general operation and refuelling of trucks and machinery may be a source	Medium	Unlikely	Minor	Very Low

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
of contamination. Manipulation and movement of contaminated materials may also be a source of contamination.				
Earthworks and general site movements may impact soil stability and enhance erosion with further impacts on waterway turbidity and sedimentation.	Medium	Possible	Minor	Low
Existing contaminated land may be discovered on site. Remediation may be required to mitigate human and environmental health impacts.	Medium	Unlikely	Moderate	Low
Unprocessed material or contaminants separated from materials during operation may be a source of contamination if uncontained.	Medium	Unlikely	Moderate	Low
Contaminated wastewater and stormwater may impact on surrounding land and water catchments.	Medium	Unlikely	Moderate	Low



CHAPTER 11
WATER QUALITY AND HYDROLOGY

11 WATER QUALITY AND HYDROLOGY

11.1 Requirements

This chapter addresses the following water quality and hydrology requirements of the Scoping Document:

- Describe the surface water and groundwater features of the area.
- Provide a description of likely annual wastewater volumes generated on site under maximum operational capacity.
- Provide a description about suitable sizing/treatment of the proposed bioretention pond system, to give confidence about the ability of the proposed bioretention pond system to manage volume and quality of wastewater under maximum operational capacity.
- Provide details of the existing dam and proposed bioretention pond, including height of the dam/pond wall from toe to crest in metres and volume of the dam/pond in Mugga Lane.
- Consider the potential for impacts associated with wastewater generation and any other on-site activity, on water quality, aquatic ecosystem and erosion within Dog Trap Creek (which flows to Jerrabomberra Creek and Lake Burley Griffin).
- Include mitigation measures to prevent potential water quality, aquatic ecosystem and erosion impacts to Dog Trap Creek and further downstream.
- Demonstrate compliance with the *'Waterways: Water Sensitive Urban Design General Code'* made under the Territory Plan.
- Consider any feasible options to divert wastewater away from Dog Trap Creek.
- Describe the potential impacts of wastewater and contaminant spills on local groundwater and surface water.
- Describe how runoff from the development site will be treated before entering the receiving environment.
- Provide information on stormwater retention and reuse capabilities at the development site.
- Provide information on measures to manage wastewater/contaminants emanating from the facility to avoid impacts on groundwater and surface water.

11.2 Environmental conditions and values

Hydrology and surface water

The proposal site's highest point is at the south-eastern boundary (at approximately 618 m AHD) and falls towards the northern boundary (at approximately 611 m AHD). A pond that is located at the north-west of the proposal site boundary was identified as a low point within the proposal site and Dog Trap Creek (Woden Creek) was identified to be a natural watercourse that passes adjacent to the western boundary of the proposal site.

Dog Trap Creek is a 2nd order stream according to the Strahler stream ordering system, increasing to a 3rd order stream immediately downstream of the proposal site. The stream flows in a north-easterly direction, through culverts and under the Monaro Highway before it reaches Jerrabomberra Creek. Jerrabomberra Creek flows northwards through Fyshwick and Jerrabomberra Wetlands into Lake Burley Griffin (Molonglo River).

The proposal site is part of the Murrumbidgee River Catchment. This catchment covers an area of 84,000 square kilometres and is a major contributor to the broader Murray-Darling Basin, making up 16 percent of the basin's input. The Murrumbidgee River flows towards the east, into the Murray River downstream of Balranald.

Flooding

The proposal site is not significantly impacted by flood flows, with flood waters generally confined to the north-western side of the site. Run-on from other sites is not notable, as upstream flood waters are diverted around the existing operations.

Geology, soils and geomorphology

The local geology comprises Silurian Rhyodacitic ignimbrite (i.e. pyroclastic origin) with minor intrusions of siltstone, shale, sandstone, and limestone. Bedrock tends to be highly weathered. Alluvial reworking and deposition are associated with Dog Trap Creek and tributaries.

Soils in the proposal site and vicinity are typically clayey sand or sandy clay (loams, silty loams, or sandy loams), with some silty sand, clay and gravel.

Erosion along Dog Trap Creek and its tributaries has been mapped as early as 1915, with the 1961 aerial imagery indicating an incised, eroding channel. It is likely that this erosion was triggered by land clearance for agriculture. Since this time, the upper banks show periodic active erosion with imperceptible bank retreat rates.

The current bank top has changed little since 1961. In some cases, bank stabilisation has occurred. This indicates that the mechanism of retreat is through shallow translational slide failures or direct entrainment by runoff (sheetwash), rather than major deep-seated failures. Erosion activity has been episodic. More stable periods have allowed vegetation to become established along the creek and gully banks, with periods of erosion associated with prolonged drought causing vegetation die-off followed by intense / prolonged rainfall, runoff and flooding. Erosion has been limited by the presence of bedrock at the base of the creek and weakly cemented or clay soils, this is evident by the lack of erosion since the 1960s. This has caused the bank to form a steep to near-vertical lower bank in the bedrock / resistant material and less-steep, more erodible upper banks.

11.3 Investigations

11.3.1 Overview

An initial Water Impact Assessment (WIA) was undertaken for the concept development proposal identified in the draft EIS publicly exhibited in September 2023. A further Water Impact Assessment was undertaken to consider changes made in the revised site layout and operations proposed by Veolia. The two assessments included:

- A desktop review of the existing environment
- Hydraulic flood modelling
- Water quality modelling
- Review of water quality targets
- Assessment of wastewater management strategies
- Development of storm and wastewater retention and reuse systems

This chapter provides a summary of the assessment findings. The full WIA's are provided in Appendix K.

11.3.2 Flood modelling

Hydraulic flood modelling of the proposal site was undertaken using TUFLOW to inform the proposed pad level, as well as to identify and avoid flood impacts to nearby receptors. Specifically:

- Results from the model for the existing scenario were used to identify a pad location that would avoid impacts to the proposal from nearby waterways.
- The final pad elevation was selected based on the initial results of flood modelling to avoid flooding impact to the proposal, as well as to minimise potential impacts to flood velocities, hazard, and level (afflux) for nearby receptors.

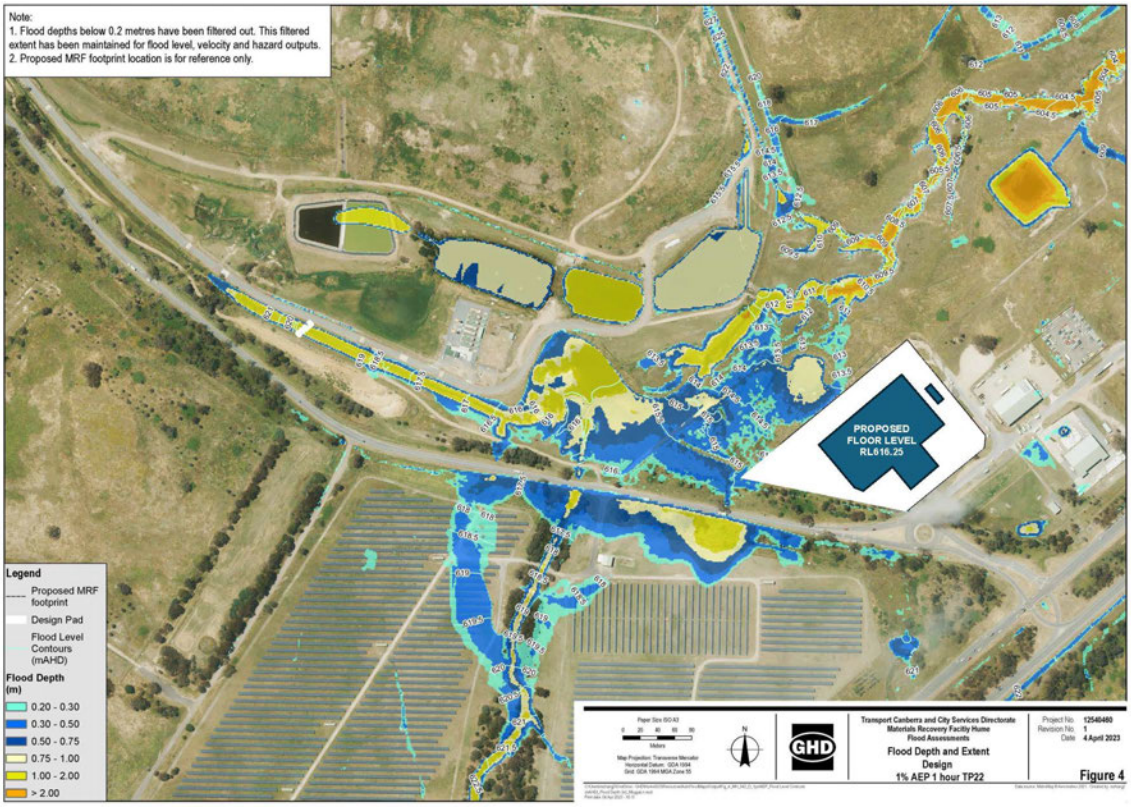
Flood modelling was also used to determine the maximum change in peak velocities (difference between existing and design flood velocities) for four modelled flood events:

- 1 Exceedance per Year (1 EY)
- 0.5 EY
- 20 percent AEP
- 1 percent AEP

The design floor level of RL 616.25 is well above the 1 in 100 AEP flood level, with diversion infrastructure conveying floodwater around the pad, as shown in Figure 11.1.

The flood modelling and mapping results also indicate that there would be no notable impacts on downstream waterways and that the floor level would not cause flooding to extend to any adjacent landholdings.

Figure 11.1: Flood Depth and Extent



11.3.3 Stormwater quality management

Objectives

Stormwater quality management objectives have been obtained from *ACT Planning* (Industrial Zones) *Technical Specifications 2024*. Clause 14.7 of the Technical Specifications requires the following stormwater reduction targets:

- 90% reduction in total gross pollutants (GP).
- 60% reduction in total suspended solids (TSS).
- 45% reduction in total phosphorous (TP).
- 40% reduction in total nitrogen (TN).

Clause 14.5(a) of the Technical Specifications requires that stormwater retention measures are provided and achieve the following:

- Stormwater storage capacity of 1.4 kL per 100 m^2 of the total impervious area of the site is provided specifically to retain and reuse stormwater generated on site as a whole.
- Retained stormwater is used on site.

The proposed stormwater management strategy has been designed to satisfy the above objectives.

Modelling methodology

Model for Urban Stormwater Improvement Conceptualisation (MUSIC) version 6.3 developed by CRC for Catchment Hydrology was used to evaluate the treatment train effectiveness to remove post development pollutant loads from the site.

Modelling for the proposed development was undertaken in accordance with the Industrial Zones Technical Specifications and Municipal Infrastructure Standard 08 - Stormwater, 2024 (MIS08). The model was developed based on the proposed site layout and catchment area details. Catchment areas were separated into areas corresponding to roof, hardstand and landscaped areas, with details provided in Table 11.1.

Table 11.1: MUSIC catchments

Name	Description	Area (ha)	% Impervious area
1A01	Roof to Rainwater Tank	1.15	100%
1A02	Roof to Gross Pollutant Trap	0.02	100%
1A03	Carpark to Gross Pollutant Trap	0.11	100%
1A04	Landscape to Gross Pollutant Trap	0.06	0%
1A05	Hardstand to Gross Pollutant Trap	1.61	100%
1A06	Landscape Bypass	0.06	0%
	TOTAL AREA	3.02	96%

Proposed treatment train

Rainwater tanks are proposed to store and allow reuse of captured roof water from the main building. Rainwater tanks provide primary treatment and help to filter coarse matter and litter from collected roof areas.

The total site impervious area of 2.898 ha requires a minimum of 405.7 kL rainwater tank storage per the Industrial Zones Technical Specifications. The proposed rainwater tank volume has been modelled with a reuse demand for glass washing of 8ml/yr.

A Gross Pollutant Trap (GPT) has been proposed to treat and manage site runoff from hardstand areas. GPT's provide primary treatment and help to filter coarse matter and sediments from surface runoff with specific devices also able to treat suspended solids and nutrients.

The Atlan Ecoceptor (4000 Series) has been proposed for the development. This GPT is to be located at the end of line to collect and treat site discharge from the development footprint.

MUSIC model results

Treatment train effectiveness results based on MUSIC modelling for the proposed development are provided in Table 11.2. Results indicate the proposed stormwater management treatment strategy achieves the required stormwater quality reduction targets.

Table 11.2: MUSIC treatment train effectiveness results

Parameter (kg/year)	Source	Residual load	%Reduction	Performance criteria target (%)
TSS	240	72	70	60
TP	4.26	1.32	69	45
TN	50.9	23.1	54.7	40
GP	635	50.9	92	90

MUSIC modelling results indicates the proposed stormwater treatment requirements of the Technical Specifications and MIS08 will be satisfied by the proposed stormwater quality treatment train. The proposed treatment train is comprised of the following:

- Minimum 406 kL rainwater tanks with internal reuse demand to be used for toilets and landscape purposes and ultimately for re-use in the glass washing process.
- A GPT (Atlan Ecoceptor) located to treat hardstand areas.

11.3.4 Stormwater quantity management

Water quantity objectives

Stormwater quantity management objectives have been obtained from the Technical Specifications. Clause 14.5(b) of the Technical Specifications requires that stormwater detention measures are provided and achieve all of the following:

- Capture and direct runoff from the entire site.
- Stormwater storage capacity of 1kL per 100m^2 of impervious area is provided to specifically detain stormwater generated on site.
- Detained stormwater is designed to be released over a period of 6 hours after the storm event.

The proposed onsite detention (OSD) system has been conceptually designed to satisfy the above objectives.

DRAINS modelling

DRAINS hydrological and hydraulic modelling package was used with the ILSAX hydrological engine to determine requirements to satisfy the above objectives. Hydraulic modelling has been completed to determine the maximum flow rate for the 1 EY to 1% AEP storm events with durations between 5 minutes to 9 hours for both existing and developed conditions.

Existing catchment delineation was completed using the proposed development footprint and lidar data with the impervious fraction determined from aerial photography. The existing catchment was modelled as one node in DRAINS. Proposed catchment delineation was based on the development footprint with impervious fraction based on the proposed land uses. Time of concentration for catchments was estimated based on the longest flow path. Post development catchments are shown in Table 11.3.

Table 11.3: Post development DRAINS catchments

Name	Description	Area (ha)	% Impervious area
1A01	Roof	1.17	100%
1A02	Other Area	1.85	93%
	TOTAL AREA	**3.02**	**96%**

The outcome of the DRAINS modelling was to install an OSD basin downstream of the proposed development footprint with stormwater quality devices (i.e. GPT) to detain surface runoff generated by the development. The preliminary modelling indicates the proposed OSD basin properties should be:

- Minimum volume of approximately 600m^3 (approximately equal to 2.09kL per 100m^2)
- Orifice Diameter of 110 mm
- Storage depth of 1.3 m with minimum 300 mm freeboard to the circulation road
- Overflow weir length of 4.0 m
- Overflow pit intake perimeter of 2.7 m.

To reduce erosion risk for the controlled development discharge an energy dissipation structure has been nominated at the OSD outlet with sizing to be completed at detailed design stage.

The DRAINS modelling results in Table 11.4 indicate the proposed OSD strategy satisfies the stormwater quantity reduction targets, including:

- The predevelopment 1 EY site discharge rate is 214 L/s with the post development discharge rate reduced to 51 L/s.
- Storm event discharge duration demonstrates that the detained stormwater is released over a minimum period of 6 hours after the critical duration storm for each storm event.

Table 11.4: DRAINS storage discharge results

Storm event	Storm event duration (min)	Discharge duration (min)	Discharge duration after storm event (hrs)	Complies (Y/N)
1EY	180 min	608 min	7.13	Y
0.5EY	120 min	562 min	7.37	Y
20% AEP	90 min	538 min	7.47	Y
0.2EY	90 min	538 min	7.47	Y
10% AEP	30 min	478 min	7.47	Y

Storm event	Storm event duration (min)	Discharge duration (min)	Discharge duration after storm event (hrs)	Complies (Y/N)
5% AEP	30 min	478 min	7.47	Y
2% AEP	20 min	470 min	7.50	Y
1% AEP	15 min	465 min	7.50	Y

Stormwater detention requirements of the Industrial Zones Technical Specifications are satisfied by the proposed stormwater drainage and OSD strategy. The proposed strategy includes an OSD storage volume of 600 m³ with a controlled slow-release discharge outlet to ensure development runoff is discharged over a period greater than 6 hours. This is managed through a 110 mm orifice and overflow intake pit and weir. A minimum freeboard to the circulation road of 300 mm is maintained. Design levels are to be finalised at detailed design stage.

11.3.5 Stream erosion

A Stream Erosion Index (SEI) assessment has been completed to determine the likely impact on downstream soils and the bed and banks of Dog Trap Creek. The SEI is the ratio of the developed catchment stormwater volume exceeding the 'stream forming flow' to the predevelopment catchment stormwater volume exceeding the 'stream forming flow'.

The SEI analysis filters out the more frequent flows and compares the total amount of higher flows between the predevelopment and post development scenarios. The SEI is presented as a ratio, lower ratios represent less potential to induce environmental change (for reference Blacktown City Council and Camden Council allow SEIs to be no greater than 3.5 and 5.0 respectively). A ratio of 1 or lower indicates that the likelihood of the development causing change is very low.

In the absence of defined targets in ACT legislation/guidelines a target value of less than 3 has been adopted.

The SEI assessment was based on the procedures set out in the *NSW MUSIC Modelling Guidelines 2015* using the following methodology:

- The DRAINS model documented was used to determine the stream forming flow rate for the site (10% of the 0.5 EY predevelopment flow based on the presence of sandy loam soils and gravel content).
- The MUSIC model was amended to include the predevelopment catchment scenario.
- The amended MUSIC model was used to compare pre and post development runoff flows greater than the stream forming flow rate.

DRAINS Modelling - The modelled predevelopment 0.5 EY flow rate was 0.287 m^3/s. Therefore, the stream forming flow rate (10% of 0.5 EY flow rate) for the development area is 0.029 m^3/s.

MUSIC Modelling - The predevelopment catchment was separated into areas corresponding to pervious and impervious based on aerial imagery and surface type. MUSIC model results demonstrating the comparison between pre and post development scenarios with the stream forming flows removed are presented in Table 11.5.

Table 11.5: SEI assessment results

Description	Value
Predevelopment flow volume (ML/yr)	2.5
Post development flow volume (ML/yr)	4.08
SEI	**1.63**

The SEI of 1.63 is lower than the adopted target of 3, indicating that the development is unlikely to have a negative impact on the stream morphology downstream from the site.

It is expected that the detailed design of the OSD and energy dissipation structure would further reduce the likelihood of any impacts to the downstream receiving environment (both within Dog Trap Creek generally and in surrounding locations).

11.3.6 Further Water Impact Assessment

Further design development, subsequent to the water impact assessments outlined in the above sections, has been undertaken in conjunction with more detailed site design and planning (refer to Appendix K). This subsequent water impact assessment addresses comments provided by the Conservator of Flora and Fauna of the ACT Government, City and Environment Directorate requesting additional outcomes to maximise stormwater retention on-site for re-use and ensuring that no erosion occurs downstream of the stormwater discharge point.

The key components of the revised stormwater detention, retention and treatment system include:

- 450 kL of on-site detention within three (3) 150kL tanks equating to detention capacity of 1 kL per 100m^2 of total impervious area on-site.
- 408 kL stormwater retention tanks equating to retention capacity of 1.4 kL per 100m^2 of total impervious area on-site.
- Ecoceptor stormwater quality improvement device to be installed downstream of the on-site detention tanks to capture gross pollutants, nitrates, phosphates and suspended solids.
- Water will be detained in detention tanks for up to 6 hours and will be discharged gradually after the storm event.
- Peak flow rate from the site post development will be less than the peak flow rate from the site pre-development.
- The on-site detention system will discharge into the existing 525 mm stormwater main in Recycling Road via a new manhole.
- No erosion occurs at or downstream of the stormwater discharge point as all stormwater runoff from the impervious areas of the site drain towards and is captured in the on-site detention tanks and no stormwater drains offsite via overland flow. The stormwater discharge point is into the existing 525 mm stormwater main in Recycling Road via a new manhole.

The changes in site layout and operations, together with the conclusions of the additional water impact assessment undertaken, result in changes to the matters considered in the draft EIS. This is based on a review of the direct and indirect impacts plus the cumulative impacts.

11.3.7 Wastewater management

Wastewater will be generated from a number of sources including:

- Wastewater generated by the washing of recycled materials in the wash plant.
- Wastewater generated by staff amenities (e.g. toilets, hand basins, kitchen, etc.).

Site wastewater management includes connection of the wastewater treatment system and all wastewater generating fixtures in staff amenities to reticulated sewer.

The facility is designed to process the recycling of various materials, and in the future value add the recycling of glass by incorporating glass washing with associated leachate treatment and

disposal. This EIS considers the potential impacts and proposes related mitigation measures to address the full suite of potential impacts that may arise as a result of the materials recycling facility, inclusive of glass washing.

The proposed glass wash plant requires approximately 50 kL/hr for the wash process. This includes 35kL/hr mains water supply plus 15kL/hr treated water re-used from the on-site leachate treatment plant. In addition, it is proposed to supplement water demand with approximately 8ML/yr from roof water. The glass washing operation is intended to be 8 hours/day which results in a total design daily wastewater generation rate of 500 kL/day. With 150 kL/day of treated effluent to be recycled and used in the MRF wash plant, the total estimated daily wastewater discharge to reticulated sewer is 280 kL/day.

The on-site leachate treatment is proposed through an 'Aerofloat' dissolved air flotation (DAF) process with clarifiers and sedimentation tanks. The DAF process removes suspended fats and proteins which will in turn remove the associated BOD and COD.

Some aspects of the leachate treatment and disposal process are reliant on the capacity of Icon Water's sewer network and treatment parameters. As a result, glass washing would not be progressed until such time as confirmation is received from Icon Water that their sewer network is capable of receiving the volumes and quality of wastewater generated by the glass washing process.

In anticipation of Icon Water being able to accept discharge volumes in the future that would enable glass washing to occur at the facility, wastewater management infrastructure (such as underground pipes and an area for on-site water treatment) will be included in the initial development to 'future-proof' the facility. The Development Application (DA) process required to give effect to the facility (and future glass washing) would confirm the specifics of Icon Water discharge parameters and any other relevant statutory requirements.

Other trade waste generated from the proposal is washdown from a vehicle washing bay. An oil and water separator would be provided to remove free floating hydrocarbons such as diesel, hydraulic fluid and oil as well as heavier suspended solids from the wash stream.

11.4 Impacts

11.4.1 Direct impacts

Construction

Erosion and sedimentation control measures would be installed to manage disturbance associated with earthworks and construction works. Control measures implemented would prevent surface water from roads entering the site as well as manage disturbance and potential water quality impacts to downstream waterways and associated aquatic ecosystems with regards to suspended solids.

Operation

Flooding

As discussed in Chapter 11.3.2, the flood model confirmed that the design floor level can be suitably located to not be impacted by the 1 in 100 AEP flood level, with diversion infrastructure conveying floodwater around the pad.

A minimum floor level of 614.7 m AHD plus the required freeboard would be adopted for the proposal. The proposed MRF has the floor level at 616.25 m AHD, providing a freeboard of almost 2 metres. This confirms the proposal's flood immunity. The flood modelling and mapping results

also indicate that there would be no notable impacts on downstream waterways and that the floor level would not cause flooding to extend to any adjacent landholdings.

Water quality

As described in Chapter 11.3.3, the water quality treatment train (mainly consisting of rainwater tanks, detention, and an OSD system inbuilt into the proposed design) was developed and assessed using a MUSIC stormwater quality model.

The MUSIC model confirms that all requirements post-development would be achieved in accordance with the *ACT Water-sensitive Urban Design Code* (ACT Government, 2017b).

As in-built management measures would be implemented to manage water quality, impacts to the receiving environment, surface water, groundwater and downstream ecosystems are not anticipated.

Water retention and detention

Infrastructure to manage the quantity of stormwater leaving the proposal site would be provided to ensure that retention and detention of water minimise impacts to downstream conditions. While the total volume of water discharged from the proposal site via the proposed OSD system would increase, the velocity of discharge would not cause an increase in flow velocities.

The *DRAINS modelling* (described in Chapter 11.3.4) confirmed that water quantity and discharge rates can be met through in-built management measures to control stormwater flow rates.

Water balance

The water balance assessment indicates that the net potable water requirement for the site is approximately 82.9 ML/yr, with 37.5 ML/yr supplied through recycled water from the leachate treatment and 4.64ML/yr supplied through rainwater capture and reuse. Overflows from the rainwater tanks are expected to be infrequent (less than 60 days per year) due to the high re-use in toilets and landscape areas as well as future re-use in the glass washing facility.

Erosion

The erosion assessment undertaken for Dog Trap Creek indicated that:

- Historic rates of bank erosion have been slow, despite the apparent erodibility of the upper bank. This indicates that the resistant materials of the lower bank and channel bed, combined with stabilising bank and floodplain vegetation cover, effectively limits bank retreat.
- Under existing conditions, resistant materials of the lower bank and bed are capable of withstanding anticipated flood flow velocities of over four metres per second.
- The SEI of 1.63 is lower than the adopted target of 3, indicating that the development is unlikely to have a negative impact on the stream morphology downstream from the site.
- The detailed flood modelling has shown that for these larger events, erosion is expected to occur under existing conditions (i.e. even without the proposal) and that the contribution of the proposal to bank retreat rates would be negligible.

The proposal is therefore highly unlikely to contribute to erosion of Dog Trap Creek.

Wastewater management

An operational management plan would be prepared with a particular focus on ensuring that materials are stored indoors and suitable housekeeping to manage waters and spills is implemented. The operational management plan would also include the management of the wastewater system, including how any response to spills or contamination would be managed.

The Operational Management Plan would also address how pest activity will be prevented and consider how food and water sources will be restricted, minimising harbourage locations, restricting entry points and the role of professional pest control treatments in the facility.

11.4.2 Indirect impacts

Construction

As discussed in Chapter 10.4.2, an ESCP would be prepared as part of the CEMP to manage sediment and nutrient laden runoff impacts from construction activities on local waterways, particularly during extreme weather events. A Soil and Water Management Plan (SWMP) would also be prepared for the construction phase.

Operation

Erosion of Dog Trap Creek was raised as a concern during public consultation of the EIS. As discussed in Chapter 11.4.1, the proposal includes a water retention and detention system developed in accordance with the ACT Water Sensitive Urban Design regulations. The erosion assessment confirmed that proposal is not anticipated to contribute to a change in creek morphology or bank retreat rates as the proposed discharge rates would be lower than the flood velocities that would otherwise be expected to contribute to erosion of the creek. The modelled output from the OSD includes installation of a dissipator to ensure that the soil erosion will not occur. Veolia shall further consult with ACT Heritage and TCCS during detailed design phase.

No indirect impacts from operation are anticipated.

11.5 Mitigation measures

Table 11.6 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to water quality and hydrology.

Provided that the mitigation measures are implemented, residual impacts are not anticipated.

Table 11.6: Water quality and hydrology mitigation measures

Potential impact	ID	Mitigation measure	Timing
Water quality impacts to downstream waterways and associated aquatic ecosystems with regards to suspended solids	W01	A Water Management Plan (WMP) would be developed that details the following mitigation measures: ▪ Installation and management of sediment basin. ▪ Control of upstream run-off movement around the site disturbance area. ▪ Conveyance of site disturbance area run-off to the basin via dirty water drains. ▪ Water quality monitoring of sediment basin and discharge. ▪ Discharge parameters ▪ Rainfall monitoring. ▪ Remedial actions to be taken where water quality value exceedances occur.	Construction
Water quality impacts to downstream waterways associated with the operation of the MRF (e.g. littering)	W02	An Operational Water Management Plan (OWMP) would be developed and implemented. Some key activities that would be specified and maintained are as follows: ▪ Materials inside trucks are not to be removed until truck is fully inside the indoor receiving area.	Operation

Potential impact	ID	Mitigation measure	Timing
		▪ Products are to be fully repackaged before leaving indoors on instances where they are transferred off-site or between buildings. ▪ Daily visual inspection with any waste located outside to be collected. Inspections would be done by verified and authorised personnel with clearly mandated responsibilities. ▪ Maintenance of the wastewater system, including the containment and conveyance system. ▪ Emergency management procedures, such as management of uncontrolled spills, including where engineered controls of areas containing hazardous materials are required such as bunding or similar to intercept pollutants from the receiving environment. ▪ Suitable storage of fuels and other spill hazards.	

11.5.1 Sediment and erosion control strategy

The detailed Soil and Water Management Plan as identified as a mitigation measure in Table 11.6 is to be prepared at detailed design stage consistent with the *ACT Government Environment Protection Guidelines for Construction and Land Development in the ACT* (2022). In this regard, the following sediment and erosion management strategies should be incorporated into the SWMP:

- Reduce disturbance area during construction as much as reasonably possible.
- Install a stabilised site access to reduce likelihood of vehicles tracking soil material onto public roads.
- Erect a sediment control fence downstream of all construction works to protect downstream environments.
- Construct upstream runoff diversion controls to divert runoff around the site disturbance area.
- Incorporate sediment filters such as straw bales or woven geotextile as protection measures as required.
- Nominate a stockpile location for construction materials with appropriate sediment management measures (i.e. sediment filters and upstream flow diversion).
- Construct a sediment basin to collect runoff for retention/particle settling to protect downstream waterways from excess sediment.

The sediment basin should be constructed in the location of the proposed OSD basin where it can be converted to the OSD basin once sediment disturbing construction activities are completed. Detailed sizing for the sediment basin should be completed prior to construction works. Based on the existing soil materials the basin is likely to be Type D/F 'wet' basin. The basin should be designed considering the settling zone and the sediment storage zone.

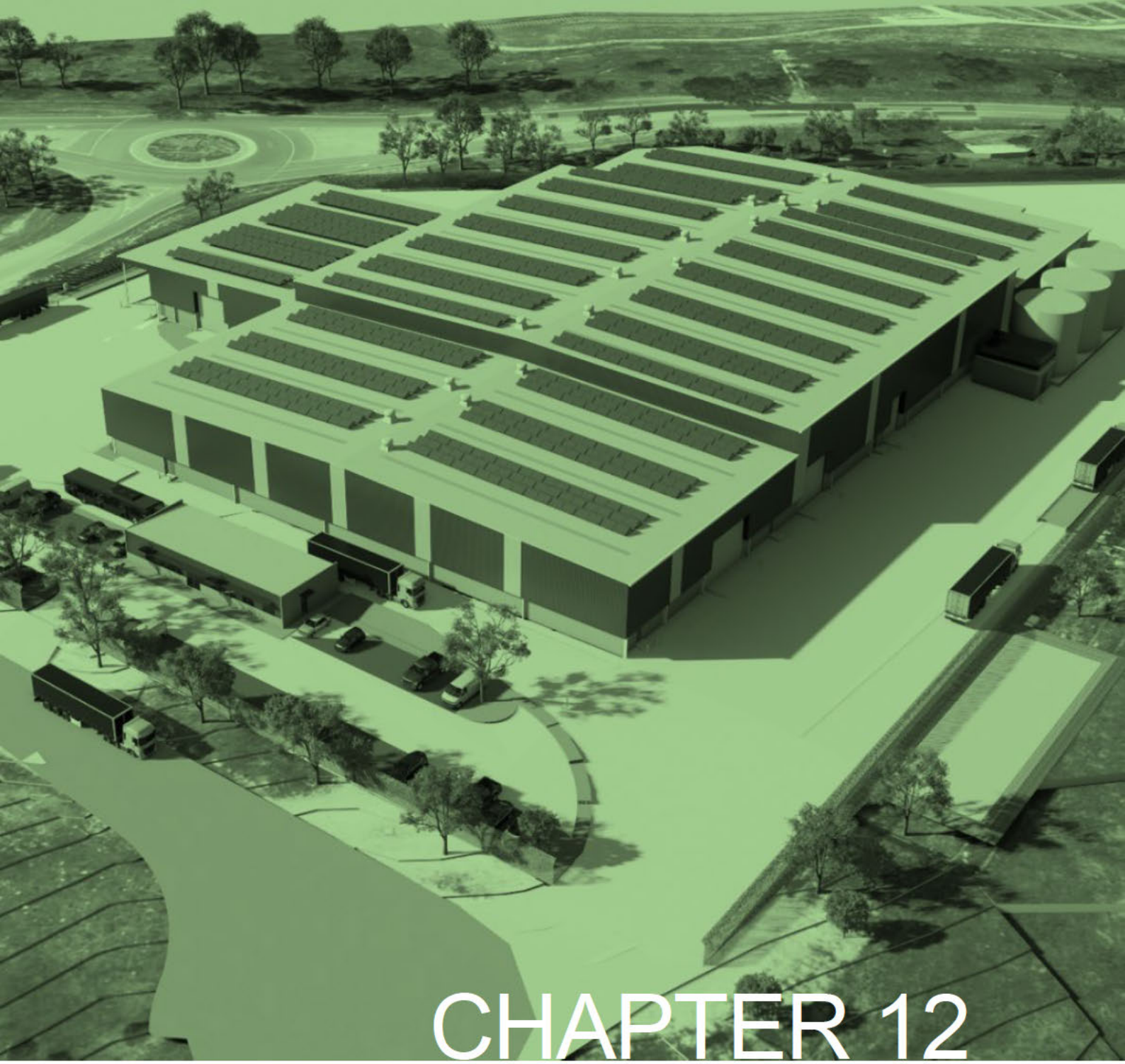
It is recommended the sediment basin water quality discharge is regularly monitored. A water quality monitoring plan should be prepared at detailed design stage.

11.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual water quality and hydrology risks associated with the proposal has been considered in Table 11.7.

Table 11.7: Water and hydrology – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Contaminated wastewater and stormwater may impact on surrounding land and water catchments.	Medium	Unlikely	Moderate	Low
Changes to water management infrastructure (dams, ponds) may impact hydrological regimes of surface water and groundwater in regard to volume and temporal discharge.	Low	Unlikely	Minor	Very Low
Additional risks				
Potential impacts of wastewater and contaminant spills on local groundwater and surface water.	NA	Unlikely	Moderate	Low
Potential for impacts associated with wastewater generation and any other on-site activity, on water quality, aquatic ecosystem and erosion within Dog Trap Creek	NA	Unlikely	Moderate	Low
Potential for flooding to occur and damage the MRF.	NA	Remote	Moderate	Very Low



CHAPTER 12

BIODIVERSITY AND NATURE CONSERVATION

12 BIODIVERSITY AND NATURE CONSERVATION

12.1 Requirements

This chapter addresses the following biodiversity and nature conservation requirements of the Scoping Document:

- Provide a description of ecological values on and adjacent to the site.
- Provide details of whether the proposal will impact the existing connectivity for the area and whether the site will contribute to the future connectivity of the area.
- Consider impact on the area from the facility attracting vermin and associated predators.
- Consider impacts from the spread of weeds.
- A targeted SLL survey must be undertaken for the site.
- Any impacts identified in the EIS must also consider avoidance and mitigation measures to ensure impacts are reduced.

12.2 Environmental conditions and values

12.2.1 Bioregion

The proposal site occurs within the South-eastern Highlands bioregion and Murrumbateman subregion which is characterised by the properties identified in Table 12.1.

Table 12.1: Properties of the Murrumbateman subregion

Property	Within Murrumbateman subregion
Geology	Fine-grained Palaeozoic sedimentary and metasedimentary rocks, with minor areas of coarse acid volcanics. Tertiary alluvial terraces along main streams.
Characteristic landform	Undulating plateau with rounded hills and peaks, entrenched meandering streams with chain of ponds tributaries.
Typical Soils	Mottled yellow and brown texture contrast soils with strongly bleached topsoils. Dark organic loams and clay loams on valley floors. Saline patches present.
Vegetation	Blakely's red gum, yellow box, on lower slopes, red stringybark, bundy and white gum on ridges. Areas of apple box, and mottled gum. Limited swampy flats and valley floor grasslands.

12.2.2 Surrounding land use

The proposal site and the surrounding land use is characterised by a history of disturbance. Existing industrial developments occur to the east and northeast. The MLRMC operates approximately 400 metres to the northwest. Formerly, the proposal site and surrounding land would have been used for agricultural purposes.

12.3 Investigations

12.3.1 Overview

The Biodiversity Assessment undertaken for the proposal was conducted by qualified and experienced ecologists and consisted of the following:

- Desktop review
- Terrestrial flora and fauna surveys including targeted surveys for the Striped Legless Lizard (*Delma impar*) (SLL)
- Habitat assessment
- Direct and indirect construction and operational impact assessment
- Formulation of mitigation measures

This chapter provides a summary of the assessment findings. A full copy of the Biodiversity Assessment together with additional assessment undertaken by Capital Ecology in January 2025 is provided in Appendix L.

The study area for the biodiversity assessment consisted of land in the vicinity of, and including, the proposal site. It is a wider area surrounding the proposal site as defined in the assessment, including land that has the potential to be indirectly impacted by the proposal.

Desktop review

The desktop review involved a search of relevant databases to determine potential biodiversity constraints within a 10 kilometre radius of the study area (defined as 'the locality').

Terrestrial flora and fauna surveys

Terrestrial flora and fauna surveys were undertaken on 5 May 2022 and 13 January 2025 in order to:

- Ground-truth previously recorded vegetation mapping.
- Ground-truth threatened vegetation community mapping previously recorded in the study area.
- Assess vegetation quality.
- Carry out opportunistic surveying for threatened flora and fauna.
- Describe the potential impacts on threatened flora and fauna species, populations and ecological communities in the study area, and their habitats that could arise from the proposal during construction and operation.

Targeted surveys were also conducted for threatened reptiles associated with grassland communities in the ACT, specifically the SLL between 29 September and 1 December 2022. This involved placing 150 artificial tiles throughout the study area between 29 September and 1 December 2022. This technique uses artificially placed structures to replicate the typical rocky habitat of the species and is the best technique for assessing the presence of the lizard in the ACT (DSEWPaC, 2011).

Habitat assessment

Habitat assessments were conducted for all fauna groups and observations of fauna signs were recorded. Fauna habitat resources were assessed to identify areas of potential habitat within the study area. Specific resources such as shelter, roosting, basking and foraging sites for birds, arboreal mammals, amphibians, ground-dwelling mammals and reptiles were recorded. Given the absence of woodland or treed habitat in the study area, habitat of this nature was excluded.

12.3.2 Vegetation communities and flora species

Vegetation types

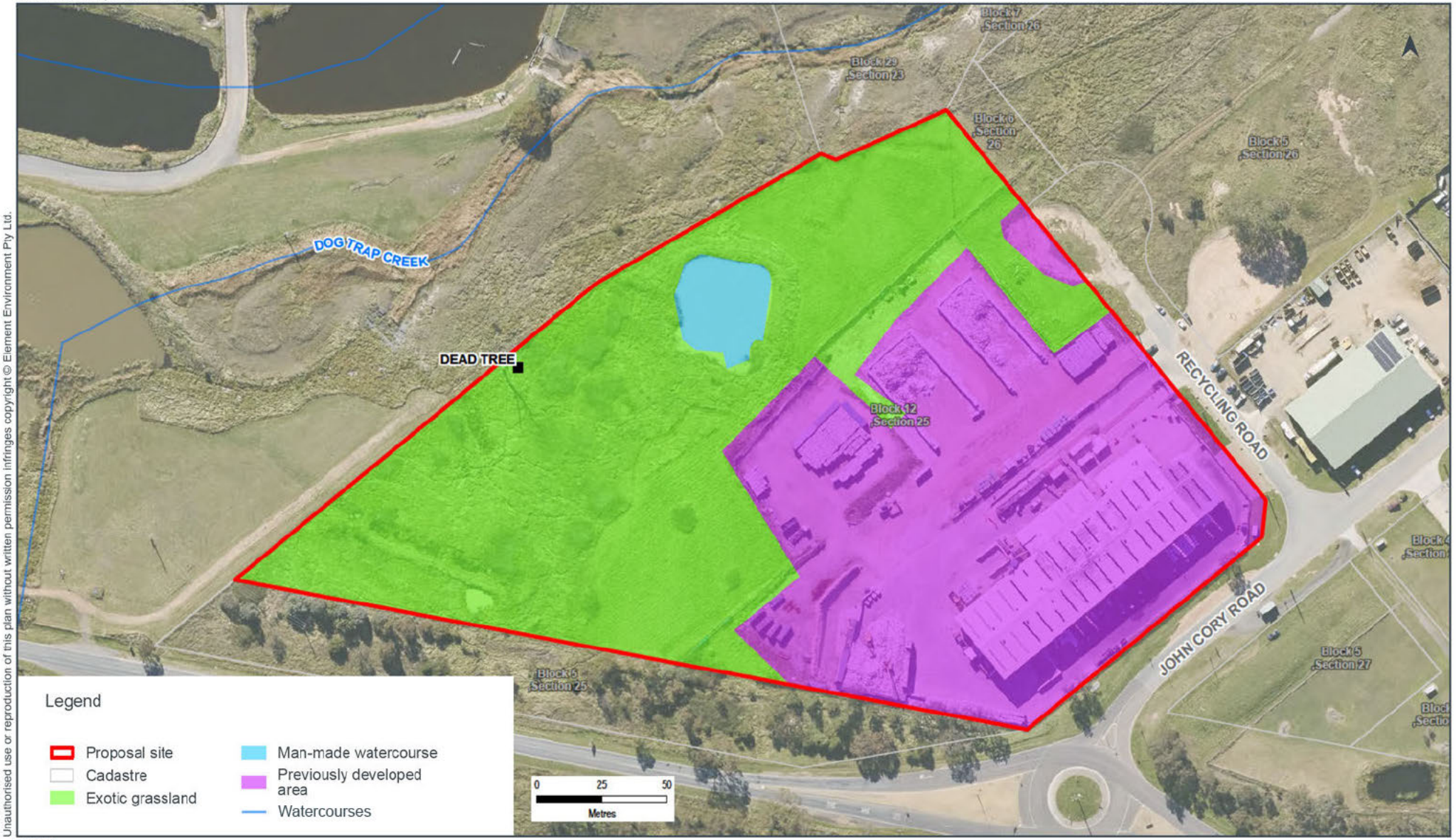
Vegetation in the region is characterised by Eucalypts such as by Blakey's red gum (*Eucalyptus blakelyi*) and yellow box (*Eucalyptus melliodora*) on lower slopes, red stringybark (*Eucalyptus macrorhyncha*), bundy (*Eucalyptus goniocalyx*) and white gum (*Eucalyptus viminalis*) on ridges, areas of apple box (*Eucalyptus bridgesiana*) and mottled gum (*Corymbia maculata*) and limited areas of swampy flats and valley floor grasslands.

The vegetation within the proposal site and its surroundings is mostly grassland. This has been highly modified and as a result is in poor condition. Patches of native vegetation remain but there is no consistent cover.

Despite being mapped in proximity to the study area boundary, there is no Yellow Box/Blakely's Red Gum Grassy Woodland community present within the study area. The groundcover within the study area is dominated by exotic vegetation with very low coverage of important native grass species, like *Themeda triandra*, and lacking diversity of native flora within the assemblage of species recorded. As such, the habitat present is consistent with that of exotic grassland.

Figure 12.1
Vegetation Mapping

ACT Materials Recovery Facility
Environmental Impact Statement



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Source
GHD - 20240613 Updated Draft MRF EIS June 2024 - Redacted

Listed ecological communities

No TECs were located in the proposal site.

Flora species

Thirty-eight (38) flora species were identified during surveys, including 15 native and 23 exotic species. These species were grasses, forbs and small shrubs. The proposal site is treeless, open grassland. There is one stag tree of an unknown Eucalyptus species present in the northwest corner of the proposal site. No hollows were observed on the tree.

Listed flora species

No NC Act or EPBC Act listed threatened flora species were identified during the flora survey. It is considered unlikely that any threatened flora species are located within the area given the high disturbance of the area.

Weeds

Four of the exotic flora are considered under the *ACT Pest Plants and Animals Act 2005* as 'weeds which must be suppressed', 'weeds which must be contained', and prohibited weeds.

12.3.3 Fauna

The desktop review indicated there were no NC Act listed threatened fauna species previously known to occur in the proposal site. Commonly encountered threatened species in the ACT including the Pink-tailed Worm-lizard (Aprasia parapulchella) and Striped Legless Lizard (Delma impar) were not mapped as possibly occurring in the proposal site, with the nearest locations they are known to occur is 1.7 kilometres to the east.

European rabbits are expected to be present.

Species

The Eastern Grey Kangaroo (Macropus giganteus) was observed during the visit. Two reptiles were recorded; and frog calls were heard from the Common Eastern froglet (Crinia signifera), likely associated with the man-made dam ephemeral ferns and boggy areas within the proposal site. A common wetland bird species, the Pacific Black Duck (Anas superciliosa) was recorded utilising the dam and the vegetation surrounding it.

Considering the disturbed nature of the habitat present, lacking records in close proximity to the study area and isolation from higher quality patches of habitat, it is not expected that any migratory birds or threatened amphibians would rely on the study area for survival. It is possible that the dam and associated wetter areas around it may be a temporary refuge for wetland birds, including migratory species, by providing a small amount of concealment and some foraging resources. However, due to its highly degraded condition, it would unlikely constitute any habitat critical for breeding or survival, if it were to be used at all.

The single stag tree present within the northwest of the proposal site has limited use by local fauna. Due to a lack of hollows and connectivity to other trees, the tree would primarily be used by birds for perching and evidence of this was present including whitewash at its base.

Two invasive species listed on the *ACT Pest Plants and Animals Act 2005*, the Common Myna (Sturnus tristis) and the Common Starling (Sturnus vulgaris), were identified during the visit.

Listed fauna species

No NC Act or EPBC Act listed threatened fauna species were identified during fauna survey.

Striped Legless Lizard

No SLLs were recorded during the 9-week program of tile surveys. The grassland in the proposal site is in degraded condition that is not suitable or the survival of the SLL and other threatened reptiles known in the ACT.

Given the nil survey result from targeted survey and with the distance to the estimated historical extent of naturally occurring temperate grassland, it is unlikely that SLLs occur in the proposal area.

Habitats

The proposal site provides a man-made dam, ephemeral ferns and boggy areas (see Figure 12.2). This is potential habitat for aquatic and semi-aquatic species, like amphibians, and wetland birds including migratory species. However, this habitat is of low quality to amphibian, fish and bird species. This is due to the invasion of exotic groundcover species surrounding the dam and elevated sediment loads that were clearly visible in the waterways (see Figure 12.3).

A single dead tree was present within the northwest of the study area (see Figure 12.1). No hollows were observed in the tree. Birds would be unlikely to roost or nest in the tree due to the lack of hollows and exposure from the lacking foliage.

Figure 12.2: Man-made dam with surrounding vegetation within proposal site

Photo: GHD

Figure 12.3: Elevated sediment content of water in the proposal site

Photo: GHD

12.4 Impacts

12.4.1 Direct impacts

Construction

Vegetation removal

The proposal footprint would be approximately 3 hectares in area. This area mostly comprises land that has been previously developed for the existing Hume MRF hardstand and shed area.

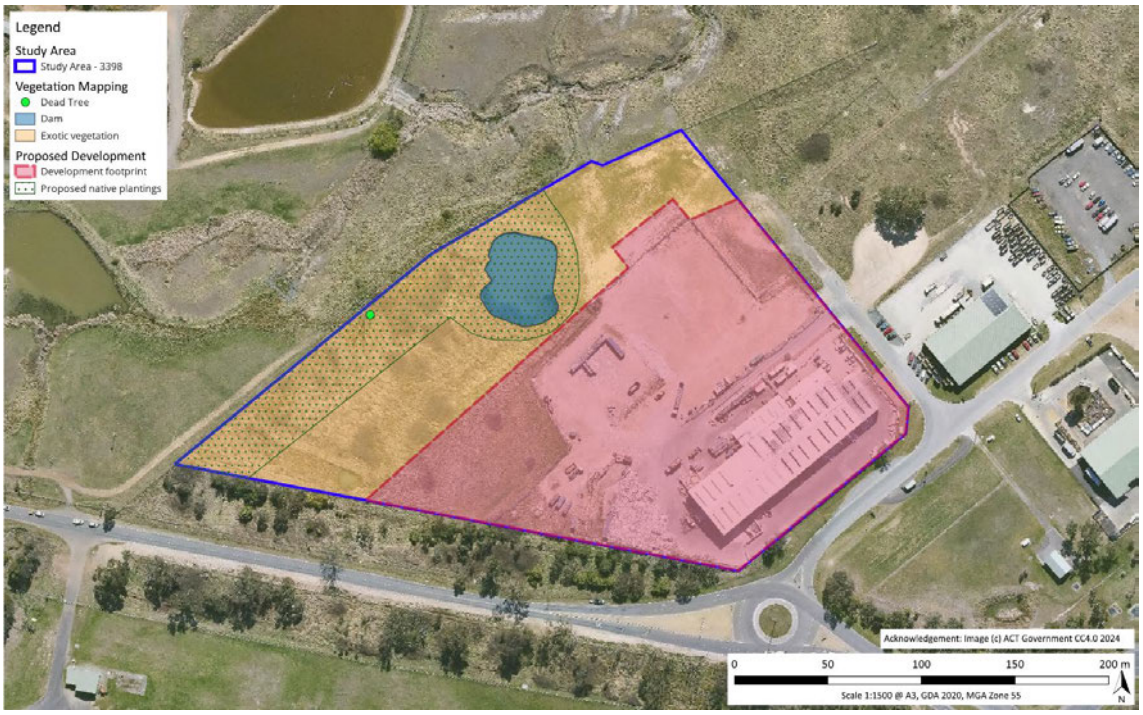
A small area of grassland habitat bordering the current facility would also need to be cleared to facilitate construction. This would be less than one hectare in area. Additional investigation of this area by Capital Ecology in January 2025 confirmed that the vegetation does not meet the requirements of an NC Act or EPBC Act listed TEC. It has relatively low biodiversity value given its landscape context as well as low habitat value for a range of threatened species known in the ACT.

Fauna habitat and fragmentation

- The potential habitat to be removed consists entirely of exotic grassland. However, a large portion of grassland within the study area remains outside the construction footprint and would be retained after construction is completed. Further, the grassland to be impacted occurs on the edge of the current facility present in the proposal site and is in a degraded condition due to edge effects. Accordingly, the proposal is unlikely to cause any fragmentation of habitat in the locality. Further, the dead tree in the proposal site that provides a perch for birds would be retained whilst avoiding direct impacts to the dam and ephemeral waterbodies near it minimises potential fragmentation of habitat for aquatic species, including any wetland birds that choose to utilise it.
- No woodland would be disturbed during construction. As such, impacts to woodland habitat connectivity are low to negligible. The waterbody within the proposal site would be retained, with no potential loss of wetland habitat proposed.
- Notwithstanding that impact on habitat connectivity is low to negligible, additional opportunities to enhance habitat connectivity have been explored at the request of the ACT conservator for Flora and Fauna. As such, Capital Ecology undertook further assessment, which is outlined in full in the Addendum to Appendix L, and recommends:
  - Fencing off a 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam.
  - Implementing a weed control program to remove Blackberry and other significant weeds, with ongoing maintenance to prevent reinvasion.
  - Planting the fenced area with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. Capital Ecology's supplementary report provides a list of suggested species of plants which would be suitable in the context of the surrounding area, the previously existing vegetation type, and the low-lying, wet conditions of the area, while at the same time not increasing bushfire risk.
  - Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat.

Figure 12.4 shows the area of exotic grassland along the northern boundary of the site that is proposed to be planted with native vegetation. Rocks and coarse woody debris will be placed in the same area proposed for native plantings.

Figure 12.4: Proposed Habitat Connectivity Improvement Measures



Threatened and migratory species

No threatened flora or fauna were observed in the proposal site and there are also limited records in the immediate surrounding area. Due to the disturbed habitat present it is unlikely the construction of the proposal would impact threatened species.

Migratory species may currently utilise the existing dam and surrounding vegetation on passage between better quality and larger wetland areas that occur in the locality. However, this would be a rare occurrence if it were to happen at all as this habitat resource is in a degraded condition and would not be sufficient to support many migratory wetland bird species.

Disturbance, injury and mortality of fauna

During construction, death or injury may occur to fauna present during clearing of vegetation. If birds are present but not nesting during construction, they will generally move away from the site to escape disturbance.

The proposal has the potential to temporarily affect the use of the site by fauna as a result of increased disturbance during construction. The use of machinery may temporarily deter some fauna species from using potential habitat in the proposal site during construction.

Noise can cause changes in behaviours such as foraging, requiring additional energy expenditure if fauna need to forage further afield. Impacts during construction would be short term, temporary and are unlikely to deter fauna from using habitat features retained in the proposal site, such as the dead tree, in the long term.

Biosecurity, pests and vermin

The proposal would be completely enclosed. This would minimise the risk of the proposal attracting vermin and associated predators to the proposal site. Given the proposal would replace an existing facility and have improved handling procedures, it is not expected to contribute to an increase in vermin or predators and is likely to decrease activity.

The on-site detention pond could create opportunity for breeding of mosquitoes. To minimise this, it is intended to install an aerator at the surface of the OSD pond to provide for surface water

movement and reduce the ability for mosquitoes to breed on still water. This would be further resolved through the preparation of the pest management plan.

As such, vermin and associated predators are unlikely to pose a hazard to existing biodiversity. Notwithstanding, it is intended to incorporate measures to prevent opportunities for harbouring and/or breeding vermin or other pests.

Operation

Disturbance, injury and mortality of fauna

Operation of the proposal is unlikely to cause long term impacts. Noise, light and other disturbance would be short term and temporary, generally from the arrival and departure of trucks carrying waste. This impact would not be likely to greatly exceed disturbance impacts from the existing infrastructure located adjacent to the study area.

With the implementation of safeguards, the proposal would be unlikely to substantially affect fauna near the proposal and surrounding area.

12.4.2 Indirect impacts

Construction

Runoff, sedimentation and contamination

Naturally occurring ephemeral waterbodies and boggy areas occur within the exotic grassland present, but no natural waterways are present. A constructed dam exists within the study area. This dam and all other wetter areas within the study area are already impacted by erosion and sedimentation, with the water present visibly turbid from high sediment loads.

Excavations and other disturbance due to construction in proximity to the dam and ephemeral waterbodies poses a risk of worsening erosion and sedimentation. This could have cumulative impacts such as erosion and sedimentation within areas outside of the study area, including waterways adjacent to the study area boundary.

Safeguard measures would be implemented to minimise the potential for soils to be washed into waterways. This would include preparation of an ESCP and SWMP, as discussed in Chapters 10.5 and 11.5.

Invasion and spread of weeds, pathogens and diseases

Cover of exotic species was very high throughout the study area. Four of the exotic species identified are ACT declared pest plants, and one (Blackberry) is also a declared Weed of National Significance. The proposal could exacerbate the spread of weeds within the area by increasing conditions conducive to their spread. Construction activities that result in vegetation clearance and ground disturbance have the potential to disturb weed species causing them to drop seeds. Additionally, the movement of machinery, vehicles and people through the study area can spread weeds into the surrounding area.

Pathogens and diseases, such Chytrid fungus (*Batrachochytrium dendrobatidis*), may also be transported into and from the site by machinery and workers. These have the potential to establish in surrounding areas that are currently unaffected by them, possibly causing damage to native fauna and flora.

The potential for significant or new impacts associated with weeds, pathogens and disease is relatively low given the existing development presence and extent of human visitation across the study area and surrounding area. Safeguards would still be implemented to further minimise these risks.

Edge effects

'Edge effects' can include increased noise and light, weed incursion or erosion and sedimentation at the interface of intact vegetation and cleared areas. Edge effects may result in impacts such as changes to vegetation type and structure, increased growth of exotic plants, increased predation of native fauna or avoidance of habitat by native fauna.

Given that most of the remnant vegetation has been cleared and the study area and surrounding area has been historically modified by humans, it is unlikely that the proposal would cause any new edge effects.

Operation

No indirect impacts from operation are expected.

12.5 Mitigation measures

Table 12.2 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to biodiversity and nature conservation.

Table 12.2: Biodiversity and nature conservation mitigation measures

Potential impact	Measures to reduce impact
Impacts to native vegetation and habitat	A flora and fauna management plan (FFMP) would be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to avoid and mitigate impacts to flora and fauna within the study area. The FFMP will include the following measures: ▪ An approximately 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam will be fenced off. ▪ Removal of areas of native vegetation will be minimised wherever possible. ▪ No impact to any areas of habitat not marked for removal would occur. ▪ No vegetation removal or soil disturbance will occur outside the impact areas. ▪ All staff would be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. ▪ If any unexpected threatened flora or fauna not assessed in the ecological assessment are identified in the proposal site, work will cease immediately and the environmental manager will be contacted. ▪ Planting the fenced area along the northern boundary of the site with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. ▪ Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat. The quantity of rocks and course woody debris, together with the locations for placement, will be determined by Veolia in consultation with a consulting ecologist.
Spread of weeds	A weed and pest management plan (WPMP) will be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to prevent the establishment and/or spread of weeds within and beyond the study area. The WPMP will include the following measures: ▪ Use of herbicides. ▪ Integrated weed management throughout the proposal site. ▪ Implementing exclusion zones. ▪ Weed removal and disposal prior to construction. The weed management plan would include: ▪ A description of the weed for identification purposes, including a description of its relevance to the proposal site. ▪ Specific function of the weed, including flowering and seeding periods.

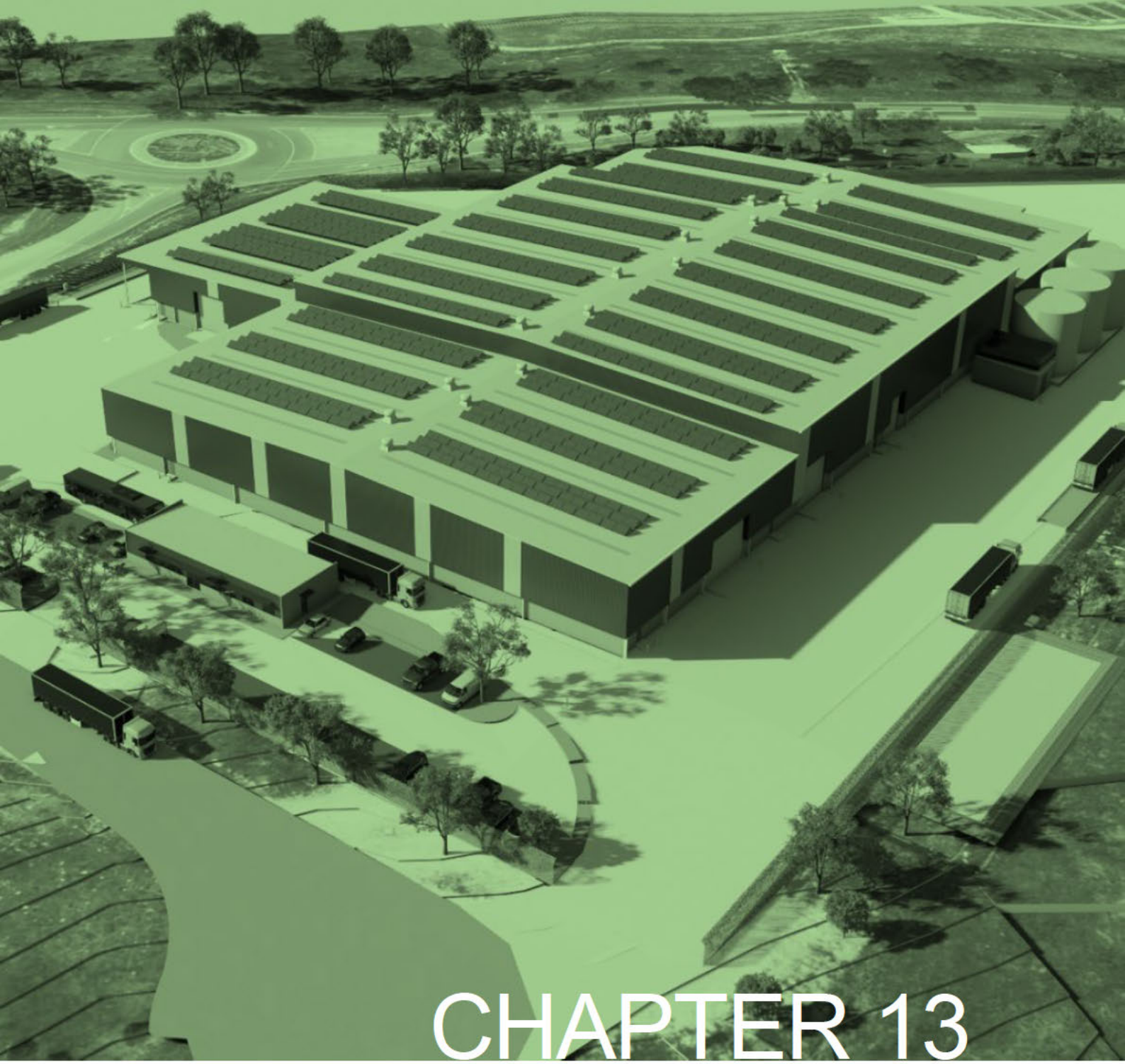
Potential impact	Measures to reduce impact
	▪ Identified risk of spread. ▪ Identification of specific management measures for individual weed control. ▪ A specific weed control program to remove Blackberry and other significant weeds in the strip of exotic grassland in the northern part of the site, with ongoing maintenance to prevent reinvasion. ▪ Limits of movement during construction to reduce spread to areas of high-quality habitat. ▪ Declared pest plants and WoNS will be identified and controlled prior to any earthworks commencing to assist in minimising spread of pest plants and WoNS. ▪ Vehicle and machinery wash/brush downs will be required to ensure that weed species are not spread to non-infested areas. No construction vehicles or staff should enter surrounding areas to minimise weed spread. ▪ Sediment control, such as silt fences, would assist in reducing the potential for spreading weeds downstream. ▪ Soil disturbance will be avoided as much as possible to minimise the potential for erosion and spread of weeds. ▪ The spread of exotic plant species within and adjacent to the proposal site would be monitored. Weed control will be undertaken if it is determined that the proposal is causing significant spread of weed species. ▪ No machinery, light vehicle, or construction staff access to adjacent areas would occur, to minimise the risk of spread of weeds to sensitive areas. ▪ When transporting weed waste from the proposal site to the waste facility, trucks must be covered to avoid the spread of weed-contaminated material. Disposal must be documented, and evidence of appropriate disposal must be kept. Other protocols will include: ▪ Minimising the removal of vegetation wherever possible. ▪ Having an ecologist/wildlife carer on site during clearing activities.
Soil erosion, sedimentation and water quality	A soil and water management plan would be prepared incorporating an erosion and sediment control plan prior to construction commencement, as part of the CEMP. This would also include the following: ▪ Refuelling or maintenance of plant and machinery will not be undertaken within 50 metres of waterways or drainage lines. ▪ A rehabilitation and revegetation plan (RRP) will be prepared for areas disturbed during the works. This will identify appropriate methods for stabilising disturbed soils to resist erosion. ▪ Sediment and erosion controls downstream of the proposal site (such as the nearby creek lines outside of the study area) will be implemented before any construction commences and inspected regularly, particularly after a rainfall event, and maintenance works undertaken as needed. These controls would remain in place after construction until sufficient regeneration of vegetation to prevent erosion or sedimentation occurs. ▪ Weather forecasts will be checked daily to ensure that high risk soil and erosion activities are not undertaken immediately before or during high rainfall or wind events. Disturbed surfaces would be compacted and stabilised in anticipation of rain events to reduce the potential for erosion.
Invasion and spread of pathogens	The weed and pest management plan will include the following: ▪ Protocols to prevent introduction or spread of pathogens like Chytrid Fungus and Phytophthora following the Hygiene guidelines for wildlife (Department of Panning, Industry and Environment (DPIE), 2020). ▪ All machinery entering the proposal site must be appropriately washed down and disinfected prior to work on site.

12.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual biodiversity and nature conservation risks associated with the proposal has been considered in Table 12.3.

Table 12.3: Biodiversity and nature conservation – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Impact to listed TECs	Low	Remote	Moderate	Very Low
Removal of threatened flora and fauna or impacts which impact habitat quality and species resilience.	Low	Remote	Moderate	Very Low
Removal of threatened flora and fauna or impacts which impact habitat quality and species resilience.	Medium	Unlikely	Moderate	Low
Additional risks				
Impacts to SLL	NA	Remote	Moderate	Very Low



CHAPTER 13

SOCIO-ECONOMIC AND HEALTH

13 SOCIO-ECONOMIC AND HEALTH

13.1 Requirements

This chapter addresses the following socio-economic and health requirements of the Scoping Document:

- Provide maps and details showing potential impacts on surrounding sensitive receptors.
- Provide an assessment of impacts from the operation harbouring vermin and pest animals.
- Outline vermin and pest control measures encompassing both the transport and storage of materials and waste on site.

13.2 Environmental conditions and values

13.2.1 Biosecurity framework

The *ACT Biosecurity Strategy 2016-26* (ACT Government, 2016) outlines the critical importance of effectively managing biosecurity risks to minimise the impacts of weeds, pest animals, and plant and animal pests and diseases on the economy, environment and community. It identifies the goals, objectives and supporting actions for addressing identified biosecurity risks. The strategy acknowledges that biosecurity is a shared responsibility, and the productivity and profitability of agricultural production depends in part on the management of pests and diseases, including the prevention of incursion of pests and diseases onto properties.

Biosecurity in the ACT is currently governed by the following legislation and respective subordinate legislation and supporting strategies and plans:

- Biosecurity Act 2015 (Cth)
- Environment Protection and Biodiversity Conservation Act 1999 (Cth)
- Animal Diseases Act 2005 (ACT)
- Plant Diseases Act 2002 (ACT)
- Pest Plants and Animals Act 2005 (ACT)
- Nature Conservation Act 2014 (ACT)
- Emergencies Act 2004 (ACT)
- Fisheries Act 2000 (ACT)
- ACT Pest Animal Management Strategy 2012 – 2022
- ACT Weeds Strategy 2009 – 2019
- *ACT Biosecurity Emergency Plan* (sub-plan of the ACT Emergencies (Emergency Plan) 2014)

The current strategy in the ACT is consistent with Commonwealth biosecurity legislation and strategies, as well as national and cross-border agreements and in particular the Intergovernmental Agreement on Biosecurity.

Biosecurity protocols would need to be considered as part of both the construction and operation phase and ensure they are appropriately managed.

13.2.2 Demographics and land use

In the 2021 Census, there were approximately 395 people residing in Hume, and of these 95% were male and 5% were female. The median age was 34 years. It is likely that the high proportion of males is a result of security and caretakers residing in industrial buildings on the census night. This is reinforced through the census data confirming only 3 families were counted, which would most likely reflect the rural dwellings in the general area.

The proposal site and surrounding land is typically industrial or rural land used for agricultural land uses. As a result, the surrounding land has been subject to larger land leases in the northern area and smaller leases within Hume with few residential dwellings or urban developments that are considered to be particularly sensitive.

13.2.3 Key surrounding developments

The proposal site is located within the HRRE, in the industrial suburb of Hume, adjacent to a number of industrial developments, including the Mugga Lane Solar Park 100 metres to the south-west. It is approximately 400 metres from the MLRMC site and approximately 10 kilometres to the south-west of Canberra International Airport. The proposed Hume FOGO Facility is adjacent east of the proposal site and would receive compostable material. It is currently in the planning phase.

The residential areas of Macarthur are more than 1.5km to the south-west. and the newly developed South Jerrabomberra is 1.2km to the east beyond the Hume Industrial area.

There are a few rural residential dwellings within the area, including the Woden Homestead which is approximately two kilometres north-east of the site.

Sensitive receptors are depicted in Figure 14.1, which shows that there are some isolated residential houses within two kilometres of the proposal site. These are further discussed in Chapters 14 and 17.

The current extent of vermin and pest infestation at the proposal site is unknown.

13.3 Investigations

A desktop review was undertaken to identify the potential social, economic and health impacts associated with construction and operation of the proposal, with a particular focus on biosecurity risks including pests and vermin.

13.4 Impacts

13.4.1 Direct impacts

Construction

Biosecurity, pests and vermin

Biosecurity risks would be managed during construction with the development and implementation of a construction biosecurity management plan as part of the CEMP. It would include measures to ensure controls and procedures are implemented during construction to avoid, minimise or manage potential adverse impacts on biodiversity within and adjacent to the proposal site. The plan would also include measures to retain and protect existing flora and fauna habitat wherever possible and also appropriately manage the spread of weeds and plant pathogens.

The construction biosecurity management plan (including a pest and weed management plan) would also detail measures to minimise the potential for biosecurity risks during construction in accordance with the *Biosecurity Act 2015* and relevant ACT legislation. Potential biosecurity risks and measures that may mitigate these risks would be included in the plan. The biosecurity measures would address the following:

People

- Limit entry points to the property.
- Complete site hygiene measures for vehicles, equipment and personnel to ensure no biosecurity issues are introduced or encouraged onto the site.
- Limit worker contact with livestock, crops or plant materials on adjacent properties as much as possible and eliminate any unnecessary contact altogether.
- Keep a visitor register.

Vehicles

- Limit the number of entry and exit points (one is preferable).
- Clearly sign and lock restricted access areas.
- Ensure construction vehicles are clean and are parked in a designated area away from livestock or crops.
- Complete site hygiene measures for vehicles and staff to ensure no biosecurity issues are introduced or encouraged onto the site. Consideration might be given for a vehicle high pressure wash down facility (if required) to clean vehicles and equipment.
- Ensure construction vehicles remain on designated tracks.

Equipment

- Clean machinery and equipment from the top down and dismantle it as far as possible to gain access to internal spaces.

With the implementation of biosecurity measures identified in the plan, impacts associated with vermin and pest animals during construction are not expected.

Operation

Biosecurity, pests and vermin

The operational phase would involve the transportation of comingled recyclables to the facility via recyclable material collection vehicles, which are typically enclosed or covered, for sorting and further processing.

Some recyclables, particularly containers, may contain small amounts of food or beverage residues. This can have the potential to attract birds, native wildlife and other vermin or facilitate the spread of pathogens to and from the facility if not properly managed.

Both the receival and materials processing operations would occur within enclosed buildings with roller doors to facilitate vehicle movement. In addition, any residual waste from the materials recovery process or staff generated waste would be stored in appropriate closed-lidded bins to avoid the likelihood of birds, wildlife, pests and vermin being attracted to the proposed facility. This waste would be stored in enclosed compactor bins until removed off-site.

An operational biosecurity management plan would also be prepared for the operational phase of the proposal to document the operational procedures, controls and ongoing monitoring and

measurement to manage biosecurity risks. The plan would also outline how pests and weeds will be managed on the site and during transport. Veolia as the site operator would be required to undertake routine monitoring and inspections of the operational biosecurity management plan.

The detailed design and proposed site operation of the proposal is therefore expected to appropriately control biosecurity risks.

Sensitive receivers

An Air Quality Impact Assessment and Noise and Vibration Impact Assessment have been undertaken as part of the EIS. The findings from these assessments are summarised in Chapter 14 and Chapter 17, respectively.

The assessments demonstrated that the proposal would not result in amenity (air quality or noise and vibration) impacts to surrounding sensitive receivers, as shown on Figure 14.1 in Chapter 14.

Benefits

The proposal is anticipated to result in socio-economic benefits to the community through the diversion of waste from landfill which supports a variety of ACT Government net zero emission goals. With less waste being disposed of to landfill means that there would be a reduction in the costs needed to extend the capacity of landfills.

The facility will also provide employment and training for residents in the region. The on-site education facility will enhance the opportunities for students to learn and understand the importance of recycling.

13.4.2 Indirect impacts

No indirect negative impacts from construction or operation are anticipated. However, there are a number of indirect positive impacts associated with implementing circular economy initiatives, employment, training, and reduced waste to landfill.

13.5 Mitigation measures

Table 13.1 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential socio-economic and health impacts.

Table 13.1: Socio-economic and health impact mitigation measures

Potential impact	ID	Mitigation measure	Timing
Biosecurity including vermin and pest animals which impacts on health	SH01	A Construction Biosecurity Management Plan (including a pest and weed management plan) would be developed and implemented as part of the CEMP and include: ▪ Measures to ensure controls and procedures are implemented during construction to avoid, minimise or manage potential adverse impacts on biodiversity. ▪ Measures to retain and protect existing flora and fauna habitat where possible and appropriately manage the spread of weeds and plant pathogens. ▪ Measures to minimise the potential for biosecurity risks during construction in accordance with the *Biosecurity Act 2015* and relevant ACT legislation.	Construction

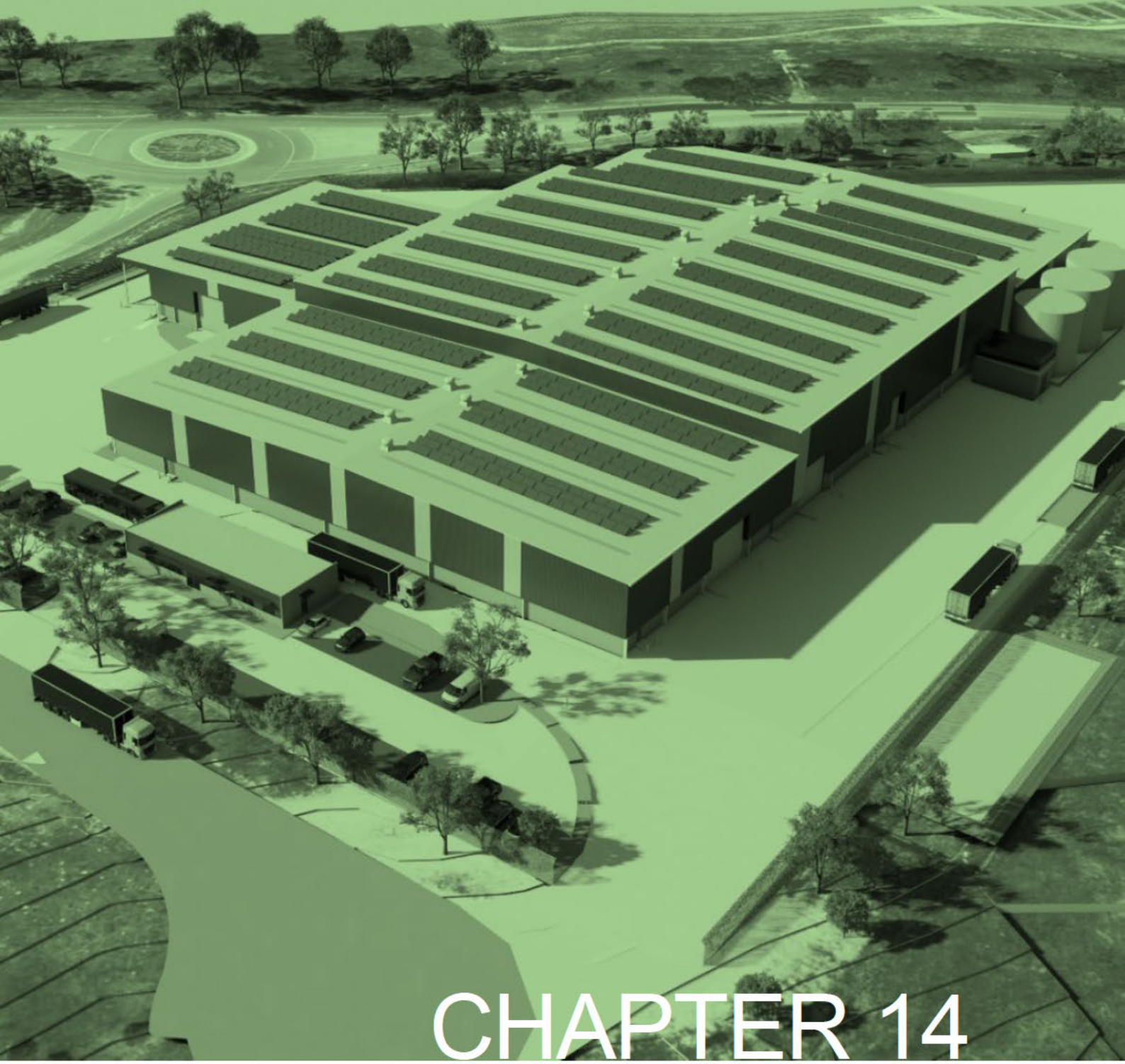
Potential impact	ID	Mitigation measure	Timing
	SH02	An operational biosecurity management plan would be developed and implemented which: ▪ Clearly documents operational procedures, controls and ongoing monitoring and measurement of biosecurity risks associated with the proposal – including requirements for vehicle deliveries to be covered, delivery within the receival hall and storage of residual waste. ▪ Outlines how pest and weeds will be managed on the site and during transport. ▪ Requires Veolia as the site operator to undertake routine monitoring and inspections on the operational biosecurity management plan.	Operation

13.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual socio-economic and health risks associated with the proposal has been considered in Table 13.2.

Table 13.2: Socio-economic and health – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Reduction in amenity during construction (noise, visual, and dust impacts)	Medium	Unlikely	Minor	Very Low
Facilities and materials may be a harbourage site for vermin and other pests with impacts on health and social amenity	Medium	Unlikely	Minor	Very Low
Additional risks				
Impacts from operation harbouring vermin and pest animals.	NA	Unlikely	Minor	Very Low



CHAPTER 14
AIR QUALITY AND ODOUR

14 AIR QUALITY AND ODOUR

14.1 Requirements

This chapter addresses the following air quality and odour requirements of the Scoping Document:

- Consider air quality impacts such as odour emissions and dust due to increased traffic movements and outline avoidance and mitigation measures to ensure any impacts are reduced.

14.2 Environmental conditions and values

14.2.1 Surrounding land use

The proposal site is located in Hume, northwest of the Monaro Highway in an industrial and rural area approximately 12.5 kilometres south of Canberra City. The predominant annual average wind direction is from the northwest and measured at 2.4 metres per second. High wind speeds (winds greater than five metres per second which are often attributed to dust lift off) mostly occur from the northwest and south and are more frequent during the summer months (BoM, 2023).

The land use around the facility is mainly industrial and rural operations. Major air emission sources contributing to the local airshed include:

- Mugga Lane Resource Management Centre
- Corkhill landscape supplies and organics composting
- Boral asphalt plant
- Hume asphalt plant
- Capital asphalt plant
- Dry waste facility

14.2.2 Sensitive receptors

Sensitive receptors are defined based on the type of occupancy and activities performed. The definition includes both existing and proposed land uses.

The nearest existing residential area is the suburb of MacArthur, located approximately two kilometres southwest of the proposal site. The developing suburb of Tralee is located approximately 1.1 kilometres southeast of the proposal site. Isolated sensitive receptors located nearer to the proposal location are described in Table 14.1 and shown on Figure 14.1.

Table 14.1: Sensitive receptors within two kilometres of the proposal site

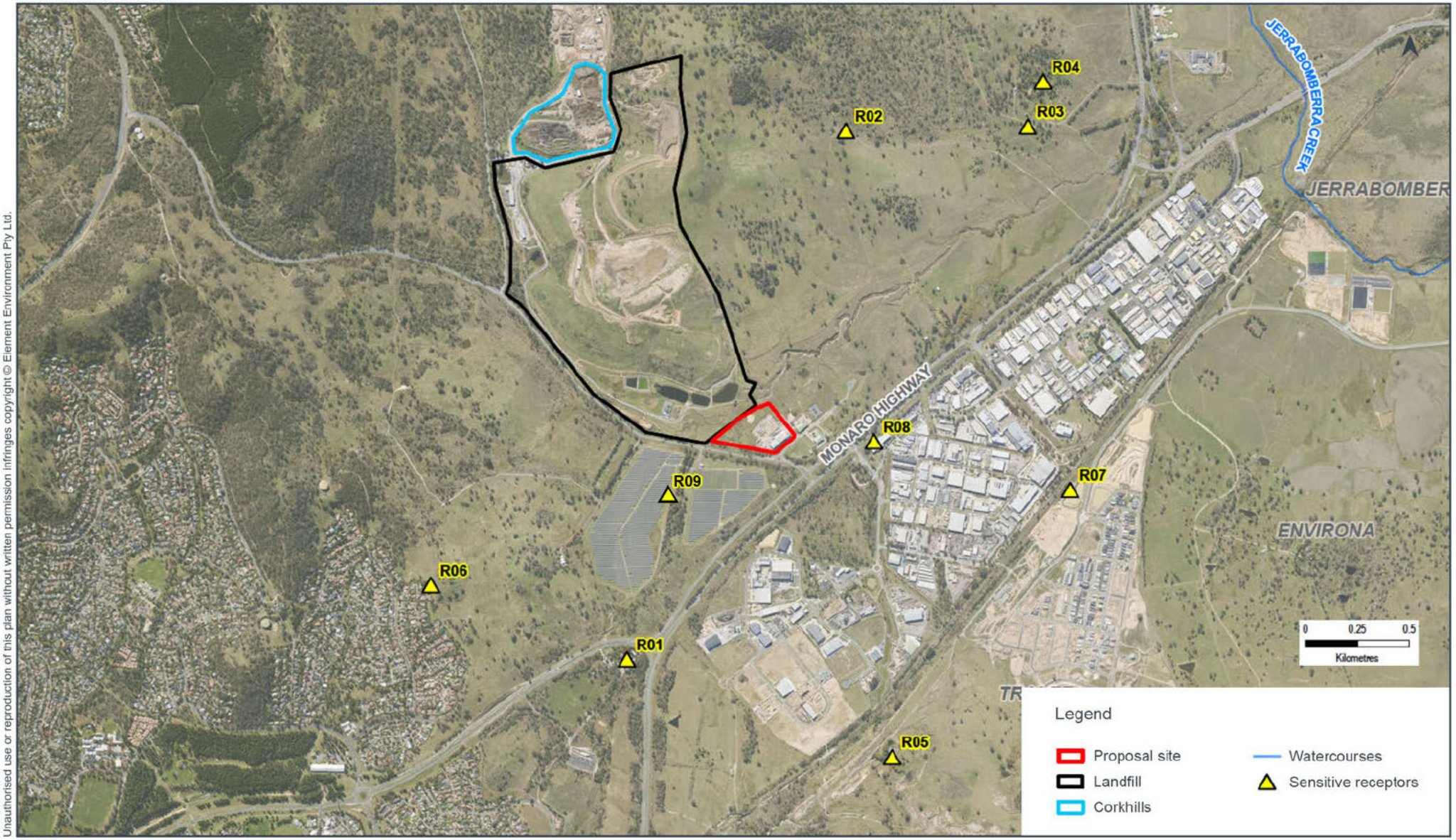
ID	Receptor type	Address	Distance and direction from proposal site
R01	Commercial	Rose Cottage Canberra, corner of Isabella Dr and Monaro Hwy	1.2 km SW
R02	Residence	Jerrabomberra, 2620	1.5 km NE
R03	Residence	10171 Monaro Hwy, Hume	1.8 km NE

ID	Receptor type	Address	Distance and direction from proposal site
R04	Residence	Woden Homestead, 10225 Monaro Hwy, Hume	2.1 km NE
R05	Residence	Tralee, 2620	1.6 km S
R06	Residential area	MacArthur	1.7 km SW
R07	Residential area	Tralee (South Jerrabomberra)	1.1 km SE
R08	Industrial area	Hume industrial area	0.4 km S
R09	Solar Farm	Mugga Lane	0.1km

It is noted that a solar farm is located within the industrial area, adjacent to the proposal site (to the southwest). Solar farms can be sensitive to dust deposition.

Figure 14.1
Sensitive Receptors

ACT Materials Recovery Facility
Environmental Impact Statement



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Source
GHD - 20240613 Updated Draft MRF EIS June 2024 - Redacted

14.2.3 Background air quality

The key pollutants in the airshed are mainly associated with manufacturing, fuel combustion and construction, which includes particulate matter of varying size fractions (PM_{10} and $PM_{2.5}$).

Ambient air quality monitoring data for the proposal area was taken from the nearest and most representative ambient air quality monitoring station (AAQMS) located at Monash, approximately 5.8 kilometres to the west. A summary of this data for the last five years is presented in Table 14.2. Unusually high 24-hour maximums of PM_{10} and $PM_{2.5}$ in 2019 and 2020 are expected to a result of the 2019-2020 summer bushfires.

Table 14.2: Average pollutant concentrations recorded at Monash AAQMS 2017-2021

Pollutant	Averaging period	Recorded background concentration by year				
		2017	2018	2019	2020	2021
NO2	Maximum 1 hour (ppm)	0.04	0.04	0.08	0.12	0.04
	Annual average (ppm)	0.005	0.004	0.005	0.004	0.003
CO	Maximum 1 hour (ppm)	0.7	0.7	4.8	4.9	0.6
	Annual average (ppm)	0.23	0.21	0.21	0.30	0.11
O3	Maximum 1 hour (ppm)	0.05	0.05	0.11	0.09	0.04
	Annual average (ppm)	0.02	0.02	0.02	0.02	0.02
PM10	Maximum 24 hour (µg/m3)	-	-	310.8	1,215.8	38.7
	Maximum 24 hour (below assessment criteria) (µg/m^3)	-	-	49.9	50.0	38.7
	Annual average (µg/m^3)	-	-	19.0	29.2	10.5
PM2.5	Maximum 24 hour (µg/m^3)	37.0	39.2	296.4	1,296.3	95.3
	Maximum 24 hour (below assessment criteria) (µg/m^3)	25.0	25.0	25.0	25.0	25.0
	Annual average (µg/m^3)	8.1	7.4	14.2	25.1	7.1

"-" indicates data not available

14.2.4 Odour

Four rounds of ambient odour field surveys were undertaken in 2021 and 2022 to assess the intensity of odours at the landfill and green waste processing facility (Corkhill) at MLRMC and the former Hume MRF (SLR Consulting Australia, 2021). The odour surveys revealed that odour intensities observed beyond the MLRMC boundary were at most 'distinct'. Stronger odours (ranging from 'strong' to 'extremely strong') were observed within the MLRMC and MRF boundaries. No 'distinct' odours were detected in the residential areas of Macarthur, Fadden or Chisholm. The surveys also indicated that odours arising from the former MRF had a relatively low plume extent while odours from Corkhill had the largest. Based on the findings of the surveys, the Mugga Lane landfill and Corkhill were identified as the most significant source of odour emissions from the MLRMC, with minimal impacts from the MRF.

Odours emitted from local industrial and rural facilities are identified as being of a different character to that from the MRF, so no cumulative impacts are anticipated.

A number of complaints regarding odour detected in suburbs around the MLRMC were recorded in recent years, however the precise cause of odour was not identified.

14.3 Investigations

14.3.1 Overview

An Air Quality Impact Assessment was undertaken for the proposal, and included:

- Review of available ambient air quality, odour data, complaint data and reports in the local area including MLRMC.
- Assessment of the risk of dust and particulate impacts from construction of the proposal on the surrounding environment.
- A risk-based operational odour and particulate assessment based on the performance of the existing facility, existing and future separation distances, proposed waste types and quantities and building design including odour control and ventilation.
- Identification of mitigation measures.

This chapter provides a summary of the assessment findings. A full copy of the Air Quality Impact Assessment is provided in Appendix M.

Assessment of risk of the construction dust and particulate impacts

The generation of dust and particulate matter are the primary pollutants during the construction phase of the proposal. The risk of dust impacts from construction of the proposal on the surrounding environment was assessed using the *United Kingdom Institute of Air Quality Management's Guidance on the assessment of dust from demolition and concrete* (Institute of Air Quality Management, 2014) (IAQM guidance).

This involved:

- Estimating the dust emission magnitude from construction stages (earthworks, construction and trackout) based on the definitions for small, medium and large dust emission magnitudes provided in the IAQM guidance for how different activities may be defined.
- Estimating the sensitivity of receptors surrounding the proposal site based on the definitions for low, medium and high sensitivity to dust soiling effects, human health impacts and ecological effects in the IAGM guidance.
- Determining the risk of dust impacts using the estimated magnitude and sensitivity using the IAGM guidance risk matrix.

Risk based operational odour and particulate assessment

The potential for operational odour and particulates impacts were assessed using a risk assessment based on definitions provided under *AS ISO 31000: 2018 Risk Management - Guidelines*. Pre- and post-mitigated risks were identified for each operational activity.

Overall risk was determined based on the impact magnitude and the likelihood of each emission from each activity.

The definition of each impact magnitude rating is listed in Table 14.3 and the definition of each likelihood rating is listed in Table 14.4.

Table 14.3: Impact magnitude

Magnitude	Description
Substantial	Impact is predicted to cause significant health and/or amenity consequences on the receiving environment. Impacts would generate widespread nuisance complaints, resulting in regulatory action.
Major	Impact magnitude would cause statutory objectives/standards to be exceeded. Impact would generate nuisance complaints, resulting in regulatory action.
Moderate	Impact would give rise to a perceivable health and/or amenity impact. Impact would generate nuisance complaints, likely to require management but not result in regulatory action.
Slight	Predicted impact may be tolerated. Impact would not generate nuisance complaints.
Negligible	Impact is predicted to cause no significant consequences. Impacts would not generate nuisance complaints, and only perceptible within the site boundaries.
Eliminated	Impact eliminated. Ranking only used when an identified hazard has been identified and eliminated.

Table 14.4: Likelihood

Likelihood	
Almost certain	Expected to occur frequently. Likely to occur often within the lifetime. Occurs continuously.
Likely	Expected to occur regularly. Will occur several times within the lifetime. Will occur frequently.
Occasional	Expected to occur occasionally. May be described as 'possible'. Likely to occur sometime in the lifetime. Will occur several times.
Unlikely	Could occur occasionally. Unlikely but possible to occur in the lifetime. Unlikely but may be reasonably expected to occur.
Rare	May occur in exceptional circumstances. So unlikely it may be assumed occurrence will not occur in the lifetime. Unlikely to occur but possible.
Eliminated	Incapable of occurring. Ranking only used when an identified hazard has been identified and eliminated.

The overall risk takes into account both the impact magnitude and the likelihood, as defined in Table 14.5. The risk of each task is then defined as 'acceptable', 'review', or 'unacceptable'.

- 'Acceptable' indicates that no further management is required, although risks should be managed.
- 'Review' indicates the risk is tolerable and should be reduced as low as practicable.
- 'Unacceptable' indicates management is required.

Table 14.5: Risk matrix

Likelihood / Magnitude	Negligible	Slight	Moderate	Major	Substantial
Almost certain	Review	Review	Unacceptable	Unacceptable	Unacceptable
Likely	Review	Review	Review	Unacceptable	Unacceptable

Likelihood / Magnitude	Negligible	Slight	Moderate	Major	Substantial
Occasional	Acceptable	Review	Review	Review	Unacceptable
Unlikely	Acceptable	Acceptable	Review	Review	Review
Rare	Acceptable	Acceptable	Acceptable	Review	Review

14.4 Impacts

14.4.1 Direct impacts

Construction

The generation of dust and particulate matter are the primary pollutants during the construction phase of the proposal. A review of potential construction air quality emissions was undertaken, and a risk-based approach in accordance with the IAQM guidance was adopted to assess dust from the construction of the proposal.

Construction works has been divided into activity groups that have potential to cause significant dust emissions. These activities are:

- Earthworks.
- Construction.
- Track-out.

The sensitivity and scale of each construction activity was used to determine the risk of dust impacts on the surrounding receptors. Table 14.6 outlines the risk levels determined for the construction of the proposal.

The risk identified during all stages of construction (earthworks, construction and track-out) was Low risk.

Proposed specific mitigation measures and residual impacts are provided in Chapter 14.5 to further minimise the risk of dust impacts at receptor locations during construction works. It is noted that the potential impact of dust on the adjacent solar farm is expected to be adequately addressed by the control measures proposed.

Table 14.6: Risk matrix for dust impacts during construction

Impact	Risk	Earthworks	Construction	Track-out
Dust soiling	Low risk	Low risk	Low risk	Low risk
Human health	Low risk	Low risk	Low risk	Low risk
Ecological	Low risk	Low risk	Low risk	Low risk

Operation

Emissions

The main potential for unmitigated air emissions associated with this type of recycling facility are:

- Total suspended particulate matter (TSP) from material loading and sorting and glass crushing.
- PM10 from material loading and sorting and glass crushing.
- PM2.5 from truck and machinery exhaust.

- Odour from any non-compliant loads/ material/ liquids.

The activities performed which may lead to low level emissions of odour or dust within the building are described in Table 14.7.

Table 14.7: Operation activities with potential for odour and dust emissions

Operation activities	Odour emissions	Dust emissions
Receival of co-mingled materials loaded onto conveyor	X	X
Receival of non-compliant loads and loads with increased odour	X	X
Removal of waste material and transfer to landfill	X	X
Removal of hazardous wastes such as gas bottles, fire extinguishers, car batteries etc.	X	X
Separation, crushing and screening glass		X
Washing of glass		X
Wastewater capture and re-use	X	
Optical sorting to identify, separate, remove contaminants, quality control and bale paper and cardboard products	X	X
Bailing processes in the CDS separated materials		X

All access roads and onsite roads would be paved, therefore dust generated by vehicle movements is expected to be negligible.

The washing of glass would result in accumulation of suspended solids and dissolved solids, requiring management to enable water reuse within the washing circuits. All wastewater collection and treatment activities would be within enclosed facilities. Therefore, wastewater collection and treatment would be unlikely to be a source of offensive odours.

14.5 Risk assessment

The pre- and post-mitigated risk ratings are presented in Table 14.8 as well as reference to specific mitigation measures which would help to mitigate the identified risk. Several other general mitigation measures which apply to the whole operation rather than each activity are also included in Chapter 14.5.

Table 14.8: Operational odour and particulate risk assessment

Operation activities	Pollutant	Pre-mitigation			Post-mitigation		
		Impact magnitude	Likelihood	Risk	Impact magnitude	Likelihood	Risk
Receival of co-mingled materials loaded onto conveyor	Odour	Negligible	Likely	Review	Negligible	Unlikely	Acceptable
	Dust	Negligible	Likely	Review	Negligible	Unlikely	Acceptable
Receival of non-compliant loads and loads with increased odour	Odour	Slight	Occasional	Review	Slight	Unlikely	Acceptable
	Dust	Slight	Occasional	Review	Slight	Unlikely	Acceptable
Removal of waste	Odour	Slight	Occasional	Review	Negligible	Unlikely	Acceptable

Operation activities	Pollutant	Pre-mitigation			Post-mitigation		
		Impact magnitude	Likelihood	Risk	Impact magnitude	Likelihood	Risk
material and transfer to landfill	Dust	Negligible	Unlikely	Acceptable	Negligible	Unlikely	Acceptable
Removal of hazardous wastes such as gas bottles, fire extinguishers, car batteries etc.	Odour	Moderate	Unlikely	Review	Slight	Rare	Acceptable
	Dust	Moderate	Rare	Acceptable	Slight	Rare	Acceptable
Washing of glass	Dust	Negligible	Likely	Review	Slight	Rare	Acceptable
Separation, crushing and screening glass	Dust	Moderate	Likely	Review	Slight	Rare	Acceptable
Optical sorting to identify, separate, remove contaminants, quality control and bale paper and cardboard products	Odour	Negligible	Unlikely	Acceptable	Negligible	Rare	Acceptable
	Dust	Negligible	Unlikely	Acceptable	Negligible	Rare	Acceptable
Baling processes in the CDS separated materials	Dust	Negligible	Unlikely	Acceptable	Negligible	Rare	Acceptable

14.5.1 Indirect impacts

Indirect air quality impacts from construction or operation include potential emissions from vehicles entering and leaving the site. This is address as a residual impact in Section 14.7 and is considered to be a very low residual risk rating.

14.6 Mitigation measures

Table 14.9 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to air quality and odour.

Table 14.9: Air quality and odour mitigation measures

Potential impact	ID	Mitigation measure	Timing
Dust			
Elevated dust levels	AQ01	A dust control protocol would be prepared that forms part of the CEMP to detail management measures, a method for recording dust complaints and monitoring requirements. This would include the following:	Construction

Potential impact	ID	Mitigation measure	Timing
		▪ On days with forecast and actual high winds (i.e. over 10 m/s) site activities would be reduced or adjusted accordingly if wind blown dust is observed to be leaving the site boundary. ▪ Dust suppression would be undertaken as required using water sprays, water extension agents, soil stabilising polymers or other media on: ▪ Unpaved work areas subject to traffic or wind ▪ Spoil and aggregate stockpiles ▪ During the loading and unloading of dust generating materials. ▪ Unpaved access tracks ▪ On days with high background dust levels (due to fire or offsite dust events for example), dust mitigation would be increased in the form of watering or reducing dusty construction activities. ▪ Construction vehicles with potential for loss of loads (such as dust or litter) would be covered when using public roads.	
	AQ02	If the works are creating levels of dust which may significantly impact on residential amenity, the works would be modified or stopped until the dust hazard is reduced to an acceptable level.	Construction and Operation
	AQ03	A dust complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding dust are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	Operation
	AQ04	A dust collector system for the glass crusher would be implemented.	Operation
	AQ05	If required, a dust collector system would be implemented in other areas which regularly emit large amounts of dust.	Operation
	AQ06	Regular sweeping and housekeeping practices would be undertaken to maintain dust levels within the building.	Operation
Other pollutants			
Elevated levels of airborne pollutants	AQ07	Plant and equipment would be maintained in good condition to minimise ignition risk, spills and air emissions that may cause nuisance.	Construction
Odour			
Release of odour to surrounding communities	AQ08	An odour complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding odour are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	Operation
	AQ09	If the works are emitting odour concentrations which may significantly impact the nearby receptors, the works would be modified or stopped until the odour hazard is reduced to an acceptable level.	Operation

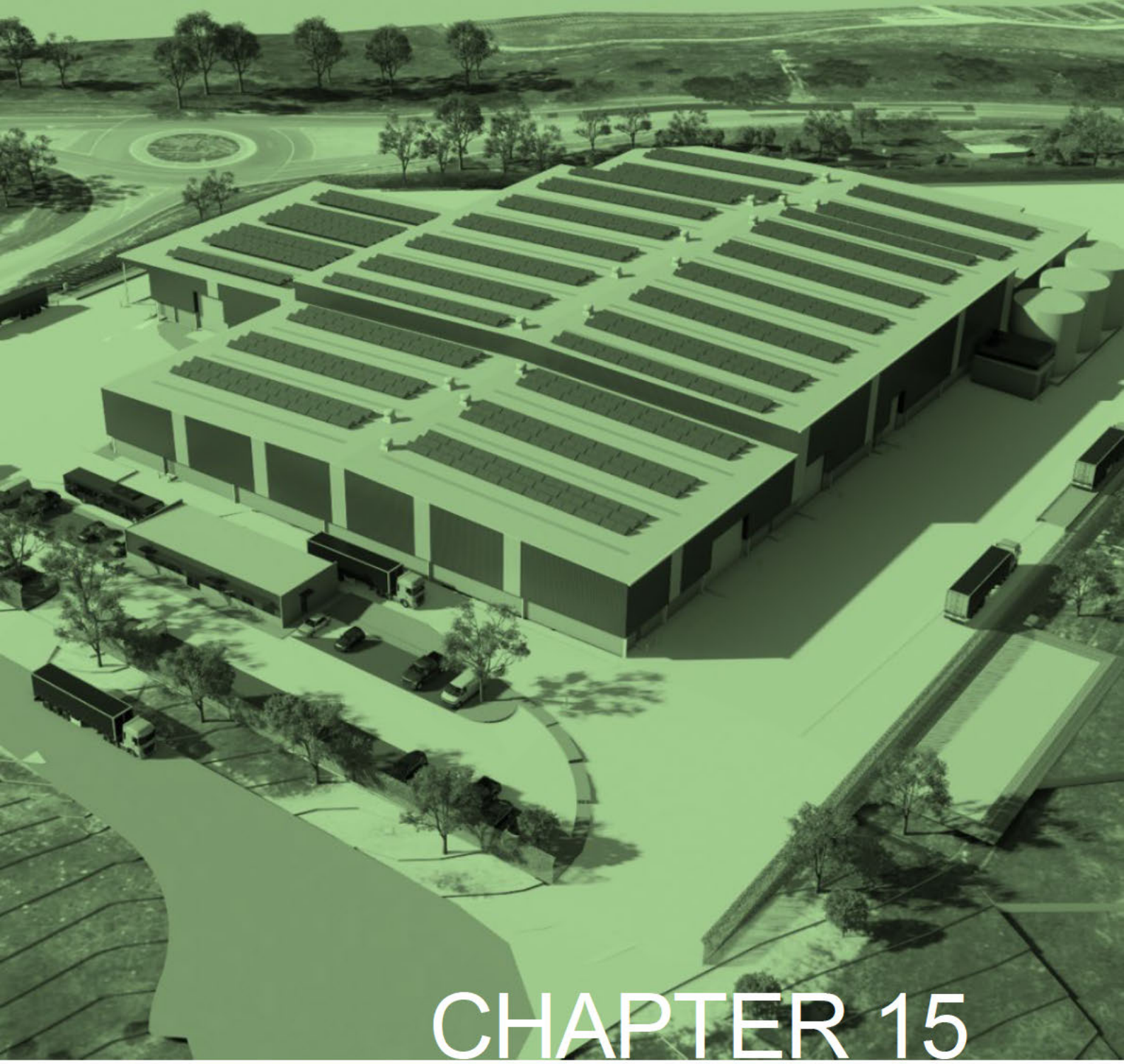
Potential impact	ID	Mitigation measure	Timing
	AQ10	An internal sealed site drainage system would be provided which leads to storage tanks or interceptors that can collect rainwater and any spillage.	Operation
	AQ11	Provision would be made for the segregation of odorous baled materials, and the recycling of those materials back through the MRF in the event they need further separation	Operation
General			
Odour and dust emissions (general)	AQ12	Household sorting practices would be promoted.	Operation
	AQ13	Post-sort inspection of materials would be undertaken, and any potentially odorous materials would be isolated. Pick-ups and transport to landfill are frequent throughout the day thereby reducing the time any potential odorous materials are on site. Note also that the MRF doesn't generate highly odorous waste	Operation
	AQ14	The name and contact details of person(s) accountable for air quality and dust issues would be displayed on the proposal boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information would be displayed.	Operation
	AQ15	Regular inspections would be carried out to monitor compliance with the air quality management strategy. Once operational, sampling of the proposal operations would be conducted to confirm assumptions made throughout the air quality assessment.	Operation
	AQ16	A dust monitoring program would be established during construction with guidance from Safe Work Australia and relevant Australian Standards. Sampling would be undertaken in each building biannually by a suitable professional in accordance with guidance from Safe Work Australia and relevant Australian Standards.	Operation
	AQ17	Sorted materials would be covered during transport.	Operation
	AQ18	Ventilation equipment and dust or odour control units (if required) must be operational and regularly maintained. Should any unit become faulty, production on those affected lines would be halted immediately and not resumed until emission control systems are fully operational.	Operation

14.7 Residual impact

Based on the mitigation measures identified, an assessment of the residual air quality and odour risks associated with the proposal has been considered in Table 14.10.

Table 14.10: Air quality and odour – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Construction activity may contribute to air pollution with dust and gas (such as carbon monoxide, hydrocarbon etc) emissions.	Medium	Unlikely	Minor	Very Low
Increased processing and vehicle movements may contribute to air pollution with gas and odour emissions.	Medium	Unlikely	Minor	Very Low



CHAPTER 15

GREENHOUSE GAS

15 GREENHOUSE GAS

15.1 Requirements

This chapter addresses the following greenhouse gas requirements of the Scoping Document:

- Outline the greenhouse gas emissions that will be generated by the proposed development during construction and operation, including measures to mitigate the impact.
- Provide quantitative estimates of the Scope 1 and 2 greenhouse gas emissions that will be generated by the proposed development during operation.

15.2 Assessment framework

Australian legislation and guidelines applicable to the greenhouse gas assessment include:

- National Greenhouse and Energy Reporting Act 2007 (NGER Act)
- National Greenhouse and Energy Reporting (Measurement) Determination 2008
- National Greenhouse and Energy Reporting Regulations 2008 (NGER Regulations)
- National Greenhouse Accounts (NGA) Factors workbook, Commonwealth Department of Industry, Science, Energy and Resources 2021

A summary of what is covered by the legislation is presented in Table 15.1.

Table 15.1: Greenhouse gas legislation summary

Act/Scheme	Description
NGER Act and Regulations	Provides for data accounting in relation to greenhouse gas emissions and energy consumption and production.
National Greenhouse and Energy Reporting (Measurement) Determination 2008	Provides methods and criteria for calculating greenhouse gas emissions and energy data under the NGER Act.
National Greenhouse Accounts	Provides methods and criteria for calculating greenhouse gas emissions, including Scope 3 emissions.

These guidelines are considered representative of good practice greenhouse gas accounting in Australia and are applicable to the proposal.

Facilities need to report under the NGER Act if they emit 25,000 t CO_2-e or more greenhouse gas (Scope 1 and Scope 2 emissions).

The *ACT Climate Change Strategy 2019-2025* (ACT Government, 2019c) is also applicable to the proposal. This strategy aims to reduce the ACT's emissions by 50–60% by 2025 and achieve net-zero emissions by 2045. The strategy highlights the crucial role that waste avoidance and management plays towards achieving a successful transition to net zero emissions. Expansion of the Hume MRF will support the expected increase of recycling, outlined in Goal 6A, Implement the Actsmart programs and household waste education programs to reduce waste generation and increase recycling.

The value of diverting recyclable material from landfill is identified in the strategy as a crucial way to reduce emissions from waste, which directly aligns with the proposal. As a significant

component in the ACT's waste management system, the proposal plays a crucial role in assisting the ACT government in achieving its goals.

15.3 Investigations

15.3.1 Overview

The greenhouse gas (GHG) assessment involved the following key tasks:

- Identify the greenhouse gas emission sources during construction and operation.
- Quantify the fuel, electricity, or other activity data for each emission source.
- Identify appropriate emission factors (typically, NGER (Measurement) Determination emission factors are being used as a reference source).
- Calculate emissions for each activity and each stage.
- Determine the total proposal greenhouse gas emissions.
- Identify emission reduction measures.

The emission factors used for the inventory were sourced primarily from the *National Greenhouse Accounts (NGA) Factors 2021* (DISER, 2021).

The GHG assessment was prepared based on the information available at the time, including documents provided and other studies conducted as part of the EIS. Wherever possible, estimates were used to calculate greenhouse gas emissions. A number of assumptions and exclusions were made to inform the estimate.

15.3.2 Greenhouse gas inventory

The NGA Factors defines three scopes (Scope 1, 2 and 3) for different emission categories based on whether the emissions are from "direct" or "indirect" sources.

Scope 1 emissions encompass the direct sources from the Project defined as:

> "…*produced from sources within the boundary of an organisation and as a result of that organisation's activities*" (Cth DCCEEW, 2024a).

Scope 2 emissions are produced by the burning of fossil fuels to generate electricity and defined as:

> "…*indirect emissions which occur as a result of activities that generate electricity, heating, cooling or stream that is consumed by an organisation but which is generated outside that organisation's boundaries*" (Cth DCCEEW, 2024a).

Scope 3 emissions are other indirect emissions which:

> "...*occur outside of the boundary of an organisation as a result of actions by the organisation*" (Cth DCCEEW, 2024a).

For the purpose of this assessment, emissions generated in all three scopes defined above provide a suitable approximation of the total greenhouse gas (GHG) emissions generated from the Project.

Scope 3 emissions can be a significant component of the total emissions inventory; however, these emissions are not directly controlled by the operation. These emissions are understood to be the Scope 1 emissions from other various organisations.

Emission sources

Scope 1 and 2 GHG emission sources identified from the proposal are the on-site combustion of diesel fuel, petrol, and on-site consumption of electricity. Scope 3 emissions have been identified as resulting from the purchase of consumables for use on-site and the transport of residual wastes generated.

Estimated quantities of materials and variables used to calculate the potential GHG emissions associated with Scope 1, 2 and 3 emissions for the proposal have been described for the construction and operational phases. These estimates are based on the maximum proposal production and would provide a reasonable worst-case approximation of the potential GHG emissions for the purpose of this assessment.

Table 15.2 summarises the quantities of materials estimated for the construction and operational phases of the proposal.

For the purposes of this assessment, it is assumed the construction phase will last 2 years and includes the site preparation and infrastructure development. Construction emission sources are identified as diesel-powered construction plant, petrol used in small plant and electricity usage.

The operational phase is based on the maximum designed capacity of the Project of 115,000tpa. Operational emission sources are identified as diesel use in on-site equipment, diesel use for ongoing maintenance and electricity usage.

Scope 3 emissions include the transport and emplacement of waste materials to landfill. Waste materials are identified as the contaminants in the feedstock that cannot be processed at the MRF. The assumed contamination rate of the incoming recyclables feedstock is 12%. The estimated diesel use for the transport is calculated from the approximate distance to the landfill assuming average fuel consumption of 53.1L/100km for articulated trucks is applied (ABS, 2025).

Other Scope 3 emissions also arise from a number of other sources indirectly associated with the operation such as emissions generated by employees travelling to and from the site. These relatively minor individual contributions are difficult to accurately quantify due to the diversity and nature of the sources and have not been considered further in this assessment.

Table 15.2: Summary of quantities of materials estimated for the proposal

Phase	Activity	Unit	Quantity
Construction	Diesel – construction equipment	kL	250
	Petrol – construction equipment	kL	15
	Electricity – construction	MWh	170
Operation	Diesel – heavy vehicles	kL	305
	Diesel – on-site equipment	kL	133
	Electricity – operations	MWh	3,024
	Electricity – maintenance	MWh	96
	Diesel – heavy vehicles to landfill	kL	4
	Waste material sent to landfill	t/y	13,800

Emission factors

To quantify the amount of carbon dioxide equivalent (CO_2-e) material generated, emission factors were obtained from the NGA Factors.

The emission factors used in this assessment are summarised in Table 15.3.

Table 15.3: Summary of emission factors

Type	Energy content factor (GJ/kL)	Emission factor			Units	Scope
		CO_2	CH_4	N_2O		
Diesel	38.6	69.9	0.1	0.2	kg CO_2-e/GJ	1
		17.3	-	-		3
Petrol	34.2	67.4	0.2	0.2	kg CO_2-e/GJ	1
		17.2	-	-		3
Diesel - Transport	38.6	69.9	0.1	0.4	kg CO_2-e/GJ	3
Municipal solid waste to landfill	-	1.6	-	-	t CO_2-e/t	3

Note: GJ/kL = gigajoule per kilolitre, CO_2 = carbon dioxide, CH_4 = methane, N_2O = nitrous oxide, kg CO_2-e = kilograms of carbon dioxide equivalent and t CO_2-e/t = tonnes of carbon dioxide equivalent per tonne of waste

The emissions from the ACT electricity grid is taken to be zero as it is supplied with 100% renewable electricity (ERM, 2024).

Summary of GHG emissions

Table 15.4 summarises the estimated annual CO_2-e emissions for the proposal.

The estimated annual CO_2-e emissions for the proposal are also presented graphically in Figure 15.1 and Figure 15.2. These figures illustrate that the majority of emissions generated by the proposal for the construction phase would be from diesel fuel consumption and from the operational phase would be from waste material sent to landfill.

The proposal is calculated to generate approximately 711 t CO_2-e emissions for the construction phase and 1,187 t CO_2-e emissions for the operational phase. These emissions are associated with diesel and petrol use. Scope 2 emissions are calculated at 0 t CO_2-e as the ACT electricity grid relies on 100% renewable sources. For Scope 3 emissions, emissions during the operational phase are dominated by the waste material sent to landfill that would be covered in the Scope 1 emission estimates for the landfill operation.

Table 15.4: Summary of CO_2-e emissions for the proposal (t CO_2-e)

Phase	Activity	Scope 1	Scope 2	Scope 3
Construction	Diesel – construction equipment	677		167
	Petrol – construction equipment	33.6		8.5
	Electricity – construction		0	
	Total	711	-	175
Operation	Diesel – heavy vehicles	827		204
	Diesel – on-site equipment	360		89
	Electricity – operations		0	
	Electricity – maintenance		0	
	Diesel – heavy vehicles to landfill			12
	Waste material sent to landfill			22,080
	Total	1,187	-	22,385

Figure 15.1: CO_2-e emissions for the construction phase of the proposal

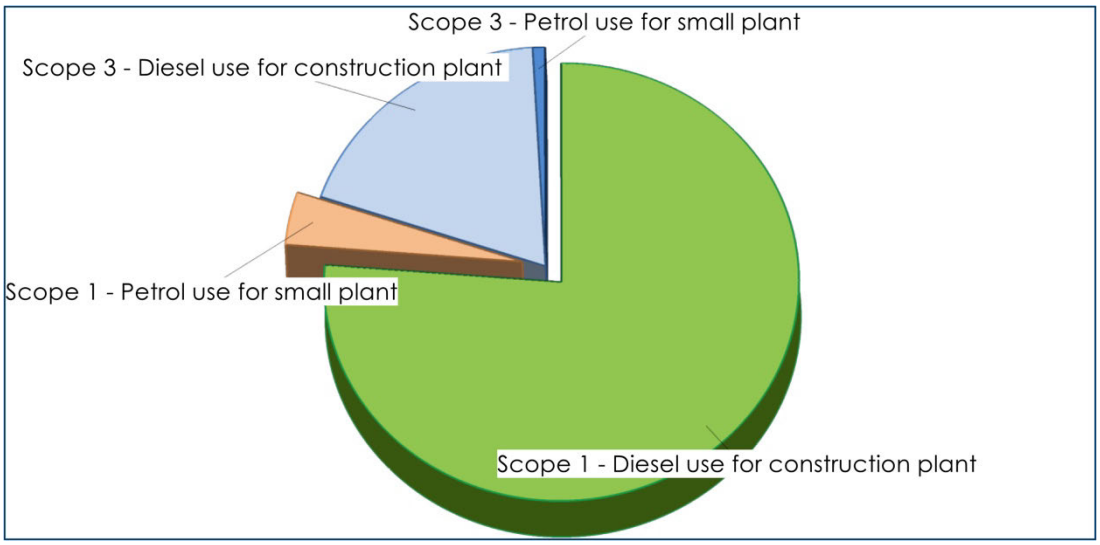
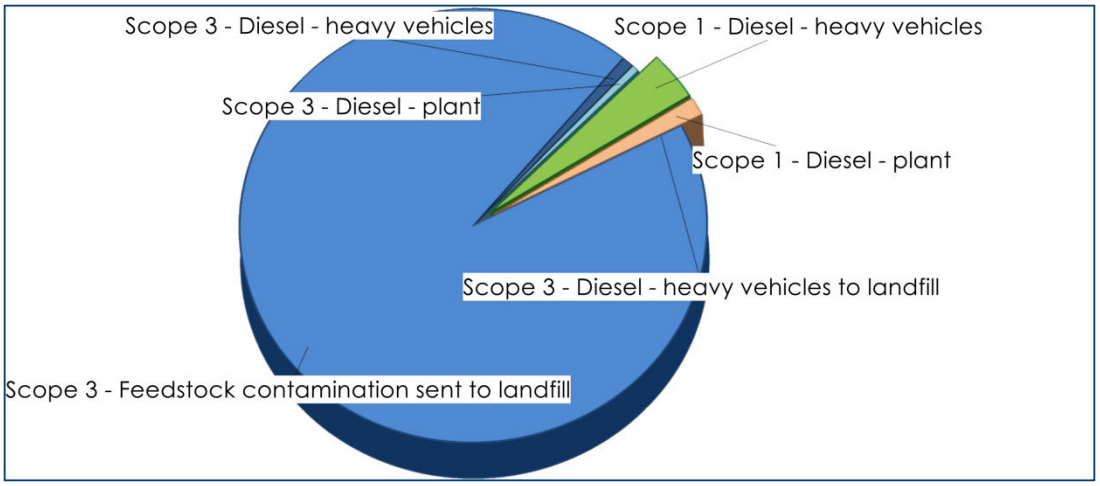


Figure 15.2: CO_2-e emissions for the operational phase of the proposal



Contribution of GHG emissions

The estimated annual GHG emissions for Australia up to June 2024 was 440.6 Mt CO_2-e (Cth DCCEEW, 2024b). In comparison, the estimated annual average GHG emissions for the proposal is 0.0012 Mt CO_2-e (Scope 1 and 2). Therefore, the annual contribution of GHG emissions from the proposal in comparison to the Australian GHG emissions for the 2024 period is estimated to be approximately 0.0003%.

At a Territory level, the estimated GHG emissions for ACT in the 2022 period were 1.28 Mt CO_2-e (Cth DCCEEW, 2025). The annual contribution of GHG emissions from the proposal (Scopes 1 and 2) in comparison to the ACT GHG emissions for the 2022 period is estimated to be approximately 0.09%.

15.4 Mitigation measures

The estimated annual average GHG emissions for the proposal is 0.0012 Mt CO_2-e (Scope 1 and 2), which is calculated to be approximately 0.0003% of the Australian GHG emissions for the period to June 2024 and approximately 0.09% of the ACT GHG emissions for the 2022 period.

In order to reach the Territory's net zero target by 2045, the proposal would need to eliminate all operational emissions sources. The facility design considers a range of measures to reduce GHG emissions including but not limited to:

- Design and construction of the MRF Facility to achieve an equivalent of GreenStar 4-Star rating.
- Reduction of operation emissions by provision of:
  - A substantial portion of the power from rooftop solar. Veolia is also investigating location of a Battery Energy Storage System on site.
  - Use of Variable Speed Drives (VSDs) for process equipment shall reduce energy demand.
  - Digital project management tools will reduce paper use and improve coordination, cutting down on rework and delays.
  - Just-in-time material delivery reduces storage needs and energy used in handling.
- Provision of electric vehicle ready charging infrastructure encourage staff to transition to electric or hybrid vehicles for personal use. When purchasing vehicles for their fleet, Veolia will consider purchasing an electric or hybrid vehicle.
- Installation of transparent roof sheeting to reduce lighting consumption.
- Undertake periodic reviews during the operational lifetime of technologies and abatement measures to reduce GHG emissions from the proposal (e.g. robotics and AI).
- Elimination of gas driven technologies for glass processing.
- Implement energy-efficient practices in construction processes, including:
  - Selection of site levels to minimise cut-and-fill.
  - Slab design to minimise number of trucks/pours.
  - Engineering design to optimise size of concrete and steel structures.
  - Implement efficient design and materials to minimise waste particularly on the structure.
  - Optimize machinery use to reduce idling and fuel waste.
  - Use electric tools where possible and battery tools, especially for smaller tasks.
  - Use of cranes and lifts efficiently. Plan lifts to minimise idle time and fuel use.
  - Switch to electric EWPs where possible once the concrete slab is poured.
  - Regularly maintain equipment to ensure optimal fuel efficiency.
  - Bulk ordering to minimise packaging and delivery trips.
  - Buy local to reduce transport emissions and support local economies.

Veolia has further considered a range of greenhouse gas mitigation and abatement measures to apply to the proposal which are summarised in Table 15.5.

Table 15.5: Greenhouse gas mitigation measures

Potential impact	ID	Mitigation measure	Timing
Construction emissions	GHG01	Opportunities to reduce construction emissions would be investigated and considered during design and construction planning. This would include opportunities for: ▪ Evaluating and considering low carbon concrete alternatives, such as replacement of Portland cement in concrete with SCM. ▪ Identifying opportunities to incorporate recycled materials.	Construction

Potential impact	ID	Mitigation measure	Timing
		▪ Assessing construction methodologies and equipment selection to minimise diesel use and explore low-emission fuel alternatives. ▪ Using reclaimed asphalt pavement. ▪ Using steel with higher post-consumer recycled content. ▪ Locally sourced construction materials where possible to minimise transport emissions. ▪ Embedding waste minimisation and recycling strategies, together with reuse/recycling of other construction waste materials and inclusion in construction management plans, where feasible. ▪ Investigation of use of transparent roofing and/or wall materials for natural plant lighting. ▪ Veolia's design shall consider and seek to maximise overall energy efficiency.	
Feedstock contamination sent to landfill	GHG02	Educational campaigns and increasing recycling awareness would be developed and implemented to help reduce feedstock contamination.	Operation
Diesel use	GHG03	Ways to lower demand of diesel use and substitution with less emission intense fuels would be investigated and considered.	Construction and operation
	GHG04	Service and maintain all machinery, as far as reasonably practical, in accordance with original equipment manufacturer recommendations for maintenance.	Operation
	GHG05	Target equipment maintenance to ensure, as far as reasonably practical, equipment remains fit for purpose over its whole life cycle.	Operation
Technology	GHG06	Undertake periodic reviews of technologies and abatement measures to reduce GHG emissions from the proposal, including whether these measures are reasonable and feasible to implement at the proposal.	Operation
Operation Emissions	GHG07	Additional opportunities to reduce operation emissions would include: ▪ A substantial portion of the power is coming from our rooftop solar. ▪ Variable Speed Drives (VSDs) for process equipment shall reduce energy demand. ▪ Continuous improvement to seek to maximise overall energy efficiency.	Operation

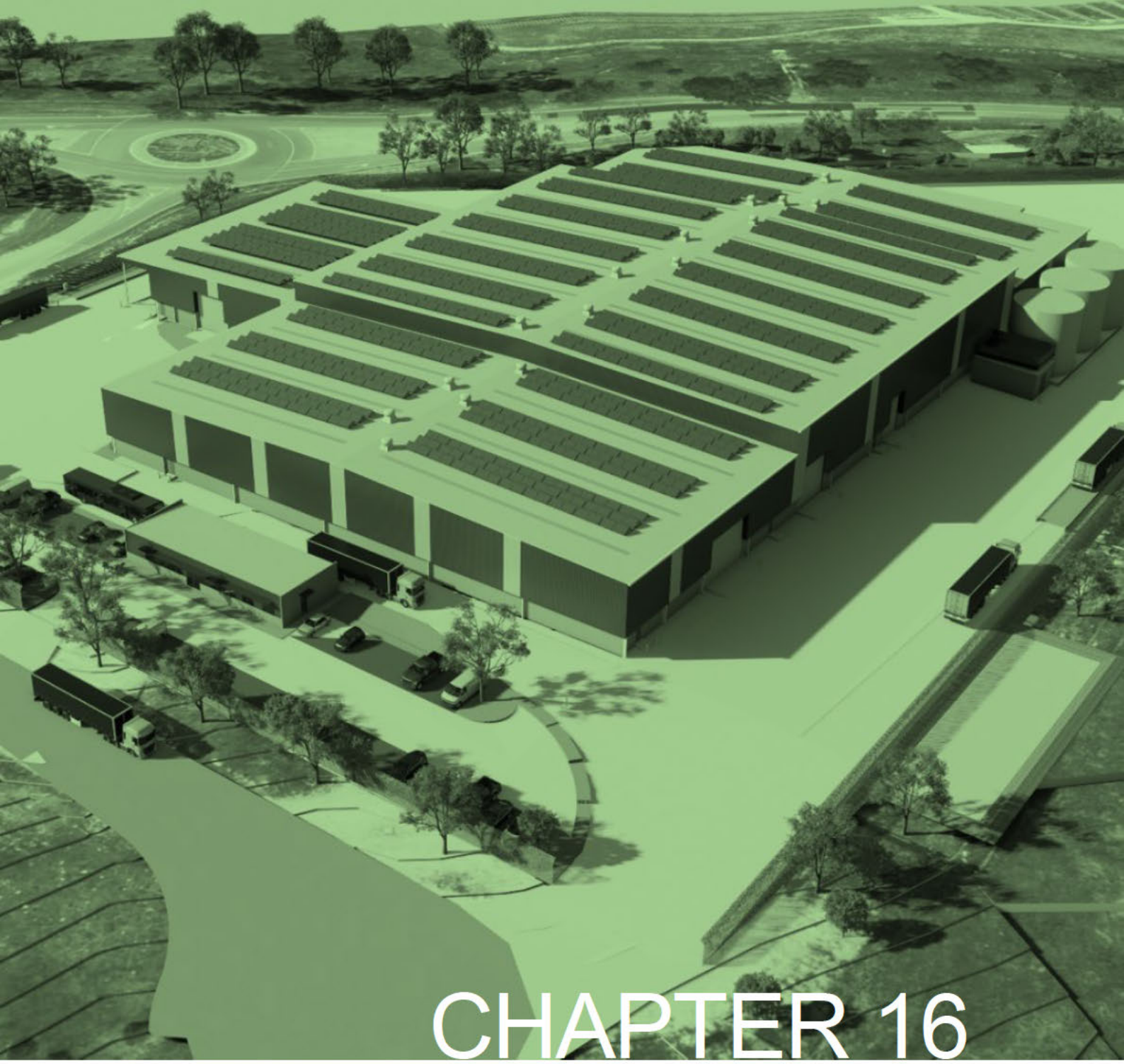
15.5 Residual impact

Based on the mitigation measures identified, an assessment of the residual greenhouse gas risks associated with the proposal has been considered in Table 15.6.

Table 15.6: Greenhouse gases – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Construction activity may contribute to air pollution with gases (such as carbon monoxide, hydrocarbon etc) emissions	Medium	Likely	Minimal	Low
Increased processing and vehicle movements may contribute to air	Medium	Likely	Minimal	Low

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
pollution with gas and odour emissions				
Additional risks				
Contribution to increased GHG emission	NA	Almost certain	Minimal	Medium



CHAPTER 16

CLIMATE CHANGE

16 CLIMATE CHANGE

16.1 Requirements

This chapter addresses the following climate change requirements of the Scoping Document:

- Outline how the proposal has assessed and responded to increased natural disaster risk being driven by climate change, particularly the extreme events of heatwaves, droughts, storms with flash flooding, and bushfires.
- A Climate Change Risk Assessment (CCRA) is required to address the risk from increased events from flood, bushfire or extreme heat risk.

16.2 Environmental conditions and values

Canberra's climate is relatively dry and warm compared to the much cooler and wetter south-western area of the ACT. The warmest month of the year is January, with an average daily temperature of 24.3°C. July is the coolest month with an average daily temperature of 12.2°C. July is also the driest month, with an average of 22 mm of rainfall. The highest volume of precipitation falls in December with an average of 590 mm. Maximum temperatures in excess of 25°C occur frequently in the region. An annual average of 20 days greater than 25°C are typically recorded in January. Canberra typically experiences 70-90 cold nights (temperatures below 2°C) and fewer than 10 hot days (maximum temperatures above 35°C) per year.

Historic average climate statistics recorded at the nearby Canberra Airport Bureau of Meteorology (BoM) weather station are summarised in Table 16.1.

Table 16.1: Historic average climate statistics (Canberra Airport BoM weather station) (BoM, 2023)

Description	Value
Mean minimum temperature	6.8°C
Mean maximum temperature	20.0°C
Coldest recorded temperature	-8.5°C
Highest recorded temperature	40.0°C
Mean wind speed (9 am)	8.4 km/h
Mean wind speed (3 pm)	17.6 km/h
Maximum wind gust	124.0 km/h
Mean annual rainfall	616.8 mm
Mean relative humidity (9 am)	73.3%
Mean relative humidity (3 pm)	46.7%
Severe fire danger days per year	1.4

16.3 Investigations

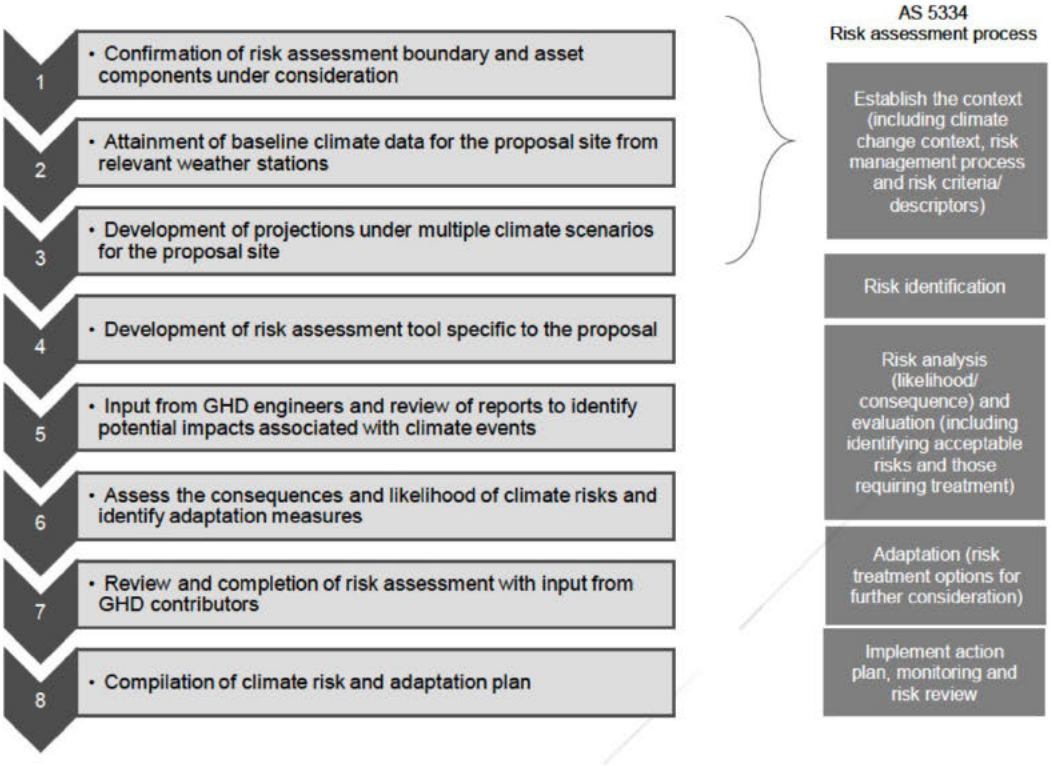
CCRA provides a high-level assessment of the inherent vulnerability of the asset to the physical effects of climate change and is intended to briefly establish the context for the risk assessment and conduct broad identification and assessment of physical risks. This is executed via a review of asset design information, and historical records of extreme weather events in the vicinity of the asset.

The method applied for the CCRA is consistent with *AS 5334:2013 Climate Change Adaptation for Settlements and Infrastructure – A Risk Based Approach*. The Standard follows the

international standards, *AS ISO 31000:2018, Risk Management – Guidelines*, which provides a set of international endorsed principles and guidance on how organisations can integrate decisions about risk and responses into their existing management and decision-making processes.

The assessment was undertaken by desktop analysis and consisted of the steps outlined in Figure 16.1.

Figure 16.1: Climate change risk assessment methodology



16.4 Impacts

16.4.1 Historical climate context and projection data

The CCRA undertaken for the proposal (Appendix N) is considered a short-term extreme plausible scenario of future greenhouse gas emissions (RCP 8.5) and a mid-term extreme plausible scenario of future greenhouse gas emissions (RCP 8.5). To reflect the design life (see Table 16.2) of the facility and associated infrastructure, the short-term time horizon of 2030 and mid-term time horizon of 2050 were used to identify climate risks.

A summary of current trends in the frequency and intensity of extreme events for Canberra are presented in Table 16.2 Climate projection data is presented in Appendix N.

Table 16.2: Current trends in the frequency and intensity of extreme events for Canberra

Climate risk pre-screening question		Response and supporting information
Exposure	**Impact**	
Does the site include areas that have been	Have past extreme events caused physical damage or	Severe storms (including hailstorms, extreme rainfall, extreme winds, flooding), heatwaves and bushfires are some of Canberra's extreme weather events.

Climate risk pre-screening question		Response and supporting information
Exposure	**Impact**	
impacted by extreme events in the past?	impacted the operations and maintenance of similar assets or supporting infrastructure within the proposed location? To what extent?	On 19 January 2020 a significant storm cell hit Canberra. At the height of the storm, winds reached more than 116 km/h at the Canberra Airport weather station. With hailstones the size of golf balls, some measuring more than four centimetres, it was the worst hailstorm to hit an urban area in Australia since the 1999 Sydney hailstorm. The storm smashed windows, dented thousands of cars, tore branches off trees and uplifted power lines, causing localised flooding. The ACT State Emergency Service responded to more than 2,000 requests for help in the wake of the storm. Insurance claims from the ACT (74,660 in total) accounted for 57 per cent of all claims made from the storm that also hit NSW and Victoria[1]. The extent of the hail damage was so large and the backlog so great that building repair companies who were contracted by insurers moved to set up permanent offices in Canberra for the first time to deal with the influx of repair jobs, many still being undertaken as of January 2021. The Canberra hailstorm also led to devastation for Canberra's wildlife. The storm resulted in the deaths of more than 600 flying foxes in Commonwealth Park, according to the National Capital Authority.
		Over the past century the ACT has experienced several major bushfires during the hot and dry summer months. Most have been caused by lightning strikes in the Brindabella Ranges on the ACT's western border. On 18 January 2003 the ACT experienced the most destructive bushfires in its history. Four people died, hundreds were injured and 500 homes destroyed. The firestorm hit the suburb of Duffy. Over the next few hours it devastated houses in the suburbs of Holder, Weston, Chapman, Rivett and Kambah. The fires overwhelmed firefighters and caused a power and communications blackout. In the ensuing confusion and panic, thousands of residents fled the burning suburbs in their cars. Others stayed, desperately trying to protect their homes. Canberra Hospital was overrun with people suffering burns and smoke inhalation.[2] Extreme temperatures and heatwaves are not uncommon in Canberra's summer months. Temperatures in Canberra in February 2020 set a new monthly record. Temperatures hit 42.7°C Celsius an all-time high for February that broke the record of 42.2°C set in 1968. The new record along with all-time highs in January and December made the 2019-2020 summer the hottest on record.[3]
		Heavy rain between 24 and 26 February 2018 caused flash flooding in parts of Canberra and the ACT. Canberra Airport and Charnwood recorded their highest ever rainfall totals for a February day. In a 24-hour period to early 26 February 2018, 64 mm of rain fell at Canberra Airport and 70 mm at Charnwood. Flooding forced the closure of a number of roads in central areas of the city and also the suburbs of Lyneham, Dickson and Turner. Some homes and buildings were flooded, including parts

[1] Canberra Times, 18 January 2021, Canberra hailstorm one year on: many still counting the cost, https://www.canberratimes.com.au/story/7088846/one-year-on-canberra-is-still-counting-the-cost-of-the-devastating-hailstorm/

[2] National Museum Australia, Defining Moments Canberra Bushfires, https://www.nma.gov.au/defining-moments/resources/canberra-bushfires

[3] Phys.org, 1 February 2020, Canberra heatwave breaks records amid wildfire threat, https://phys.org/news/2020-02-canberra-heatwave-wildfire-threat.html

Climate risk pre-screening question		Response and supporting information
Exposure	**Impact**	
		of the Australian National University which was forced to close.[4] In December 2021, a severe storm cell hit Canberra, resulting in strong winds reaching 89 km/h at Canberra Airport. Strong winds caused several trees to fall, blocking roads and damaging power lines and properties. The ACT State Emergency Services received nearly 70 requests for assistance following the storm.[5]
		Past extremes in weather, including severe storms and bushfires have impacted the operation of assets in the vicinity of the proposal. Predicted future weather trends for the region are presented in the following section.
What past or current trends can be observed regarding frequency and intensity of extreme events?	If any past or current impacts from extreme events have been identified, consider whether projected changes in the climate might worsen in the future and the potential impact this may have on the asset or supporting infrastructure within the proposed location.	A summary of current trends in the frequency and intensity of extreme events is as follows: Under the high emission scenario (RCP 8.5), the maximum daily temperature at nearby BoM Canberra Airport is projected to warm on average by 0.7-1.3°C to 21.3°C by 2030, and 1.4-2.3°C to 22.3°C by 2050. Projections show that by 2050, under the high emissions scenario, the hottest summer day is likely to increase by a median value of 2.4°C to 42.4°C, compared to the 1986-2005 record (40.0°C). Under the same scenario for 2030, the hottest summer day is likely to increase by a median value of 1.3°C to 41.3°C, compared to the 1986-2005 average. A decrease in annual rainfall is projected for both time series compared to the 1986-2005 average, with 2030 projections showing a decrease of -1% to 610.6 mm, and 2050 -3.7% to 593.9 mm. The highest daily rainfall event is expected to increase from the 1986-2005 average by 6.4% in 2030 (134.1 mm) and 6.1% in 2050 (133.7 mm). In the current climate, this region experiences 15 – 20 thunder days per year. This is predicted to increase by 5-6% per degree Celsius of warming, resulting in a 7-8.4% increase in lightning frequency by 2030, and 18.5-22.2% by 2050. The current climate experiences 4 hail producing thunderstorms per year, and this is expected to increase to 6 hail producing thunderstorms per year under the high emissions scenario by 2050. An increase in the number of extreme heat days compounded with a decrease in annual rainfall will lead to drought conditions and a decrease in soil moisture (-3.1% by 2030, -7% by 2050) and an increase in evapotranspiration (+3.1% by 2030, +5.5% by 2050). Fire danger days are subsequently expected to increase from 1.4 days (current) to 1.7 to 2.1 days by 2030 (RCP8.5) and 2.1 to 5.9 days (RCP8.5). An increase in the intensity and frequency of extreme weather events in the vicinity of the proposal may impact the asset and supporting infrastructure.
	If the proposed location has previously recorded impacts, to what extent is it anticipated that the future	More frequent and severe storms, floods and bushfires are a risk to the functionality of the MRF. Measures to mitigate these risks should be considered in the design of the proposal to ensure identified risks are adequately managed. Recommended climate change

[4] Floodlist, 26 February 2018, Australia – Record Rain Floods Canberra, http://floodlist.com/australia/record-rain-floods-canberra-february-2018

[5] ACT Emergency Services Agency, 18 December 2021, Canberra Storms update, https://www.esa.act.gov.au/canberra-storms-update

Climate risk pre-screening question		Response and supporting information
Exposure	Impact	
	proposal design will avoid or mitigate the risks from those impacts, and can adaptation responses be cost effectively retrofitted in future?	adaptation measures for the proposal are detailed in Chapter 16.5.

16.4.2 Description of asset components

Infrastructure assets of the proposal were identified in consultation with the design team to determine what may be impacted in terms of functionality and operability, and importantly, what will need to be managed in response to climate change. The asset components identified as part of the risk assessment are listed in Table 16.3.

Table 16.3: Identified asset components of the proposal

Component	Component name	Design life
1	Permanent mechanical systems, stationary equipment, tanks and building elements	20 years
2	Replaceable mechanical equipment and critical components (fire and water tanks)	10 years
3	Mobile plant and equipment	7 years

16.4.3 Climate change risk assessment

The CCRA was completed as per Figure 16.1, including inherent risks, which consider the measures identified in the planned controls, and the residual risks, which consider the identified adaptation measures.

Planned and assumed controls, and adaptation measures for the identified risks were documented. In this context, planned controls represent Business as Usual (BAU) measures that have been identified as standard considerations which will then be implemented in design while assumed planned controls are those that will foreseeably form part of future design, construction, or operation considerations.

Adaptation measures on the other hand, represent measures above and beyond BAU incorporated specifically for the climate change risk identified. Adaptation measures to address risks would be identified and would be considered in design or would be adopted during the construction and operation of the proposal.

The CCRA for the proposal is presented in Appendix N. The assessment identified four climate hazards and associated risks which were applicable to the proposal: extreme heat, extreme rainfall, storms and bushfires. These climate hazard events were identified during the assessment process with the potential to impact the components of the infrastructure asset as defined in Table 16.3, or impact upon the construction or operation.

Nineteen impacts were identified across the different climate event scenarios. Four of those risks are associated with the construction phase (risk 006 and 007: medium risk) (risk 011 and 017: low risk). Ten identified risks returned a risk rating of low for baseline and RCP 8.5 2030 and nine identified risks returned a risk rating of low for RCP 2050 conditions. Details of risks for each phase of the proposal are presented in Table 16.4.

For construction, risks resulting from extreme heat are a primary concern resulting in a medium risk during the construction period (risk 006 and 007).

During operation, extreme heat (risk 008: medium risk) and extreme rainfall (risk 009: medium risk) are found to be the highest risks to operation.

Drought (risk 002: medium risk), extreme rainfall (risk 010: medium risk), storms (risk 013: medium risk) and bushfire (risk 015: medium risk) were found to be the highest risks to infrastructure components.

For medium risks 008, 009, 010 and 014, adaptation responses were identified to reduce residual risks to low.

Table 16.4: Climate change risk assessment

Risk ID	Impact	Components potentially impacted	Planned controls	Inherent risk ratings			Adaption responses	Residual risk
				Current climate	2030 RCP 8.5	2050 RCP 8.5		
002	Drought affects near surface ground movement, potentially causing differential settlement and expansion/contraction of soils, resulting in movement of infrastructure.	Permanent mechanical systems, stationary equipment, tanks and building elements	Geotechnical investigation inform site design (foundations, concrete slab). Monitoring of concrete condition. Design to consider temperatures under high emission scenario (e.g. 44 degrees Celsius)	M	M	M	No further adaptation measures identified	M
006	Extreme heat effects concrete temperature management for early age crack risk and for concrete curing resulting in reduce reliability and design life of concrete foundations.	Construction	Planned controls documented in design and construction specifications, and include the thermal control plan and the concrete specification. Plan for concrete pours to occur during cooler/finer weather conditions	M	n/a		n/a	-
007	Increase in extreme heat days resulting in 'stop work' days, and greater delays to the construction program than accounted for.	Construction	Additional buffer in program to account for increase in extreme weather days (i.e. 5 days per year)	M	n/a		n/a	-
008	Increase in extreme heat days resulting in 'stop work' days during operations.	Operations	WHS management procedures for extreme heat days are covered in the facility's operational plans.	M	M	M	Regularly update WHS management plan and procedures to adjust to conditions.	L
009	Extreme rainfall leading to flooding of the site and facilities leading to impact on open processing recyclables and contamination of flood water leaving the site (water quality compliance issues)	Operations	Rainwater captured on site for re-use and appropriate site drainage for hardstand areas. Drainage for excess stormwater would be directed to Mugga Lane.	M	M	M	While the water impact assessment concluded that the proposed floor level was well above the 1% flood level, detailed design will consider additional protection structures are necessary for	L

Risk ID	Impact	Components potentially impacted	Planned controls	Inherent risk ratings			Adaption responses	Residual risk
				Current climate	2030 RCP 8.5	2050 RCP 8.5		
							extreme flood events.	
010	Extreme rainfall leading to flooding of the site and facilities leading to damage of facility components.	All infrastructure components	Based on design guidelines stormwater pond size sufficient to capture required water volumes.	M	M	M	While the water impact assessment concluded that the proposed floor level was well above the 1% flood level, detailed design will consider additional protection structures are necessary for extreme flood events.	L
013	Increased frequency, severity, and duration of significant storm events including hail cause damage to the sites exposed components such as roofs and uncovered equipment.	All infrastructure components	Consider use of materials (especially roofing) that can withstand potential hail damage. Ensure that mobile and permanent equipment is sufficiently covered.	M	M	M	No further adaptation measures identified.	M
014	Severe wind/ storm event has higher wind loading than designed, causing stress to site structures resulting in damage, reduced design life or safety hazard.	Permanent mechanical systems, stationary equipment, tanks and building elements	Site to be designed in accordance with Australian Standards for wind loading. Maintenance of vegetation in the surroundings of the site	L	L	M	Ongoing monitoring of site components and maintenance if deficiencies are identified.	L
015	Extreme heat generated by bushfires (greater than 300 degrees Celsius) comes in direct contact with site components causing damage.	All infrastructure components.	Implement bushfire management plan and operational protocols.	M	M	M	Maintenance slashing of vegetation and regular updating and review of bushfire management plan.	M

16.5 Mitigation measures

The implementation of adaptation measures would be recorded and tracked for traceability as the design progresses. Additional adaptation measures may be incorporated into the design upon re-run of flood modelling. Adaptation measures to address risks would be identified and considered in the design or to be adopted during the construction and operation of the proposal. All proposed adaptations were assessed with input from the project team and relevant stakeholders. The proposed mitigation measures associated with climate change are described in Table 16.5.

For nine risks identified, five adaptation responses were identified, and four of these led to a decrease of the risk (risk 008, risk 009, risk 010 and risk 014). The adaptation measures for these four risks are described in Table 16.5, and relate to the detailed design and operation of the proposal.

Refer to Appendix N for the full CCRA including adaptation measures.

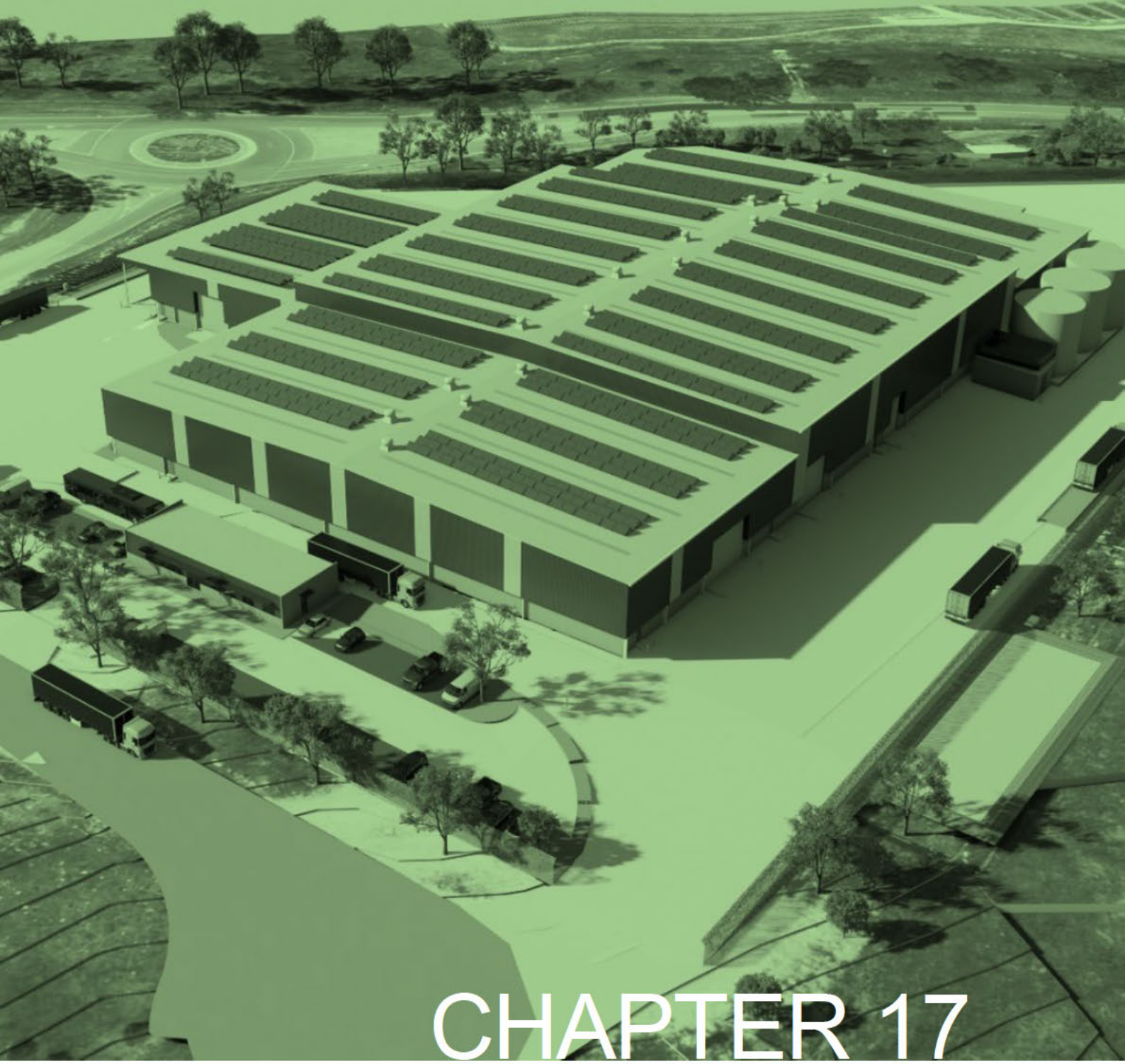
There are no construction mitigation measures for climate change as the facility is located well above the flood zone and the facility is constructed in accordance with relevant Australian standards for earthquake citing, bushfire and bushfire smoke, extreme heat and extreme storm events. Further, construction shall be completed in 2028, therefore the longer term effects of climate change risk do not apply to the construction.

Table 16.5: Adaptation measures

Risk ID	Mitigation ID	Impact	Adaptation mitigation measures	Timing
008	CCR01	Increase in extreme heat days resulting in 'stop work' days during operations.	WHS management plan and procedures would be regularly updated to adjust to conditions.	Operations
009	CCR02	Extreme rainfall leading to flooding of the site and facilities leading to impact on open processing of recyclables and contamination of flood water leaving the site (water quality compliance issues)	While the floor level of the building is well above the 1% flood level, additional protection structures (e.g. bunding etc.) would be considered during detailed design.	Detailed design and operations
010		Extreme rainfall leading to flooding of the site and facilities leading to damage of facility components		
014	CCR03	Severe wind/storm event has higher wind loading than designed, causing stress to site structures resulting in damage, reduced design life or safety hazard.	Ongoing monitoring would be undertaken of site components and maintenance if deficiencies are identified.	Operations

16.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual climate change risks associated with the proposal has been considered in Table 16.4 above.



CHAPTER 17
NOISE AND VIBRATION

17 NOISE AND VIBRATION

17.1 Requirements

This chapter addresses the following noise and vibration requirements of the Scoping Document:

- Provide a noise and vibration impact assessment regarding the operation of the facility prepared in accordance with the Guidelines for the preparation of Noise Management Plans for development applications Environment Protection Authority, March 2021.

17.2 Environmental conditions and values

Noise zones and sensitive receivers

The ACT has been divided into seven noise zones which relate to land zones under the Territory Plan. The noise standards permit the highest noise levels in industrial areas and are most stringent in residential areas.

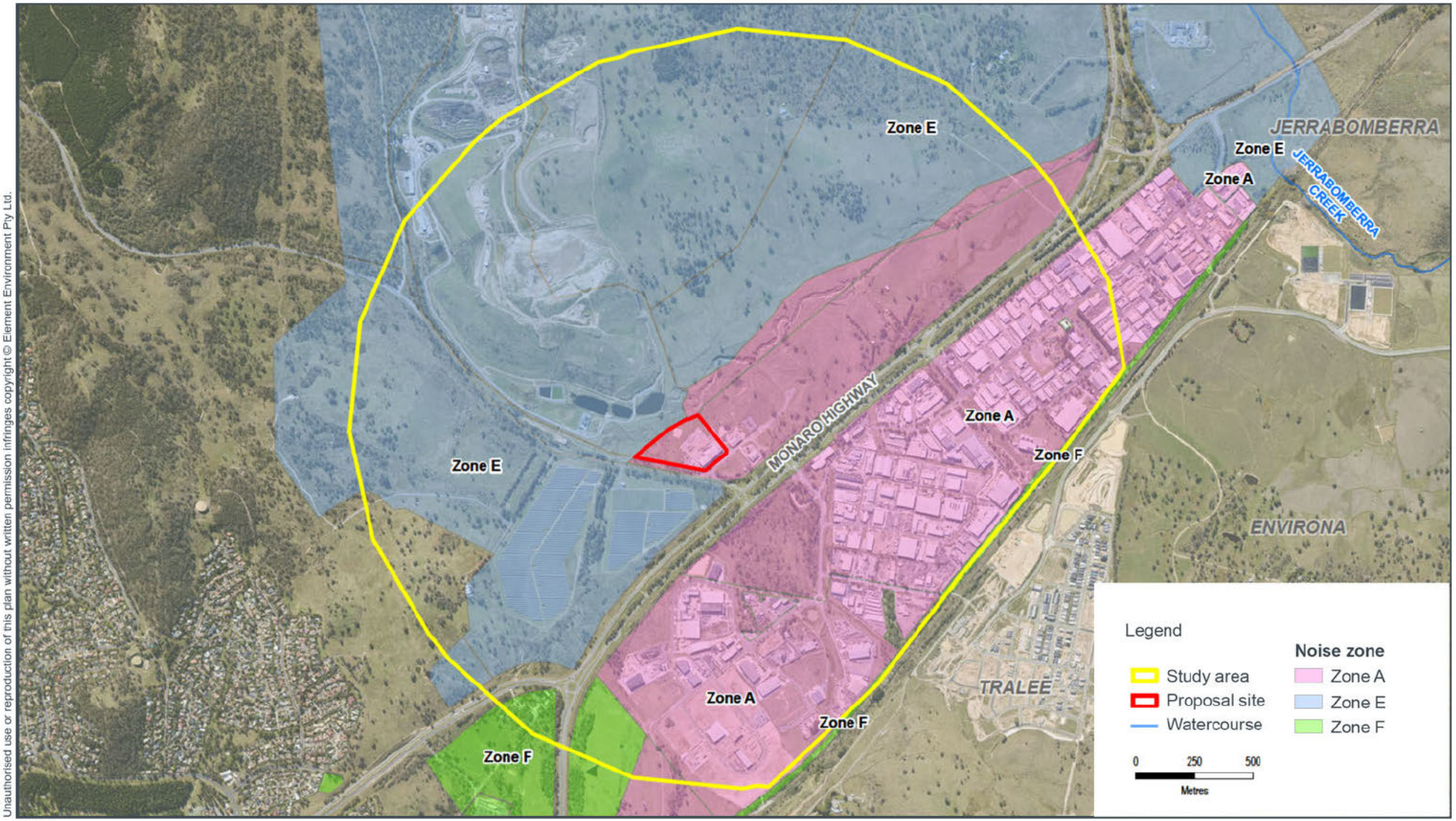
The noise zones and sensitive receivers identified within the study area are summarised in Table 17.1. The noise zones are shown on Figure 17.1. The nearest noise sensitive receivers are located 1.2 kilometres to the south in NSW and 1.2 kilometres to the north-east.

Table 17.1: Noise zone descriptions and associated sensitive receivers

Noise zone	ACT land description	Sensitive receivers
A	Land in an industrial zone.	A FOGO facility directly to the northeast of the proposal site. A soft-landing mattress recycling facility directly to the south of the proposal site. Other commercial and industrial buildings between Monaro Highway and the NSW border.
E	Land (other than land in the city centre, town centres and group centres) in a restricted access recreation zone. A broadacre zone.	Mugga Lane Solar Park to the south of the proposal site. Mugga Lane Resource Management Centre to the northwest of the proposal site. Wanniassa Hill Special Purpose Reserve to the west of the proposal site. Two rural residential receivers north-east of the proposal site. The proposed Southern Memorial Park west of the proposal site.
F	Land (other than land in the city centre, town centres and group centres) in: ▪ a commercial CZ5 zone. ▪ a TSZ2 services zone. ▪ a community facility zone. ▪ a leisure and accommodation zone.	Rose Cottage, 1km to the south of the proposal site is within a CZ6 Leisure and Accommodation zone.

Figure 17.1
Noise Zones

ACT Materials Recovery Facility
Environmental Impact Statement



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Source
Muller Acoustic Consulting - Muller Revised Noise Report

Noise standards

The ACT noise standards as applied to the proposal are presented in Table 17.2. Operational noise levels are to be predicted and assessed to the vertical plane of the proposal site boundary.

Table 17.2: ACT noise standards

Noise zone	ACT land description	L10(10minutes) Noise standard, dB(A)		Proposal site boundary
		Day	Night	
A	Land in an industrial zone	65	55	East South West
Proposal site boundary between Noise Zone A and Zone E		58	48	South North
E	Land (other than land in the city centre, town centres and group centres) in a restricted access recreation zone, a broadacre zone.	50	40	-

It is recognised that certain activities have the potential to generate noise above the relevant noise standard. Exceedances of the noise standards are permitted for certain activities under the EP Regulation if additional conditions are met. The full list of noise conditions can be found in Schedule 2 of the EP Regulation. The exemption outlined in Table 17.3 applies to the proposal.

Table 17.3: Noise conditions

Item	Noise	Conditions
5	Noise emitted in the course of maintaining or repairing something	The noise is emitted- Between 7 am and 8 pm on Monday to Saturday; or Between 8 am and 8 pm on Sunday or a public holiday; and Any noise exceeding a zone noise standard is emitted for periods totalling not more than 40 hours in any 8-week period; and The equipment used is maintained and operated in accordance with the manufacturer's instructions.

Compliance point

As a general rule, the compliance point is any point as near as practicable to the boundary of the parcel of land. In a case where compliance to the noise standard is considered excessive, an Environmental Authorisation or approval may specify an alternative compliance point, and in effect, change the noise level permitted. When such a compliance point is specified, it is done by applying the following principles:

- The compliance point should make it as easy as possible to measure the sound concerned.
- In combination with the setting of the noise level permitted, the choice of compliance point should ensure that the overall noise authorised or approved is consistent with the provisions and objects of the EP Act and the Noise Environment Protection Policy (EPA, 2010).

17.3 Investigations

A Noise and Vibration Impact Assessment (NVIA) was undertaken by GHD in 2023 and a further Noise Impact Assessment was undertaken by Muller Acoustics in March 2025. The additional noise assessment was undertaken to review the modelled noise measurements based on actual recording of activities to be undertaken in the revised site layout for Veolia. In particular the glass

receival bunker shown on the revised Veolia site plan was not part of the original GHD noise assessment.

The additional Muller Acoustics noise assessment in March 2025 was based on a proposed operating period for the MRF limited to 7am to 10pm. This meant the assessment was only focussed on compliance with the daytime noise standard (i.e. 65dB(A) at the site boundary).

Following a review of operations by Veolia and subsequent advice that trucks may need to enter the site during early mornings, on occasions as early as 3am, Muller Acoustic prepared a further Addenda to their noise assessment focussed on potential noise impacts during the night period (i.e. before 7am, when the noise standard is 55dB(A) at the site boundary).

The initial GHD NVIA included:

- Identification of the noise sources associated with the proposal, the noise zones applicable at the boundary of the site and the location of the nearest sensitive receivers to the proposal site.
- Establishment of relevant noise criteria at the boundary of the proposal site based on the requirements of the EP Regulation and the *Noise Environment Protection Policy* (EPA, 2010).
- Development of a 3D noise model of the study area using CadnaA software to predict indicative noise levels to the boundary of the proposal site. Source noise levels of plant and equipment were estimated based on noise measurements of similar equipment.
- Assessment of operational noise from the proposal with reference to the EP Regulation and *Noise Environment Protection Policy* (EPA, 2010).

Muller Acoustics methodology for their additional assessment was based on a computer model developed to quantify proposal noise emissions to neighbouring receivers using DGMR (iNoise, Version 2024.2.1) noise modelling software.

iNoise is an intuitive and quality assured software for industrial noise calculations in the environment. 3D noise modelling is considered industry best practice for assessing noise emissions from projects.

The model incorporated a three-dimensional digital terrain map giving all relevant topographic information used in the modelling process. Additionally, the model uses relevant noise source data, ground type, attenuation from barrier or buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers. Where relevant, modifying factors in accordance with Fact Sheet C of the NPI have been applied to calculations.

The model calculation method used to predict noise levels was in accordance with ISO 9613:1 and ISO 9613:2 including corrections for meteorological conditions using CONCAWE1.

This chapter provides a summary of the assessment findings. The full NVIA report is provided in Appendix O.

17.3.1 Assessment Scenarios

The modelling assessment was undertaken based on the following key noise sources expected to occur at the proposal site:

- Heavy vehicle movements delivering materials to the site;
- Mobile equipment such as front-end loaders moving around site to load out materials; and
- Breakout noise from the receival and processing buildings, particularly through open doors.

A review of the updated project design identified the following key changes and/or additional noise sources:

- Receivals to occur at the western side of the project site;
- Receival of glass will be to an external concrete bunker adjacent to the glass recycling area; and
- Water treatment area would be open.

All other sources, including heavy vehicle volumes, mobile equipment, and internal noise sources remain consistent with the previous *GHD* (2023) report.

Sound Power Levels

Table 17.4 presents the sound power level for each noise source modelled in this assessment. It is noted that sound power levels were generally consistent with the *GHD* (2023) report. Noise levels associated with heavy vehicles idling at receivals and weigh bridges, and glass dumping at glass receivals were measured at similar facilities.

Table 17.4: Acoustically significant sources - Sound power levels dBA (re 10-12 Watts)

Source	Assumptions	Modelled Noise Level, dBA	Source
External noise sources			
Delivery Truck Movements	Moving source – 12 heavy vehicles per hour	Lw 102 per vehicle	GHD (2023)
Delivery Trucks Idling	Point source - Truck idling at receivals and weighbridges	Lw 87 per vehicle	MAC Database
Wheeled Loader	Moving source - 2 x loaders	Lw 101 per vehicle	GHD (2023)
Glass Dump to Receivals	Point source - Dumping glass to concrete material bay.	Lw 104	MAC Database
Break-out noise from buildings			
Receivals Area	Deliveries to receival area. Emitting façade. Doors open 50% of time.	SPLi 85	GHD (2023)
Processing Area	Emitting façade. Doors open 20% of time.	SPLi 85	GHD (2023)
Glass Recycling	Emitting façade. Doors open 20% of time.	SPLi 85	GHD (2023)
Product Storage Area	Emitting façade. Doors open 20% of time.	SPLi 80	GHD (2023)
Water Treatment Area	Emitting façade. Open Sides	SPLi 85	GHD (2023)

The single octave noise source data used in the modelling is presented in Table 17.5.

Table 17.5: Single octave equipment sound power levels, dB LAeq(15min) (re10-12W)

Source		Octave Band Centre Frequency, Hz								Total
	Source Type	63	125	250	500	1000	2000	4000	8000	dBA
Delivery Trucks	Lw	84	88	88	93	96	96	93	88	102
Trucks Idling	Lw	65	71	73	80	84	80	78	68	87
Wheeled Loader	Lw	83	87	91	94	97	95	90	85	101
Glass Dump	Lw	67	74	79	88	93	97	102	92	104
Receivals Area	SPLi	64	74	76	79	79	78	75	69	85
Processing Area	SPLi	57	65	72	75	75	73	69	62	80

Source		Octave Band Centre Frequency, Hz								Total
Glass Recycling	SPLi	62	70	77	80	80	78	74	67	85

Break-out noise from buildings

The proposed buildings would comprise a steel frame with precast concrete at the lower levels and metal cladding (0.6mm) at the upper levels. The buildings would have a maximum elevation of 13.5m RL.

Large doors would provide access for vehicles to the receivals area, processing area, glass recycling area and product storage area. It has been assumed that there would be no sound reduction through open vehicle access doors.

17.3.2 Noise assessment results

This assessment has quantified operational noise levels from the MRF to the vertical plane of the site boundary. The results of the assessment are summarised in Table 17.6, representing the highest predicted noise level for each site boundary. A noise contour map is provided in Figure 17.2, showing the predicted noise levels against the ACT Noise Standard (day period) at the site boundary.

Table 17.6: Noise Predictions – Site Boundary (Vertical Plane)

Boundary	Period* (Note 1)	Predicted Noise Level, dBA	ACT Noise Standard, dBA	Compliant	Dominant Source
Northeast	Day	56	65	Yes	Delivery Trucks
Southeast	Day	64	65	Yes	Glass Receivals
South	Day	63	65	Yes	Glass Receivals
Northwest	Day	47	65	Yes	Delivery Trucks

*Day period: 7am and 10pm Monday to Saturday (8am and 10pm Sunday and public holidays).

The results of the noise modelling assessment demonstrate that noise levels are anticipated to meet the *ACT Noise Standard* of 65dBA along each of the site boundaries, with the highest noise levels, of up to 64dBA, predicted at the southeast boundary, adjacent to the glass receivals area. It is therefore considered that no specific noise mitigation measures are required for the operation of the MRF.

The additional Muller Acoustic night-time Addenda assessment concludes that during the night period, operational noise levels are anticipated to exceed the ACT Noise Standard by up to 2dBA at the southern and southeastern boundaries, refer Figure 17.3.

The small exceedance of 2db(A) is due to trucks idling near the receival area and outbound weighbridge of the facility. The same trucks which cause the exceedance will be travelling down Mugga Lane causing higher sound power levels.

It is noted that the nearest adjacent land uses to the south and southeast of the project site are the road easements of Mugga Lane and John Cory Road, with no sensitive receiver located immediately adjacent to the project site. Furthermore, it is considered that a difference in noise levels of 2dBA is barely perceptible and represents a negligible impact to sensitive receivers.

Notwithstanding, Muller Acoustics recommended that an alternative compliance point is established at any point along the closest adjacent industrial lot to the southeast, approximately 10m from the project boundary. This has been discussed with ACT EPA and it was noted that the minor departure from the night-time noise standard occurs within the road reserve where there are no sensitive receivers and that such a minor departure should not cause any concern.

17.4 Impacts

17.4.1 Direct impacts

Construction

Vibration

Vibration impacts (human comfort or cosmetic damage to buildings) would be generally limited to an area of 100 metres. No sensitive receivers have been identified within 100 metres of the proposal site boundary and the nearest building is an industrial building located 25 metres east of the proposal site. At this distance, no cosmetic damage vibration impacts are anticipated.

Noise

Section 9.4 of the *Noise Environment Protection Policy* (EPA, 2010) permits noise from building work that exceeds the noise standard, subject to time restrictions and provided the work is carried out in accordance with AS 2436:1010 - *Guide to noise and vibration control on construction, demolition and maintenance sites (Reconfirmed 2016*). The *Noise Environment Protection Policy* states that:

"In industrial areas, city centre and town centres, noise from building work can only exceed the noise standard between 6am and 8pm."

The proposal site is in located in an industrial zone and the construction hours would comply with Section 9.4 of the Noise Environment Protection Policy. Given this, exceedances of the noise standard are permitted, and no further assessment of construction noise is required.

Operation

Noise

The results of the noise modelling indicate that noise levels would not exceed the *ACT Noise Standard* of 65 dBA during the day-time period at the boundaries of the proposal site.

The vehicle noise from early morning deliveries would slightly exceed the night-time noise standard by up to 2dBA at the southern and southeastern boundaries. As there are no receivers close to the site, the minor exceedance in the noise standard is not considered to have any impact on the amenity of the area.

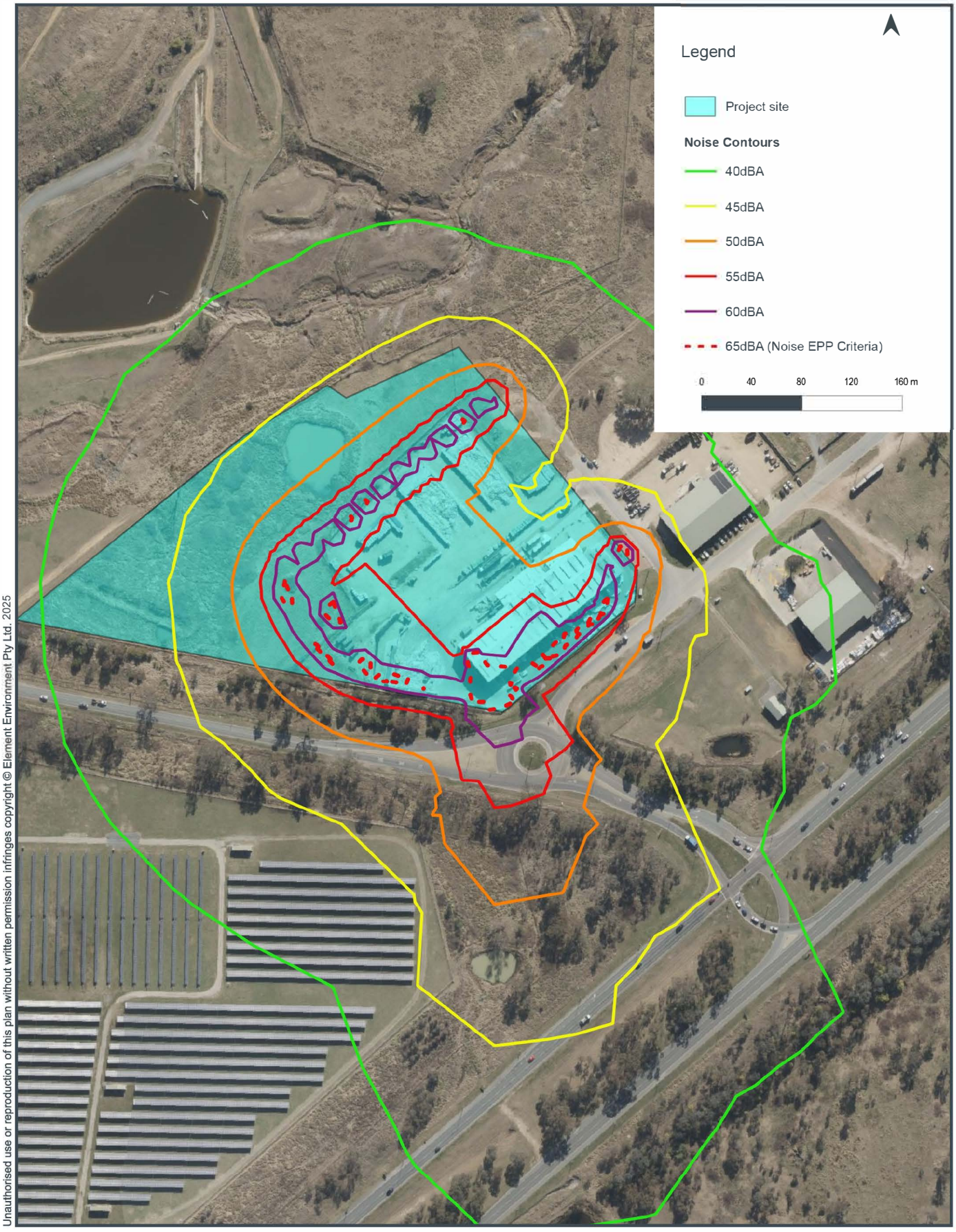
The nearest adjacent land uses to the south and southeast of the project site are the road easements of Mugga Lane and John Cory Road, with no sensitive receiver located immediately adjacent to the project site. An alternative compliance point is proposed at any point along the closest adjacent industrial lot to the southeast, approximately 10m from the project boundary.

17.4.2 Indirect impacts

No indirect impacts from construction or operation of the proposal are expected.

Figure 17.2
Operational Noise Contours - Day Period

ACT Materials Recovery Facility
Environmental Impact Statement



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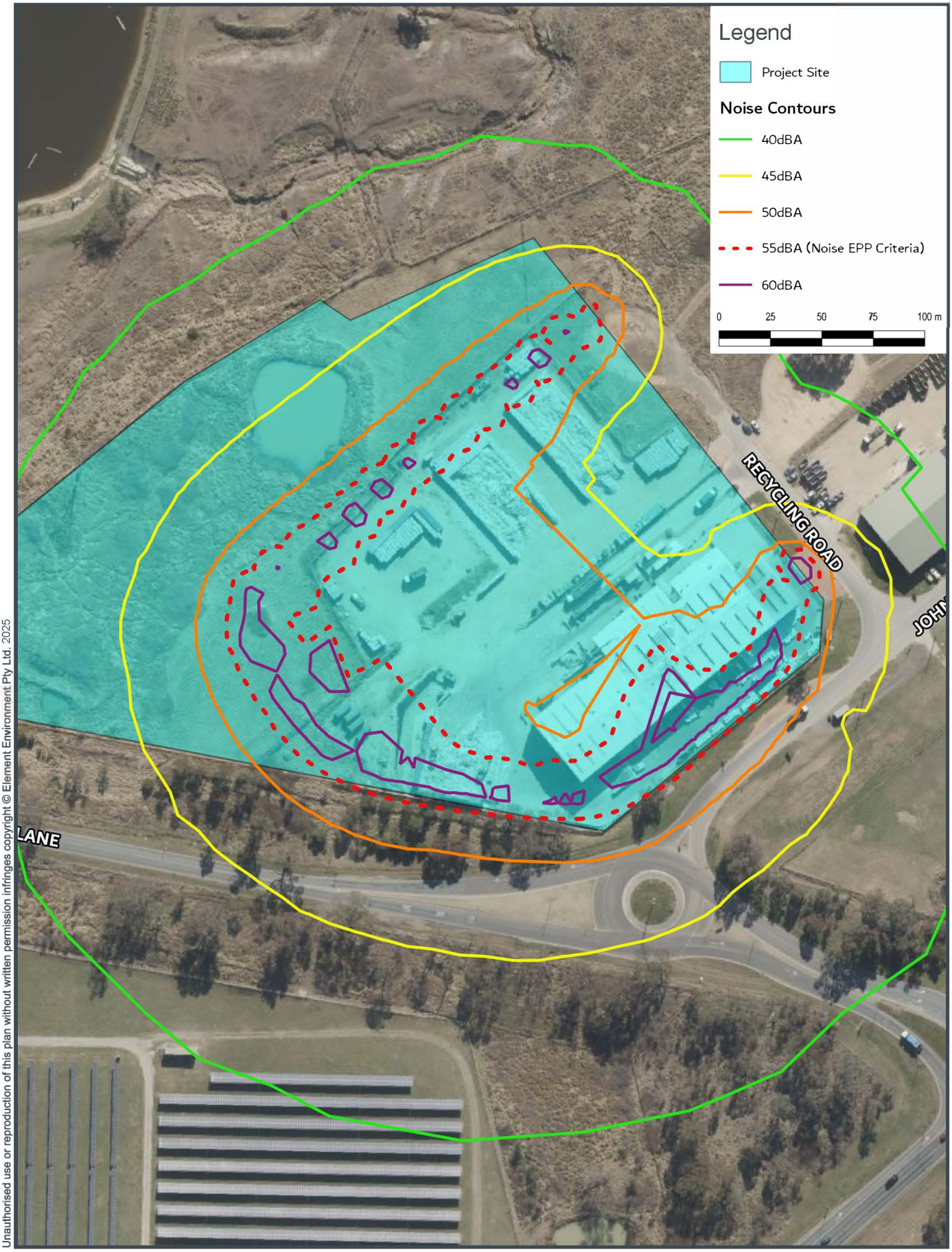
Source
Muller Acoustic Consulting - Muller Revised Noise Report

Figure 17.3
Operational Noise Contours - Night Period

ACT Materials Recovery Facility
Environmental Impact Statement



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Source
Muller Acoustic Consulting - Muller Revised Noise Report

17.5 Mitigation measures

Table 17.7 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential noise impacts.

Table 17.7: Noise impact mitigation measures

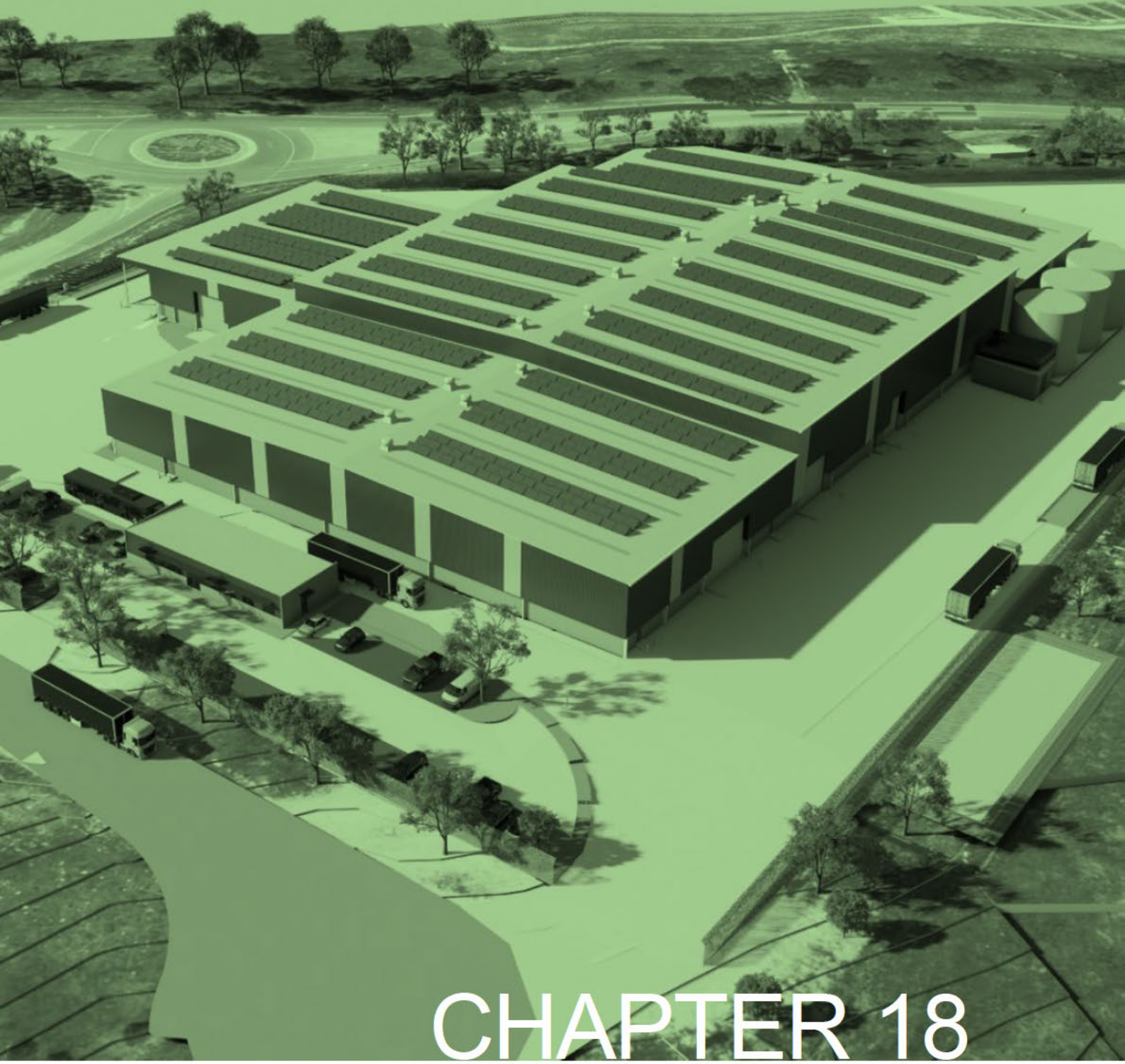
Potential impact	ID	Mitigation measure	Timing
Noise disturbance to sensitive receivers	NV01	Construction hours would comply with Section 9.4 of the Noise Environment Protection Policy. This states that: "*In industrial areas, …. noise from building work can only exceed the noise standard between 6am and 8pm.*"	Construction
Night-time operational noise beyond site boundaries	NV02	That should the minor departure of 2dB(A) over the night-time noise standard at the sight boundary create issues within the John Cory road reserve, then an Operational Noise Management Plan will be considered at the detailed design stage	Detailed Design

17.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual noise and vibration risks associated with the proposal has been considered in Table 17.8.

Table 17.8: Noise and vibration – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
On site noise and vibration impacts during operation.	Medium	Unlikely	Minor	Very Low
Operation of trucks and machinery on site may create significant sources of noise and vibration.	Medium	Unlikely	Minor	Very Low
Additional risks				
Disturbance to the local community.	NA	Unlikely	Minor	Very Low



CHAPTER 18

HAZARD AND RISK

18 HAZARD AND RISK

18.1 Requirements

This chapter addresses the following hazard and risk requirements of the Scoping Document:

- Outline management procedures to be followed should critical infrastructure failure occur.
- Provide assessment and mitigation measures against the requirements of the NASF and airport operations including “Guideline C Managing the Risk of Wildlife Strikes in the Vicinity of Airports” and “Guideline E Lighting and Pilot Distraction”.
- Provide a Wildlife Management Program in accordance with the NASF Guidelines.

This chapter also addresses the following materials and waste requirements of the Scoping Document, in relation to hazardous materials:

- Describe any hazardous materials and dangerous chemicals to be used or stored on site during construction and operation.
- Identify any Schedule 11 hazardous chemical, as per *Work Health and Safety Regulation 2011* (WHS Regulation).
- Provide details of maximum storage capacities for any hazardous chemicals.
- Provide safety data sheets for any hazardous chemicals.
- Identify whether any Schedule 11 hazardous chemicals meet the placard quantity as per the WHS Regulation.

This chapter also addresses the following traffic and transport requirement of the Scoping Document, in relation to transport of hazardous materials:

- Describe how any potential hazardous materials will be transported to and from the site.

18.2 Environmental conditions and values

18.2.1 Legislative and policy context

The Planning Act 2023 is the key legislation informing planning and development on Territory land in the ACT.

The Act sets out requirements that include, but are not limited to, the provision of offsets and a policy to compensate for impacts that have significant adverse impacts on protected matters. It also provides the formal process for development approvals, the management of public land, and complaints and enforcement.

The Act also references Schedule 11 hazardous chemicals which are set out in the *ACT Work Health and Safety Regulations 2011*.

18.3 Investigations

A preliminary hazard analysis (PHA) was prepared for the proposal. The PHA approach was based on a comprehensive hazard identification study to demonstrate that the proposed activities do not pose a significant risk. The PHA process complied with *Australian Standard AS 31000:2018 Risk Management – Guidelines*, and followed the following steps:

- System definition
- Hazard identification
- Likelihood analysis
- Consequence analysis
- Risk calculations/ analysis
- Risk evaluation (compare against criteria and consider risk mitigation and management options)

The hazard identification was undertaken as a desktop qualitative assessment to document possible events, potential causes and identify operational and organisational safeguards. In undertaking the hazard identification study, both on-site and off-site risks were considered and it was assumed that:

- All equipment is installed and operated in accordance with appropriate Australian Standards, codes and guidelines.
- All equipment and systems are designed to be inherently safe.

This chapter provides a summary of the assessment findings. A full copy of the PHA is provided in Appendix P.

It is noted that bushfire risk and climate change risk have been considered separately (refer to Chapters 19 and 16 respectively) and are not discussed further in this chapter. It is also noted that dust and noise have been assessed in detail in Chapters 14 and 17, respectively.

18.4 Impacts

18.4.1 Direct impacts

Hazardous materials and dangerous chemicals

Schedule 11 to the *Work Health and Safety Regulations 2011*, outlines the threshold quantities for placarding and providing a manifest for materials storage.

A list of the expected hazardous chemicals to be used during construction and operation is shown in Table 18.1 and Table 18.2, respectively. Minimal chemicals are expected to be stored on-site during construction.

As the chemical supply details are not finalised, example safety data sheets (SDS) are provided in Appendix C of the PHA (Appendix P).

Table 18.1: Indicative hazardous chemicals used during construction

Product name	UN number	GHS Class	GHS category	Indicative maximum quantity (kg)	Schedule 11 placard threshold (litres)	Schedule 11 manifest threshold (litres)	Schedule 11 Requirements
Spray paint	Multiple	Gas under pressure	Acute toxicity 1	0.02	50	500	None
LPG	1075	Flammable gas	1	0.09	200	5,000	None
Acetylene (welding)	1001	Flammable gas	1	0.01	200	5,000	None
Oxygen (welding)	1072	Gas under pressure	Other	0.05	1,000	10,000	None

Product name	UN number	GHS Class	GHS category	Indicative maximum quantity (kg)	Schedule 11 placard threshold (litres)	Schedule 11 manifest threshold (litres)	Schedule 11 Requirements
Paint (oil based considered worst case)	1263	Flammable liquid	2	100	in combination 1,000	in combination 10,000	None
Solvents	Multiple	Flammable liquid	3	10	in combination 1,000	in combination 10,000	None
Epoxy resins	Multiple	Flammable liquid	3	10	in combination 1,000	in combination 10,000	None
Diesel (C1)	3082	Flammable liquid	4	10,000	10,000	100,000	None
General oils and lubricants (C2)	Multiple	Flammable liquid	4	0.5	10,000	100,000	None
Bitumen	3257	Flammable liquid	4	-	10,000	100,000	None
Cleaning products	Multiple	Eye irritation	1	0.005	None	None	None
Concrete	N/A	Not classified as DG		-	None	None	None
Steel structural members	N/A	Not classified as DG		-	None	None	None
Plasterboard	N/A	Not classified as DG		-	None	None	None
Sealants / joint fillers	N/A	Not classified as DG		0.05	None	None	None
Detergent	N/A	Not classified as DG		0.005	None	None	None

Table 18.2: Indicative hazardous chemicals used during operation

Product name	UN number	GHS Class	GHS category	Maximum quantity (kg)	Schedule 11 placard threshold (litres)	Schedule 11 manifest threshold (litres)	Schedule 11 Requirements
Diesel	3082	Flammable liquid	4	2,000	10,000	100,000	None
Oils (motor/waste)	Multiple	Flammable liquid	4	200	10,000	100,000	None
Cleaning products and lubricants	Multiple	Flammable liquid	4	50	10,000	100,000	None
Treatment chemicals	Multiple	Corrosive liquids	1C	5,000	1,000	10,000	Provide placard requirements

Although none of the proposed hazardous chemicals trigger a requirement to have a manifest, a register of all chemicals used on-site, either during construction or operation would be kept on-site. The register would include global harmonised system (GHS) and Australian dangerous goods (ADG) designations, quantities and storage locations. A current SDS would also be accessible to all personnel for all chemicals used on-site. Due to the quantity of corrosive treatment chemicals, they would require placarding.

Any hazardous chemical would be transported to the proposal site following the *ADG code (NTC, 2022)* requirements. Whilst diesel is likely to be trucked in via a bulk tanker and transferred to a fixed storage vessel, the other chemicals are expected to be transported in package form, for example a 1,000 litre iso-container and used as required.

To limit the potential of a fire initiating from diesel storage, the goods would be stored in dedicated locations away from potential ignition sources, as per *AS 1940:2017 The Storage and Handling of Flammable and Combustible Liquids*.

It should be noted that lithium-ion batteries were not considered given they would not be required for construction or operation. However, there may be occasions where lithium-ion batteries are incorrectly disposed of at the proposal. In this case, appropriate separation and operating procedures for correct disposal of these items off-site would be implemented and they would not be stored on-site. Given that the batteries are considered a contained unit, they are not a dangerous substance.

Failure of critical infrastructure

Management of critical infrastructure, including processes to follow should a failure occur, would be detailed in the Asset Management Plan for the proposal. The requirements and contents of the Asset Management Plan would be subject to the final detailed design and updated in conjunction with the maintenance schedule and operational contingency planning.

Preliminary hazard analysis

The results of the hazard identification process and risk assessment of hazards are summarised in Table 8.3.

The hazard identification process indicated that whilst there are several hazard scenarios that have the potential for off-site impact, it is considered that there is minimal, if any, potential for high-level harm. Therefore, a qualitative PHA was determined to be appropriate.

The assessment of the hazards show that the risk is rated as medium, which is within the risk appetite of ACT NoWaste. The risk of fire at the facility is associated with a total loss event and assumes the safeguards are implemented. It should also be noted that the PHA risk matrix differs from an impact assessment risk rating. The risk of bushfire is considered in Chapter 19.

Recommended safeguards for each of the hazard scenarios have been included in Table 18.3 which contain, or control each of the hazards to an acceptable level.

The potential for unauthorised access resulting in safety risks is low, based on ACT workplace safety laws and the location of the proposal site. A work health and safety management plan and safe work method statements would be developed in accordance with regulatory requirements.

Table 18.3: Hazard identification

Hazard scenario	Phase	Causes	Consequence	Identified/recommended safeguards	Consequence rating	Likelihood rating	Risk rank
Fire at facility	Construction and operation	Accumulation of flammable waste product Building/electrical fire	Personal injury Asset damage	Design layout to incorporate compartmentation and appropriate features (as per AFAC and NSW Guidelines) to be incorporated in the detailed design. Fire Management Plan, including location and size of combustible material stockpiles and management of ignition sources. Thermal imaging equipment (TIE) using IR on stockpiles and product storage. Early detection system such as CCTV, TIE, zones identified to areas of risk, alert triggers, and 24h security monitoring Appropriate placement of smoke detectors, fire extinguishers, fire blankets, fire hose reels and sprinklers. Separate gates for site access and consideration for fire rated walls between processing areas and combustible material storage. Emergency Management Plan.	Moderate (3)	Unlikely (2)	Medium
Hazardous chemicals spill	Operation	Chemicals transfer/ transport	Personal injury Environmental damage	Appropriate segregation and use of bunds. Licenced transporters of chemicals. Trained handlers of chemicals. Safe work method statements (SWMS) and procedures for the use of chemicals. Safety data sheets (SDS) for all chemicals used and/or stored on-site. Personal protective equipment (PPE).	Minor (2)	Unlikely (2)	Medium
Falling objects from height	Operation	Magnets, eddy currents and optical sorters eject material above the	Personal injury	Design layout to incorporate compartmentation. Appropriate safety training for employees.	Minor (2)	Unlikely (2)	Medium

Hazard scenario	Phase	Causes	Consequence	Identified/recommended safeguards	Consequence rating	Likelihood rating	Risk rank
		transporting conveyor belt		Use of 'state-of-the-art' equipment Regular maintenance of equipment			
Slippery floors		Wet recyclable material spilled onto facility floor.	Personal injury	Appropriate safety training for employees. Ongoing observation by staff	Minor (2)	Unlikely (2)	Medium
Failure of critical infrastructure	Operation	Lack of maintenance	Loss of production Personal injury Asset damage	Regular maintenance schedule undertaken by qualified personnel. Adequate training provided on operating machinery. Business Continuity Plan.	Moderate (3)	Rare (1)	Medium
Bird strikes aircraft	Operation	Birds being attracted toward organic waste in adjacent facilities	Injury/fatality to birds Asset damage	Organic waste will not be stored in the MRF. Adhere to the Guideline C of NASF, *Managing the Risk of Wildlife Strikes in the Vicinity of Airports*. Recyclable materials will be held in dedicated sealed skip bins. This will be managed in accordance with the site operations plan and be serviced regularly by a waste contractor. Waste from office and administration activities would be stored in appropriate bins (with lids). The site would be kept clean and tidy A Waste Management Plan is created for the site to continuously manage and monitor waste. Any unwanted putrescible waste sources will go into waste bins to be taken to landfill.	Moderate (3)	Rare (1)	Medium
Pilot distraction from lighting	Operation	Proximity to airport	Personal injury	Nil	Insignificant (1)	Rare (1)	Low

18.4.2 Indirect impacts

Wildlife strikes

Guideline C of *National Airports Safeguarding Framework* (NASF), *Managing the Risk of Wildlife Strikes in the Vicinity of Airports* (Guideline C) aims to provide guidelines to land users and planning decision makers to manage the risk of collisions between wildlife and aircraft at or near airports where that risk may be increased by the presence of wildlife-attracting land uses. It is important to note that:

- Processed material would not be organic and would not attract wildlife. This material would be inert and is not considered an attractant to birds.
- Processed material would be housed inside the building.
- The majority of the proposed site activities would be contained within an enclosed building, eliminating access to birds.

Attachment 1 to Guideline C of the NASF details an action table for a range of land uses. An existing non-putrescible waste facility (including transfer station) located 8-13km from an airport is listed as 'monitor' for the appropriate actions. Guideline C states that "Where 'monitor' is indicated, the site should be included in wildlife monitoring activity and elements that are found to be attracting hazardous wildlife should be assessed and mitigated. This may include seeking wildlife hazard expert advice."

Given that the risk of wildlife strike at the proposal site is not increasing the risk in relation to an existing airport, further risk mitigation measures such as Wildlife Management Programs are not considered to be required. Notwithstanding, a Wildlife Management Plan has been prepared and is provided in Appendix B of the PHA (Appendix P).

18.5 Mitigation measures

Table 18.4 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to hazard and risk.

Table 18.4: Hazard and risk management measures

Potential impact	ID	Mitigation measure	Timing
Facility fire	HR01	A Fire Management Plan would be prepared for construction and operation.	Construction and operation
	HR02	Smoke detectors, fire extinguishers, fire blankets, fire hose reels and sprinklers would be appropriately placed within buildings. Early detection technologies such as CCTV, Thermal imaging equipment (TIE) using IR on stockpiles and product storage, zones identified to areas of risk, alert triggers, and 24h remote security monitoring.	Operation
	HR03	An Emergency Management Plan would be prepared, including locations and sizes of combustible material stockpiles and management of ignition sources and provision of access in line with ACT Emergency Services Agency (ESA) requirements.	Operation
	HR04	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020).	Detailed design

Potential impact	ID	Mitigation measure	Timing
	HR05	Separate gates would be provided for site access (delivery/pickup heavy vehicles and staff/visitors cars). The main entry gate includes the enclosure/box with the EMP, and directions to FIP and booster. Fire separation (between the receival hall and the processing area; and the storage area and the processing area) consistent with national construction code fire resistance level and the overall fire strategy of the facility, including appropriately rated fire walls, doors, alarm, and suppression devices.	Operation
Hazardous/ dangerous chemicals	HR06	Each chemical would have appropriate labelling, an appropriately sized bund and stored within designated work areas.	Operation
	HR07	SWMS and procedures would be implemented for the handling of all chemicals including transfer, storage, spill prevention and clean up requirements.	Operation
	HR08	A SDS library would be located on-site that covers all chemicals used and/or stored on-site.	Operation
	HR09	Appropriate PPE would be provided for users of chemicals.	Operation
Wildlife strike	HR10	Organic material would not be stored on-site.	Operation
	HR11	Guideline C of NASF, *Managing the Risk of Wildlife Strikes in the Vicinity of Airports* would be adhered to.	Operation
	HR12	Waste would be stored and processed in buildings or vessels.	Operation
	HR13	The proposal site would be kept clean and tidy.	Operation
	HR14	Waste from office and administration activities would be stored in appropriate bins (with lids).	Operation
	HR15	A Waste Management Plan would be created for the proposal site to continuously manage and monitor waste.	Operation
	HR16	Any unwanted putrescible waste sources would go into waste bins to be taken to landfill.	Operation
Failure of critical infrastructure	HR17	A regular maintenance schedule would be developed and undertaken by qualified personnel.	Operation
	HR18	Adequate training would be provided on operating machinery.	Operation
	HR19	The following plans would be developed to manage critical infrastructure: ▪ Business Continuity Plan ▪ Asset Management Plan	Operation

18.6 Residual impact

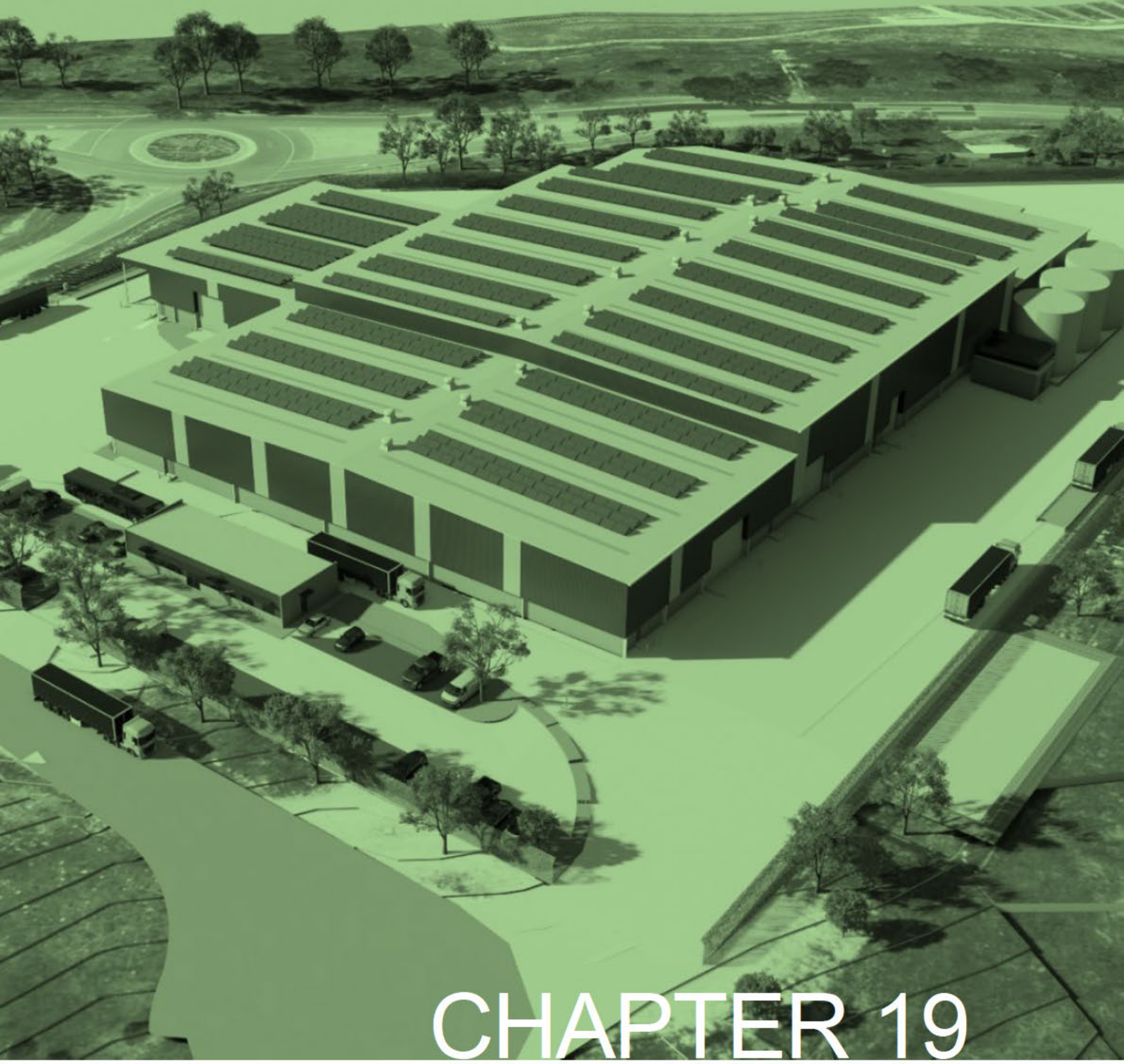
Based on the mitigation measures identified, an assessment of the residual hazards and risks associated with the proposal has been considered in Table 18.5.

Table 18.5: Hazard and risk – residual risk assessment

Risks identified	Original risk rating[6]	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				

[6] The original risks were not identified in the scoping document (Appendix A) and have been obtained from the PHA completed for the proposal as additional risks that were not previously considered.

Risks identified	Original risk rating[6]	Residual likelihood	Residual consequence	Residual risk rating
Nil				
Additional risks				
Fire at facility	Medium	Unlikely	Moderate	Low
Hazardous chemical spills	Medium	Unlikely	Minor	Very Low
Failure of critical infrastructure	Medium	Unlikely	Moderate	Low
Impacts on aircraft from bird strike	Medium	Remote	Moderate	Very Low
Pilot distraction from lighting	Low	Remote	Minimal	Negligible



CHAPTER 19

BUSHFIRE

19 BUSHFIRE

19.1 Requirements

This chapter addresses the following bushfire risk requirements of the Scoping Document:

- Provide an assessment of the potential threat of fire occurring at the facility, such as risk in relation to fire in stockpiled material, any effect on the surrounding area that a fire may have, and the protection measures necessary to address the potential threat of fire.
- A bushfire assessment must be undertaken by a suitably qualified person.
- Consider how the development will limit the storage of flammable materials on-site during the bushfire danger period.

19.2 Environmental conditions and values

The area surrounding the proposal site is predominantly grassland vegetation, with a small portion of open woodland present adjacent John Cory Road to the south-east. A solar farm to the southwest of Mugga Lane has some grassland vegetation under panels but this vegetation is considered managed due to an extensive network of tracks that provide fire breaks and vegetation maintenance, such as sheep grazing, to minimise the grass growth under the solar panels.

The proposal site itself has been cleared and has minimal vegetation. However, it is currently mapped as Bushfire Prone by the ACT ESA.

The bushfire season is typically between 1 October and 31 March. This may vary from year to year, depending upon prevailing weather conditions including wind speed, ambient temperature, relative humidity, and fuel load.

19.3 Investigations

A bushfire assessment was prepared for the proposal in accordance with the recently legislated *ACT Bushfire Management Standards 2023* (ESA, 2023) and *Strategic Bushfire Management Plan 2019-2024* (SBMP v4) (ESA, no date).

The investigation included:

- Site inspections to collect site information and data.
- Assessment of the risk profile of the proposal site and the impact of siting on Asset Protection Zones (APZ).
- Identification and prioritisation of mitigation measures appropriate for the proposed use and development type.
- Assessment of the existing road network to evaluate the capacity to deal with evacuating site users and responding emergency services.
- Consideration and analysis of the increase in demand for emergency services responding to bush fire, and the ability of emergency services to carry out fire suppression because of the proposal.
- Identification and prioritisation of issues associated with infrastructure and utilities, particularly water for firefighting.

- Assessment of the impact on adjoining landowners and their ability to undertake bush fire management.

Due to changes in the site layout from the initial concept layout used as the basis for the GHD 2023 assessment, to the revised proposal the subject of this final EIS, a further bushfire assessment was undertaken by BlackAsh Bushfire Consulting.

This chapter provides a summary of the assessment findings. A full copy of the Bushfire Risk Assessment is provided in Appendix Q.

19.4 Impacts

19.4.1 Direct impacts

Construction

Construction may occur during the bushfire season. The proposal has the potential to spark or ignite fires from the following activities during construction:

- Hot works that generate heat and sparks such as welding and grinding.
- Vehicle use.
- Excavation, where there is potential to sever or dislodge powerlines.
- Mulch or cleared vegetation stored in large quantities for long periods of time.
- Electrical fault as a result of equipment not being maintained or stored properly.

The level of risk would be minimised through the implementation of mitigation measures in Table 19.4.

Operation

Asset Protection Zone requirements

The initial GHD Bushfire Assessment determined that an asset protection zone (APZ) of 36m from the building footprint of both the main MRF building and the education building was required based on the whole site being considered a 'sensitive use' due to the inclusion of an 'education facility' as a defined land use.

Subsequent technical advice from Black Ash Bushfire Consulting concludes that the primary purpose of the development is commercial/ industrial in nature, and this classification remains unchanged despite the potential for school groups or other educational visitors to access the site. The availability of the site for visits by school groups does designate the development as sensitive use (i.e. that it should be treated as a school) under the *ACT BMS regulations*.

A sensitive use is typically defined as one where the primary function involves vulnerable populations, such as schools, childcare centres, hospitals, or aged care development, where prolonged exposure to bushfire risk or impact could be of concern. In this case, while school groups may visit the site, they are not the primary occupants or beneficiaries of the site. The site's core function remains commercial/ industrial, with any educational visits being incidental and not altering its fundamental classification. The control of school groups can be managed by the exclusion of such vulnerable occupants if certain thresholds are met such as declaration of a Total Fire Ban Day, catastrophic fire weather conditions or fires burning in the vicinity of the site. This can be easily achieved by emergency planning arrangements as part of the Fire Management Plan.

While it is submitted that the Education Centre is not a sensitive use and should be considered in the same manner as any on-site office ancillary to industrial uses, this EIS considers the potential impacts under the worst-case scenario. In this regard a 36m APZ would apply but be limited to 36m around the education building only. Such an APZ would mostly be within the proposal site, but would extend northward into Recycling Road, refer Figure 19.2. Recycling Road is managed land comprising bitumen, gravel, concrete and exotic grass, refer Figure 19.1, These ground conditions meet the requirements of an APZ. In addition, the proposed education building is located at the entrance to the site (refer Figure 1.1) allowing for immediate access and egress. Notwithstanding, additional measures will be considered at detailed design stage, subject to review by ACT Agencies including ACT Fire and Rescue.

Figure 19.1: Ground Conditions within Recycling Road

Based on the main MRF building not being a sensitive use, Black Ash Bushfire Consulting consider that a 12m APZ is appropriate for the main MRF building. A 12m APZ around the main MRF building only slightly extends into the John Cory Road and Magga Lane road reserves for a distance of 2m.

The narrow band of vegetation situated between Mugga Lane and the site serves primarily as a visual buffer, providing tree cover that enhances screening without contributing to bushfire risk. Due to its fragmented nature, the vegetation within this strip does not form a continuous or dense fuel load capable of sustaining or spreading a bushfire. Additionally, the absence of significant undergrowth, ladder fuels, or highly combustible species further minimizes its potential to escalate bushfire hazards.

While this land within the road reserves is managed land, this EIS considers the worst-case scenario, and it is proposed to further mitigate the bushfire risk by installing a colourbond fence at the location where the APZ extends into the road reserve to provide shielding from grassfire and ensure the APZ is located entirely within the proposal site.

Building Construction Standard

Section 8 of the BMS provides the requirements for “other” development in the ACT. Section 8.3.1 of the BMS (p. 66) states:

Buildings of Class 5 to 8 under the NCC

Under the building classification system within the NCC, Class 5 to 8 buildings include offices, shops, factories, warehouses, public car parks and other commercial and industrial facilities. Where no residential component is included, commercial and industrial development is addressed through the aim and objectives of BMS (see Section 1 of this document).

The NCC does not provide for any bush fire specific performance requirements for these classes of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however compliance, where possible, with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of BMS. A suitable package of BPMs should be proposed commensurate with the assessed level of risk to the development. The scale of the development and numbers of people likely to be occupying the building will be directly relevant to the BPMs proposed. The provisions within Section 7 of this document should be used as a base for the development of a package of measures. Each development will be assessed on its own individual merits.

Whilst bush fire is not captured in the NCC for Class 5-8 buildings, the following objectives will be applied in relation to access, water supply and services, and emergency and evacuation planning:

- to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.
- to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and provide for the storage of hazardous materials away from the hazard wherever possible.

The NCC does not impose specific bushfire-related requirements for commercial and industrial buildings (Classes 5–9). This regulatory gap means that determining an appropriate level of bushfire resilience for these buildings is primarily a risk-based decision left to the owner, operator, or developer.

Given this, the construction level concerning the Bushfire Attack Level (BAL) should be assessed based on factors such as the site's bushfire exposure, operational continuity needs, asset protection priorities, and insurance requirements. The construction recommendations provide for BAL 12.5 or BAL Low across the site. This approach does not rely on or seek off site APZs as adjoining land is managed or not of sufficient risk to warrant specific mitigation treatment – specifically adjacent to the buildings on Mugga Lane.

ACT Bushfire Management Standards

The proposal has been reviewed against the 2023 ACT Bushfire Management Standards (BMS), specifically the Bushfire Protection Measures outlined in Section 6.7 of the BMS. The relevant Performance Criteria and associated Acceptable Solutions detailed in Section 6.7 of the BMS together with the assessment of the proposal against the measures are outlined in Table 19.1 below.

Table 19.1: Assessment against ACT Bushfire Management Standards 2023

BMS PERFORMANCE CRITERIA	BMS ACCEPTABLE SOLUTIONS	RESPONSE
Asset Protection Zones		
▪ Radiant heat levels of greater than 10kW/ m²	▪ The building is provided with an APZ in accordance with Table 19 in Appendix 1.	▪ Meets the Acceptable Solution as the building is

BMS PERFORMANCE CRITERIA	BMS ACCEPTABLE SOLUTIONS	RESPONSE
(calculated at 1200K) will not be experienced on any part of the building. ▪ APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised. ▪ APZs are managed and maintained to prevent the spread of fire to the building. ▪ the APZ is provided in perpetuity.	▪ APZs are located on lands with a slope less than 14 degrees. ▪ The APZ is managed in accordance with the requirements of Appendix 4 of this document and is wholly within the boundaries of the development site. ▪ APZ are wholly within the boundaries of the development site; and ▪ Other structures located within the APZ need to be located further than 6m from the refuge building.	provided with an APZ ▪ The APZ is on land with a slope less than 14 degrees ▪ Meets the Performance Criteria as the APZ is managed and provided in perpetuity
Landscaping		
▪ Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	▪ Landscaping is in accordance with Appendix 4	▪ Detailed landscape design at DA stage will ensure compliance
Construction standards		
▪ The proposed building can withstand bush fire attack in the form of wind, embers, radiant heat, and flame contact.	▪ A construction level of BAL-12.5 (or BAL-19 for class 9 buildings) under AS 3959 or NASH Standard.	▪ Construction level will be consistent with BAL 12.5 in accordance with recommendations of the BlackAsh bushfire risk assessment
Access		
▪ Firefighting vehicles are provided with safe, all-weather	▪ Sensitive use development access roads are two-wheel drive, all- weather roads. ▪ Access is provided to all structures.	▪ Access complies with Acceptable Solution

BMS PERFORMANCE CRITERIA	BMS ACCEPTABLE SOLUTIONS	RESPONSE
access to structures and hazard vegetation	▪ Traffic management devices are constructed to not prohibit access by emergency services vehicles. ▪ Access roads must provide suitable turning areas in accordance with Appendix 3; and ▪ One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	
Perimeter roads		
▪ Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	▪ There are two-way sealed roads. ▪ Minimum 7.5m carriageway width kerb to kerb; parking is provided outside of the carriageway width; hydrants are to be located clear of parking areas. ▪ There are through roads, and these are linked to the internal road system at an interval of no greater than 500m. ▪ Curves of roads have a minimum inner radius of 6m. ▪ The maximum grade road is 15 degrees and average grade of not more than 10 degrees. ▪ The road crossfall does not exceed 3 degrees; and ▪ A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	▪ Access driveway around building (perimeter road) complies with Acceptable Solution.
Non-perimeter roads		
▪ Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	▪ Minimum 5.5m carriageway width kerb to kerb. ▪ Parking is provided outside of the carriageway width; hydrants are located clear of parking areas. ▪ There are through roads, and these are linked to the internal road system at an interval of no greater than 500m. ▪ Curves of roads have a minimum inner radius of 6m. ▪ The maximum grade road is 15 degrees and average grade of not more than 10 degrees. ▪ The road crossfall does not exceed 3 degrees; and ▪ A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	▪ Internal driveways comply with Acceptable Solution.
Water supplies		
▪ An adequate water supply	▪ Reticulated water is to be provided to the development, where available; or	▪ The internal water reticulation

BMS PERFORMANCE CRITERIA	BMS ACCEPTABLE SOLUTIONS	RESPONSE
for firefighting purposes is installed and maintained.	▪ A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.	network will achieve a minimum 20Lps for 90 min with static water storage tanks, ring main, and hydrants outlets. ▪ The overall design for firefighting water availability uses duration and flow rates that meet codes and Brigade requirements for high hazard and waste facilities for both sprinklers and hydrants.
Electricity services		
▪ Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	▪ Where practicable, electrical transmission lines are underground. ▪ Where overhead, electrical transmission lines are proposed as follow: ▪ Lines are installed with short pole spacing (30m), unless crossing gullies, gorges, or riparian areas; and ▪ No part of a tree is closer to a power line than the distance set out in https://www.evoenergy.com.au/residents/trees-and-powerlines	▪ Complies with Acceptable Solution
Emergency management		
▪ A Bush Fire Emergency Management and Evacuation Plan is prepared	▪ Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: ▪ The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan. ▪ Australian Standard AS 3745:2010 Planning for emergencies in facilities; and ▪ Australian Standard AS 4083:2010 Planning for emergencies – Health care facilities (where applicable). ▪ The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants. ▪ Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to ACT ESA for its information prior to occupation of the development.	▪ Complies with Acceptable Solution

Figure 19.2
Asset Protection Zone

Materials Recovery Facility in Canberra
Environmental Impact Statement

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Construction standard

Based on the proposed concept layout and the APZ (shown on Figure 19.2), the indicative construction standard (as defined in *AS 3959-2018 Construction of buildings in bushfire-prone areas*) Bushfire Attack Levels for the proposal are indicated in Table 19.2.

Table 19.2: Indicative Bushfire Attack Levels for the proposal

Aspect	Vegetation	Slope	Bushfire Attack Level (AS 3959)
Northeast	Grassland	Upslope/flat	12.5
Southeast	Woodland	Upslope/flat	12.5
South	Low threat vegetation	0-5°	LOW
Northwest	Grassland	Upslope/flat	12.5
West	Grassland	Upslope/flat	12.5

Water supply

The proposal site would be serviced by reticulated water supply. ICON Water supplied reticulated water supply would be connected to the upgraded MRF meeting acceptable solutions of the BMS and complying with the *Utilities Act 2000*. Fire hydrants spacing, sizing and pressure would comply with AS2419.1:2021. Hydrants would be accessible (i.e. outside parking bays or within the access road) and suitably spaced. Additionally, all above ground water service pipes external to the building would be metal, including taps.

The internal water reticulation network will achieve a minimum 20Lps for 90 min with static water storage tanks, ring main, and hydrants outlets. The overall design for firefighting water availability uses duration and flow rates that meet codes and Brigade requirements for high hazard and waste facilities for both sprinklers and hydrants.

The MRF would also be fitted with an internal automatic fire sprinkler system.

Access and egress

Primary access to the MRF would be provided via Recycling Road off John Cory Road. The road within the site is not a public access road with the remaining access requirements for the proposal able to meet the applicable access requirements detailed in Table 8 of the *ACT Bushfire Management Standards* (ESA, 2023) for emergency services appliances through design.

Threat of fire occurring at the MRF and storage of flammable materials

Historically, the largest and longest-lasting fires at waste facilities have often involved large stockpiles of unsorted waste with inadequate separation. Combustible recyclables such as paper, cardboard and plastics would be received at the MRF for processing. Therefore, appropriate and effective storage management, monitoring of fire hazards and development and implementation of policies and procedures would be required.

To manage the threat of fire at the MRF, the guidance provided in AFAC and *NSW guidelines for fire safety in waste management facilities* (AFAC, 2022) (FRNSW, 2020) would be considered in detailed design for the facility and in the development of the bushfire mitigation and operational plans.

Combustible material stockpile dimensions, stockpile access, height, length and width play a key role in the severity, duration and intensity of fires. As identified in Chapter 18.4.1, detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and *NSW guidelines for fire safety in waste management facilities* (AFAC, 2022) (FRNSW, 2020). This would include:

- Limiting each internal (combustible) stockpile to 1,000 cubic metres.
- Ensuring a minimum of six metres unobstructed access is maintained on each accessible side of each internal (combustible) stockpile.

Other requirements of the AFAC and NSW guidelines regarding the fire hydrant system, automatic fire sprinkler systems, smoke hazard management, fire hose reels, perimeter access and fire water containment would also be incorporated during detailed design.

In addition, all fire safety measures as required by the *Building Code of Australia* (Australian Building Codes Board, 2022) would be installed within the buildings. The bushfire risk is also mitigated through the installation of underground utility services within the site.

An Emergency Management Plan would be prepared that includes locations and sizes of combustible material stockpiles and management of ignition sources.

Landscaping

All open space within the proposal site would undergo management to meet APZ or low hazard standards under *AS 3959-2018 Construction of buildings in bushfire-prone areas*. The proposed APZ would not require vegetation clearance or tree removal to support the proposal due to the predominant cleared nature of the proposal site, the proposed site layout, distance to vegetation surrounding the subject land and existing and proposed access.

Fuel management practices would be implemented by Veolia as the site operator within the APZ (both within the licence area and outside to the north and north-west) in accordance with the *ACT Bushfire Management Standards* (ESA, 2023).

Emergency management and evacuation planning

An Emergency Management and Evacuation Plan would be prepared for the proposal and updated prior to construction, operation and occupancy of the facility in compliance with the requirements set out in the *ACT Bushfire Management Standards* (ESA, 2023). The plan would clearly identify bushfire preparedness actions, bushfire response actions, evacuation plans and procedures (for on-site and off-site evacuation), and on-site refuge locations. A copy of the Emergency Management and Evacuation Plan would be provided to ESA for its information prior to occupation of the MRF.

19.4.2 Indirect impacts

No indirect impacts from construction or operation of the proposal are anticipated.

19.5 Mitigation measures

The initial mitigation measures proposed to be implemented were reviewed by ACT Fire & Rescue of the ACT Emergency Services Agency ('Fire & Rescue') and their feedback resulted in additional bushfire risk assessment by Bushfire Protection Planning & Assessment Services Pty Ltd (BPPAS) to consider these comments from Fire & Rescue.

BPPAS Consultants prepared a specific Bushfire Attack Level Assessment and Statement of Compliance report in response to further design development for the facility. The additional assessment, included in full in Appendix Q confirmed that even with conservatively assessing the development as a 'sensitive use' the implementation of recommended measures and emergency management procedures would provide a far better outcome for bushfire safety compliance than what was previously in place.

The recommendations of the BPPAS report are summarised as follows:

- The development is to incorporate fire safety construction provisions as per NCC.
- All components of the development are to be non-combustible (BAL-12.5).
- The education building is to be constructed to BAL-19.
- An APZ is to be maintained to the block boundary (excluding riparian/grassland constraints).
- A 10m defendable space is to be maintained around the development.
- A 2m high colorbond fence is to be constructed along the southern boundary, where unmanaged vegetation is within 20m of the building.
- Future grassland management is to occur to keep grasses below 200mm.
- Landscaped or vegetated areas are to be maintained as 'low threat' as per BMS.
- Any tree planting is not to result in overhang or obstruct internal driveways.
- No storage of hazardous materials are to occur within 10m of buildings.
- Electrical supply connections are to be underground.
- Any exposed water pipes are to be metal.
- Water supply tanks are to incorporate 65mm outlet.
- Emergency management and fire evacuation procedures are to be prepared and submitted to ACT Fire & Rescue before occupation.
- Fixed firefighting hose and reels are to be of a length to reach all immediate surrounding areas.
- Signs are to be installed to identify emergency vehicle access, locations of hydrant connection points and evacuation procedures.

Table 19.3 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential bushfire risks.

Table 19.3: Bushfire mitigation measures

Potential impact	ID	Mitigation	Timing
Bushfire	BR01	A Bushfire Prevention and Response Plan would be prepared as part of the CEMP, providing relevant information for fire and emergency service responders and project personnel. The plan would include the following requirements: ▪ Plant and equipment to be maintained in accordance with manufacturers recommendations and best practice. ▪ Seasonal and daily fire hazard warnings issued by the ACT ESA to be observed. ▪ No hot works on days of Severe, Extreme or Catastrophic Danger Rating ▪ Vehicles to be kept on formed roads and paths, and away from long grass where possible. ▪ Appropriate parking areas to be provided for personnel that are away from long grass and other ignition sources. ▪ Unnecessary idling of vehicles to be avoided. ▪ All vehicles on-site to be equipped with fire extinguishers.	Construction

Potential impact	ID	Mitigation	Timing
		▪ Fire prevention and fire control instructions to be included in site inductions. ▪ Hot works not to be undertaken outside designated workshop areas. ▪ Job Safety Analyses to incorporate fire ignition risk assessment and controls for prevention of grass fire ignition where relevant. ▪ Job Safety Analyses for activities involving hot works to incorporate hot works risk assessment and controls.	
	BR02	An APZ would be provided in accordance with *ACT Bushfire Management Standards* (ESA, 2023).	Detailed design
	BR03	Primary access would be provided to meet the following requirements: ▪ Minimum vertical clearance to a height of 4.2 metres above access at all times. ▪ Road widths (minimum 3.5 metres for one way and 6.5 metres for two way). ▪ Road capacity (25 tonnes minimum). ▪ Minimum inner radius six metres for curves and minimum distance between inner and outer curves is six metres. ▪ Crossfall of roads not exceeding six percent.	Detailed design
	BR04	APZ landscaping would comply with the *ACT Bushfire Management Standards* (ESA, 2023) fuel management standards and be guided by the fuel management principles. These would be managed by Veolia as the site operator.	Operation
	BR05	An Emergency Management and Evacuation Plan would be prepared for the proposal in accordance with the requirements set out in the *ACT Bushfire Management Standards* (ESA, 2023) and updated prior to construction, operation and occupancy of the MRF. The plan would: ▪ Clearly identify bushfire preparedness actions, bushfire response actions, evacuation plans and procedures (for on-site and off-site evacuation), and on-site refuge locations. ▪ Include locations and sizes of combustible material stockpiles as per AFAC and *NSW guidelines for fire safety in waste management facilities* (AFAC, 2022) (FRNSW, 2020) and management of ignition sources. A copy of the Emergency Management and Evacuation Plan would be provided to ESA for its information prior to occupation of the MRF.	Construction and operation
	BR06	The provision of shielding (non-combustible fencing) to the perimeter of the block would be considered in detailed design to assist with prevention of fire travel into the facility from grassland hazard in the event of a bushfire.	Detailed design
Facility fire	BR07	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and *NSW guidelines for fire safety in waste management facilities* (AFAC, 2022) (FRNSW, 2020). This would include: ▪ Limiting each internal (combustible) stockpile to 1,000 cubic metres. ▪ Ensuring a minimum of six metres unobstructed access is maintained on each accessible side of each internal (combustible) stockpile. ▪ Storage bunkers up to 5m high allowing for a 1m freeboard above a 4m maximum pile height.	Operation

19.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual bushfire risks associated with the proposal has been considered in Table 19.4.

Table 19.4: Bushfire – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Potential risk of bushfire during construction from sparks, heat, fuel storage, and general works	Medium	Unlikely	Moderate	Low
Potential impact of bushfires affecting operation of the facility	Low	Unlikely	Moderate	Low
Additional risks				
Impacts from fires in the surrounding area.	NA	Unlikely	Moderate	Low

CHAPTER 20

HERITAGE

20 HERITAGE

20.1 Requirements

This chapter addresses the following heritage requirements of the Scoping Document:

- [redacted]
- [redacted]
- Provide a Cultural Heritage Assessment (CHA) of the potential Aboriginal heritage impacts of the proposal.
- [redacted]
- If the above assessment actions identify that the proposal may have detrimental heritage effects, all alternatives to heritage impacts must be considered and adopted where reasonably practicable. Where alternatives are not reasonably practicable, measures to minimise heritage impacts must also be considered and adopted.

20.2 Environmental conditions and values

A number of archaeological studies have been undertaken within and around the proposal site. The Hume area and Dog Trap Creek valley have been subject to extensive survey and subsurface investigations from the 1990s onward, leading to a great deal of research focused in the area.

20.2.1 Predictive model – Aboriginal heritage

As a result of the archaeological surveys undertaken to date in the local area and ethno-historical data from the local region and south-eastern Australia more broadly, qualitative observations regarding Aboriginal site location parameters may be summarised as follows:

- The most commonly recorded site types are surface and subsurface scatters of stone artefacts.
- Artefact densities in open artefact scatters may vary considerably.
- Open artefact scatters are most likely to occur on relatively level ground in locally well-drained contexts, either spurline crests, terraces or elevated creek banks in valley floor contexts, low gradient crests and streamline banks in mid valley slope contexts, and level crests, shoulders and saddles on major ridgelines and spurs.
- The majority of open artefact scatters, (particularly larger sites), are situated adjacent to, or in close proximity to, creek flats or valley bottom contexts, frequently on low gradient basal slopes adjacent to streams or wetlands.
- Open artefact scatters which contain relatively large artefact assemblages and densities occur most frequently and consistently within 100-150 m of major and relatively permanent drainage lines.

- Open artefact scatters which occur away from the valley basal slopes and major tributaries tend to be small and sparser. A preference for major confluences and valley constrictions may be indicated.
- Subsurface deposits of artefacts will not necessarily be associated with visible surface artefacts.
- Most sites located away from major water sources will consist of low density scatters of artefacts, and mostly contain less than ten visible surface artefacts.
- Artefacts may occur wherever surface exposures of exploitable rock occur. Rock sources which are known to have been locally exploited include chalcedony, chert, quartz, and fine grained igneous rocks such as fine grained porphyry and fine grained intrusives within granodiorite.
- The occurrence of high grade chert does not necessarily indicate Aboriginal exploitation (Officer & Navin, 1992).
- Aboriginal scarred trees may occur anywhere old-growth trees survive. It is estimated that in the Canberra/Queanbeyan region trees bearing Aboriginal scars would need to be in the order of 140 to 150 years old.

20.2.2 Predictive model – historic heritage

Unrecorded historic sites and features of heritage significance that may occur within the proposal site include:

- Old fence lines, such as post and rail fencing; these may occur along road easement boundaries and farmlands.
- Indications of field systems, such as drainage channels and ridge and furrow ploughlands; these are likely to survive in low lying agricultural ground.
- Traces of agricultural and industrial processing or extractive sites, such as dairies, factories, and quarries; these may be found throughout agricultural lands on valley floors and adjacent low ranges.
- Archaeological sites, such as the occupation remains of former dwellings including homesteads, houses and huts; these will be distributed in close association with land settlement patterns, and correlated with favourable agricultural lands, trading nodes and transport corridors.
- Nineteenth-century structures, such as farm dwellings, outbuildings, selector's and timber-getters huts; these may survive as standing buildings, ruins or archaeological deposits and are most likely to survive on less developed rural properties, on early portion numbers, and in or near established farm building complexes.
- Sites associated with early roads; these will be closely associated with early cadastral road reserves, watershed ridgelines, and related to early river and creek crossing points.
- Structures of historical interest and heritage significance may be standing, ruined, buried, abandoned or still in use.

20.2.3 Preservation of archaeological material

Previous land use has resulted in the following impacts to the preservation of archaeological material:

- Removal of native vegetation and tree cover
- Thorough ploughing of paddocks for pasture improvement or cropping, disturbance to soil surface and subsurface
- Erosion on hill crests and upper slopes
- Soil deposition on lower slopes and creek flats
- Areas of stock impact along fence lines, gates and vehicle access roads
- Construction of four house lots with landscaped gardens, tanks and sheds
- Installation of electricity distribution lines across the paddocks and communication lines.

20.3 Investigations

20.3.1 Overview

A CHA was undertaken for the proposal to assess potential for heritage impacts relating to the proposal. The CHA included:

- A literature and database review
- Developing predictive archaeological models of Aboriginal and historical heritage
- Field surveys
- Identifying and recording cultural heritage values within the survey areas
- Assessing the likely impacts of the proposal to Aboriginal and historical cultural heritage values
- Providing management recommendations

This chapter provides a summary of the assessment findings. A full copy of the CHA prepared by Navin Officer Heritage Consultants (NOHC) is provided in Appendix R.

Literature and database review

A literature and database review of heritage registers and schedules, local histories and archaeological reports was undertaken. The review included the Heritage Registers maintained by the Australian Heritage Council, (Federal) Department of Environment and the Heritage Registers and associated reports held by ACT Heritage, and the ACT Department of Environment, Planning and Sustainable Development Directorate.

Field surveys

Site surveys were undertaken by NOHC staff on the 21 December 2022. This involved a walk over of the area proposed to be impacted by the proposal. All areas subject to direct impact were traversed, with particular focus given to areas with low to moderate levels of disturbance. NOHC was accompanied by Wally Bell, and Reuben House, from the Representative Aboriginal Organisations (RAOs) Buru Ngunnawal Aboriginal Corporation (BNAC), and Mirrabei.

20.3.2 Aboriginal heritage

Database search results

One previously recorded Aboriginal heritage site (NW1/PAD1) is located within the proposal site. Site NW1/PAD1 has been previously subject to surface salvage and subsurface testing, following these actions it was recommended that no further action was required at the proposal site.

There are seven previously recorded Aboriginal heritage sites (HFF01, HUME1, NW2/PAD 2, HID1391, HID139, H/A11, MPAD2) and two areas of archaeological potential (PAD 4, HFFPAD01) located within 350 metres of the proposal site.

[redacted]

Archaeological survey results

One Aboriginal artefact scatter (HMRF01) was recorded during the site surveys within the northeast section of the proposal site. This site consisted of three lithic artefacts, one of which was a conjoin flake in two pieces, located within an exposure used as a vehicle turning circle. Disturbance at this site is extremely high. The potential for there to be additional artefacts was assessed as moderate, and the potential for there to be any subsurface archaeological deposit was assessed to be low.

Archaeological potential

The proposal site as a whole is considered to have low Aboriginal archaeological potential. This assessment is based on the high level of disturbance in the study area within areas assessed as having archaeological potential. The western portion of the study area has been subject to less disturbance than the east, however the archaeological potential of this area is considered to be low based on landform and the results of past assessments.

There is moderate potential for calcareous deposits associated with Hume Site 1 to extend into the proposal site. A suggested revision of the Hume Site 1 boundary was proposed by NOHC based on existing contour mapping. However, the mapping did not provide a high enough level of detail in some areas. A program of gridded auger survey will be undertaken for the adjacent proposed FOGO facility in order to further define the boundary of the site by plotting the presence of the upper calcareous layer. Although the boundary of Hume Site 1 may be further revised following this testing, there is low risk that the upper calcareous deposits would extend into the impact areas of the proposal site.

Heritage significance

The Burra Charter defines cultural significance in terms of aesthetic, scientific, historic, and social values. Aboriginal cultural heritage is typically assessed according to its social and scientific significance. Other values may also be important. The assessment of significance provides a guideline for determining appropriate mitigation and management strategies.

All Aboriginal sites within the ACT are regarded by the RAOs as having cultural significance as locations that have direct evidence of the past Aboriginal occupation of the area.

HMRF01 – Artefact scatter

The HMRF01 site type is common throughout the Canberra region and is evidence of Aboriginal occupation within the area, however due to the lack of rare or defining characteristics this site provides little further archaeological information. This site has no subsurface archaeological potential. The site is assessed as having low scientific significance.

The HMRF01 site was assessed to have heritage significance according to 'criterion g' (has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons). The site symbolically represents past patterns of Aboriginal occupation which contributes to a sense of identity for the Aboriginal community.

[redacted]

Aboriginal consultation

Four local Aboriginal organisations have stated an objective to represent traditional Aboriginal cultural values and interests within the ACT. The following groups have been recognised by the Minister as RAOs as defined under the *ACT Heritage Act 2004*:

- Buru Ngunawal Aboriginal Corporation (Buru Ngunawal)
- King Brown's Tribal Group Pty Ltd (KBTG)
- Mirrabei
- Ngarigu Currawong Clan (Ngarigu)

Contact was made by phone and email with the RAOs to inform them of this assessment and to organise representation during the field survey.

The following personnel participated in the initial fieldwork program and represented the interests of their group in the proposal:

- Wally Bell (BNAC)
- Reuben House (Mirrabei)

Following SHE approval by ACT Heritage, the following personnel participated in the collection survey program and represented the interests of their group:

- Kelsie Brown (KBTG)
- Judy Bell (Mirrabei)

20.3.3 Historic heritage

Historical archaeology refers to the 'post-contact' period and includes domestic, commercial and industrial sites as well as most maritime sites. It is the study of the past using physical evidence in conjunction with historical sources. The two primary types of places or items that may form part of the historical archaeology context include:

- Below ground evidence, including building foundations, occupation deposits, features and artefacts; and above ground evidence, including buildings, works, industrial structures and relics that are intact or ruined.
- Areas of land that display evidence of human activity or occupation.

Database search results

No recorded historic heritage sites are located within the proposal site. An unlisted historic heritage site (H/H4) is located 160 metres from the proposal site.

Archaeological survey results

No historical heritage sites were recorded during the site surveys.

Archaeological potential

The proposal site as a whole is considered to have low historic archaeological potential.

20.4 Impacts

20.4.1 Direct impacts

Construction

HMRF01 and NW1/PAD1

The construction of the proposal may directly impact site HMRF01 and NW1/PAD 1. Half of the listed site boundary for HMRF01 is located within the proposed impact area for the proposal, and site NW1/PAD 1 is contained wholly within the proposed impact area. Refer to Figure 20.1.

Impacts have already occurred at site NW1/PAD 1 as allowed for under past heritage assessments, and as such no further works are required at this site.

Partial harm is proposed at HMRF01, and additional impacts are considered likely in the area outside of the proposal site. Site HMRF01 is subject to impacts from heavy vehicle movement, surface erosion, and weed coverage which has had damaging effects on the archaeological material at the site, as evidenced by the breakage of the chert flake located during survey.

Following SHE approval by ACT Heritage, on the 3 March 2023, Nicola Hayes (NOHC), Kelsie Brown (KBTG) and Judy Bell (Mirrabei) conducted a collection survey for site HMRF01 to avoid further physical impacts to the site and its contents.

HMRF01 would be added to the Heritage Register as a site of Aboriginal heritage.

Figure 20.1
Proposed Heritage Impacts

Disclaimer

[redacted]

[redacted]

Operation

No operational impacts are expected.

20.4.2 Indirect impacts

[redacted]

[redacted]

[redacted]

20.5 Mitigation measures

Table 20.1 identifies the mitigation measures that would be implemented for the proposal to avoid or reduce potential impacts to heritage.

Table 20.1: Heritage mitigation measures

Potential impact	ID	Mitigation measure	Timing
Impacts to known heritage sites NW1/PAD 1 and HMRF01	H01	Long-term management outcomes for all artefacts collected in association with HMRF01 would be developed in consultation with the RAOs following completion of the assessment for the adjacent proposed FOGO facility.	Following completion of assessment for the proposed FOGO facility
	H02	All proposal personnel, including contractors, would be made aware of the heritage status of the NW1/PAD 1 and HMRF01 sites prior to impacts.	Prior to construction and construction
Impacts to unknown heritage sites	H03	The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 6 of the CHA) would be adopted and complied with during construction activities involving ground surface disturbance and excavation.	Construction
[redacted]			

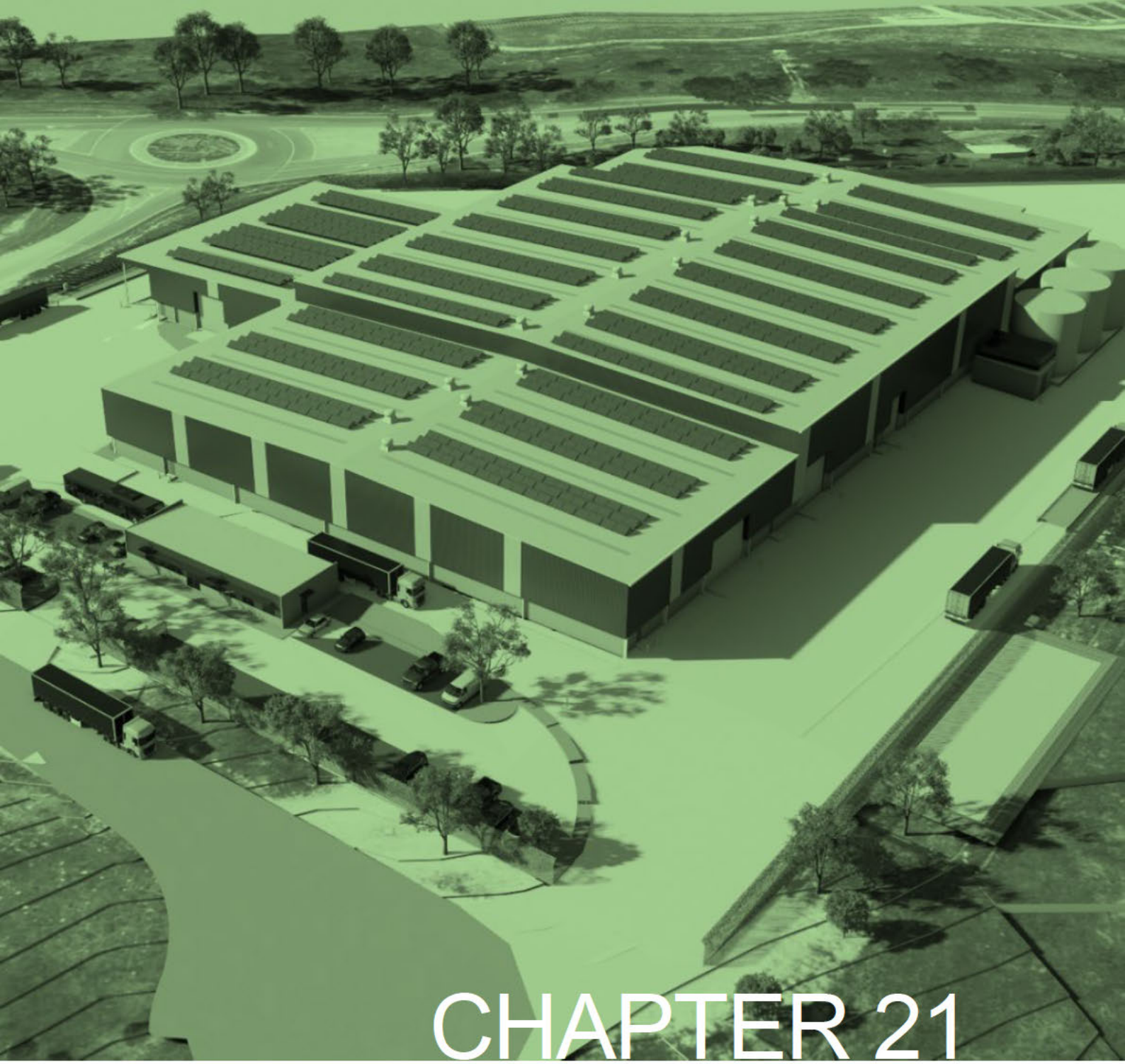
20.6 Residual impact

Based on the mitigation measures identified, an assessment of the residual heritage risks associated with the proposal has been considered in Table 20.2.

Table 20.2: Heritage – residual risk assessment

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Preliminary risks				
Direct or indirect impact to Aboriginal archaeological potential or places with high Aboriginal cultural values	Low	Unlikely	Moderate	Low
Additional risks				

Risks identified	Original risk rating	Residual likelihood	Residual consequence	Residual risk rating
Unexpected finds of Aboriginal archaeological potential or places with high Aboriginal cultural value	NA	Remote	Moderate	Low



CHAPTER 21

CUMULATIVE IMPACTS

21 CUMULATIVE IMPACTS

21.1 Requirements

The Scoping Document did not require cumulative impacts to be assessed. Nonetheless, an evaluation of the potential for the proposal to have cumulative environmental impacts with other developments in the vicinity of the proposal site has been undertaken.

21.2 Environmental conditions and values

For an EIS, cumulative impacts can be defined as the successive, incremental and combined effect of multiple impacts, which may in themselves be minor, but could become significant when considered together.

21.3 Investigations

The following was undertaken to assess the potential for cumulative impacts:

- Review of active development applications and environmental approvals within a one-kilometre radius of the proposal site.
- Screening of identified projects for their potential to interact with the proposal.
- Identifying and evaluating the significance of potential cumulative impacts.

There are three active development applications located within a one-kilometre radius of the proposal site. These are summarised in Table 21.1.

Table 21.1: Development applications within one kilometre radius

DA Number	Block and Section	Date lodged	Proposal	Assessment of relevance
200704152	Block 1676 Section 0	March 2008	No information.	There is insufficient information to determine the potential for interaction with the proposal.
202341588	Block 13 Section 1	May 2023	This Lease Variation serves to vary the Crown Lease Purpose Clause for Block 13 Section 1 Hume, to increase the maximum GFA that can be used for 'light industry' will be increased to 741.50 square metres from 315 square metres, an increase of 426.50 square metres. The use is described as 'cold store distribution and freight transport facility'. Potential increase in traffic flow is described as 'minor'.	Potential for interaction with the proposal: Due to proposed use and likelihood for increased traffic flow being minor, the development is unlikely to have any cumulative impacts.
202341432	Block 66 Section 22	March 2023	Proposal for construction of a new warehouse for storage, landscaping and associated site works was approved. Total gross floor area 94.24 square metres.	Potential for interaction with the proposal: Due to the small size of the proposed storage warehouse, this development is unlikely to have any cumulative impacts.

The proposed FOGO facility is currently in the environmental approvals stage and would be located on Block 5 Section 26. The FOGO facility would process up to 70,000 tonnes per year and is expected to commence construction within two years of receiving approval, subject to tendering. Given the nature and size, there is potential for the proposed FOGO facility construction and operation to have some cumulative impacts. The potential impacts are anticipated to be limited to noise, air quality and traffic. The significance of these potential cumulative impacts is evaluated in Chapter 21.4.

No other proposed large-scale future developments in the vicinity of the proposal site are known at this time.

21.4 Impacts

As outlined in Table 21.1, the potential for cumulative impacts with the identified development applications is considered unlikely.

Construction

If the construction of the proposal and the proposed FOGO facility were to occur at the same time, potential cumulative impacts are anticipated to be limited to air quality and traffic.

Air quality

The Air Quality Impact Assessment (Appendix M) assessed the risk of dust and particulate matter impacts to be low during all stages of construction of the proposal (earthworks, construction and track-out). With implementation of appropriate dust mitigation and management measures during construction of both the proposal and the proposed FOGO facility, the potential for cumulative dust impacts is also considered to be low.

Traffic

The TTIA (Appendix F) considered the cumulative traffic impacts of construction of the proposal and proposed FOGO facility occurring concurrently. Key assessment findings were as follows:

- The roundabout joining Mugga Lane and John Cory Road (proposal site access) is expected to continue operating at LoS B with minimal delays.
- Intersections with the Monaro Highway are expected to operate between LoS A and F in the AM peak, with high delays and long queues in the northbound lane. In the PM peak, both northbound and southbound lanes experience poor levels of service from LoS D to F, with delays ranging from 37 to 75 seconds.
- The LoS for the key intersections are generally expected to remain the same with or without the construction activities associated with the proposal and proposed FOGO facility, except for the Monaro Highway at Mugga Lane (southbound) which would experience an LoS increase from D to F during the PM peak.

Operation

Potential cumulative operation impacts of the proposal and the proposed FOGO facility are anticipated to be limited to air quality, noise and traffic.

Air quality

The proposal would be enclosed, would not process putrescible waste, and would have minimal processes which are considered a source of odour or particulates. The risk assessment undertaken as part of the Air Quality Impact Assessment (Appendix M) found all proposed

activities to be acceptable from an air quality perspective and separation distance guidelines show that receptors are outside the recommended distance where adverse impacts may occur.

Odour from the proposed FOGO facility would be emitted from receival of waste material, composting processes, and storage of composted product. Air from the FOGO facility would be pumped through a biofilter and therefore is expected to have a different character to that from the MRF. Cumulative operational air quality impacts are therefore considered unlikely.

Noise

The Noise and Vibration Impact Assessment for the proposal (Appendix O) indicate compliance with the *ACT Noise Standard* for the day-time period at all boundaries of the proposal site.

Noise from the proposed FOGO facility at the boundary is expected to comply with the *Noise Environmental Protection Policy* (EPA, 2010) at all times.

As such, cumulative operational noise impacts from the proposal and FOGO facility would be minimal.

Traffic

An increase in traffic is expected along John Cory Road, Recycling Road, Mugga Lane and the Monaro Highway during operation of the proposal and proposed FOGO facility.

The TTIA (Appendix F) considered the cumulative impacts of operation of the proposal and proposed FOGO facility (2033 horizon year). Key assessment findings were as follows:

- With the operation of the proposal and FOGO facility, the roundabout joining Mugga Lane and John Cory Road (proposal site access) is expected to continue operating at LoS B with minimal delays.
- The LoS of key intersections are expected to remain the same with or without the operation of the proposal and the proposed FOGO facility.

Even without the operation of the proposal and proposed FOGO facility, the Monaro Highway at Mugga Lane is expected to be already operating over capacity during the AM and PM peak periods. Capacity upgrades would be necessary to allow the intersections to operate at acceptable levels of service. The Monaro Highway Upgrade program has undertaken traffic modelling that identified that the proposed upgrades to the Monaro Highway at Mugga Lane would support a good LoS in the 2031 and 2041 horizon years.

Pests and vermin

The operation of the MRF combined with the proposed FOGO facility would involve the transportation of comingled recyclables plus food and garden organics to each respective facility.

Both the MRF receival and materials processing operations would occur within enclosed buildings with roller doors to facilitate vehicle movement. In addition, any residual waste would be stored in appropriate closed-lidded bins to avoid the likelihood of pests and vermin being attracted to the proposed facility. This waste would be stored in enclosed compactor bins until removed off-site.

The draft EIS for the FOGO facility (GHD for ACT NoWaste Draft EIS 1 November 2023) confirms that FOGO waste would be delivered directly into a receival hall through automated fast acting roller/shutter doors and unloaded in the designated delivery areas within the building. As the operations would take place within enclosed buildings the likelihood of pests and vermin being attracted to the proposed facility is minimal.

An operational biosecurity management plan would also be prepared to outline how pests will be managed. Veolia as the site operator would be required to undertake routine monitoring and

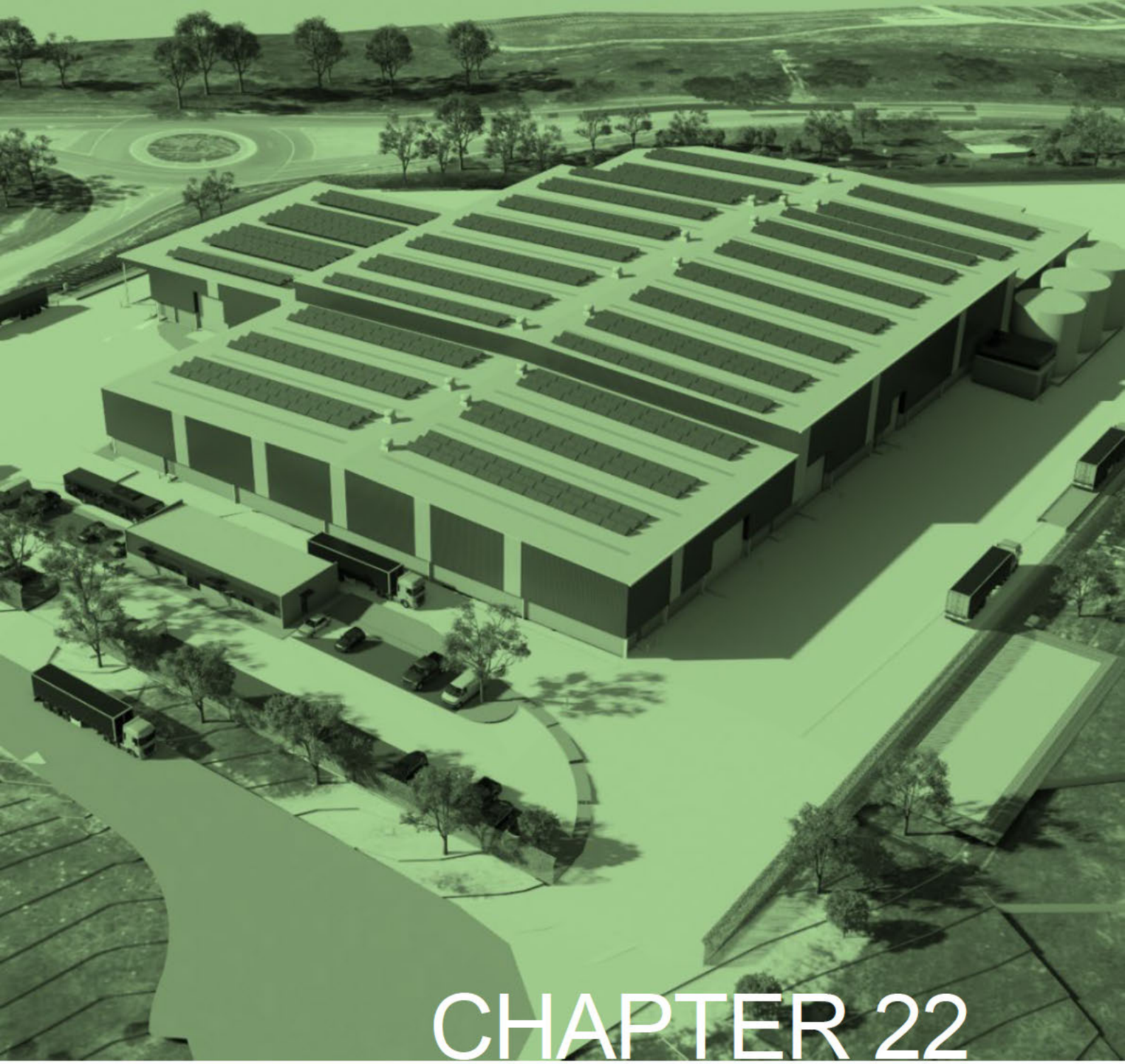
inspections of the operational biosecurity management plan thereby ensuring cumulative impacts are minimal.

21.5 Mitigation measures

No mitigation measures are considered to be required given the low risk of cumulative impacts.

21.6 Residual impact

No residual impacts associated with cumulative impacts are expected.



CHAPTER 22

SUMMARY OF MITIGATION MEASURES

22 SUMMARY OF MITIGATION MEASURES

Table 22.1 provides a summary of mitigation measures that are committed to be implemented for the proposal. The proponent (Veolia) and its contractors would be responsible for the implementation of the mitigation measures.

Any ongoing monitoring requirements (associated with water quality, sewage discharge limits and noise) from the proposal would be incorporated into the development application and, ultimately, the Environmental Authorisation for the proposal. Veolia and/or its contractors would engage the EPA in the development of the Environmental Authorisation for the proposal.

Table 22.1: Summary of mitigation measures

Environmental matter	ID	Recommended mitigation measure	Timing
Traffic and transport			
Construction traffic management plan	T01	A CTMP would be developed to include the following management measures: ▪ Preparation of a *Traffic Guidance Scheme*, detailing adequate road signage at construction work sites to inform motorists and pedestrians of the work site ahead to ensure that the risk of road accidents and disruption to surrounding land uses is minimised. ▪ Maintain accessibility for pedestrians and cyclists. ▪ Indicate routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses. ▪ Implement measures to manage traffic flows around the area affected by the construction of the proposal, including, as required, regulatory and direction signposting, line marking, and variable message signs and all other traffic control devices necessary for the implementation of the construction traffic management sub-plan. ▪ Undertake consultation with the relevant road authorities during preparation of the sub-plan. Ensure the performance of the proposal traffic arrangements is monitored during construction. ▪ Ensure trucks used for the delivery for the developments on John Cory Road are unimpeded. ▪ Monitor the roads leading to and from the proposal site	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		and take necessary steps to rectify any road deposits caused by site vehicles, to maintain the safety of road users. ▪ Where possible, offset the construction vehicle activity from peak periods of road network activity. ▪ Induct employees and contractors to raise awareness and understanding of traffic and transport mitigation measures to be implemented during construction via the CEMP.	
	T02	Construction management would be controlled by the site supervisor to ensure the efficient delivery of equipment and construction materials, and to minimise the number of trips that would need to be taken for all vehicle types.	Construction
Impacts to site access and parking	T03	All vehicles would comply with road traffic rules, particularly for any local traffic rules.	Construction and operation
	T04	All parking would be contained within the proposal site premises. Under no circumstance would personnel, company vehicles or heavy vehicles be allowed to use any public road for long-term parking, including leaving parked or unattended vehicles.	Construction and operation
	T05	Carpooling opportunities for personnel living in close proximity to one another would be explored where feasible. Opportunities for coach services to shuttle workers from the CBD or nearby public transport stations to the site shall also be explored.	Construction and operation
Safety	T06	All staff and subcontractors engaged on-site would be required to undergo site induction. The induction would outline the requirements of the CTMP, including access routes, environmental and occupational health and safety responsibilities, emergency procedures, potential carpooling/shuttle service opportunities, and vehicle height and mass restrictions, among others. Additionally, the Site Manager would discuss CTMP requirements regularly as a part of regular “toolbox talks.	Construction
	T07	Separation of internal haulage routes for light and heavy vehicle movements within the proposal site	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		would be maintained as far as practicable.	
	T08	All vehicles would move through the proposal site in an anticlockwise direction to maintain the predictability of vehicle movements and to minimise conflict points.	Construction
	T09	Separate entrances and exits for vehicles and pedestrians would be provided. Pedestrians on-site would be directed to utilise clearly-defined designated pedestrian paths.	Construction
	T10	Access for emergency vehicles would be maintained at the proposal site during the construction works, in accordance with emergency vehicle requirements. The emergency services, including fire, ambulance, and police, would be advised of all planned changes to traffic arrangements prior to the commencement of works.	Construction
Heavy vehicle access	T11	Truck drivers would be directed to follow the predetermined haulage routes. Additionally, all drivers would be required to observe posted speed limits on adjoining road networks to comply with Australian Road Rules. Drivers would be required to adjust speeds to suit the road environment and weather conditions appropriately to ensure the safe movement of the vehicles based on the individual vehicle configurations.	Construction and operation
	T12	Any oversized or overweight load would be transported in accordance with the requirements of the relevant road authority.	Construction and operation
Utilities			
Locations of utilities and services	U01	The locations of existing utility services and any unknown utilities together with changes required would be confirmed by the construction contractor during the detailed design of the proposal in consultation with the relevant utility provider.	Detailed design and prior to construction
Contamination resulting from utilities	U02	The CEMP would include appropriate water management and erosion and sediment controls to avoid contamination resulting from utility works.	Prior to construction and construction
Impacts to critical services and utilities	U03	Prior to commencing detailed design, the BYDA would be conducted again to verify the locations of the utilities and services. During the detailed design process necessary clearance distances as per AS standard, Icon Water and	Prior to construction and construction

Environmental matter	ID	Recommended mitigation measure	Timing
		Evoenergy standards would be determined and provided to utility and service providers as necessary. Site supervision by the utility and service providers would be included as required during construction.	
Operation of existing utilities	U04	Evoenergy and Icon Water would be consulted with during the detailed design phase in order to ensure the current utilities have capacity to service the proposal.	Detailed design
Materials and waste			
Excessive waste generation	MW01	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
Non-classified or incorrectly classified waste transport and disposal	MW02	A demolition and construction waste management plan should be prepared and implemented as part of the CEMP for the proposal. The plan should adopt the waste hierarchy principles contained in the *Waste Management and Resource Recovery Act 2016* and detail processes, responsibilities and measures to manage waste and minimise the potential for impacts. This should include waste separation, handling, storage, transport and off-site reuse, licensed recycling and disposal locations.	Prior to construction
Regulatory non-compliance and/or contamination at receiving facilities	MW03	All demolition and construction waste should 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. A detailed *Operational Waste Management Plan* would be developed and implemented to incorporate the requirements of relevant guidance documents and waste management hierarchy principles contained in the *Waste Management and Resource Recovery Act 2016*.	Construction phase
Improper waste handling	MW04	The detailed OWMP would include: ▪ All key waste and process residue streams and expected quantities. ▪ Waste and residue handling, management and storage procedures including	Prior to operation

Environmental matter	ID	Recommended mitigation measure	Timing
		feedstock receival 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.	
Contingency Plan	MW05	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. ▪ 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	Prior to operation

Environmental matter	ID	Recommended mitigation measure	Timing
		the event of disruptions to scheduled removal of baled products.	
Landscape and visual			
Visibility of construction activities and storage areas	LV01	All practical measures would be undertaken to ensure construction equipment, storage areas, and other visible elements are located away from key views to or from the identified sensitive visual receivers.	Construction
	LV02	General tidiness of the site would be maintained during construction.	Construction
	LV03	Conducting of works in evenings and nights would be avoided where possible, to minimise impacts from lighting.	Construction
	LV04	Where works cannot be located away from trees, tree protection would be provided to ensure they are not damaged.	Construction
	LV05	All areas disturbed by construction and ancillary works would be rehabilitated to their previous condition.	Construction
	LV06	During construction, screening measures would be employed to assist the proposal site in blending into the surrounding area. Choice of screening would be sympathetic to the existing rural setting (e.g. neutral colours or green depending on location).	Construction
Visual impacts during operation	LV07	The following measures would be considered during detailed design in relation to design materiality: ▪ Ensure the proposal form, material and finishes are of high quality and are in keeping with the surrounding setting, contributing positively to the existing landscape character values. ▪ The *DCP Guidelines* states that 'The roof should be of pre-coated metal of low reflectivity'. This should be taken into consideration when specifying metal roofing finishes. ▪ Avoid the use of shiny or reflective materials to minimise associated visual impacts on surrounding sensitive receivers. ▪ Consider specifying a custom-designed external cladding that complements the Indigenous cultural and rural landscape setting, for instance by printing imagery of native vegetation onto the façade, in order to mitigate	Prior to Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		visual impacts from the Tuggeranong Heritage Track. ▪ If custom-designed cladding is not possible, consider using a green colour for the roof and external Colourbond steel façade walls of the facility to ensure it is in keeping with nearby structures, reducing the landscape and visual impacts.	
	LV08	The following measures would be considered during detailed design in relation to landscaping: ▪ Screen planting along the northern property boundary, to preserve the landscape character of Dog Trap Creek corridor and to minimise views from surrounding elevated areas and consistent with principles shown on DCP Drawing No. 171/08/0009. ▪ Increasing the density of planting along the site boundaries, to minimise visual impacts of the buildings, car parking, and ancillary structures and equipment, following DCP 171/09/0001 planting requirements. ▪ Planting screening vegetation within the site boundary along John Cory Road, to minimise visual impacts experienced from the Tuggeranong Heritage Track. ▪ Avoid the clearing of trees where possible, to retain the existing character values.	Construction
	LV09	The following measures would be considered during detailed design in relation to signage: ▪ Minimising signage dimensions. ▪ Avoiding brightly illuminated signage. ▪ Employing high quality signage design. ▪ Locating signage on buildings rather than freestanding.	Construction and Operation
Soil and geology			
Existing contamination risks to construction	SG01	A Contamination Management Plan (CMP) would be prepared with measures to mitigate unexpected contamination risks during	Prior to construction and construction

Environmental matter	ID	Recommended mitigation measure	Timing
workers and ecological receptors		construction and included in the CEMP.	
	SG02	A hazardous building material survey would be undertaken prior to demolishing the existing MRF	Prior to construction
	SG03	An asbestos assessor would be appointed to ensure there is no ACM on the proposal site.	Construction
	SG04	Drainage on the proposal site would be improved to manage runoff towards Dog Trap Creek.	Construction
Discovery and/or disturbance of unexpected, contaminated material	SG05	A UFP and CMP would be developed and included in the CEMP.	Construction
Sediment and nutrient laden runoff from areas impacting water quality in downstream waterways	SG06	An ESCP and CMP would be prepared as part of the CEMP to identify and mitigate erosion impacts from construction activities, particularly during extreme weather.	Construction
Transport of contaminated material from the proposal site	SG07	A designated washdown area would either be provided on the proposal site or located at truck depots off-site.	Construction and operation
	SG08	Any contaminated soil removed from the proposal site would be classified in accordance with ACT EPA *'Requirements for the reuse and disposal of contaminated soil in the ACT'* (Access Canberra, 2019) and disposed of at a suitable licensed waste facility.	Construction
Spills of diesel fuel, and lubricating oils	SG09	All hazardous materials would be stored and bunded in designated areas within site compound / facility building in accordance with AS 1940-2017 *The storage and handling of flammable and combustible liquids* (incorporating amendments 2:2021).	Construction and operation
	SG10	All diesel fuels and lubricating oils would be stored in appropriate containers and in bunds and away from drainage areas.	Construction and operation
	SG11	Spills kits would be located adjacent to storage areas.	Construction and operation
	SG12	All spills would be cleaned up immediately and logged in the site incident register and notified to the EPA where the potential for harm or other obligation requires notification.	Construction and Operation
	SG13	SDS sheets would be located adjacent to storage areas.	Construction and operation
Generation of contaminated material	SG14	Appropriate storage areas would be created for batteries to ensure quarantine standards are in accordance with best practice advice issued by ACT Fire and	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		Rescue plus fuel storage compliant with relevant standards.	
Water quality and hydrology			
Water quality impacts to downstream waterways and associated aquatic ecosystems with regards to suspended solids	W01	A Water Management Plan (WMP) would be developed that details the following mitigation measures: ▪ Installation and management of sediment basin. ▪ Control of upstream run-off movement around the site disturbance area. ▪ Conveyance of site disturbance area run-off to the basin via dirty water drains. ▪ Water quality monitoring of sediment basin and discharge. ▪ Discharge parameters ▪ Rainfall monitoring. ▪ Remedial actions to be taken where water quality value exceedances occur.	Construction
Water quality impacts to downstream waterways associated with the operation of the MRF (e.g. littering)	W02	An Operational Water Management Plan (OWMP) would be developed and implemented. Some key features of proposed activities that would be specified and maintained are as follows: ▪ Materials inside trucks are not to be removed until truck is fully inside the indoor receiving area. ▪ Products are to be fully repackaged before leaving indoors on instances where they are transferred off-site or between buildings. ▪ Daily visual inspection with any waste located outside to be collected. Inspections would be done by verified and authorised personnel with clearly mandated responsibilities. ▪ Maintenance of the wastewater system, including the containment and conveyance system. ▪ Emergency management procedures, such as management of uncontrolled spills, including where engineered controls of areas containing hazardous materials are required such as bunding or similar to intercept pollutants from the receiving environment. ▪ Suitable storage of fuels and other spill hazards.	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
Biodiversity and conservation			
Impacts to native vegetation and habitat	BC01	A Flora and Fauna Management Plan (FFMP) would be developed before the commencement of construction (as part of the CEMP). Measures will be implemented before, during and after construction to avoid and mitigate impacts to flora and fauna within the study area. The FFMP will include the following measures: ▪ An approximately 30m wide corridor of approximately 0.96 hectares along the northern boundary of the site including the area around the dam will be fenced off. ▪ Removal of areas of native vegetation will be minimised wherever possible. ▪ No impact to any areas of habitat not marked for removal would occur. ▪ No vegetation removal or soil disturbance will occur outside the impact areas. ▪ All staff would be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. ▪ If any unexpected threatened flora or fauna not assessed in the ecological assessment are identified in the proposal site, work will cease immediately and the environmental manager will be contacted. ▪ Planting the fenced area along the northern boundary of the site with a mix of native grasses, rushes, sedges and forbs to provide connectivity between the existing plantings along Mugga Lane, the dead tree and the dam, and to improve the habitat value for native fauna. ▪ Placement of rocks and coarse woody debris in suitable locations within the fenced native planting area to provide additional fauna habitat. The quantity of rocks and course woody debris, together with the locations for placement, will be determined by Veolia in consultation with a consulting ecologist.	Prior to Construction
Spread of weeds, pathogens and diseases	BC02	A Weed and Pest Management Plan (WPMP) would be developed before the commencement of construction (as part of the CEMP) Measures will be implemented before, during and after construction to prevent the	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		establishment and/or spread of weeds within and beyond the study area. The WPMP will include the following measures: ▪ Weed management may include the following measures: - Use of herbicides. - Integrated weed management throughout the proposal site. - Implementing exclusion zones. - Weed removal and disposal prior to construction. ▪ The weed management plan would include: - A description of the weed for identification purposes, including a description of its relevance to the proposal site. - Specific function of the weed, including flowering and seeding periods. - Identified risk of spread. - Identification of specific management measures for individual weed control. - A specific weed control program to remove Blackberry and other significant weeds in the strip of exotic grassland in the northern part of the site, with ongoing maintenance to prevent reinvasion. - Limits of movement during construction to reduce spread to areas of high-quality habitat. - Declared pest plants and WoNS will be identified and controlled prior to any earthworks commencing to assist in minimising spread of pest plants and WoNS. - Vehicle and machinery wash/brush downs will be required to ensure that weed species are not spread to non-infested areas. No construction vehicles or staff should enter surrounding areas to minimise weed spread. - Sediment control, such as silt fences, would assist in reducing the potential for spreading weeds downstream. - Soil disturbance will be avoided as much as possible to minimise the potential for erosion and spread of weeds.	

Environmental matter	ID	Recommended mitigation measure	Timing
		- The spread of exotic plant species within and adjacent to the proposal site would be monitored. Weed control will be undertaken if it is determined that the proposal is causing significant spread of weed species. - No machinery, light vehicle, or construction staff access to adjacent areas would occur, to minimise the risk of spread of weeds to sensitive areas. - When transporting weed waste from the proposal site to the waste facility, trucks must be covered to avoid the spread of weed-contaminated material. Disposal must be documented, and evidence of appropriate disposal must be kept. ▪ Other protocols will include: - Minimising the removal of vegetation wherever possible. – Having an ecologist/wildlife carer on site during clearing activities.	
Soil erosion, sedimentation and water quality	BC03	A SWMP would be prepared incorporating an ESCP prior to construction commencement, as part of the CEMP. This would also include the following: ▪ Refuelling or maintenance of plant and machinery will not be undertaken within 50 metres of waterways or drainage lines. ▪ A rehabilitation and revegetation plan (RRP) will be prepared for areas disturbed during the works. This will identify appropriate methods for stabilising disturbed soils to resist erosion. ▪ Sediment and erosion controls downstream of the proposal site (such as the nearby creek lines outside of the study area) will be implemented before any construction commences and inspected regularly, particularly after a rainfall event, and maintenance works undertaken as needed. These controls would remain in place after construction until sufficient regeneration of vegetation to	Prior to construction

Environmental matter	ID	Recommended mitigation measure	Timing
		prevent erosion or sedimentation occurs. ▪ Weather forecasts would be checked daily to ensure that high risk soil and erosion activities are not undertaken immediately before or during high rainfall or wind events. Disturbed surfaces would be compacted and stabilised in anticipation of rain events to reduce the potential for erosion.	
Invasion and spread of pathogens	BC04	The weed and pest management plan will include the following: ▪ Protocols to prevent introduction or spread of pathogens like Chytrid Fungus and Phytophthora following the Hygiene guidelines for wildlife (Department of Panning, Industry and Environment (DPIE), 2020). ▪ All machinery entering the proposal site must be appropriately washed down and disinfected prior to work on site.	
Socioeconomic and health			
Biosecurity including vermin and pest animals which impacts on health	SH01	A Construction Biosecurity Management Plan (including a pest and weed management plan) would be developed and implemented as part of the CEMP and include: ▪ Measures to ensure controls and procedures are implemented during construction to avoid, minimise or manage potential adverse impacts on biodiversity. ▪ Measures to retain and protect existing flora and fauna habitat where possible and appropriately manage the spread of weeds and plant pathogens. ▪ Measures to minimise the potential for biosecurity risks during construction in accordance with the *Biosecurity Act 2015* and relevant ACT legislation.	Construction
	SH02	An Operational Biosecurity Management Plan would be developed and implemented which: ▪ Clearly documents operational procedures, controls and ongoing monitoring and measurement of biosecurity risks associated with the proposal – including requirements for vehicle	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		deliveries to be covered, delivery within the receival hall and storage of residual waste. ▪ Outlines how pest and weeds will be managed on the site and during transport. ▪ Requires Veolia to undertake routine monitoring and inspections on the operational biosecurity management plan.	
Air quality and odour			
Elevated dust levels	AQ01	A dust control protocol would be prepared that forms part of the CEMP to detail management measures, a method for recording dust complaints and monitoring requirements. This would include the following: ▪ On days with forecast and actual high winds (i.e over 10 m/s) work effort would be reduced accordingly if wind blown dust is observed to be leaving the site boundary. ▪ Dust suppression would be undertaken as required using water sprays, water extension agents, soil stabilising polymers or other media on: – Unpaved work areas subject to traffic or wind. – Spoil and aggregate stockpiles. – During the loading and unloading of dust generating materials. – Unpaved access tracks. ▪ On days with high background dust levels (due to fire or offsite dust events for example), dust mitigation would be increased in the form of watering or reducing dusty construction activities. ▪ Construction vehicles with potential for loss of loads (such as dust or litter) would be covered when using public roads.	Construction
	AQ02	If the works are creating levels of dust which may significantly impact on residential amenity, the works would be modified or stopped until the dust hazard is reduced to an acceptable level.	Construction and Operation
	AQ03	A dust complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding dust	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	
	AQ04	A dust collector system for the glass crusher would be implemented.	Operation
	AQ05	If required, a dust collector system would be implemented in other areas which regularly emit large amounts of dust.	Operation
	AQ06	Regular sweeping and housekeeping practices would be undertaken to maintain dust levels within the building.	Operation
Elevated levels of airborne pollutants	AQ07	Plant and equipment would be maintained in good condition to minimise ignition risk, spills and air emissions that may cause nuisance.	Construction
Release of odour to surrounding communities	AQ08	An odour complaints management procedure would be developed as part of the broader complaints management procedures to ensure that any complaints regarding odour are received by appropriate personnel and that potential issues can be investigated, and site practices adjusted accordingly.	Operation
	AQ09	If the works are emitting odour concentrations which may significantly impact the nearby receptors, the works would be modified or stopped until the odour hazard is reduced to an acceptable level.	Operation
	AQ10	An internal sealed site drainage system would be provided which leads to storage tanks or interceptors that can collect rainwater and any spillage.	Operation
	AQ11	Provision would be made for the segregation of odorous baled materials, and the recycling of those materials back through the MRF in the event they need further separation.	Operation
Odour and dust emissions	AQ12	Household sorting practices would be promoted.	Operation
	AQ13	Post-sort inspection of materials would be undertaken, and any potentially odorous materials would be isolated. Pick-ups and transport to landfill are frequent throughout the day thereby reducing the time any potential odorous materials are on site. Note also that the MRF doesn't generate highly odorous waste	Operation
	AQ14	The name and contact details of person(s) accountable for air quality	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		and dust issues would be displayed on the proposal boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information would be displayed.	
	AQ15	Regular inspections would be carried out to monitor compliance with the air quality management strategy. Once operational, sampling of the proposal operations would be conducted to confirm assumptions made throughout the air quality assessment.	Operation
	AQ16	An air monitoring program would be established to ensure workplace exposure limits are maintained. Sampling would be undertaken in each building biannually by a suitable professional in accordance with guidance from Safe Work Australia and relevant Australian Standards.	Operation
	AQ17	Sorted materials would be covered during transport.	Operation
	AQ18	Ventilation equipment and dust or odour control units (if required) must be operational and regularly maintained. Should any unit become faulty, production on those affected lines would be halted immediately and not resumed until emission control systems are fully operational.	Operation
Greenhouse gases			
Construction emissions	GHG01	Opportunities to reduce construction emissions would be investigated and considered during design and construction planning. This would include opportunities for: ▪ Evaluating and considering low carbon concrete alternatives, such as replacement of Portland cement in concrete with SCM. ▪ Identifying opportunities to incorporate recycled materials. ▪ Assessing construction methodologies and equipment selection to minimise diesel use and explore low-emission fuel alternatives. ▪ Using reclaimed asphalt pavement. ▪ Using steel with higher post-consumer recycled content.	Construction

Environmental matter	ID	Recommended mitigation measure	Timing
		▪ Locally sourced construction materials where possible to minimise transport emissions. ▪ Embedding waste minimisation and recycling strategies, together with reuse/recycling of other construction waste materials and inclusion in construction management plans, where feasible. ▪ Investigation of use of transparent roofing and/or wall materials for natural plant lighting. ▪ Veolia's design shall consider and seek to maximise overall energy efficiency.	
Feedstock contamination sent to landfill	GHG02	Educational campaigns and increasing recycling awareness would be developed and implemented to help reduce feedstock contamination.	Operation
Diesel Use	GHG03	Ways to lower demand of diesel use and substitution with less emission intense fuels would be investigated and considered.	Construction and operation
	GHG04	Service and maintain all machinery, as far as reasonably practical, in accordance with original equipment manufacturer recommendations for maintenance	Operation
	GHG05	Target equipment maintenance to ensure, as far as reasonably practical, equipment remains fit for purpose over its whole life cycle	Operation
Technology	GHG06	Undertake periodic reviews of technologies and abatement measures to reduce GHG emissions from the Project, including whether these measures are reasonable and feasible to implement at the Project	Operation
Climate change			
Increase in extreme heat days resulting in 'stop work' days during operations.	CCR01	WHS management plan and procedures would be regularly updated to adjust to conditions.	Operation
Extreme rainfall leading to flooding of the site	CCR02	While the floor level of the building is well above the 1% flood level, additional protection structures (e.g. bunding etc.) would be considered during detailed design.	Detailed design and operation
Severe wind/storm event has higher wind loading than designed, causing stress to site structures resulting in damage, reduced	CCR03	Ongoing monitoring would be undertaken of site components and maintenance if deficiencies are identified. The Facility shall be designed in accordance with Australian	Operation

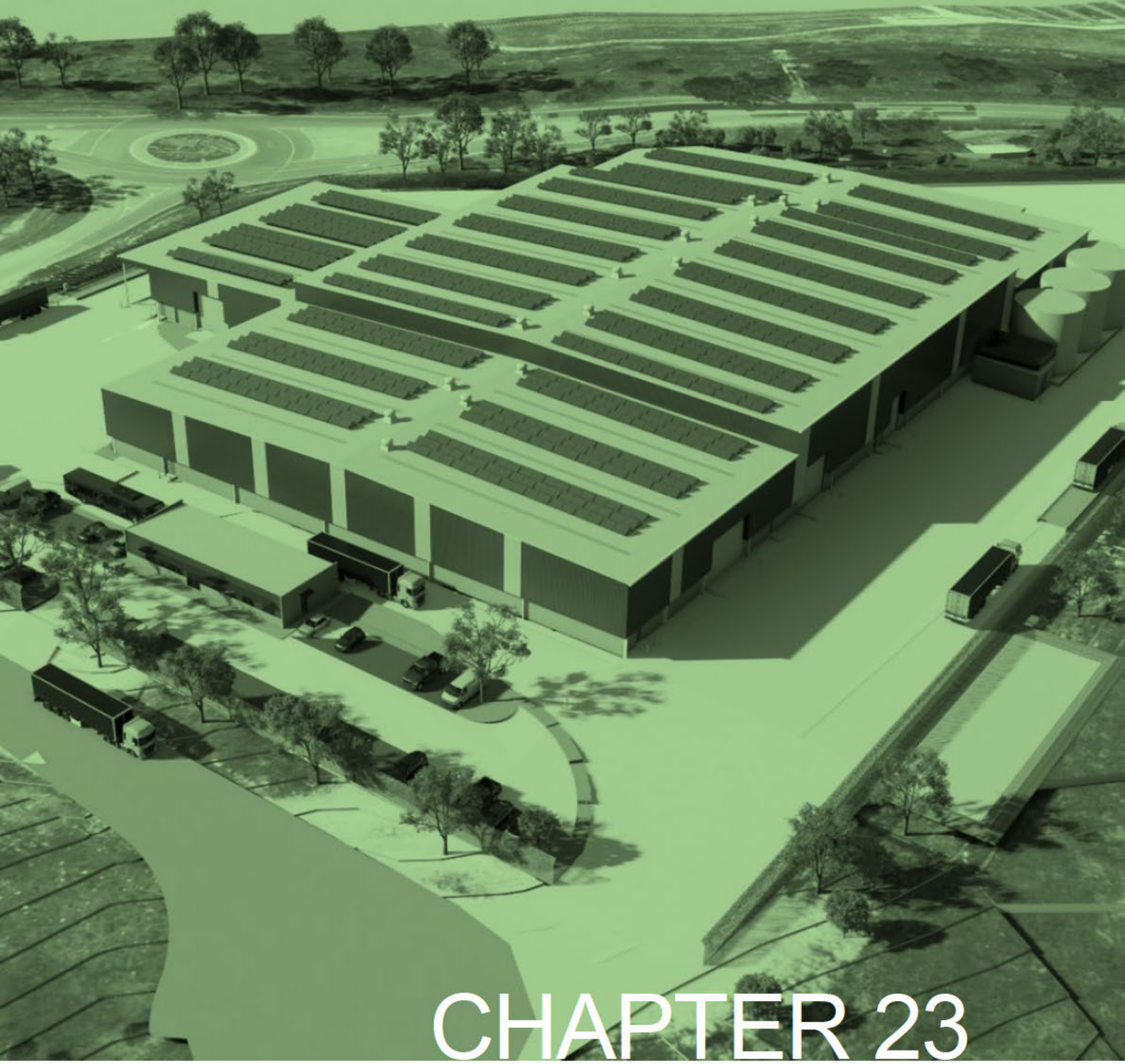
Environmental matter	ID	Recommended mitigation measure	Timing
design life or safety hazard.		Standards or equivalent for wind loading and earthquake loading	
Noise and vibration			
Noise disturbance to sensitive receivers	NV01	Construction hours would comply with Section 9.4 of the Noise Environment Protection Policy. This states that: "*In industrial areas, …. noise from building work can only exceed the noise standard between 6am and 8pm.*"	Construction
Night-time operational noise beyond site boundaries	NV02	That should the minor departure of 2dB(A) over the night-time noise standard at the sight boundary create issues within the John Cory road reserve, then an Operational Noise Management Plan will be considered at the detailed design stage	Detailed Design
Hazard and risk			
Facility fire	HR01	A *Fire Management Plan* would be prepared for construction and operation.	Construction and operation
	HR02	Smoke detectors, fire extinguishers, fire blankets, fire hose reels and sprinklers would be appropriately placed within buildings. Early detection technologies such as CCTV, Thermal imaging equipment (TIE) using IR on stockpiles and product storage, zones identified to areas of risk, alert triggers, and 24h remote security monitoring.	Operation
	HR03	An *Emergency Management Plan* would be prepared, including locations and sizes of combustible material stockpiles and management of ignition sources and provision of access in line with ACT ESA requirements.	Operation
	HR04	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020).	Detailed design
	HR05	Separate gates would be provided for site access (delivery/pickup heavy vehicles and staff/visitors cars). The main entry gate includes the enclosure/box with the EMP, and directions to FIP and booster. Fire separation (between the receival hall and the processing area; and the storage area and the processing area) consistent with national construction code fire resistance level and the overall fire strategy of the Facility, including appropriately rated fire walls, doors, alarm, and suppression devices.	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
Hazardous/ dangerous chemicals	HR06	Each chemical would have appropriate labelling, and appropriately sized bunds and stored within designated work areas.	Operation
	HR07	SWMS and procedures would be implemented for the handling of all chemicals including transfer, storage, spill prevention and clean up requirements.	Operation
	HR08	A SDS library would be located on-site that covers all chemicals used and/or stored on-site.	Operation
	HR09	Appropriate PPE would be provided for users of chemicals.	Operation
Wildlife strike	HR10	Organic material would not be stored on-site.	Operation
	HR11	Guideline C of NASF, Managing the Risk of Wildlife Strikes in the Vicinity of Airports would be adhered to.	Operation
	HR12	Waste would be stored and processed in buildings or vessels.	Operation
	HR13	The proposal site would be kept clean and tidy.	Operation
	HR14	Waste from office and administration activities would be stored in appropriate bins (with lids).	Operation
	HR15	A *Waste Management Plan* would be created for the proposal site to continuously manage and monitor waste.	Operation
	HR16	Any unwanted putrescible waste sources would go into waste bins to be taken to landfill.	Operation
Failure of critical infrastructure	HR17	A regular maintenance schedule would be developed and undertaken by qualified personnel.	Operation
	HR18	Adequate training would be provided on operating machinery.	Operation
	HR19	The following plans would be developed to manage critical infrastructure: ▪ Business Continuity Plan. ▪ Asset Management Plan.	Operation
Bushfire			
Bushfire	BR01	A bushfire prevention and response plan would be prepared as part of the CEMP, providing relevant information for fire and emergency service responders and project personnel. The plan would include the following requirements: ▪ Plant and equipment to be maintained in accordance with manufacturers recommendations and best practice.	Construction and operation

Environmental matter	ID	Recommended mitigation measure	Timing
		▪ Seasonal and daily fire hazard warnings issued by the ACT ESA to be observed. ▪ No hot works on days of Severe, Extreme or Catastrophic Danger Rating. ▪ Vehicles to be kept on formed roads and paths, and away from long grass where possible. ▪ Appropriate parking areas to be provided for personnel that are away from long grass and other ignition sources. ▪ All vehicles on-site to be equipped with fire extinguishers. ▪ Fire prevention and fire control instructions to be included in site inductions. ▪ Hot works not to be undertaken outside designated workshop areas. ▪ Job Safety Analyses to incorporate fire ignition risk assessment and controls for prevention of grass fire ignition where relevant. ▪ Job Safety Analyses for activities involving hot works to incorporate hot works risk assessment and controls.	
	BR02	An APZ would be provided in accordance with *ACT Bushfire Management Standards* (ESA, 2023). Appropriate fire shielding, such as a colorbond fence would be installed to supplement the APZ.	Detailed design
	BR03	Primary access would be provided to meet the following requirements: ▪ Minimum vertical clearance to a height of 4.2 metres above access at all times. ▪ Road widths (minimum 3.5 metres for one way and 6.5 metres for two way). ▪ Road capacity (25 tonnes minimum). ▪ Minimum inner radius six metres for curves and minimum distance between inner and outer curves is six metres. ▪ Crossfall of roads not exceeding six percent.	Detailed design
	BR04	APZ landscaping would comply with the *ACT Bushfire Management Standards* (ESA, 2023) fuel management standards and be guided by the fuel management	Operation

Environmental matter	ID	Recommended mitigation measure	Timing
		principles. These would be managed by the site operator.	
	BR05	An *Emergency Management and Evacuation Plan* would be prepared for the proposal in compliance with the requirements set out in the *ACT Bushfire Management Standards* (ESA, 2023) and updated prior to construction, operation and occupancy of the MRF. The plan would: ▪ Clearly identify bushfire preparedness actions, bushfire response actions, evacuation plans and procedures (for on-site and off-site evacuation), and on-site refuge locations. ▪ Include locations and sizes of combustible material stockpiles as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020) and management of ignition sources. A copy of the *Emergency Management and Evacuation Plan* would be provided to ESA for its information prior to occupation of the MRF.	Construction and operation
	BR06	The provision of shielding (non-combustible fencing) to the perimeter of the block would be considered in detailed design to assist with prevention of fire travel into the facility from grassland hazard in the event of a bushfire.	Detailed design
Facility Fire	BR07	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020). This would include: ▪ Limiting each internal (combustible) stockpile to 1,000 cubic metres. ▪ Ensuring a minimum of six metres unobstructed access is maintained on each accessible side of each internal (combustible) stockpile. ▪ Concrete storage bunkers limited to a height of 5m. This provides separation with 1m freeboard above 4m maximum pile height	Operation
Heritage			

Environmental matter	ID	Recommended mitigation measure	Timing
Impacts to known heritage sites NW1/PAD 1 and HMRF01	H01	Long-term management outcomes for all artefacts collected in association with HMRF01 would be developed in consultation with the RAOs following completion of the assessment for the adjacent proposed FOGO facility.	Following completion of assessment for the proposed FOGO facility
	H02	All proposal personnel, including contractors, would be made aware of the heritage status of the NW1/PAD 1 and HMRF01 sites prior to impacts.	Prior to construction and construction
Impacts to unknown heritage sites	H03	The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 6 of the CHA) would be adopted and complied with during construction activities involving ground surface disturbance and excavation.	Construction



CHAPTER 23

COMMUNITY AND STAKEHOLDER ENGAGEMENT

23 COMMUNITY AND STAKEHOLDER ENGAGEMENT

23.1 Requirements

This chapter addresses the following community and stakeholder engagement requirements of the Scoping Document:

- Consultation must be undertaken with:
  - Lease holders and land managers of land potentially impacted by the proposal.
  - Any recreational groups which may be affected by the proposal.
  - Any volunteer conservation, landscape management or land care groups active in the area to be affected by the proposal, such as the Molonglo Conservation Group and the Isaacs Ridge Mount Mugga Mugga Park Care Group.
  - Adjacent and nearby business owners and employees.
  - The local community; and community groups, such as the Tuggeranong Community Council, the Jerrabomberra Residents Association and other community groups in the Southern Central Canberra area.
- Provide a consultation report that includes:
  - A description of the methodology and criteria for identifying stakeholders and how they were identified. Details and plans must be provided showing potential impacts on the local and wider community to justify how stakeholders were identified.
  - An outline of the communication methods used. A variety of communication methods must be adopted to ensure all stakeholders are engaged appropriately, such as face to face, email/letters, community meetings and information sessions and website notifications.
  - Details on the information provided during the community consultation process. Note: A plain English statement explaining the proposal and conceptual drawings must be made available to the community and stakeholders.
  - A summary of the responses and the main comments raised. Evidence must be provided demonstrating that consultation has been undertaken with each relevant group/person including specific detail on how these concerns were addressed.
  - A description on how any concerns have been considered and identify any changes that have been made to the proposal.

23.2 Consultation approach

23.2.1 Overall approach

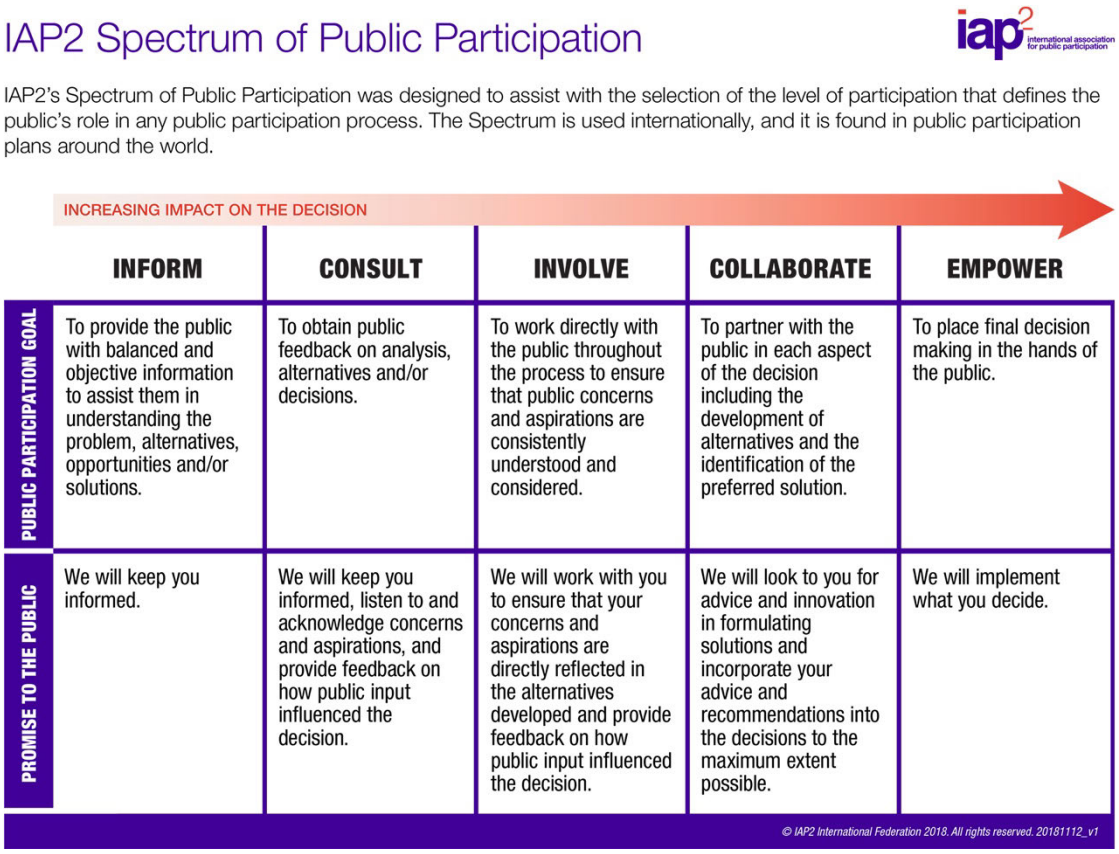
A community and stakeholder engagement plan (CSEP) was prepared to identify stakeholders and the proposed engagement approach to be undertaken to support and address the requirements of the EIS.

Given the proximity of the proposal to the proposed future FOGO facility, the public engagement phase was carried out for both facilities together to consider community feedback.

The engagement approach was guided by the *Core Values and Code of Ethics of the International Association for Public Participation* (IAP2). As outlined in Figure 23.1, the level of participation for the EIS stage of the proposal is advised to be at the 'Inform' and 'Consult' levels.

This spectrum is based on the level of community and stakeholder impact of the proposal to ensure adequate feedback is received from the community. Involving the community and stakeholders at these levels has helped ensure that concerns and aspirations are directly reflected in the concept design and EIS, where feasible, and to provide feedback on how community and stakeholder input influenced the decision-making process.

Figure 23.1: IAP2 Public Participation Spectrum



IAP2 Spectrum of Public Participation

IAP2's Spectrum of Public Participation was designed to assist with the selection of the level of participation that defines the public's role in any public participation process. The Spectrum is used internationally, and it is found in public participation plans around the world.

INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

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23.2.2 Engagement objectives

The objectives of engagement for the proposal were to:

- Build and maintain relationships with the community and stakeholders.
- Ensure that a broad range of the local community and stakeholders are informed about the proposal and given the opportunity to provide feedback.
- Provide the community and stakeholders with an opportunity to ask questions and to identify areas of concern with respect to the proposal.
- Provide direct feedback to the project team during all stages of the proposal and develop solutions that address community expectations where possible.
- Effectively and proactively identify and manage issues.
- Manage stakeholder feedback and complaints in a timely, respectful way.
- Monitor and evaluate stakeholder feedback to measure success.
- Build community and stakeholder confidence in the ACT Government and the decisions it makes.

23.2.3 Identification of key stakeholders

The proposal site is located approximately one kilometre from low density suburban areas and is situated in proximity to potential sensitive environmental zones. The community was seen to fall into three categories as listed in Table 23.1; those potentially directly impacted, potentially indirectly impacted and the broader community.

Table 23.1: Community overview

Community	
Potentially directly impacted	Community members who own, live or work at properties potentially impacted by the proposal's operation or construction
Potentially indirectly impacted	Community members who own, live or work at properties located adjacent to, or near the proposal
Broader community	Wider community within the area Community groups – Media Local businesses – Environmental groups Canberra Airport

The proposal is located near the Hume Industrial Estate on the outskirts of Canberra. It was expected the local stakeholder and community concerns would relate to traffic and noise impacts during construction and operation as well as the potential for odour and litter associated with the operation of the proposal.

Stakeholder mapping identified the following key stakeholders:

- The local area dominated by low density residential properties to the west of the proposal site
- Neighbouring suburbs of Chisholm, Fadden, Farrer, Gilmore, Gowrie, Hume, Isaacs, Jerrabomberra, Macarthur and Tralee
- Hume Business District

- Businesses operating on or near Recycling Road, John Cory Road, and Mugga Lane including ACT Skip Hire and Soft Landing Mattress Recycling ACT, Mugga Lane Solar Park, ACT Recycling, Corkhill Bros and the MLRMC
- Community groups including the Tuggeranong Community Council, Inner South Canberra Community Council, Jerrabomberra Residents Association and the Woden Valley Community Council
- Volunteer conservation, landscape management or landcare groups active in the area including the Molonglo Conservation Group.

23.2.4 Consultation and engagement tools

Consultation for the proposal started on 24 April and closed on 5 June 2023.

The community and stakeholders were notified through a letterbox drop and a stakeholder email inviting them to community sessions about the proposal. This was supported by a project page on the City Services website and downloadable factsheets and project information.

Feedback on the proposal was encouraged via email or attendance at one of the drop-in sessions.

Further details are provided in the Engagement Report (Appendix S).

23.3 Consultation and engagement activities

23.3.1 Community consultation sessions

Four face-to-face consultation sessions were held in May 2023. Across the four sessions, 76 people attended and registered interest in the proposal.

The community sessions were held across two weeks, with two sessions per week, across four different locations near the proposal site. The community sessions are outlined below.

Session 1:	Date: Saturday 20 May 2023 Time: 10:30 am to 12:30 pm Location: Woden Library
Session 2:	Date: Wednesday 24 May 2023 Time: 3:30 pm to 5:30 pm Location: Tuggeranong Library
Session 3:	Date: Saturday 27 May 2023 Time: 10:30 am to 12:30 pm Location: Chisholm Village Shopping Centre
Session 4:	Date: Wednesday 31 May 2023 Time: 10:30 am to 12:30 pm Location: Mawson Southlands Shopping Centre

The purpose of the sessions was to allow the community to:

- Understand the proposal
- Ask questions and discuss issues and their concerns in more detail
- Provide feedback to inform the development of the EIS.

To support the consultation sessions, six A0 sized posters were prepared. In addition, hard copies of the project fact sheets were provided to attendees.

23.4 Engagement outcomes

23.4.1 Overview

The consultation and engagement activities resulted in the following engagement:

- 765 views of the project page.
- 4 pop-ups were held.
- 1 presentation to the Tuggeranong community Council.
- 10,000 letters were delivered to residents and the community.
- 143 emails were set to businesses and organisations.
- 1382 individuals reached via social media.
- 14 items of written feedback.
- 78 conversations with 78 people during engagement.

23.4.2 Comments and/or issues raised

Stakeholders and community members expressed support for the proposal acknowledging the role of the new MRF as a key piece of recycling infrastructure for the Territory.

Key topics raised by stakeholders and community members related to:

- Traffic
- Circular economy
- Community education
- Fire prevention
- Water management
- Odour
- Legislation/regulation
- Procurement process
- Waste collection trucks
- Consultation session locations

The *Engagement Report* (Appendix S) provides details of the written comments received during the engagement period and the ACT Government's response to each of the key topics and issues raised.

23.5 Public exhibition of the EIS

The EIS was placed on public exhibition for 35 days from 28 August 2023 and closed on 16 October 2023. Over this period one public submission was received and several agency responses. The public comments and responses are outlined in Table 23.2 and ACT Government Agency comments and responses are outlined in Table 23.3.

The community will continue to be kept informed about the proposal during this time to allow them to make informed comments regarding the proposal.

Table 23.2: Public Comments Received

Concern raised	Response and location in EIS
Conservation Council (ACT Region)	
The Conservation Council supports the building of the proposed MRF at Hume with the following recommendations: ▪ Install an air quality monitoring station ▪ Implement environmental containment measures proposed ▪ Implement a schedule of regular environmental monitoring (including water runoff), maintenance and compliance ▪ Plant native vegetation around the facility for multiple benefits ▪ Replace the fossil-fuel collection truck fleet with electric vehicles, at a size suitable for slow-traffic streets safe for active travel ▪ Protect Aboriginal heritage values ▪ Partner with and adequately fund local enterprises and research institutions to expand the sorting and recovery capacity to maximise reuse, high-quality materials recovery and diversion from landfill ▪ Aim for the highest-value uses of glass, plastics and all other recoverable materials, according to circular economy principles ▪ Partner with and adequately fund community organisations to enhance community education	All mitigation measures would be implemented as part of conditions of approval. Environmental monitoring would be refined during detailed design and the development application stage and monitoring requirements outlined in an Environmental Authorisation.

Table 23.3: Agency Comments and Responses

Agency	Concern raised	Response and location in EIS
ACT Planning and Land Authority		
Requirements of the scoping document	Below are parts of the scoping document that were identified by the planning and land authority (the Authority) which have not been adequately addressed in the draft EIS. In general, the scoping document sets out how the EIS must be structured, potential impacts that need to be addressed and the method for addressing each impact. All existing and any additional mitigation measures or avoidance measures must be clearly outlined and definitive. All mitigation measures must be summarised in the summary table. In addition to the matters raised below, the draft EIS was referred to entities who provided further detail relating to each impact. Entity advice needs to be addressed in the revised EIS. For any matter raised in public representations made within the consultation period, you must address each matter and demonstrate how the matter has been taken into account in the revised EIS.	No response required.
Executive Summary	The executive summary does not summarise all key findings and mitigation measures. Revise the executive Summary to include further information on key findings and include further details of recommendations for mitigation of each environmental impact.	New section on 'Key Findings included plus full table of mitigation measures.

Agency	Concern raised	Response and location in EIS
Project Description:	In Table 2.1 of the draft EIS, please clarify if Block 12, Section 25 Hume is leased land. Item 2 in Table 2.1 currently states that ACT NoWaste is the 'Lessee/Land Custodian'. Also in Table 2.1, please include an additional row clarifying the intended use/s for Block 12. Section 5(h) of the scoping document requires information outlining any developments that have been, or are being, undertaken by the proponent, or other person(s) or entities, within the proposal area and broadly in the region. Whilst a list of developments has been provided at section 2.1 of the draft EIS, please provide further information describing how the proposal relates to these developments. Please ensure this list captures all development proposals within the proposal area and surrounding region. Developments such as the upgrades to the intersection of Lanyon Drive, Sheppard Street/Monaro Highway should also be considered. See Commonwealth referrals 2020/8767 and 2020/8768 (at http://epbcnotices.environment.gov.au /referralslist/) and https://www.cityservices.act.gov.au /Infrastructure-Projects/tuggeranong/monaro-highwayupgrades.	Table 2.1 clarifies the lease by ACT NoWaste and the intended sub-lease to Veolia. Additional line added to confirm intended use as per Territory Plan terms. Section 2.1 amended to show that other land uses (waste facilities) are consistent with proposed MRF.
	Details of the likely nature, source and quantities of all waste streams should be included in the project description at section 2 of the draft EIS.	Table 2.2 included detailing existing and proposed waste quantities and sources.
	Sections 2.4 of the draft EIS provides partial descriptions of works to be undertaken and construction methodologies. In accordance with section 5 (i), (j) and (k) of the scoping document, please provide further information on the construction methodology of each structure, and a detailed description of the works to be undertaken in site preparation and construction of the structures.	Section 2.4.1revised to include list of construction activities This would be further addressed in the DA.
Alternatives to the Proposal	In accordance with section 5.2(b) of the scoping document, please include details of the criteria used for assessing the performance of alternative proposals.	Section 2.7 amended to include criteria for consideration alternatives.
Legislative Context	Section 3.2.8 of the draft EIS - *Tree Protection Act 2005*, states "as the land is not identified as part of the built-up urban area, and the proposal site is not currently leased land, any trees in the proposal area are not currently regulated by this Act." However, section 5.2.2 of the draft EIS states that "the block is under the custodianship of TCCS and leased to ACT NoWaste."	References to legislation updated to reflect current *Urban Forest Act*.
Planning and Land Status	Please clarify if Block 12, Section 25 Hume is leased land and if so, please update this text and confirm if there are any regulated trees on the site.	Section 5.2.2 clarifies the lease by ACT NoWaste and the intended sub-lease to Veolia. Section 3.2.6 details the Urban Forest Act and confirms there are 3 regulated trees that will not be affected by the development.
Climate Change	Whilst climate change has been addressed at various sections throughout the EIS, at Chapter 3.3, please provide a summary detailing how the proposal will reduce the risks from climate change	Section 3.3.4 describes the application of the ACT Climate Change Strategy to the proposal. Chapter 16

Agency	Concern raised	Response and location in EIS
	impacts, including details of proposed adaptation measures to reduce vulnerability and increase resilience of the community and the Territory, particularly the extreme events of heatwaves, droughts, storms with flash flooding and bushfires. Refer to section 6.2 of the scoping document for further details.	provides full details on how the proposal reduces the risk from climate change impacts. Section 16.5 and Table 16.5 provide a summary through the mitigation measures outlined.
Ecologically Sustainable Development (ESD)	The description at Chapter 3.4.10 of the draft EIS, which details how the proposed development demonstrates ESD should provide clear differentiation between long-term and short-term considerations related to economic development, social development and environmental protection at local, regional, and national scales.	The ESD principles in the draft EIS responded to Section 9 of the Planning and Development Act. This Act has been repealed, and these provisions are not within the Planning Act 2023.
Territory Plan Strategic Directions	At Chapter 3.4.1 of the draft EIS, please provide a more detailed response to each of the principles in the *Statement of Strategic Directions in the Territory Plan 2008*.	References to Territory Plan updated to reflect *Territory Plan 2023*.
Utilities	In accordance with section 8.2.3 of the scoping document, further information is required detailing how existing utilities will be avoided. Please also clarify if any identified utilities are required to be removed or relocated. If so, please provide specific information about how this will be done, and whether there will be disruption to existing services, and for how long.	This was addressed as part of the approval of the DA for demolition of the existing facility. In addition, mitigation measure U03 expanded to include reference to further BYDA search.
	At Chapter 7.4.1 of the draft EIS, please provide further details of any impacts and required mitigation measures associated with the discharge of liquid trade waste and the proposed sewer connected vehicle and mobile plant and equipment washdown pad.	Section 7.4.1 expanded in relation to glass washing and leachate treatment. This would be further addressed in the development application.
	Describe how stormwater collected from hardstand areas will be treated before being released to the stormwater network, including how stormwater will be treated if retention and detention tanks reach their capacity.	Cross reference to Chapter 11 included, where stormwater management is discussed in detail.
Materials and Waste	The stockpile management guidelines used in the EIS are from NSW. The ACT has its own stockpile management guidelines, please update references to this guideline: https://files.accesscanberra.act.gov.au/legacy/4984/Guideline-for-Stockpile-Management.pdf.	Amended as required, various references now *Guideline for Stockpile Management 2019* (ACT Government)
	Provide details of potential waste destinations referred to in Table 8.5 of the draft EIS.	Waste destinations added to Table 8.5.
	Provide further details of management procedures in case of oversupply and/or stockpiling of materials and waste and any consideration of measures to be implemented when/if the facility ceases operation. Specifically, measures proposed to prevent the spread of waste outside of the facility and on to other blocks.	Section 8.3.4, subsection titled "Contingency Management", details contingency measures if more than 3 days deliveries are accumulated. Note: this includes diverting material to an alternative facility rather than continued on-site stockpiling.
Soils and Geology	At Table 10.4 of the draft EIS, please update the colour for unmitigated medium risk ratings to yellow.	Colours for risk rating not used as they are no longer used in "*Factsheet: Making an EIS Scoping Document or ESO application*"

Agency	Concern raised	Response and location in EIS
Water Quality and Hydrology	Further detail is required in the draft EIS about the performance of the bioretention basin. A complete summary of the MUSIC modelling that was undertaken for the proposal will need to be included in the revised EIS to enable an appropriate level of assessment.	Additional hydrological modelling was undertaken and an OSD is proposed rather than bio-retention pond. Refer to Chapter 11 with the MUSIC model provided at Appendix K.
Biodiversity and Nature Conservation	In accordance with section 8.2.8 of the scoping document, please consider impacts on the area from the facility attracting vermin and associated predators from a biodiversity context. It is noted that this has partially been addressed in Chapter 13 of the draft EIS in relation to socio-economic and health impacts. However, consideration to biodiversity impacts and relevant mitigation measures must be outlined under Chapter 12 of the EIS.	Section 12.4.1 expanded to include subsection on Biosecurity, pests and vermin.
Climate Change and Air Quality	The draft EIS and Appendix N do not identify the future climate projections used (e.g. NSW and Australian Regional Climate Modelling (NARCliM)) and also do not provide an outline of the climate changes that are expected (e.g. increase in number of extreme heat days). Page 161 of the draft EIS advises that this information will be in Appendix N, however it has not been included.	Appendix N has been revised to include climate projection data and relevant data sources.
	The Climate Change Risk Assessment at Table 16.4 of the draft EIS considers the potential for extreme rainfall to cause flooding (risks 009 and 010). The Assessment proposes additional protection structures to be considered at detailed design stage. However, the water impact assessment at Appendix K of the draft EIS does not consider the future climate and that design of additional protection structures may require relevant modelling, such as flood modelling, to be updated with the future climate. Please update Appendix K to include further consideration of future climate scenarios and adaptation measures identified in Table 16.4 of the draft EIS.	The flood assessment shows the proposed revised building floor level to be almost 2m above current 1% flood level. The site design confirms diversion infrastructure will convey floodwaters away from the building. It is considered that this addresses the extreme events described in Table 16.4 This would be further addressed in the DA.
	Table 14.1 of the draft EIS does not consider the solar farm at Tuggeranong Rural Block 1694 as a sensitive receptor for dust. Dust can have a significant impact on the efficiency of solar panels, as well as the frequency of panel cleaning required. Please consider the potential impact of dust on the solar farm and whether any additional mitigation measures are required.	It was later clarified that the comment will be able to be satisfied by a statement in the EIS that the impact of dust on the solar farm is expected to be adequately addressed by the control measures already proposed. Table 14.1 and Figure 14.1 amended to include solar farm and Section 14.4.1 confirms mitigation measures address solar farm impacts.
Hazard and Risk	The proposed development is located within a bushfire prone area as mapped by the Emergency Services Agency. It is noted the supplied bushfire assessment report specifies the proposed facility must comply with the referred document 'NSW Fire and Rescue. Fire Safety Guideline – Fire safety in waste facilities. Document ID: D17/81582 Version 02.02. 27 February 2020'. ACT Fire and Rescue require the proposed development to also comply with Australasian Fire	Chapter 18 (Hazard & Risk) amended to refer to both AFAC and NSW guidelines.

Agency	Concern raised	Response and location in EIS
	and Emergency Service Authorities Council (AFAC) document 'Fire safety in waste management facilities' Version 1.0 5th May 2022 Doctrine ID: 3095, specifically Section 2.10 Fire water run-off containment and Section 2.11 Bushfire prone areas.	
	Please update Table 18.5 of the draft EIS to include unmitigated risk ratings shown in Table 18.3.	Table 18.5 updated to include the original risk rating for the identified risks
Community Consultation	Within Chapter 23 of the draft EIS and Appendix S – Engagement Report, further details about the methodology and criteria for identifying stakeholders and how they were identified is to be provided. Examples of letters and any other information that was provided to the public during the public consultation process should be included within Appendix S – Engagement Report.	Presentation material used in community consultation included as an attachment to Appendix S.
Recommendations	In addition to the summary of mitigation measures provided at Chapter 22 of the draft EIS, please describe any ongoing monitoring requirements for the proposed development, including monitoring parameters, monitoring points, frequency, data interpretation and reporting for the proposal.	Details would be outlined in an Environmental Authorisation.
Environmental Health		
The HPS has reviewed the Draft EIS documents and notes that comments provided at the EIS scoping stage have primarily been addressed. The applicant is advised of the following: ▪ Pest/vermin harborage is noted to be addressed through the implementation of both a Construction and Operational Biosecurity Management Plan, this is supported by HPS. The Operational Management Plan should address how pest activity will be prevented and should consider how food and water sources will be restricted, minimising harborage locations, restricting entry points and the role of professional pest control treatments in the facility.	Section 12.4.1 expanded to include subsection on Biosecurity, pests and vermin. Mitigation SH01 expanded to include details of Biosecurity Management Plans.
▪ The Draft EIS documents do not address the previous HPS comments regarding the design and construction of any bioretention ponds to minimise the potential for mosquito nuisance. The Revised EIS should address how the design and construction of bioretention ponds will minimise mosquito nuisances.		Section 12.4.1 explains that a surface aerator to be installed in OSD to reduce mosquito breeding on still water. This would be further resolved in the DA.
EPSDD Adaptation and Resilience Policy		
Greenhouse Gas Emissions calculations The Division has reviewed the greenhouse gas emissions calculations provided in the draft EIS and advises that they are calculated appropriately.		Notwithstanding Agency comments, greenhouse gas calculations have been revised based on the revised proposal.
Natural hazards and climate change The Division has reviewed the Climate Change Risk Assessment provided and advise that, while largely appropriate, an amendment is required. The draft EIS and Appendix N do not identify the future climate projections used (e.g. NARCliM) and also do not provide an outline of the climate changes that are expected (e.g. increase in number of extreme heat days). The draft EIS (p161) advises that this information will be in Appendix N, however it has not been included. We recommend that the proponent is required to amend the documentation to address this. The following matter is noted by the Division for EPSDD Impact Assessment's information, however no recommendation is made as it falls outside the Division's scope. The Division notes that the Climate		Appendix N has been revised to include climate projection data and relevant data sources. The flood assessment shows the proposed revised building floor level to be almost 2m above current 1% flood level. The site design confirms diversion infrastructure will convey

Agency	Concern raised	Response and location in EIS
	Change Risk Assessment considers the potential for extreme rainfall to cause flooding (risks 009 and 010). The Assessment proposes the following adaptation response: "Detailed design will consider additional protection structures" (Appendix N p1). The Division notes that the water impact assessment (Appendix K) does not appear to consider the future climate and that design of additional protection structures may require relevant modelling (e.g. flooding) to be updated with the future climate.	floodwaters away from the building. It is considered that this addresses the extreme events described in Table 16.4 This would be further addressed in the DA.
	Air quality The air quality and odour Chapter of the draft EIS does not consider the solar farm. However, a statement in the EIS that the impact of dust on the solar farm is expected to be adequately addressed by the control measures already proposed.	It was later clarified that the comment will be able to be satisfied by a statement in the EIS that the impact of dust on the solar farm is expected to be adequately addressed by the control measures already proposed. Table 14.1 and Figure 14.1 amended to include solar farm and Section 14.4.1 confirms mitigation measures address solar farm impacts
Conservator of Flora and Fauna		
	1. The documentation identifies that tank overflows will be directed to the bioretention basin. This is not desirable, if the tanks overflow, they will contribute to overflow from the bioretention basin, degrading its performance. Tank outflows should be directed downstream of the bioretention basin.	Section 7.4.1 revised to detail that tank overflows will be directed to the street drainage system, noting that tank water will be used to supplement reticulated water for glass washing and for toilets and landscaping and overflows are not expected to occur.
	2. Bioretention basins are also prone to clogging from fine particulate matter. Therefore, bioretention without particulate treatment beforehand will have a short effective life. The revised EIS will need to include a gross pollutant trap prior to the bioretention basin.	Additional hydrological modelling was undertaken and an OSD with GPT filter is now proposed, refer Sections 2.5.7, 11.3.4 and 11.3.5.
	3. Insufficient detail is provided in the draft EIS about the performance of the bioretention basin. The MUSIC model will need to be updated in the revised EIS to address this and enable an appropriate assessment.	Revised MUSIC modelling undertaken.
	4. Recommend that the proponent seek endorsement from Transport Canberra and City Services for Asset Protection Zones to be located in adjacent blocks and road reserves, to bring the mapped zones into compliance with the Bushfire Management Standards.	Revised Bushfire advice amends need for maintenance of APZ within Recycling Road. Inclusion of colourbond fence on part of Mgaa Lane boundary ensure APZ is within site, refer Section 19.4.1 and Figure 19.2
Environmental Protection Authority		
	The Environment Protection Authority (EPA) has no comments on the draft EIS. Detailed comments will be provided once the design elements become clear at the Development Application stage. Please note that the stockpile management guidelines used in the EIS are from NSW. The ACT has its own stockpile management guidelines, please refer to those in future documentation or development. They can be found here: https://files.accesscanberra.act.gov.au/legacy/4984/Guideline-for-Stockpile-Management.pdf	Amended as required.
ACTF&R		

Agency	Concern raised	Response and location in EIS
	ACTF&R have no objections however, provide the following comments: The provided scoping documents acknowledge the proposed development/waste facility is located within a bushfire prone area as mapped by the Emergency Services Agency and that bushfire risk would be considered during the EIS process. It is noted the supplied bushfire assessment report specifies the proposed facility must comply with the referred document '*NSW Fire and Rescue. Fire Safety Guideline – Fire safety in waste facilities*. Document ID: D17/81582 Version 02.02. 27 February 2020'. ACTF&R require the proposed development to also comply with AFAC document '*Fire safety in waste management facilities*' Version 1.0 5th May 2022 Doctrine ID: 3095, specifically Section 2.10 Fire water run-off containment and Section 2.11 Bushfire prone areas.	Amended as required.
	Due to the nature of the facility, ACTF&R recommend the provision of shielding (non-combustible fencing) to the perimeter of the block to assist with prevention of fire travel into the facility from grassland hazard in the event of a bushfire.	The further bushfire advice suggests shielding would not be required. However, this would be further reviewed as part of detailed design at DA stage.
ACT Heritage		
	The EIS has met the key requirements of the Scoping Document in relation to heritage matters, as outlined below: Assessment completed in association with a suitably qualified geomorphologist has determined that Hume Site 1 likely does not extend into the proposed development area. The Draft EIS notes that the boundary of Hume Site 1 may be further revised from adjacent investigations related to the Hume Food Organics Green Organics (FOGO) development, which were pending at the time of the Draft EIS preparation. A SHE report in relation to the FOGO facility has been provided to the Council, however no advice or approvals have been issued to date in relation to this report. Noting this, review of the revised boundary of Hume Site 1 as per this SHE report for the FOGO facility indicates that Hume Site 1 is not located in the footprint of the new MRF; Assessment from GHD in relation to water quality and hydrology studies has identified that Hume Site 1 will not be subject to any direct or indirect impacts from flood beyond those already occurring. The risk of potential impacts to Hume Site 1 from flooding and water runoff associated with the proposal was assessed by GHD in the Draft EIS as unlikely. Vibration testing found that at 25 metres no cosmetic damage or human comfort vibration impacts were identified. GHD in the Draft EIS have assessed vibration impacts to Hume Site 1 to be negligible; and A CHA has been prepared and conditionally endorsed by a Council delegate, as described above. The Draft EIS also includes a Landscape Visual Impact Assessment. This assessment considers nearby registered heritage places along with places of historical interest that are not registered. This assessment includes mitigation measures for the unregistered Tuggeranong Heritage Track, and recommends new plantings as a vegetation screen to mitigate visual impacts to this track and to Dog Trap Creek. Vegetation screening of places of heritage value is encouraged, however, any associated visual screening must not diminish the significance of a registered heritage place, or cause damage to an Aboriginal place or object. Additional advice from the Council may be required once further details about any screening proposals are known. Advice: As a delegate of the Council, I advise that the Draft EIS has adequately addressed the requirements of the Scoping Document, and adequately describes the heritage impacts of the development, and how these will be avoided, minimised and mitigated. Accordingly, the draft EIS is	No action requiredAdditional heritage investigations undertaken to address ACT Heritage comments. An Addenda to Appendix R addresses requirements.

Agency	Concern raised	Response and location in EIS
	endorsed in relation to heritage mitigation and managements measures, subject to the following conditions: 1. Disturbance associated with the new MRF is to be contained to the mapped 'Proposed Impact Area' as per Figure 9.1 in the CHA. This Proposed Impact Area appears to be consistent with other mapping presented in the Draft EIS referral. If disturbance beyond this boundary is proposed, further advice must be sought from the Council; 2. Any Return to Country outcome for the Aboriginal objects recovered from HMRF01 must be developed in accordance with the conditions of the Council's endorsement of the CHA, issued on 10 July 2023; 3. The Unanticipated Discovery Protocols outlined in Appendix 6 of the CHA must be adhered to for the duration of ground disturbing works associated with the project, and be incorporated into the project's Construction Environment Management Plan (CEMP) (where applicable); 4. Restricted heritage information is not to be included in any documents, reports or plans to be placed on public exhibition for the Revised Environmental Impact Statement, Development Application or any other associated planning process; and 5. Vegetation, or other associated visual impact mitigation measures must not cause damage to an Aboriginal place or object, or diminish the significance of a registered heritage place or object. Further advice will be required from the Council should any screening be proposed in the curtilage of a registered heritage place, and/or should any screening be proposed outside the 'Proposed Impact Area' as per Figure 9.1 in the CHA. The Council will also provide advice on subsequent development applications, and any other relevant referrals in relation to this project.	
Icon Water		
	1. These works shall require Building Approval from Icon Water, this approval is separate to and additional to, approval of the Environmental Impact Statement.	Noted, this will be addressed at DA stage
	2. Sewer: Onsite wastewater treatment plant is proposed as part of current EIS scoping proposal to reduce wastewater discharge into the sewer network. It is noted, the treatment plant would periodically discharge wastewater to Icon Water's sewer network and the discharge rate would be dependent on the amount of processed materials and development intentions. The block is currently serviced by DN 150 mm gravity main. However, minimum pipe size requirement for commercial/industrial development is DN 225 mm according to the WSAA code. Detailed network hydraulic assessment will be required for the project. In addition, any water quality concerns raised by the onsite treatment plant should also be assessed.	This would be addressed in the development application.
	3. Water: Icon Water's existing network has sufficient capacity to meet peak hour pressure threshold and fire flow requirement. However, detailed hydraulic assessment will be required once more information will be available.	Noted.
National Capital Authority		
	Thank you for the referral for EIS 202200011, Hume Materials Recovery Facility at Block 12 Section 25 Hume. The NCA's requirements and interests from the scoping document have been adequately addressed in the draft Environmental Impact Statement. The NCA has no additional comments to add for the EIS process. The future development application must be consistent with Site Development Control Plan (DCP) 171/09/0001. The DCP has been considered by the proponent in the draft EIS document. Consistency with the site DCP can be further addressed at the development application stage.	Section 5.3 addresses DCP requirements.
TCCS		
	TCCS continues to support the proposal.	No action required.
Access Canberra		

Agency	Concern raised	Response and location in EIS
	The information requirements in Section A12 of the Scoping Document have been met in the draft EIS, and Utilities Technical Regulation are unlikely to have further interest in the bioretention pond, providing there are no changes to the height of the pond / dam.	No action required.
Canberra Airport		
	Our concerns are focused on the safe and efficient operation of aircraft arriving and departing from Canberra Airport which is located approximately 10 kilometres away. Following a review of the documents available on your website in regard to the Draft EIS, Canberra Airport notes that the MRF building will be fully enclosed and that, most importantly, there will be no open waste stored outside the MRF building unless it is containerised in waterproof shipping containers: thereby negating the risk of attracting more birds in the area. On this basis, Canberra Airport has no objection to the proposal. We look forward to reviewing the Development Application when lodged to be reassured that bird attraction risk is appropriately mitigated when the MRF is operational.	No action required. Bird strike addressed in Table 18.3 with sentence added to Executive Summary.

23.6 Additional consultation

Since the draft EIS was publicly exhibited and referred to ACT Government Agencies, a range of additional consultations have been undertaken by the Veolia team. These include:

- Gap analysis to identify issues raised by Agencies that could not be addressed earlier due to the absence of a specific development proposal (noting the GHD draft EIS was based on a concept plan).
- Emails to selected Agencies to advise of the revised site layout and operational changes. Agencies included:
  - National Capital Authority – advised that the revise layout plan had been reviewed, and the changes do not present anything of concern for the NCA.
  - Environment Protection Agency – advised that noise impacts would be addressed in more detail at the DA stage.
  - Conservator for Flora & Fauna – advised that their initial concerns about tank overflows being directed to the bio-retention pond had been addressed with the tank overflows now being directed to the street drainage system.
  - ACT Heritage – requested additional research which is further outlined below.
  - EPSDD Climate Change Team – advised that new greenhouse gas calculations would be required.
  - EPSDD Impact Team – provided ongoing advice on the process to complete the revised EIS, including:
    - The proposed changes to the site layout and operations.
    - The proposed approach of revising the EIS.
    - New risks identified due to the changes to the concept design, would need to be addressed more substantially in the revised EIS.
    - Upgrades to Recycling Road are not part of the MRF project covered in the revised EIS and this would be clarified.
    - ACT Heritage would need to be further consulted
    - Roof tank overflow will be directed to street stormwater, not the bio-retention pond.
    - Gas is no longer proposed to be used. The removal of gas from the project would require new GHG calculations.

- Day-to-Day Monitoring - Veolia's approach is that the ongoing monitoring will be covered in the environmental authorisation and the EIS will be general and refer to the environmental authorisation.
- Legislative Context – Need to update the references to the new legislation. The EIS/project will be assessed under the former P&D Act as allowed by S.636 Planning Act Transitional Provisions. However, any future DA will be considered under the new Planning Act and Urban Forest Act.
- Surrounding Developments – Additional general commentary in the revised EIS on other local activity (e.g. proposed FOGO) would be sufficient.
- Utilities – While the Demolition DA includes requirements for Utilities, this should also be included in the revised EIS.
- Climate Change - Need to include commentary in the EIS on any proposed climate change protection measures for extreme rainfall events.
- Construction methodology – Some commentary on matters like site disturbance, earthworks, excavation should be included in the revised EIS.
- Bushfire Risk – The bushfire standards have changed since the draft EIS and this should be reviewed to determine if the Asset Protection Zones and BAL requirements have changed for the revised site layout.
- Alternatives – General commentary as to why the revised Veolia site layout is a better outcome than other options is acceptable, specific weighting of assessment criteria is not necessary.

– Icon Water - requested additional information which is further outlined below.

- Additional consultation with representatives from Icon Water raised the following matters to be addressed:

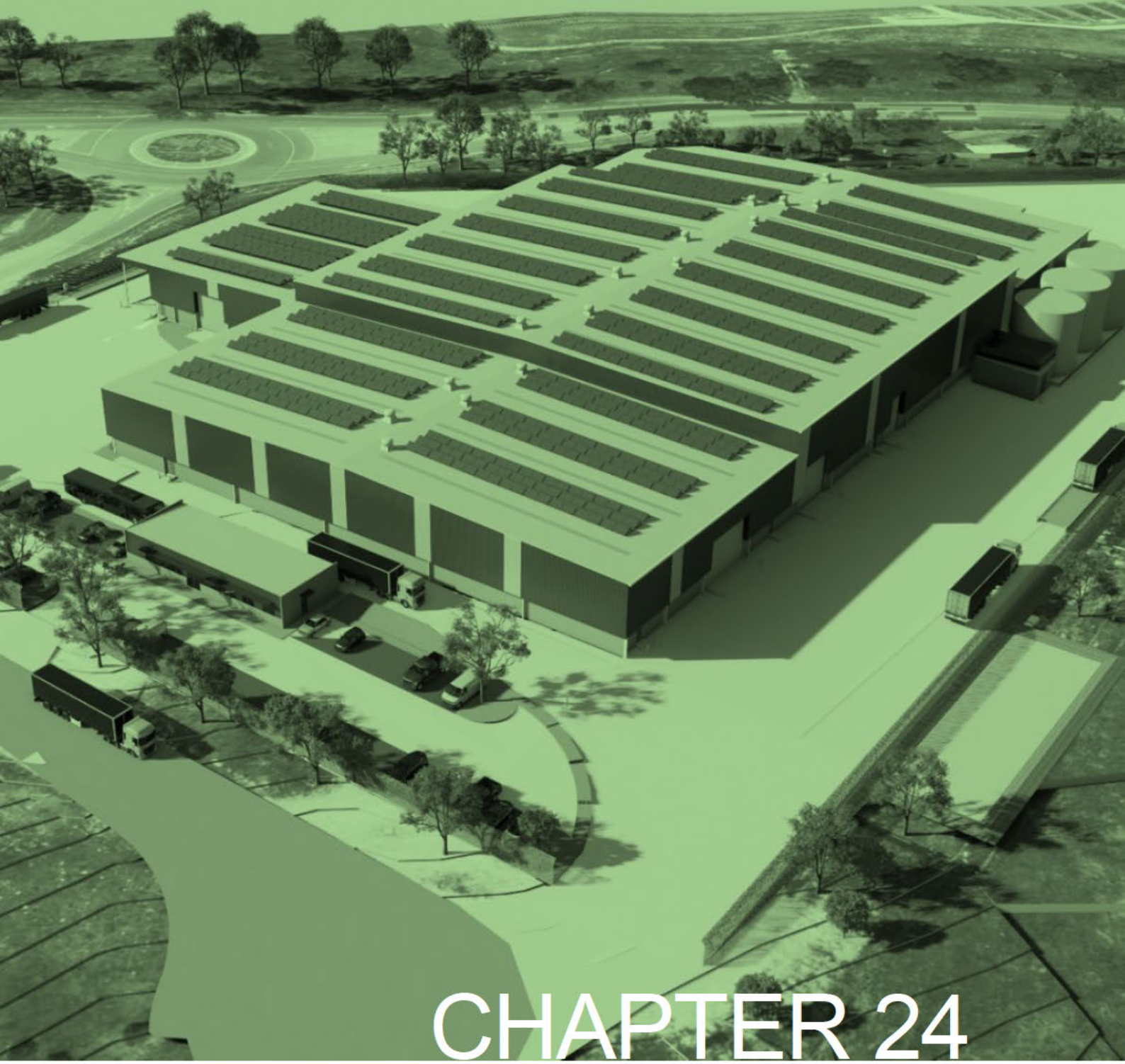
  – No secondary plastic processing / washing as previously proposed, but included proposing glass washing that was not previously proposed.
  – On average, Veolia's proposal is to take 35m^3/hr of town water over an 8-hour day and discharging 35m^3/hr of treated leachate.
  – Treatment of the leachate thru a DAF system to ICON Water discharge specification
  – Disposal to landfill as General Solid Waste of ~8.7t/day of sludge generated by the process
  – Leachate treatment to be through an Aerofloat system.
  – PFAS - monitoring at other Veolia plants haven't identified any increase in PFAS due to washing. PFAS testing will be required.
  – COD can't be 3 times more than BOD (which is 98ppm, against a COD of 526ppm)
  – Icon needs to model capacity for the network, but an upgrade will be required, as the site drains to the Jerrabomberra pump station which is at capacity. Icon needs 3-4 years lead time to upgrade the pump station.
  – Veolia should get in principle approval/acceptance from ICON through the Asset Acceptance Process before commencing detailed design and lodging a DA.
  – The Icon treatment plant is already at capacity dealing with TDS. Icon needs more speciation of dissolved solids including different types of salts.
  – Micro-plastics are a major concern. However, plastic washing and processing is no longer proposed so there won't be microplastics in wastewater discharged.
  – ACT will have new draft Trade Waste Guidelines released for public comment in 2025. This will include requirements for contingency plans, due-diligence, safety data sheets, hours, volumes, SCADA remote if not manned, discharge auto-flow based metering.
  – Need to contact ACT Fire & Rescue with regard to water mains pressure requirements.

- After the Agency meetings, ACT Heritage provided further advice as the revised proposal extends slightly beyond the areas previously identified as the 'Proposed Impact Area'. The additional information sought by ACT Heritage included:
  - An addendum report or similar, prepared by a suitably qualified specialist, which considers the latest investigation of Hume Site 1 and the revised development footprint and assesses whether direct impacts to deposits associated with Hume Site 1 will occur.
  - Consider alternatives to avoid heritage impacts.
  - Describe the outflows in relation to the height of the bank and outline if this will be below Hume Site 1.
  - Articulate why the lower bank is resistant to erosion
  - Consider where along the height of the bank that erodibility changes.
  - It is noted that upper bank erosion is expected for the 20 percent AEP and above flood events. It must be clear where along the profile of the bank that Hume Site 1 is located, and if a lower AEP may also impact associated deposits this should be stated; and
- In addition, the Targeted Site Investigation was referred to the EPA, who provided initial feedback, summarised as follows:
  - Justify why the existing MRF area is not considered an APEC.
  - The site's suitability for all land uses permitted by its zoning needs to be considered.
  - Demonstrate that six sampling locations are appropriate.
  - Justify why further odour investigation is not warranted and whether odour management measures are needed.
  - Reference the correct version of the Territory Plan
- Further details were provided to the EPA who then advised that they support the proposed method, namely carrying out a Pre-Construction Environmental Site Investigation (PESI), following demolition and prior to the commencement of any new building works subject to:
  - The PESI must be undertaken by a suitably qualified environmental consultant to determine whether past activities have impacted the site from a contamination perspective and to determine whether the site is suitable for the proposed uses.
  - A consolidated assessment report (combining the analytical results from the PESI and GHD TSI) by a suitably qualified environmental consultant must be submitted to the OEPA for review and endorsement prior to the commencement of any new building works.

Assessment

The matters raised, or additional information requested by ACT Government Agencies was addressed through commissioning additional specialist studies in relation to water management, noise, bushfire, heritage and greenhouse gases. Each of these studies are provided as Addenda to the original draft Appendix attached to the EIS.

The revised site layout and operational changes do not affect the matters raised in public submissions to the draft EIS. As such the approach to address these issues remain relevant and are incorporated in the revised EIS.



CHAPTER 24
CONCLUSION AND JUSTIFICATION

24 CONCLUSION AND JUSTIFICATION

This EIS addresses the matters specified in the EPSDD Scoping Document dated 21 July 2022 (Application Number 202200011). It has been prepared to assess the potential environmental impacts of the development of the proposed new Hume MRF on Block 12, Section 25 Hume, Recycling Road.

The proposal would replace the existing facility (which was extensively damaged by fire in December 2022) and provide technological improvements to facilitate greater resource recovery by increasing the quality of recycled materials and reducing the amount of non-recyclable residual waste generated that is currently sent to landfill. The proposal would be designed to process up to 115,000 tonnes per year of mixed recyclables, providing capacity for population growth and changing consumer behaviours.

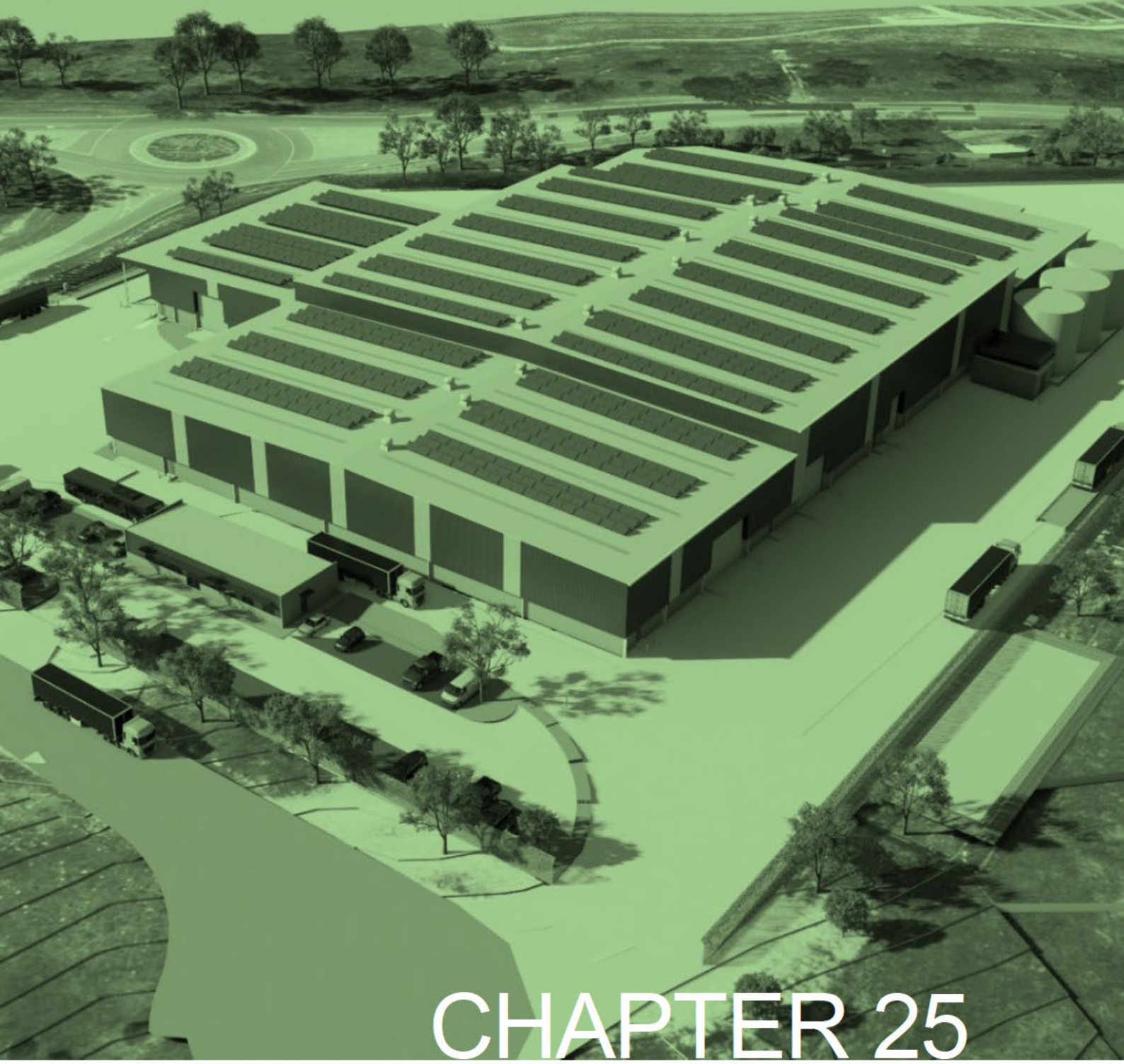
The proposal would enable robust, long-term capability for the ACT to manage co-mingled recycling consistent with:

- The ACT's new Circular Economy reform package (strategy and legislation).
- Joint commitments and cooperation arrangements with the Commonwealth and the States and Territories including the Environment Minister's Meeting and the National Waste Policy Action Plan (particularly Target 1 and the COAG waste export bans).
- Obligations of the National Partnership Agreement and the Recycling Modernisation Fund which is the basis for the partial funding for this project.
- Cooperative arrangements with regional local governments.
- Relevant ACT NoWaste procurements and particularly the new household waste and recycling service.
- Community expectations in regard to maximising recycling and minimising waste to landfill.

Consultation has been undertaken with relevant stakeholders, including ACT Government, relevant landowners, the local communities, nearby businesses and special interest groups and RAOs, during preparation of the EIS. Matters raised by these stakeholders have been considered when assessing potential impacts and developing management measures.

A detailed list of committed mitigation measures has been developed. These measures are to be implemented with the aim to avoid or reduce potential impacts on environmental values within or in proximity to the proposal site. They include planning and design features, construction management commitments, and operational management commitments.

It has been assessed for all matters considered, that provided the committed mitigation measures are implemented, the proposal would be unlikely to cause significant adverse environmental impact.



CHAPTER 25
REFERENCES

25 REFERENCES

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