PURDON PLANNING

REVISED EIS

CAPITAL RECYCLING SOLUTIONS

EIS201700053

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Prepared For:

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Study Team

Consultant	Role/Report
AECOM – Engineering Services	Traffic and Transport Assessment
Blackash – Bushfire Consulting	Bushfire Risk Assessment
Cardno – Engineering Consulting	Advice on EIS
Capital Recycling Solutions	Proponent
EnRisk – Environmental Risk Sciences	Health Impact Assessment
NewGate Communications	Community and stakeholder engagement
The Odour Unit	Odour Impact Assessment
Purdon Planning – Planning Services	Urban Planning and EIS preparation
Rothe Lowman - Architects	Visual Impact Assessment
Rudds – Consulting Engineers	Noise Management Plan
Todoroski Air Sciences	Air Quality Assessment
WSP – Engineering Services	Remedial Action Plan

Glossary of Terms

Above Ground Storage Tanks	AST
Planning and Development Act 2007	PDA
ACT Planning and Development Regulations 2008	PDR
ACT Planning and Land Authority	ACTPLA
ACT Work, Health and Safety Act 2011	WHS
Capital Recycling Solutions Pty Ltd	CRS
Commonwealth of Australia	Cth
Construction and Demolition Waste	C & D
Construction Management Plan	CMP
Commercial and Industrial Waste	C & I
Commonwealth Environmental Protection and Biodiversity Conservation Act 1999	EPBC Act
Construction Management Plan	CMP
Copper, Chromium and Arsenic coated timbers	CCA
Development Application	DA
Environmental Management Plan	EMP
Environmental Impact Study	EIS
Environment, Planning and Sustainable Development Directorate	EPSDD
Environment Protection Authority	EPA
Fine Particulate Matter 2.2 micrometres	PM2.5
Food Organics and Garden Organics collection program	FOGO
Freight Transport Facility	FTF
Greenhouse Gas	GHG
John Holland Rail	JHR
Material Recovery Facility	MRF
Mechanical Biological Treatment Facility	MBT
Medical and Clinical Waste	M & C
Micrograms per Cubic Meter of Air	Ug/m^3
Monitored Natural Attenuation	MNA
Municipal Solid Waste	MSW
Multi-Unit Dwellings	MUD's
National Capital Authority	NCA
National Capital Plan	NCP
NSW State Environmental Planning Policy No.33 Hazardous and offensive development	SEPP33
Operational & Environmental Management Plan	OEMP
Odour unit measurement	ou
Particulate Matter 10 micrometres	PM10

Plastic #1: Polyethylene Terephthalate	PET
Plastic #2: High Density Polyethylene	HDPE
Plastic #3: Polyvinyl Chloride	PVC
Plastic #4: Low Density Polyethylene	LPPE
Plastic #5: Polypropylene	PP
Plastic #6: Polystyrene	PS
Process Engineered Fuel	PEF
Queanbeyan -Palerang Regional Council	QPRC
Rail Freight Terminal	RFT
Remedial Action Plan	RAP
Single Unit Dwellings	SUD's
Tonne-Kilometre	tkm
Total Suspended Particulates	TSP
Transport Canberra and City Services	TCCS
Transport for NSW	TfNSW
Underground Storage Tanks	UST
Vehicles per hour	vph
Waste Management Strategy 2011-2015	WMS
Woodlawn Bioreactor Landfill	WBL
Waste Feasibility Study – Discussion Paper May 2018	WFS

Executive Summary

Proposal Description

This Environmental Impact Statement (EIS) has been prepared on behalf of Capital Recycling Solutions Pty Ltd (CRS), by Purdon Planning. The proposal includes the potential environmental impacts of a proposed Materials Recovery Facility (MRF) at Blocks 9 and 11 Section 8 Fyshwick. The purpose of the EIS is to consider the potential environmental impacts associated with the proposal and proposed mitigation and management strategies to be implemented to address any perceived or potential adverse impacts.

The ACT Government prides itself as being a leader in resource recovery and recycling. However, in line with constant population growth and waste generation the capture of potentially recyclable materials has plateaued in the last 10 years, a comment made by the Minister in the Waste Feasibility Study – May 2018 (p.5). As such, much of the Territory's waste, including potentially recoverable materials, end up in Canberra's only landfill site – the Mugga Lane Resource Management Centre.

In addressing these issues, the ACT Government has aimed to divert 90% of waste from landfill as outlined in the ACT Waste Management Strategy 2011-2025. ACT NoWaste currently surveys local recyclers to assess whether they are on track to meet the ACT Government's 90% resource recovery rate by 2025. In achieving this target, the preferred outcome is to generate less waste and facilitate full resource recovery.

In response to the Government's aims, the plateauing of resource recovery, and several approaches to the private sector for ideas, CRS is proposing to develop a Materials Recovery Facility (MRF) on the former Shell fuel storage facility on Block 9 Section 8 (2.06ha) and Block 11 Section 8 (1.2ha) Fyshwick (the subject site) for the purposes of improving the ACT's resource recovery. CRS proposes to develop a recycling facility which will receive, sort, separate and export a significant proportion of the ACT's waste that is currently going to the Mugga Lane landfill as well as wastes currently landfilled in surrounding regions.

The proposal would ideally integrate with a proposed Rail Freight Terminal (RFT) on the adjacent Block 11 Section 47 (in the rail corridor) leveraging existing rail infrastructure. The construction of an RFT is the subject of a separate Development Application (DA201835108) which was approved in June 2019. An EIS is not required for the RFT, however, CRS included it in the Draft EIS to enable complete assessment of potential environmental impacts for the proposal.

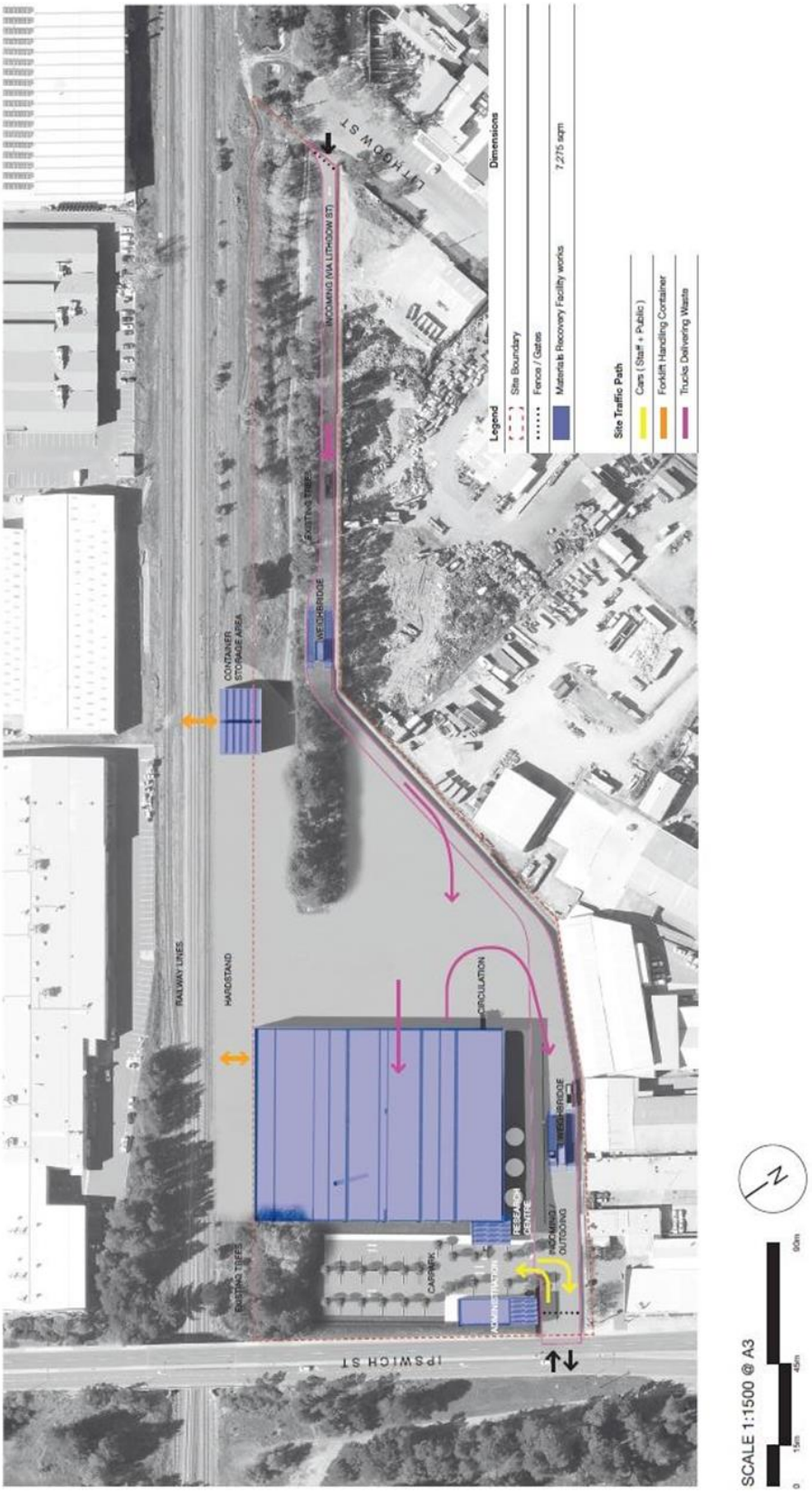
The intention of the recycling proposal is to process Municipal Solid Waste (MSW), Commercial and Industrial (C&I) waste and light residues from Construction and Demolition (C&D) and other wastes to a maximum design capacity of 300,000 Tonnes per annum (Tpa). It is important to understand that the design capacity allows for future growth of the waste to be processed and this also allows for the 'worst case' environmental aspect of the proposal. The commercial viability of the facility is less than 300,000 Tpa, but CRS is presenting the maximum capacity of the facility so that environmental considerations are fully assessed and understood. Should there be less tonnes received, or the composition of the waste does not include MSW then the environmental risks and impacts would be significantly less (less trucks, less volume, less odour, less processing, less risks). Should there be a need for more than 300,000Tpa throughput in the future then this would require a new EIS application.

Targeted waste for recycling will be collected and transported by the existing commercial (and potentially Government), waste vehicles to the subject site. All waste tipping, stockpiling, processing and containerisation will take place within the MRF building which provides a high level of management of possible impacts to the surrounding area including air quality, odour, vermin, fire and litter. The proposal is directly consistent with the Territory strategic waste and recycling objectives.

It is conservatively estimated that the MRF will be able to recover and recycle more than 20% of the targeted waste materials it proposes to process, currently being transported to landfill. The residual waste, after recycling and diversion, will be packaged into shipping containers for transport via rail (or road if necessary) to the Woodlawn Bioreactor landfill at Woodlawn. It is expected that there will be

some 28 containers of MRF site residues and recyclables daily at maximum throughput, as well as some 50 containers of general freight each week.

Figure ES 1: Site Plan



The recycling proposal will have a range of economic, environmental, policy and social benefits to the ACT including:

At maximum throughput capacity, recycling and diverting at least 60,000 Tonnes of resources annually for re-use locally and regionally that would otherwise go to landfill
Reduced greenhouse gas emissions relating to landfills (recycling and diverting organics)
The significant extension of the Mugga Lane landfill's life and reduced need for future expansion
The creation of 48 full-time jobs, 10 part-time jobs and more than 80 constructions jobs.
The incorporation of the ACT's underutilised rail infrastructure for freight access
Provision of a facility adaptable to the evolving nature of the ACT region's Waste Management needs
Promote the ACT as an innovative and advanced waste management hub.
Assist in quickly expediting the various policy goals the ACT Government has in place
Providing some $50-60m of capital investment to the territory that is not taxpayer funded

These factors may initiate future investment in the Territory, thereby contributing to the ACT economy both directly and indirectly.

Key Impacts

During preparation of the EIS, several important issues have been considered and assessment of the potential pre-mitigation risks identified several discrete risk scenarios. Mitigation measures have been subsequently developed in response to these risk scenarios and will influence the final design where applicable to lower the potential likelihood or consequence of these risk scenarios. These measures will be incorporated in environmental and operational documentation for licencing to ensure that CRS is a good neighbour.

The key potential impacts are primarily related to the following areas:

- planning and land status
- traffic and transport
- utilities
- materials and waste
- landscaping, visual and lighting
- soils and geology
- water and hydrology
- air quality and climate change
- socio-economic and health
- noise and vibration and
- hazards and risks.

These are discussed further below and at Section 5.0.

Planning and Land Status

The subject site for the MRF is in one of the ACT's dedicated and original industrial suburbs. Accordingly, the subject site is zoned Mixed-Use Industrial (IZ2).

The proposed MRF development activity is best defined in the Territory Plan as a 'recycling facility' and 'waste transfer station' which are both permissible in IZ2 Mixed-Use Industrial zones. The preliminary design and siting of the proposal is consistent with the relevant Rules and Criteria of the Territory Plan. The detailed design of the proposal will be the subject of a subsequent Development Application process through the Environment, Planning and Sustainable Development Directorate (EPSDD). This would occur as the next stage after the Minister has determined the merits of the EIS

The subject site sits adjacent to Block 11 Section 47 Fyshwick, which is in Canberra's key rail corridor. This adjacent block is zoned TSZ2 – Services Zone. The total proposal intends to integrate with the proposed RFT (should it be approved) on the adjacent railway land, to allow rail freight transport of exported MRF residues and recyclables. A separate DA has been approved (June 2019) which addresses the rail freight terminal construction and activity on the rail corridor which is zoned TSZ2 – Services Zone site. It is immediately adjacent to the railway track and the RFT will simply involve a rail siding, forklifts to load and unload containers from freight trains and the storage of those containers.

This EIS has been prepared assuming the optimal proposal and maximum tonnages so that the potential impacts created by the proposal at maximum capacity can be fully assessed. The optimum solution includes integration with the adjacent rail corridor. Emergency measures in Section 6.11 of the EIS should detail key activities should there be an issue with rail network availability and would involve the addition of two extra trucks per hour on average above those predicted. AECOM has calculated the impact of these two additional trucks and the calculations can been seen in Section 6.2.4.2 and Appendix W.

Pre-mitigation risk assessments highlighted that the proposed MRF facility had some possible moderate impacts on surrounding residential, and commercial and industrial uses. However, these have been considered in the planning and design phase of the project and an array of mitigation methods (See Section 7.0) have been proposed to ensure these impacts are minimised or negated where possible. The sensitive design and orientation of the development and adoption of leading technology ensures that such impacts are contained within the site and/or minimised and dispersed as necessary to ensure minimal risks as far as practicable.

Traffic and Transport

The MRF site previously housed the former Shell fuel storage facility and had a dual track siding with direct rail connection from the South Shunt. This rail track connection across Blocks 9 & 11 Section 8 was recently removed in favour of remediation works carried out on behalf of CRS. The creation of a parallel siding to the South Shunt on the adjacent Block 11 Section 47 (parallel to the existing track) was considered a better design option. Block 11 Section 47 is unleased Territory Land which is licenced to Transport for NSW (TfNSW) for providing rail services. TfNSW has issued a 20-year sub-licence to CRS for developing and operating a rail terminal on this land. As stated previously, this is the subject of a separate application process which was approved in June 2019 (DA201835108). The South Shunt is existing rail infrastructure and is currently closed to all rail traffic.

Any change of use or redevelopment of these sites will see some increases in vehicle traffic numbers to and from the site. A formal traffic study for the MRF was conducted by AECOM at the maximum proposed design capacity of 300,000Tpa. The assessment by AECOM (See Appendix E) indicates that the proposed MRF development when combined with proposed general freight container movement will produce an average addition of 230 truck traffic movements per day (waste collection vehicles, recycled material distribution trucks and general freight trucks) to the site. For the purposes of this EIS, Heavy vehicles include government (contractor) and non-government vehicles transferring waste to the Material Recovery Facility for processing. Freight vehicles are those vehicles transferring containers of other material directly to the Rail Freight Terminal.

The transport times of waste collection trucks will be coordinated and dispersed throughout the proposed 16-hour operating day. This equates to an average total of 15 heavy vehicles entering/exiting the site every hour, or one truck per 4 minutes. Most movements will occur outside of identified peak periods (8.00-9.00am and 4.15-5.15pm weekdays).

The additional proposed maximum trucks represent an approximate 5% increase to the existing truck movements on the immediate road network and would see an overall increase, during the AM peak, of approximately 0.2% in total vehicles (cars, trucks etc). This percentage increase and the impact to road users is considered by AECOM to be not statistically significant.

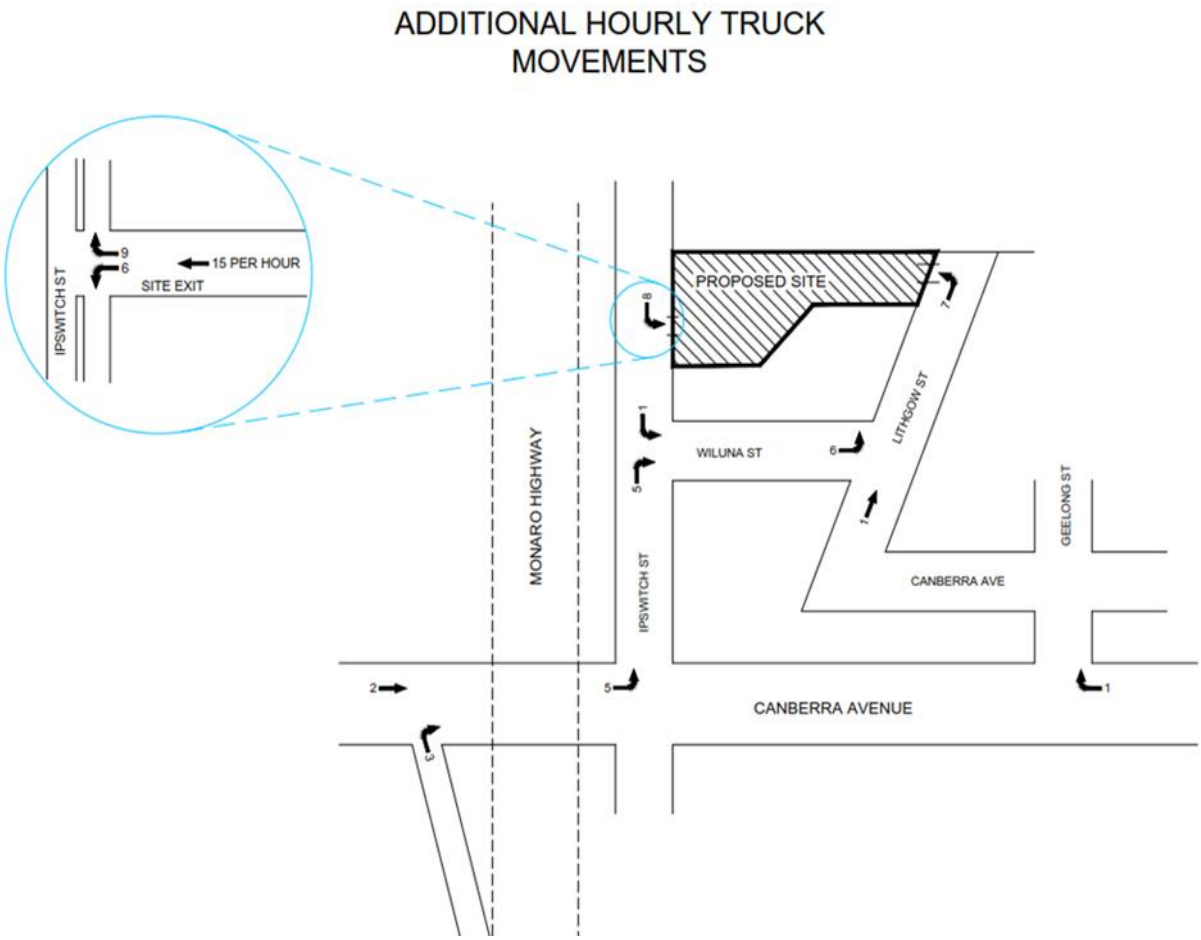
Additional sensitivity modelling was done by AECOM (See Appendix Y) to look at the impact of trucks arriving in shorter time frames, including modelling Mugga Lane landfill hours. The worst-case impact, if

all Government trucks arrived before midday across 5 days and the Commercial trucks, recycling and freight operated 6.00am to 5.00pm 6.5 days, was an increase in Ipswich Street traffic of 2.3%. TCCS has acknowledged in their assessment of the sensitivity modelling by AECOM that "no significant impact will occur on [the] surrounding road network"

The proposed acquisition of Block 11 Section 8 (subject to approval) allows for a one-way circulation opportunity through the site for trucks which will allow entry from Lithgow Street and exit onto Ipswich Street. While this flow is optimal, in the interests of businesses activities and concerns in Wiluna Street, regarding the extra proposed 14 trucks per hour (1 arrives up Lithgow Street to make 15 averages (**Figure ES 2**), CRS is prepared to consider allowing Ipswich Street entry to the site for Southbound rigid waste trucks. This would allow some 8 trucks per hour to turn directly into the site from Ipswich Street and avoid using Wiluna Street. Northbound trucks on Ipswich would still turn right onto Wiluna Street and enter from Lithgow Street. The net effect would be to limit the trucks using Wiluna Street to approximately 6 per hour rather than 14 which is a significant decrease.

There will be no right hand turn directly into the site from Ipswich Street.

Figure ES 2: Truck Movements



CRS has also determined that in the interest of safety on the street and footpaths at Ipswich Street the installation of traffic lights is an appropriate initiative. The installation of these traffic lights will be integrated with the Wiluna Street traffic lights to maximise safety and allow safe entry and egress from the site to Ipswich Street. Truck entry to the site and the weighbridge locations will allow significant off-street truck queuing to avoid any on-street interference.

Should the rail network be unavailable then CRS would transfer the containers to Woodlawn by road. AECOM has determined (See Appendix W) that in the absence of the RFT, there would be a conservative requirement for 2 extra trucks per hour on average to move the containers. This would mean that 17vph would be required which is an additional 0.45% increase in trucks in the peak. These revised numbers are discussed in Section 6.2.4.2 of this report and Appendix W.

Utilities

Utility services and any potential impacts have been identified during the EIS process by Cardno and sub-consultants. As a brownfields site in an established Canberra industrial suburb, the site already has connections, or easy connection can be made, to existing utility infrastructure located in the adjacent street. ACT Emergency Services have stated that they are satisfied that there is enough service for firefighting purposes.

Connection to stormwater and runoff were also identified as a potential risk. The complete separation of the stormwater system from the waste management and recycling activities ensures that all waste unloading and loading and processing activities will occur inside the MRF building. The MRF building will be designed to contain and collect any waste or run-off generated internally, including leachate. A 20,000-litre leachate collection tank will be used to capture all leachate from the tipping floors, around the compactors and processing equipment. This leachate can then be sent via the shipping containers to landfill or be pumped out by a liquid waste processor for treatment and/or a trade waste application will be made with Icon water. This trade waste application can only take place when the chemical composition of the leachate can be tested in the operations stage against Icon Water requirements.

The building will be designed to incorporate a 150mm bund around the inside perimeter to ensure any leachate generated in the building is collected and kept separate from the external stormwater collection system outside the building. At the doorways this will be a 150mm drive over kerb and the remainder of the perimeter will be a gutter arrangement.

Materials and Waste

The MRF facility has the perceived risk of waste stockpiling and the spread of waste outside the MRF to neighbouring sites. This risk is mitigated through design of the building to incorporate all the proposed loading, unloading and storage of waste (unless containerised first) and its processing will be located and conducted indoors within the MRF building. Once waste is transported to the site and tipped within the MRF building, the waste will be processed promptly. The waste will be visually examined at receival for prohibited and hazardous wastes. Inappropriate wastes will not be accepted. Accepted wastes will be sorted with excavators before being processed for recyclable and divertible materials. The non-recoverable waste residues are containerised for transport via rail as soon as practicable (**Figure 13**).

There will be no storage of waste or recyclable materials outside the MRF building at any time unless it is in sealed waterproof shipping container. The container seals are the subject of daily inspection and maintenance. They are replaced annually, or sooner if required.

There are approximately 4.5 hours contingency in the planned processing capacity per day (16 hours operation) for breakdowns, stoppages and maintenance activities. This contingency and prompt management will ensure no stockpiling of waste will occur inside the MRF building. No waste will spread to neighbouring blocks as activities take place inside the MRF. CRS will employ regular external site cleaning services to clean and tidy its hard surfaces and gardens.

Landscaping, Visual and Lighting

The potential visual impacts of this proposal have been included in photomontages by Rothelowman–Architects (refer **Figure ES 3** and **Figure ES 4**). The visual impact is also assessed in relation to landscaping and lighting. Is it considered that the proposed visual impact will be a significant improvement on the existing site with all new features to be lower in height and less stark in colour than the existing 16m white petroleum tanks which will be removed as part of the proposal. Additionally, the existing large twin

line of pine trees at the eastern end of the site will be retained as far as practically possible, noting that it will be used to screen the proposed access road from Lithgow Street. Some of the radiata pines are deceased and it is this species that would be removed. The line of Canary Island Pines would be retained where possible. Other random trees and shrubs have grown haphazardly around the site. None of the trees are significant.

Figure ES 3: Perspective from Monaro Highway (Current)

Figure ES 4: Perspective from Monaro Highway (Proposed)

Source: Rothe Lowman

The proposal's visual impact is considered negligible and the scale and bulk of the MRF building is consistent with the surrounding colour, scale and character of the industrial precinct and neighbouring structures. The site will be fenced for security and this will be a mesh fencing type except along the southern boundary where a noise wall will be incorporated which will screen the proposal from Wiluna Street. These businesses are generally oriented to Wiluna Street and don't overlook the site, nor do the business to the north which face and operate northwards.

Soils and Geology

The site is in a designated industrial area and the previous long-term use was a fuel storage facility that had rail access directly into the site. The likelihood of site contamination was deemed to be high due to its history and the measurements of contamination. Remediation of the site was commenced in 2010. WSP Australia Pty Ltd (WSP) was engaged to review the site history of testing and remediation and provide advice as to whether the site was suitable for industrial and commercial uses as part of their proposed Remedial Action Plan (RAP) and whether this specific proposal could be successfully installed on the site.

WSP, in its assessment of the site history, site condition, site contamination situation and the proposed building design, has recommended a vapour barrier and a passive ventilation system be installed under the new building slab to prevent the permeation of any latent hydrocarbon vapour into the MRF building. This will sufficiently mitigate any risk to on-site workers in the building.

CRS has already remediated parts of the site for this proposal. All existing and potentially contaminating infrastructure is to be removed as part of site redevelopment. The Environmental Management Plan (EMP), prepared in 2017 by Environmental Consulting Services on behalf of CRS, is to be updated and incorporated as part of the Construction Management Plan (CMP) and Operational and Environmental Management Plan (OEMP). WSP has proposed a monitored natural attenuation plan (MNA) to be included within the updated EMP.

The Management Plans will require approval by the relevant Authority prior to construction and operation.

Water and Hydrology

The potential risk of contaminated offsite water and hydrological impacts, particularly relating to contaminated stormwater egressing the site and risk to Jerrabomberra Creek and Jerrabomberra Wetlands has been assessed by Cardno and sub-consultant, Arcadis.

As mentioned above, all waste processing activities are to be located indoors within the main MRF building and therefore separated from the external stormwater system. Processed waste will then be immediately containerised within the MRF building ready for transport. No waste or recyclables will be loaded, unloaded or stockpiled outside of the MRF building, unless containerised first. The MRF building will be sealed for noise and odour mitigation, therefore the opportunity for the wind to carry waste outside the building is negligible. Additionally, all leachate generated in the MRF building will be contained within a designated leachate catchment tank (20,000ltr) and it is proposed to be transported by the sealed and waterproof containers to landfill or pumped out to an appropriate liquid waste processor. Establishment of a trade waste connection with Icon Water is under investigation.

All external stormwater events will be separated by a 150mm bund around the inside perimeter of the MRF building to prevent any ingress. The Cardno report shows site hardstand surfaces will be shaped and sloped to take any stormwater to the southwest corner of the site where there is an existing stormwater connection. The Operational & Environmental Management Plan (OEMP) will have scheduled maintenance of the hard surfaces for dust, the site will be kept clean and tidy with gardens maintained. As a part of the routine yard maintenance any stormwater grates will be cleaned and kept clear of obstructions.

Three rainwater tanks are proposed to be located at the southern end of the MRF building. These will be used for the capture of building roof stormwater for reuse on the site and inside the building when required.

Specialist assessments undertaken for this EIS and previous site analysis have concluded that the risk to both the Jerrabomberra Creek and Wetlands is negligible, particularly due to distance. CRS takes the view that containing the waste activities internally to the building means there is no additional risk to stormwater quality. Formal management of the stormwater (currently uncontrolled) will be a significant

improvement on what is currently occurring onsite. Water monitoring has been proposed during construction by WSP in their remedial action plan and this would also form part of the CMP and OEMP which would be required for the licensing stage.

The Management Plans will require approval by the relevant Authority prior to construction and operation.

Air Quality and Climate Change

Odour, as it relates to air quality, has been assessed by The Odour Unit. The community interactions about this proposal identified odour as a key concern of residents and neighbours. An additional Air Quality study, by Todoroski Air Sciences, has been prepared as a result of the draft EIS formal public consultation period and their results have been incorporated into Section 6.8 of this EIS and Appendix Q. The additional public concerns were about the impact of dust from the processing operations and diesel emissions from trucks coming to and from the proposed facility. The impact on climate change has also been assessed as part of the EIS process.

As a waste processing facility, potential odour impacts were highlighted as a key area of concern from the early public consultation. However, appropriate design and the adoption of advanced and proven technology ensures these risks can be appropriately mitigated to NSW standards.

All waste loading, unloading and processing activities will be conducted wholly within the main MRF building and its treatment and containerisation will occur promptly. This negates the need to stockpile within the building and no waste will be stored externally unless first containerised. Additionally, to mitigate any odour migration, the MRF building will utilise a negative pressure environment with minimal doors and openings. The negative pressure environment will be created utilising a twin variable fan ventilation extraction system that will rotate the air in the entire building five times per hour and vent to the atmosphere via a 9-metre vent stack on top of the building. The ventilation system will rely on dual variable speed fans that will operate at 75% capacity such that one can be repaired or maintained while the other maintains the extraction function. There will be fast-opening vinyl doors fitted to the MRF building for the truck entry and exists to maintain the negative-pressure environment and to minimise fugitive odour as trucks enter and leave the building.

An odour analysis by The Odour Unit Pty Ltd determined these key mitigation measures are appropriate in containing the fugitive odour, based on the maximum design tonnage of 300,000Tpa (mix of MSW and C & I waste) within the subject site's boundaries, with all odour being contained within the designated industrial precinct (refer **Figure 35**). It should be noted that the modelling and assumptions utilised have been conservative and a program of operational field testing is appropriate to verify correct odour management. Further mitigation measures can be incorporated if required, such as creating air locks at the entry and exit doors or a taller ventilation stack. However, at this stage these measures are not deemed necessary.

Todoroski Air Sciences have conducted some supplementary assessments subsequent to materials prepared for the Draft EIS. CRS engaged Todoroski Air Sciences to establish baseline ambient air quality levels which were conducted in October 2017 with monitoring equipment placed on the subject site. This enabled the ambient air quality at the site to be compared with other parts of the ACT measured by ACT Health (Florey, Civic, Monash)

In relation to the publics concerns about PM2.5 (fine dust) levels, the monitoring showed slightly lower levels of PM2.5 at the subject site than the other ACT locations and all results were below the annual average criterion of 8ug/m3. It was concluded that the results of the monitoring campaign infer that for the areas surrounding the Project site, the ambient air quality for PM2.5 levels would be like other areas in the ACT.

The use of extraction and ventilation outlets will minimise ground level dust concentrations and these *"are commonly used in various industrial applications to promote dispersion of air pollutants into the atmosphere"* (Todoroski -Air Quality report p2)

"*A review of surrounding activity in the local area indicates three dust generating operations on Lithgow Street (two concrete batching plants and a recycling facility). These other facilities operate outdoors, whereas the proposed Project operates indoors and would generate significantly less dust. In this context, the Project and its immediate industrial neighbours are not sensitive to dust, and the Project would contribute a low quantity of dust into the environment, indicating the project is suitably positioned"* (refer Appendix F).

The proposal will have a clear beneficial outcome for climate change objectives, through the reduction of greenhouse gas emissions. Presently, more than 300,000 tonnes of waste are buried in the Mugga Lane landfill every year. The MSW and C&I waste streams that make up the bulk of this receive very little treatment to recover materials for recycling (including organic materials such as greenwaste, paper, cardboard and timber). CRS will be able to divert and recycle organic materials to assist in methane gas reduction at landfill through its recycling targets. Should CRS be able to divert organics from landfill for a possible future Food Organics and Garden Organics (FOGO) processing facility this will further reduce greenhouse emissions.

Socio-Economic and Health

Socio-economic and health impacts, particularly regarding the harbouring of pest animals and treatment of hazardous materials have been considered.

Canberra Airport has not raised objection to the proposal and does not consider the proposal to increase risk of bird hazards (refer Appendix U).

The internal facility with its expeditious treatment and containerisation of waste and its negative-pressure environment ensures the attraction for pest animals is minimised. Programmed pest control measures will be part of the OEMP that will be required by the operating licence. Additionally, the waste treatment process allows hazardous materials to be separated and addressed accordingly.

The building ventilation system ensures that any incidental vapour/fumes are constantly and quickly dispersed by replacing the volume of the air in the building five times every hour.

CRS has an obligation to provide a safe working environment for its staff and customers under the ACT Work, Health & Safety Act 2011 (WHS) and there is no reason that this would not be the case and licensed to the satisfaction of ACT NoWaste and the EPA.

Noise and Vibration

Noise and vibration impacts associated to site construction and waste transport have been considered by Rudds Consulting Engineers as part of the EIS process.

Site redevelopment will produce a degree of construction noise. However, these will not be inconsistent to a development of a similar scale. General construction noise mitigation measures will be adopted, including limiting construction work to normal working hours and ensuring noise reduction devices including mufflers and suppressors are fitted properly.

All specific and significant plant types, both mobile and fixed, have been assessed for their noise contribution across the operation. Having the majority of fixed equipment inside the MRF building will assist greatly with noise attenuation. The equipment will use noise enclosures and rubber mounts (vibration), acoustic attenuators and/or localised noise barriers to ensure noise and vibration from mobile and fixed machinery is minimised. Noise producing external operations, such as the delivery of waste material to site and the loading of containers on and off the train will occur during daylight hours only which assists compliance. The noise risk to both the southern and northern boundary is possibly created by the forklifts and delivery trucks. Although these noise sources are intermittent, the construction of a 2.7m noise fence along the southern boundary will alleviate the truck noise and specific sound attenuation of forklifts will achieve the same for the north.

Hazards and Risks

Although unlikely, the potential identified impacts associated with hazards and risks, include the potential for a spontaneous combustion fire event in the building, aircraft operation interference from the ventilation stack, the impact of critical infrastructure failure, bushfires and the availability of water have all been addressed as part of the EIS.

Acceptance protocols have been outlined to ensure every load is checked for any smouldering elements or igniting substances. Prevention of hazardous waste or waste that could cause issues will be a key aspect of the OEMP. Additionally, automated infra-red firefighting equipment will be installed that will monitor changes in stockpile temperatures to prevent a fire incident.

All processed waste residues will be loaded into sealed (with a small carbon filter vent) ISO containers promptly, limiting the time material is in the building and avoiding spontaneous combustion events using thermal cameras and automated firefighting systems.

Protocols for the identification of any inadvertent hazardous wastes will be outlined as part of the OMP. It should be noted that all this waste is currently being buried at Mugga Lane landfill – any successful recovery or diversion of hazardous materials will reduce risks, but the objective of CRS is to not accept the material in the first place and train the customer base accordingly.

A range of hazard related infrastructure equipment can be included on site, including back to base fixed smoke and fire alarm systems within the building; portable and fixed thermal cameras; fire warning systems and fire exits; fixed fire hoses; water and foam sprinklers; fixed zoned sprinkler system, and; machinery sprinklers where appropriate.

The proposed development has been confirmed, by the Civil Aviation Safety Authority (CASA) to not be hazardous to aircraft operations.

Cardno has determined that there is an existing firefighting main onsite which will be adapted for use.

Blackash determined that the site is outside any bushfire risk zone and has made some pragmatic recommendations to further reduce risk.

In terms of critical infrastructure failure scenarios there are a range of duplicate and back up arrangements that would be employed for any significant fire scenarios, equipment failures, loss of power and rail interruptions. All these emergency plans are discussed in detail in section 6.11.

The provisions of the ACT Work, Health and Safety Act 2011 specifically provides for the regulatory obligations, rights and requirements to ensure worker safety. CRS acknowledges and takes seriously this obligation and will provide the relevant operating and induction procedures to meet the requirements of the ACT. The detail of this will be provided in writing for sign off, prior to any operations and will be posted online. It should be noted that Benedict industries (a company operating facilities similar to this proposal) currently has 9 sites that all operate with the benefit of an approved environmental management plans (EMP), operational management plans (OMP) and safe work procedures specific to the site circumstances. All workers and customers will be inducted to the site procedures.

All Management Plans will require approval by the relevant Authority prior to construction and operation.

Assessment criteria of the proposal risks

The table below provides a summary of the identified potential impacts of this proposal and their residual risk assessment.

	Minimal	Minor	Moderate	Major	Severe
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

The table below provides a summary of the **post mitigation risk assessment**.

			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Planning and Land status	PL-1	Sterilisation of adjacent land uses	Unlikely	Moderate	Low
Traffic and Transport	Traff-1	Increased traffic congestion during construction	Possible	Minor	Low
	Traff-2	Reduced network efficiency due to increased traffic from staff and diverted trucks from Mugga Lane landfill l	Possible	Minor	Low
	Traff-3	Reduced road safety	Unlikely	Moderate	Low
	Traff-4	Increased Rail movements	Likely	Minimal	Low
Utilities	Util-1	Impacts on existing infrastructure	Unlikely	Moderate	Low
	Util-2	Contaminated storm and wastewater egressing from the site during extreme weather	Unlikely	Moderate	Low
Materials and Waste	MW-1	Increased waste to landfill during construction	Possible	Minimal	Very Low
	MW-2	Spread of waste to other sites	Remote	Minor	Negligible
	MW-3	Excess stockpiling during operation and cleanup when operation ceases	Remote	Moderate	Very Low

			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
	MW-4	Waste spread during transport	Unlikely	Minor	Low
Landscape, Visual and Lighting	LV-1	Visual impacts on the surrounding areas such as building bulk and scale, stockpiling and lighting the facility	Unlikely	Minor	Very Low
	LV-2	Visual impact of the facility on the surrounding streetscape	Unlikely	Minor	Very Low
Soils and Geology	Geo-1	Potential existing contamination	Likely	Minimal	Low
	Geo-2	Potential spills contaminating soils	Unlikely	Moderate	Low
Water quality and hydrology	Hyd-1	Contaminated stormwater or wastewater impacting on receiving land and water	Unlikely	Moderate	Low
	Hyd-2	Risk to Jerrabomberra Creek and Wetlands	Remote	Major	Low
Air Quality and Climate Change	CCAQ-1	Dust from construction activities	Likely	Minimal	Low
	CCAQ-2	Odour from transport and processing of waste	Unlikely	Moderate	Low
	CCAQ-3	Impacts on climate change	Remote	Major	Low
	CCAQ-4	Cumulative impacts of the development on air quality in the locality	Unlikely	Moderate	Low
	CCAQ-5	Hazardous emissions from the plant including cumulative impacts with other developments in the air shed	Possible	Minor	Low
	CCAQ-6	Poor quality waste or dangerous contaminants in the waste material impacting on operations or air quality	Possible	Minor	Low
Socio-economic and health	SEH-1	Facilities and materials storage providing harbour to vermin and pest animals which impact on health and amenity	Possible	Minor	Low
	SEH-2	Minimise the occurrence and therefore disposal of hazardous	Possible	Minor	Low

			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
		waste that poses a risk to the environment or human health			
Noise, vibration and lighting	NVL-1	Noise during construction	Likely	Minimal	Low
	NVL-2	Noise from operation of the facility and vehicle movements	Possible	Minor	Low
Hazard and Risk	HR-1	Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses and human health	Possible	Minor	Low
	HR-2	Risk of bushfire or fire on neighbouring premises impacting the proposed facility	Remote	Minor	Negligible
	HR-3	Insufficient water supply from tanks and mains for fire suppression in the event of an emergency	Remote	Moderate	Very Low
	HR-4	Hazard to aircraft operations from stack emissions and flaring	Remote	Moderate	Very low
	HR-5	Critical infrastructure failure	Unlikely	Moderate	Low
	HR-6	Safety of Workers	Unlikely	Minor	Very Low

Recommendations

The proposed development will result in a range of economic, social and environmental benefits for the ACT and surrounding region. Support of the proposed MRF development will allow immediate benefits to the ACT through improved waste management and reduced environmental impacts compared to the current landfill approach.

The proposal is directly consistent with and helps achieve the ACT Government's waste objectives established in the ACT Waste Management Strategy 2011-2025 and the ACT Waste Feasibility Study.

During the development of the draft EIS, investigations have identified pre- mitigation risks. Targeted mitigation and management measures have been developed to address the potential for adverse impacts. Mitigation measures for all identified risks employed as part of the design during both the construction and operation of the Proposal, result in post-mitigation risks which are considered acceptable.

This has reduced uncertainty of the nature and scope of the threat of environmental, social and economic damage, as far as technically possible. To this end it is recommended that this proposal be supported by the Minister.

1.0 Introduction

1.1 Purpose

Purdon Planning has prepared this Draft Environmental Impact Statement (EIS) on behalf of Capital Recycling Solutions Pty Ltd (CRS) in accordance with the requirements of the *ACT Planning and Environment ACT, 2007*. This Draft EIS document is in response to a scoping document from the ACT Government Environment, Planning and Sustainable Development Directorate (EPSDD) received 15 January 2018.

CRS is committed to implementing a fully funded, world's best practice waste management system to receive, sort, separate and export the ACT's waste currently going to landfill. CRS intends to process these waste streams which include municipal solid waste (MSW) from the red lid bin collections, commercial and industrial wastes (C & I), light residues from commercial and demolition (C & D) streams and other non-hazardous wastes, totalling approximately 300,000 tonnes per annum.

The proposal will develop and utilise an advanced sorting and recycling system to generate commercially reusable products for export and reuse. CRS expects that the Material Recovery Facility (MRF) component can recycle more than 20% of the material it is targeting to process and transport the remainder of non-recyclable residues to the Woodlawn Bioreactor landfill (WBL). It is proposed to transport by sealed containers on trains via an adjacent Rail Freight Terminal (RFT). In the event that rail is not available the residues will be transported by road to WBL (see Section 6.2.4.2). This could achieve a diversion for processing of potentially up to 300,000 tonnes per annum (maximum design capacity) from which some 60,000 tonnes (20%) would be conservatively recovered and recycled. The proportion of tonnes recycled relates to the input tonnes. CRS is designing for future (300,000Tpa) and can operate successfully on less throughput volume. From a broader ACT Government Policy and community perspective, the development of this MRF proposal will benefit the ACT Government across a range of policy objectives including:

- Extend the life of the ACT's Mugga Lane landfill by processing the MSW and C & I waste streams (designed for up to 300,000 tonnes per annum). This extends its operational life for the purposes of special and hazardous landfill requirements. The reduction in Mugga Lane landfill receipt volumes could increase the available landfill space by 8-10 years in the first year of CRS opening its MRF operation. Mugga Lane landfill could continue to accept high revenue wastes such as medical waste and asbestos as well as processing the public drop-off facility as well as locate other waste management activities proposed for the future.;
- Integrate export of recyclables and waste residues with rail freight infrastructure, thereby reducing regional truck traffic on the roads;
- Providing cross border solutions for waste management benefiting the wider region. This is an underlying theme of the ACT/NSW Memorandum of Understanding (MOU) for regional collaboration to promote economic development and improve resource management across borders;
- Promoting the ACT as a new and innovative advanced waste management hub, incorporating the latest in sorting equipment, proven odour control methods and other best practice environmental safety systems;
- Provide a positive impact on the ACT economy by diversifying the economic base and creating 48 fulltime jobs, and other part time jobs, through the development of a new, innovative and growing industry.

1.2 Summary of Proposal

Waste management is a vital and basic function of local governments and municipal services. The ACT has a growing population that is increasingly aware of the environmental impacts surrounding domestic waste management. In recognition of the challenges that face the ACT now and increasingly in the future, the ACT Government has developed the ACT Waste Management Strategy 2011-2025 (The strategy). The strategy is a follow on from the 'No Waste by 2010 Strategy' (1996) which saw a reduction of domestic waste sent to landfill from 60% to 30% by the year 2003[1].

To build on the efforts of the 'No Waste by 2010 Strategy', the key objective of the ACT Waste Management Strategy 2011-2025 was to *"ensure that the ACT leads innovation to achieve full resource recovery and a carbon neutral waste sector"*.

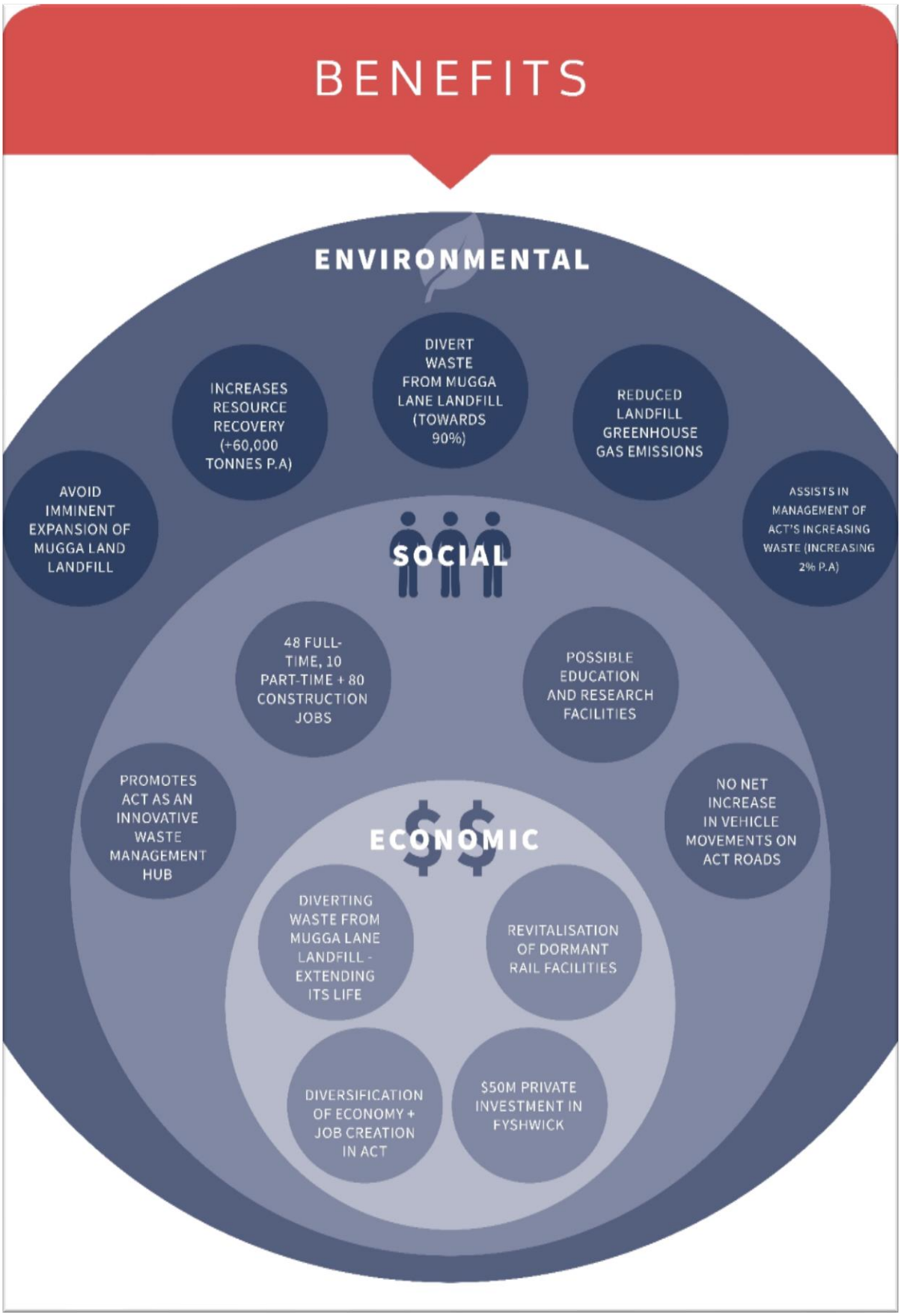
In a bid to accomplish the outcomes established in the ACT Waste Management Strategy 2011-2025 and increase recycling and landfill diversion (prolonging the life of Mugga Lane landfill), CRS has proposed a local solution to assist the ACT in their waste management.

CRS were originally planning the development of a holistic waste recovery facility. The development of such a facility would require two components, MRF (this EIS Application) and previously, a Waste to Energy plant (WtE) (this WtE aspect has now been abandoned). This revised proposal will directly contribute towards accomplishing outcome 2 of the Waste Strategy. The flow on benefits of resource recovery will in-turn also contribute towards achievement of outcomes 3 and 4 of the Strategy.

The location of the proposed MRF is Block 9 and 11, Section 8 Fyshwick (16 Ipswich Street). The proposed RFT construction, which is the subject of a separate Development Application (DA201835108, approved in June 2019), is to be situated wholly on part Block 11 Section 47 Fyshwick. In its commitment to the waste management strategy, CRS have already purchased Block 9 Section 8. CRS has already remediated the site to a level to permit the proposed use, as this was the location of a Shell fuel storage facility. CRS is seeking to purchase Block 11, Section 8 Fyshwick. The site is ideally positioned with regards to its central location in the ACT and adjacent to the "*South Shunt*" rail siding on part Block 11 Section 47 Fyshwick. This ensures the residues can be transported by rail from the ACT to Woodlawn, and recyclables to other destinations such as Port Botany. Repairs and upgrades will be made to this rail siding with the help of a Fixing Country Rail funding allocating for up to $1 million grant from the NSW Government.

Should the approval of the RFT (now approved subject of DA201835108) not occur, CRS is able to transport the containers to landfill by truck. The impact of this has been modelled and would equate to an extra two trucks per hour of operation. Based on the AECOM assessment, this additional volume of trucks entering and leaving the site can be easily accommodated within the existing network, even with the proposed MRF functioning at maximum capacity.

[1] https://www.environment.act.gov.au/__data/assets/pdf_file/0007/576916/ACT-Waste-Strategy-Policy_access.pdf


BENEFITS
ENVIRONMENTAL
INCREASES RESOURCE RECOVERY (+60,000 TONNES P.A)
DIVERT WASTE FROM MUGGA LANE LANDFILL (TOWARDS 90%)
REDUCED LANDFILL GREENHOUSE GAS EMISSIONS
AVOID IMMINENT EXPANSION OF MUGGA LAND LANDFILL
ASSISTS IN MANAGEMENT OF ACT'S INCREASING WASTE (INCREASING 2% P.A)
SOCIAL
48 FULL-TIME, 10 PART-TIME + 80 CONSTRUCTION JOBS
POSSIBLE EDUCATION AND RESEARCH FACILITIES
PROMOTES ACT AS AN INNOVATIVE WASTE MANAGEMENT HUB
NO NET INCREASE IN VEHICLE MOVEMENTS ON ACT ROADS
ECONOMIC
DIVERTING WASTE FROM MUGGA LANE LANDFILL - EXTENDING ITS LIFE
REVITALISATION OF DORMANT RAIL FACILITIES
DIVERSIFICATION OF ECONOMY + JOB CREATION IN ACT
$50M PRIVATE INVESTMENT IN FYSHWICK

1.3 Proponent

1.3.1 Capital Recycling Solutions Pty Ltd

CRS is a joint venture formed between Benedict Industries Pty Ltd (Benedict) and Access Trading Company Pty Ltd (Access Recycling). Combined, these two companies employ over 300 people and have annual revenues more than $180 million.

CRS will deliver the MRF and separate Rail Freight Terminal (RFT). Veolia has indicated interest in providing rail access to the WBL for residue disposal.

1.3.2 Joint Venture Partners

1.3.2.1 Benedict Industries

Benedict is a Sydney-based and family owned quarrying, resources and recycling company. The company has been operating for some 50 years and has numerous quarries and recycling facilities throughout NSW. Benedict continues to expand into surrounding areas to further develop its core markets and opportunities. Benedict currently produces, markets, and/or recycles more than 2 million tonnes of products per annum.

1.3.2.2 Access Recycling

Access Recycling has been a leading supplier of metal recycling services to mining, rail and other heavy industries for the past 30 years. The company is well established in the eastern states of Australia, including NSW, ACT and South Australia; processing and exporting more than 100,000 tonnes of metals per annum.

1.4 Policy Background

The ACT Government has recognised waste management as an integral part of delivering a more sustainable Territory. To address this, the direction of waste policy objectives in the ACT has shifted from a focus purely on protecting population health and the environment, to also achieving sustainability through resource recovery. This progressive approach requires a transformation of the way the ACT manages waste.

1.4.1 ACT Waste Management Strategy 2011-2025

The ACT Government implemented the ACT Waste Management Strategy 2011-2025 (the Strategy) in 2011. The Strategy sets the management direction for the ACT towards 2025. The goal of this 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 (refer below) (and 29 strategies) that will enable the achievement of those outcomes:

1. *"Less waste generated"*
2. *"Full resource recovery"*
3. *"A clean environment"*
4. *"A carbon neutral waste sector"*

The ACT has nearly 2 tonnes per capita of waste generation and with a population expanding at an average rate of 1.6% per annum (2.2% in 2017), waste volumes are increasing, levels of recycling have plateaued which results in an increase in waste going to landfill. Worldwide, this issue has been intensely scrutinized, particularly over the last 15 years, where the TOTAL environmental outcome is now being prioritised.

To achieve all four outcomes, the solution will need to involve a sophisticated and proven level of recycling and waste processing technologies that will work in simultaneously to achieve the Strategy 2025 outcome of 90% waste diversion from landfill. The ACT Government outcomes are as listed below along with CRS's approach to achieving outcomes.

OUTCOME 1: Less Waste Generated

CRS considers education to be key in achieving outcome one. To do this, CRS proposes to house an onsite education centre/classroom with a coordinator. The coordinator's role will be to take neighbours, interested parties, schools and community groups for tours through the MRFs and terminal activities. The education centre will have a strong focus on the waste hierarchy, educating the visitors in 'reduce and reuse' before recycling, as well as showcasing the other technologies employed there. The learning programs will be appropriately developed to show that many of the materials received in the MRF could have been reduced or reused by households and businesses before being discarded. The core message will be that recycling begins at home therefore educating the young will bring about positive change.

CRS does not see MSW waste volume reduction due to increased household separation as a threat; rather, it will then create an opportunity to utilise the plant to provide recycling solutions for a wider regional area.

OUTCOME 2: Full Resource Recovery

The CRS proposal can assist in increasing the recovery of recyclable materials that currently go directly into the Mugga Lane landfill by focussing on processing two significant streams (MSW and C&I). A recovery of recycling or diversion and other post processing of at least 20% of the materials intended to be processed by CRS, would be a significant boost to recycling rates and contribute to achievement of this objective.

A significant element of the project will be to build the C&I and MSW MRF and associated infrastructure. It should be noted that the processed recycling of MSW waste is not widely done in Australia, but CRS recognises that the composition of the waste streams and the advances in recycling technology will make this worthwhile, particularly in the opportunity to separate organics and reduce landfill methane. CRS is proposing to process and sort MSW to maximise recycling and reuse. The sophisticated sorting equipment available today will utilise the latest in sorting and mechanical separation to achieve the best outcomes as well as create jobs.

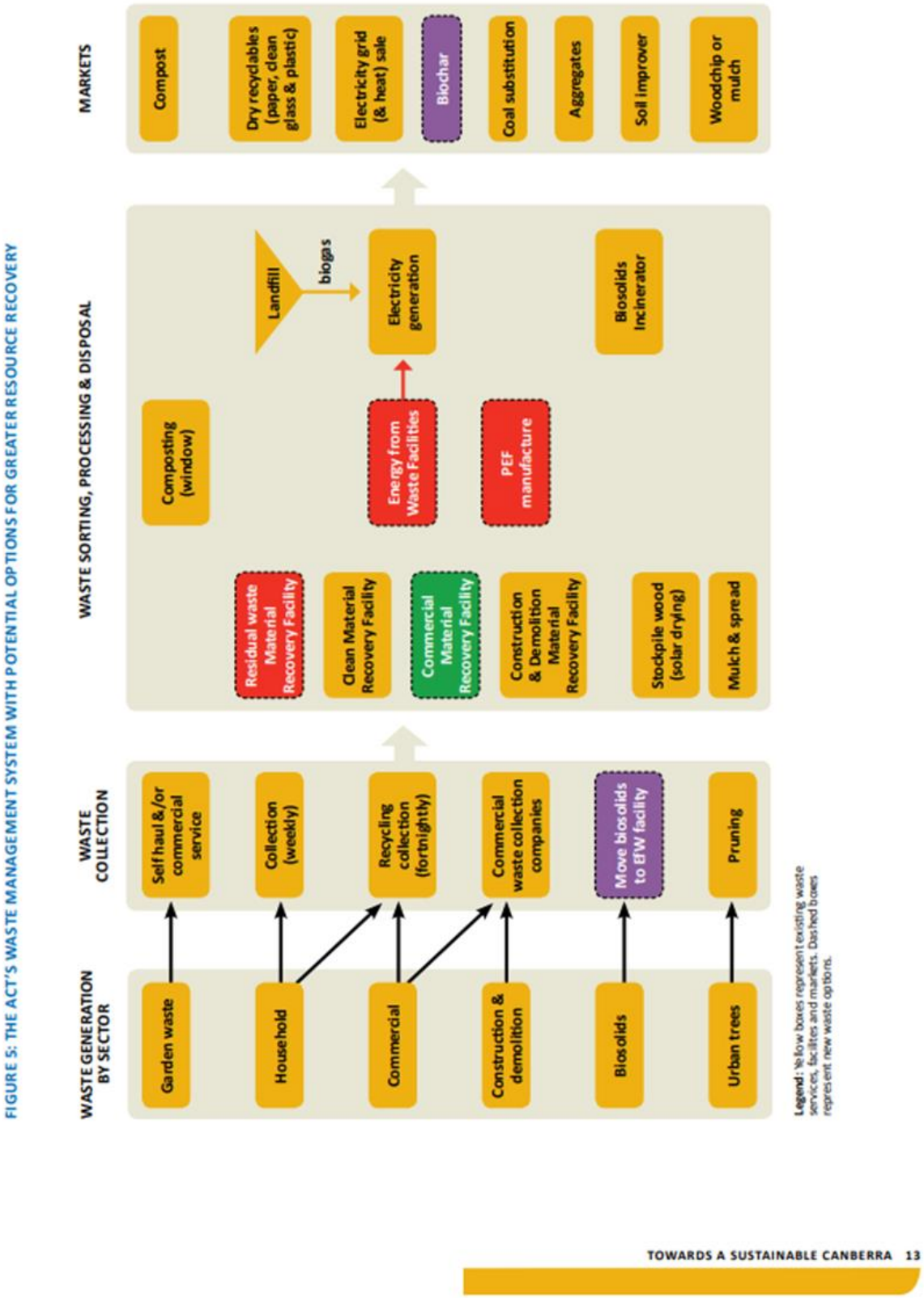
CRS supports quality green-waste and timber recycling and does not seek to influence that market, which is already functioning well in Canberra. It should be noted that there is significant greenwaste in the MSW stream (25,000 TPA – 2015 TCCS data room) and significant tonnes of timber currently go to the Mugga Lane landfill. Some of this wood material may have recycling and reuse potential.

The advanced C&I and MSW MRFs will engage best-practice sorting technology to ensure that all commonly recyclable materials are recovered. For this reason, CRS have chosen to construct two separate and different processing lines within the MRF, specifically designed to cater for the respective C&I and MSW waste streams simultaneously but separately.

A key factor in determining whether a commodity is commercially recyclable is cost. CRS will achieve economies of scale with the proposed MRF systems. Supporting this will be onsite baling and waste containerisation equipment to enable direct-to-market exports without the need for further processing by others. To reduce the cost of doing so, rail freight direct to eastern seaboard ports and reuse markets will be utilised.

Potential options have been incorporated in the ACT Waste Management Strategy 2011-2025 (see **Figure 1**). This Strategy has been in place for the duration of CRS's planning process and the latest Waste Feasibility Discussion Paper (WFS) was introduced in May 2018 after the CRS proposal went on public exhibition. Opportunities and requirements for recycling were identified, and it suggests that potential facilities could include an MSW material recovery facility, Commercial material recovery facility, Process Engineered Fuel (PEF) facility and energy from waste facilities. The CRS proposal aims to implement two of the facility types identified in the ACT Government policy.

Figure 1: ACT waste management system with potential options for greater resource recovery



Source: ACT Waste Management Strategy 2011-2025 p.13

OUTCOME 3: A Clean Environment

CRS's proposed MRF technology is a low risk, simple and proven approach to environmental management. There are many MRF systems already operational in Australia and the advanced versions that CRS proposes are utilised around the world as the recovery of resources has been a sophisticated endeavour for the last 30 years. Targeting waste streams that go direct to landfill is a logical way to ensure that valuable resources are not discarded. This is complementary to source separation and will ensure maximum recovery. It must be remembered that recycling gets more complicated by the time waste is in the back of a truck and effective separation will require a combination of proven technology and manual sorting to separate and capture useful resources and ensure that only non-recyclable waste residues are landfilled.

The transfer of waste residues to the Woodlawn Bioreactor will ensure that the waste that is landfilled will be deposited into a fully engineered landfill (old quarry) that was engineered, and leachate lined from its inception. This will ensure the capture and containment of any leachate as well as contribute to the capture and conversion of landfill gas for electricity.

The creation of a rail terminal (separate DA) will enable container transport via rail from Canberra which has been difficult to achieve to date. The opportunity to remove diesel trucks from the greater regional road network will assist in improving the environment by negating their impact.

OUTCOME 4: Carbon Neutral Waste Sector

The reduction of GHG is a benefit of the CRS proposal as it is expected that there will be more than 20% recovery which will assist in reducing Landfill GHG emissions. The proposed recycling process is targeting the unrecycled proportion of ACT's waste stream that goes directly to landfill. Any removal of organic materials (wood, paper, cardboard, greenwaste, food waste) will reduce methane gas production which will assist in achieving this outcome.

CRS is investigating the inclusion of Solar PV and battery technology on the roof of the facility to further reduce GHG and promote renewable energy in the ACT.

1.4.2 ACT Waste Feasibility Study 2015

The ACT Waste Feasibility Study was established in mid-2015 to investigate how best to reduce waste generation, maximise resource recovery, minimise littering and illegal dumping, and achieve a carbon-neutral waste sector.

Drivers of the ACT Waste Feasibility Study include taking a regional approach to waste management, forming partnerships with relevant stakeholders, investing in waste management, research and technology, ongoing communication and education with the public, collecting data regarding waste management, and managing appropriate legislation.

The CRS project has been developed with the Study's recommendations being central to the proposal.

1.4.3 ACT Government Market Sounding 2017

On 20 February 2017, the ACT Government released a market sounding for waste management in the Territory.

The objective of the market sounding is to enable the Territory to set higher standards for resource management. Specifically, the Territory is wishing to consider waste solutions that:

A. Increase resource recovery and reduce waste to landfill (outcomes 1 and 2 of the Strategy);
B. Minimise environmental impacts and greenhouse gas emissions (outcomes 3 and 4 of the Strategy);
C. Improve social outcomes; and
D. Represent value for money.

The scope of the market sounding comprised four parts:

1. Collection
2. Processing
3. Excavated material
4. Advisory services

Suppliers were invited to respond to any or all the above components. CRS made a submission, in April 2017, in response to the market sounding request and the focus of that submission was in relation to "Part B – Processing", which aligns with CRS's core capability and experience.

1.4.4 Waste Feasibility Study Discussion Paper – Roadmap and Recommendations - May 2018

This discussion paper was released in 2018 after the Draft EIS went on exhibition. It has been referenced by ACT NoWaste, EPSDD and in some submissions to the Draft EIS. The relevant strategic ideas are now included as it pertains to CRS. Below is a statement in relation to the Roadmap itself. Responses to the response submission made by ACT NoWaste are contained in Appendix R.

The ACT Minister for City Services, Meegan Fitzharris MLA, makes the following comments in the Waste Feasibility Introduction:

> *"The strategy includes the aspirational targets of 90 per cent of waste being diverted from landfill by 2025 and a carbon-neutral waste sector by 2020.*
>
> *However, the Territory's resource recovery rate has plateaued at around 70 per cent for the last decade, and the waste sector is unlikely to be carbon neutral by 2020 under current management practices."* (p5)

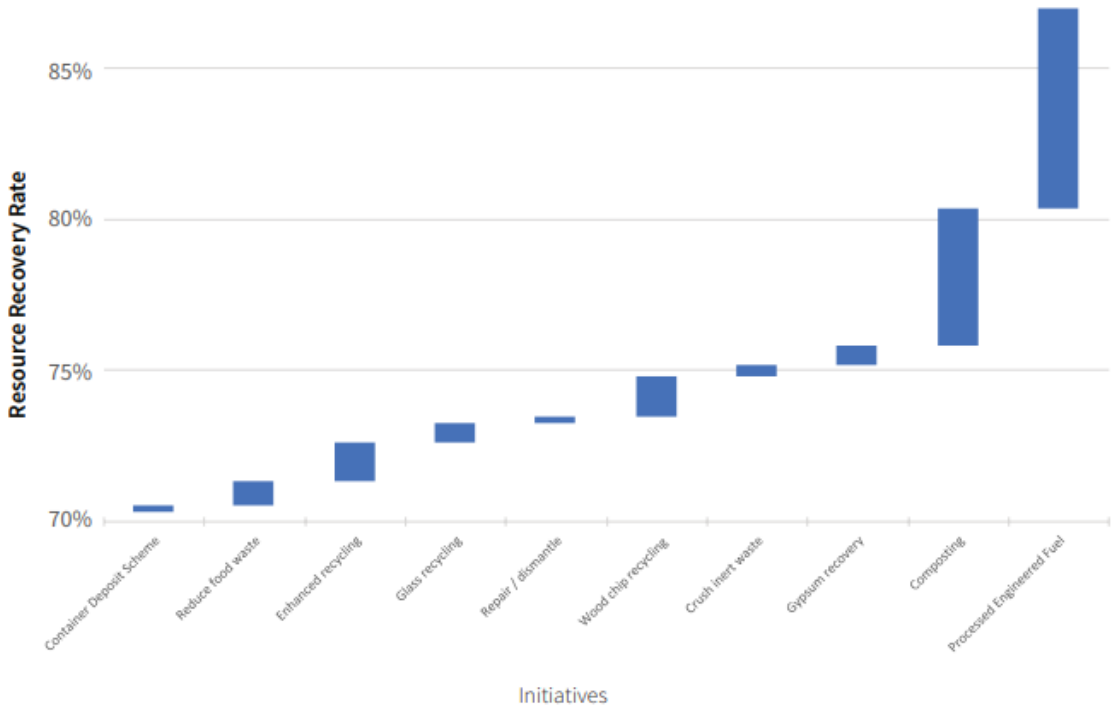
The discussion paper suggests that the implementation of the Roadmap will require some *"$5-$10 million per annum"* (p34) and is working on the *"assumption that the majority of the initiatives would be carried out on behalf of the Territory by the private sector"* (p34) CRS is offering to privately fund, construct and operate a facility that can deliver many of the strategy items identified by the ACT Government as necessary. This would add some $50-$60 million of capital investment that the ACT does not need to fund and has clearly identified that it will need.

This Roadmap is initially heavily focussed on the removal of organics from landfill, and the Roadmap identifies that this will again take significant time to implement (5 years). There is no specific solution (only *"investigation"* or policy development) being proposed for the commercial and industrial waste stream which is the biggest proportion currently going to Mugga Lane landfill.

CRS acknowledges that the removal of organics will reduce landfill and methane production. Source separation of these organic materials will achieve diversion, but it is unlikely to capture all the material possible – e.g. Multi-Unit developments (MUD's) will not be as effective at source separation and will need some level of separation.

CRS believes that there is no reason that the Roadmap recommendations cannot be delivered in parallel (especially if the funding is not from the taxpayer) and therefore the prospect of achieving the targets set by Government may be achieved faster. The Roadmap initiatives diagram (see below p.10) indicates that the biggest outcome for the ACT would be to tackle the biggest diversion opportunities – composting (FOGO) – 40,000 tonnes and PEF – 70,000 tonnes (produced from the waste after food waste and inert wastes are removed) to significantly increase the diversion from landfill.

Figure 2: The Roadmap - key projects and initiatives (Waste Feasibility Study)



Source: ACT Waste Feasibility Study Discussion Paper – May 2018 p.15

The current ACT Waste Management Strategy 2011-2025, upon which CRS has relied, is now overlapped by the Waste Feasibility Study. ACT NoWaste still acknowledges that it is the *"the key strategy for managing waste in the Territory"* (ACT NoWaste section 3 of their EIS submission) CRS has made the following submissions since February 2017:

- Market Sounding response (Feb 2017)
- Scoping for MRF and WtE (May 2017)
- Scoping for MRF (Nov 2017 – Jan 2019)
- EIS for MRF (May 2018)

ACT NoWaste, at no stage, has offered any commentary or contradiction to the CRS ideas or proposals despite the ACT Waste Management Strategy 2011-2025 showing their need. ACT NoWaste has been formally involved in consultation at every stage of these submissions and supplied the data from information for the Market Sounding process, upon which CRS has relied.

Since lodgement of the Draft EIS in May 2018 the ACT Government has released the Waste Feasibility Study RoadMap and Recommendations as a discussion document. CRS has been asked to consider how its proposal will work within the recommendations of the Roadmap.

The CRS proposal can deliver short term organics diversion from landfill and in the long term, even if there is a FOGO collection program and facility, Food and greenwastes that are not source separated could be separated and diverted to the FOGO facility. This could include processing waste from multi-unit dwellings (MUD's) that do not have the opportunity to source separate as efficiently and single unit dwellings (SUD's).

CRS could adapt its sorting processes in the future to create, for example, a specified PEF product (as suggested in the WFS) from the high calorific waste residues that are going to landfill. This PEF material

could then be railed to relevant markets outside the ACT as is suggested in the Roadmap. However, PEF processing is not part of this application.

CRS has targeted the processing of two specific waste streams that currently go directly into landfill. CRS does not seek to stop or inhibit ACT government recycling initiatives and is more than willing to work within the system as it evolves.

CRS believes that the location of the proposed CRS facility is perfectly central to future intensification and future urban growth. The rail line will become more important as the population grows and as the CRS facility is not the final destination for the waste material its location near the source of the waste generation is optimal.

CRS has addressed specific Draft EIS comments from ACT NoWaste in its response to Government submission responses – See Appendix R.

1.4.5 Mugga Lane Resource Centre Management

The Mugga Lane Resource Management Centre, in Hume, currently receives virtually all of Canberra's landfilled waste. The Mugga Lane landfill provides some recycling opportunities but much of the waste going directly to the tip face. This is not processed and is reliant on separation of materials at source. The direct landfilling of this waste currently represents a missed opportunity for higher order uses for MSW, C & I as well as "light" fractions of C & D waste recycling.

ACT NoWaste have advised that the "*combination of current and under construction capacity of the Mugga Lane main landfill (referred to as Stage 5) was estimated to last until 2030" The "amount of waste going to the Mugga Lane main landfill has averaged around 240,000 tonnes per annum"*, This is less than the " 309,000 tonnes per annum recorded in 2015 – Market Sounding data room provided to industry). Expansion of this facility has received EIS approval and subject to a series of development applications. This will require significant capital and technological investment by the ACT Government.

Expanding the landfill facility will not help facilitate the achievement of the ACT Waste Management Strategy's outcomes nor encourage an innovative solution to waste management in the ACT. Notwithstanding this, there will always be a requirement for some landfill for wastes such as medical incinerator residues and asbestos. The benefit to the ACT of the CRS proposal is that Mugga Lane landfill can remain open as a facility with significant longevity and a fixed footprint to deal with the smaller amounts of the wastes that require this disposal option.

The proposal would allow for the processing of recyclables from some 90% of the current C&I and MSW waste going to Mugga Lane landfill within 18 months of an approval, subsequently extending the life of the Mugga Lane landfill.

2.0 Proposal Details

2.1 Objectives and justification

The objective of this EIS is to establish the environmental circumstances involved in the construction and operation of the MRF component of the CRS project. The RFT construction component is being dealt with as part of a separate DA process (DA201835108, approved in June 2019).

The proposed MRF incorporates the waste receival and materials recovery building, including the waste processing equipment and container loading equipment. The separate DA proposal for the RFT includes the associated hardstand, siding, access carriageways and utilities for the rail terminal on the adjacent rail corridor on part of Block 11 Section 47 Fyshwick.

Waste that is diverted to this facility will be tipped and sorted within the proposed building, using either the MSW or the C & I sorting process. Both are designed to recover and divert the maximum amount of reusable materials which would include: -

Paper/cardboard
Various plastics
Whole containers (glass and plastic)
Metals
Inert materials
Organics and timber
Other materials that have a specific reuse market (plasterboard, E-waste etc)

The materials that are recyclable and recovered will be compacted (where possible) and transported to either local/regional reuse markets (25%) and to specific rail ports by train (75%).

ACT domestic waste production has increased per annum as the population is growing at an average of 1.6%per annum. The population growth between 2014 (386,000) and 2017 (415,900) was some 30,000 persons (ABS.Gov.au). based on the National Waste Report 2016 of waste generation per capita in the ACT of 1,998kg per person, it is calculated that the volume of waste generated has increased by some 60,000tpa across that period.

Education and changing habits for waste generation is touted as a fundamental component for increasing recycling rates. Considering current recycling rates, education alone cannot solve the entire problem by changing what we consume and how we dispose of it. To this end we believe that solutions such as the one proposed combined with education and additional recycling initiatives will be integral to land fill diversion and resource recovery rates increasing.

The major benefit of the proposed advanced MRF is that although recycling rates are not increasing or matching the rate of annual waste creation, recyclable items can still be captured and recycled. Thus, reducing the burden of lower recycling rates and recovering at least an additional 20% of recyclables (that are clearly difficult to separate) which currently are going directly into the Mugga Lane landfill.

The site CRS has selected is centrally located and ideal for the proposal. Fyshwick was the only potential site available in 2015 that can integrate rail and waste management as well as provide a regional solution without increasing traffic on the wider road network. CRS does not require the ACT Government to surrender land to facilitate such a solution as CRS are already the lessee of Block 9 Section 8 Fyshwick, is seeking to purchase Block 11 Section 8 and has a 20-year lease over part Block 47, Section 11 from the railways.

2.2 The Site

The subject site has been disused since 2010 when the Shell fuel facility shut down; the built components of this facility remain on site. Development of this project will see the existing dormant infrastructure (large storage tanks, pumping facilities and ancillary sheds) demolished except for utilities including a high capacity firefighting system. The site has already been remediated to standards that allows this type of development and an independent site audit conducted by GHD which has endorsed the site as suitable for commercial/industrial land use as per the existing IZ2 zoning (excluding Child care, Community activity centre, religious activities and educational establishments). The audit endorsed the EMP created by Environmental Consulting Services for the generic use of this site for those purposes subject to any subsequent specific development application detail. There is not deemed to be any off-site pollution hazard.

WSP, as part of this application process, have analysed the previous remediation works (to a level to allow commercial and industrial activity in the zoning as outlined above) and the audit process. WSP have now prepared a specific contamination management report pertaining to the specific proposal, outlining the implementation of the EMP in the construction phase and have recommended mitigation measures, a summary of key findings and mitigation measures is at Section 6.0.

Current road access to the former Shell Site is via Ipswich Street. Part Block 11 Section 8 is accessible from Lithgow Street. The site is approximately 350m from the south-bound connection to the Monaro Highway via Ipswich Street, and approximately 750m from the north-bound connection via Ipswich and Newcastle streets.

2.2.1 Locality and Zoning

The subject site is located at 16 Ipswich Street in Fyshwick and is referenced as Block 9 Section 8 (2.06ha) and Block 11 Section 8 (1.2ha) (see **Figure 4**). The site is located approximately 6km south-east of Canberra CBD, and 7km north of the Mugga Lane landfill facility.

The site is within the industrial suburb of Fyshwick and is zoned IZ2 – Industrial Mixed Use. A key feature of the site is the adjacent "South Shunt" rail siding which falls within Block 11 Section 47 Fyshwick (**Figure 3**). This shunt provides direct access to the ACT and NSW Rail network. The proposed rail connection will be situated wholly in Block 11 Section 47 Fyshwick and the construction is subject to a separate DA (DA201835108, approved in June 2019).

Figure 3: Site locality

Adjacent uses include bulky goods retail to the south west and north east and industrial trade supplies to the south. Block 13 Section 8 shares a common boundary with the subject site and is a metal recycling facility leased by Access Recycling. Access Recycling is one part of the partnership that formed CRS and will utilise the rail shunt on Block 11 Section 47 for distribution of recyclable exports to Asia.

Acquisition of Block 11 Section 8 will facilitate vehicular access to the subject site via Ipswich Street. This is a necessary arrangement to reduce external traffic impacts and to improve internal site circulation. Further information on traffic impacts and mitigation measures is provided at section 6.2.

Figure 4: Cadastral plan

Figure 5: The South Shunt (Block 11 Section 47)

2.2.2 Crown Lease

A 99-year Crown Lease was issued for Block 9 Section 8 Fyshwick on 9 July 1981 under Volume 832 Folio 21 of the Land Title register. The lessee of the subject site is Capital Recycling Solutions Pty Limited who purchased the site in 2016. The Crown Lease permits use of the site for the following purpose/s:

> *"(a) To use the premises only for the purpose of an industry or industries (other than a noxious trade) and for any purpose subsidiary to such industry or industries provided that not more than one residence shall be erected on the land"*

It is considered that the proposed use is consistent with the lease as the proposed facility is not a noxious trade. A noxious trade is not defined under the Territory Plan but is understood to be an offensive use that carries with it a high risk of pollution and/or environmental degradation. It is considered that a successful EIS process will confirm this assessment, given that the process is considered safe, and is conducted throughout the world in populated areas.

The EPSDD defines as follows:

> *"Industry" (p12 – Definitions): "means the use of land for the principal purpose of manufacturing, assembling, altering, repairing, renovating, ornamenting, finishing, cleaning, washing, winning of minerals, dismantling, processing or adapting of any goods or any articles"*

CRS considers this to be a very broad and encompassing definition which the proposal satisfies by its aims to sort waste for *"winning of minerals"* and *"processing"* and "*adapting of any goods or any articles*" for recovery rather than landfill. Goods and articles are not defined but the fact that materials are being processed for recovery and reuse suggests that the broad intent is being satisfied.

There are no other relevant restrictions or conditions detailed in the Crown Lease.

The rail component of the proposal will be situated wholly in Block 11 Section 47 which is unleased Territory Land licensed to Transport for NSW. CRS have been granted a 20-year sub-licence to access and utilise a siding connected to the main line for general freight on part of this block which is zoned TSZ2 – Services Zone.

2.2.3 Adjacent Uses and Geomorphic Features

The subject site is located within an industrial zoned area and many of the adjacent land uses are industrial or bulky goods retail based.

Adjacent lessees are unlikely to be adversely affected by the proposed MRF. The MRF component will be conducted entirely within the MRF building and is proposed to utilise the adjacent RFT on part Block 11 Section 47 Fyshwick for container handling and storage by way of forklift.

Immediate neighbours to the site include two storey commercial buildings located at 3,5,7 & 9 Wiluna Street which house office and auction activities. The buildings are all oriented to Wiluna Street and Ipswich Street and don't "overlook" the site. The other adjoining activities include a large block subdivided for tenants that include Tiger Waste, C&D waste processing and truck depot, Canberra Firewood supplies and the Access Recycling yard, which processes metals. These three activities are all accessed via Lithgow Street. The proponent has conducted discussions and information dissemination with near neighbours as part of its consultation process (see Section 2.4). The proposal has been modified based on those communications.

Stringent odour management controls will be in place to ensure that adjacent lessees are not negatively impacted by the proposed MRF facility (see Section 6.8.4and 6.8.4.2).

The Access Recycling site (1.58ha) adjoining (Block 13 Section 8) could be used for ancillary recycling activities in conjunction with the proposal if necessary. This site has the largest common boundary of

some 230m. The utilisation of the access recycling site could be used for the further processing of fines, metals, aggregates and glass wastes if additional space was required.

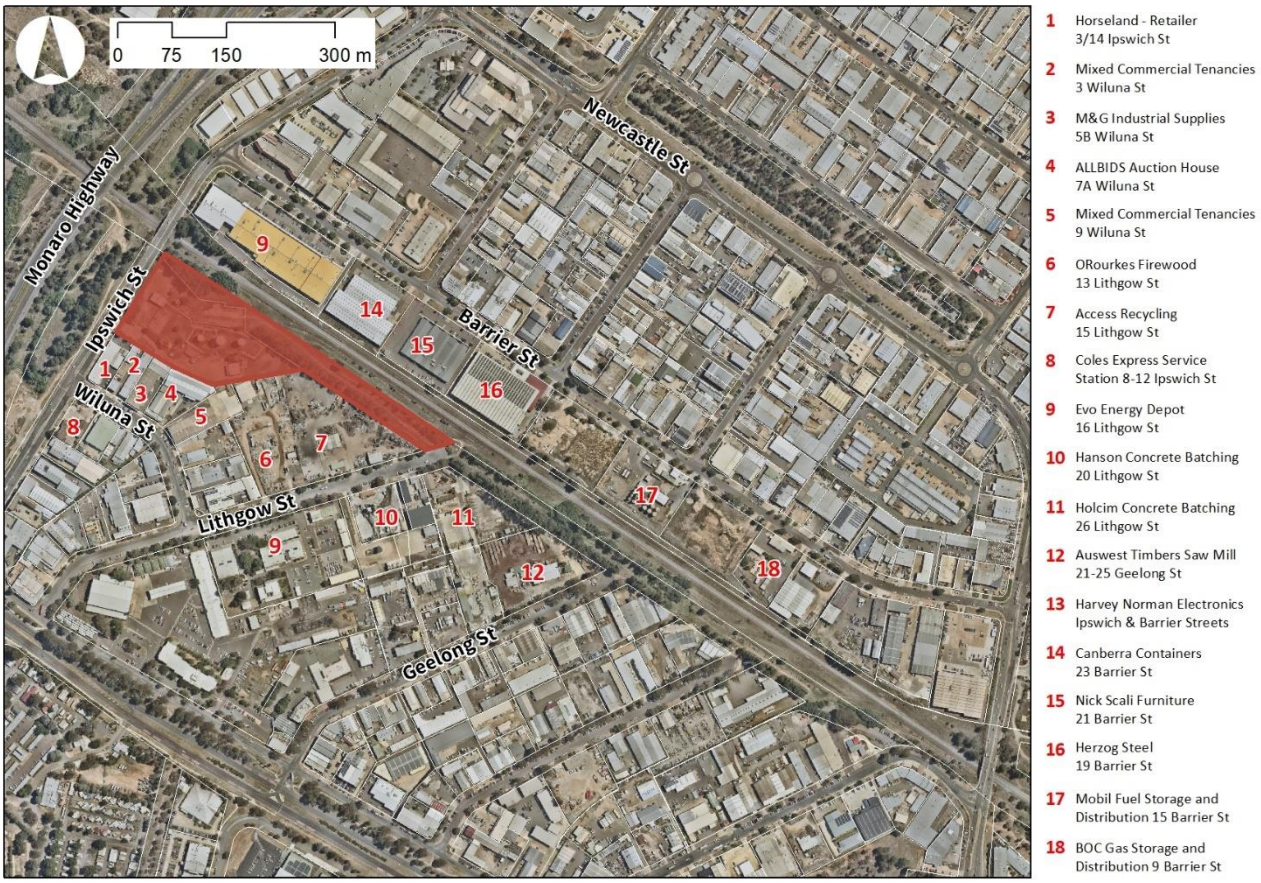
To the North is the railway easement that is bordered by the large Harvey Norman Outlet at 33 Barrier Street. This outlet has some 225m of frontage to the other side of the rail easement and it's notable that the southern side (rear) of the Harvey Norman site (facing CRS) is used for fire doors and stairs and goods pick-up. There are no windows or other openings facing the site except fire doors.

Other buildings that are located to the North of the site are a large warehouse at 23 Barrier Street, Nick Scali, and Bing Lee at 21 Barrier Street and the Herzog Steel warehouse. All these properties are oriented to face North onto Barrier Street and do not have windows or other openings facing the subject site.

To the West are the four lanes of Ipswich Street and then the elevated Monaro Highway which runs in parallel to Ipswich Street. Both these elevated structures provide significant visual and noise screening from the central part of Canberra, Kingston, Kingston Foreshore, Lake Burley Griffin, West Fyshwick, Narrabundah and the Jerrabomberra Wetlands to all the proposed ground-based activities.

Other land uses near the subject site include many one and two storey commercial and retail activities. Several production type activities are close to the proposed site and are indicated at Figure 6. There are also numerous other recycling and waste related activities already located throughout the Fyshwick precinct.

Figure 6: Adjacent and nearby land uses



The nearest residential areas of Narrabundah and North Symonston are to the south of the subject site (refer **Figure 7** below) and their proximity has been considered in the emission modelling study (see Appendix I). The distance from the proposed advanced waste management facility to the nearest residence at the Canberra South Motor Park in North Symonston is approximately 450 metres. The nearest house in the nearest residential suburb of Narrabundah is in Matina Street, approximately 630 metres from the subject site.

In addition, there is a caretaker's residence amidst the industrial zoned land approximately 110m boundary to boundary on the southern side of Wiluna Street and around 140m from the proposed MRF building.

Figure 7: Proximity to residential areas

2.2.4 Watercourses

There are two water courses within two kilometres of the subject site (**Figure 8**). Jerrabomberra Creek runs to the west of the site and is located some 500m away. The Molonglo River is approximately 1.3 km north of the site on the far side of the Fyshwick industrial precinct and the ridge along Newcastle Street.

The site has a gradual fall from the east (Lithgow Street) to the west (Ipswich Street).

It should be noted that the external surfaces on site will be connected to the stormwater system and not exposed to waste processing activities. The internal MRF surface will be connected to a leachate collection tank and appropriate sewer connections will exist for other wastewater. The site currently, post remediation, has no cohesive catchment or management system, so the proposal will be a significant improvement on the existing situation.

Figure 8: Location of watercourses

2.2.5 Ecological

The site is in a dedicated and mature industrial area of the ACT/Canberra. This part of Fyshwick is not considered to be important in maintaining existing natural processes or natural systems of the ACT; does not exhibit any unusual richness of diversity of flora, fauna or landscapes, or endangered species; and does not contribute to a wider understanding of the ACT's natural history. This industrial site has been heavily used in the past, is currently substantially disturbed and there are numerous residual structures and services that, while remediated are still abandoned on site.

There are several mature non-native trees within the subject site. The subject site contains very little native vegetation or regulated trees. The rail siding is overgrown with weeds and grasses. The natural environment is considered highly modified and degraded as Block 9 Section 8 is almost completely concreted or asphalted. The subject site also has significant gravel and sand areas as part of the previous onsite siding works. Non-native pine trees have been planted in two lines along Block 11 Section 8. There are also some non-native willow trees in the north-west corner of the subject site and on the railway, easement propagating naturally.

The following provides a snapshot of the environmental conditions surrounding the site and in the precinct:

- Moderate Habitat colonisation potential along the rail line and in open areas around the site
- No heritage items or objects in immediate area
- No registered trees in vicinity of site
- Striped Legless Lizard within 900m of site
- Earless dragon within 1.5km of site
- Button Wrinklewort within 1.9km
- Natural Temperate Grasslands within 2.00km
- EPBC Woodlands within 2.9km
- Box Gum Woodland within 2.9km
- Golden Sun Moth within 1km
- Perunga Grasshopper within 980m

2.2.6 Heritage

A formal heritage assessment was not required by the scoping request. It was advised that the ACT Heritage Council considered that the "*proposed development is unlikely to damage any Aboriginal places or objects, and that no heritage assessment is required as part of the EIS scoping document*". The site is already highly disturbed and is also predominantly covered in existing structures and bitumen/concrete.

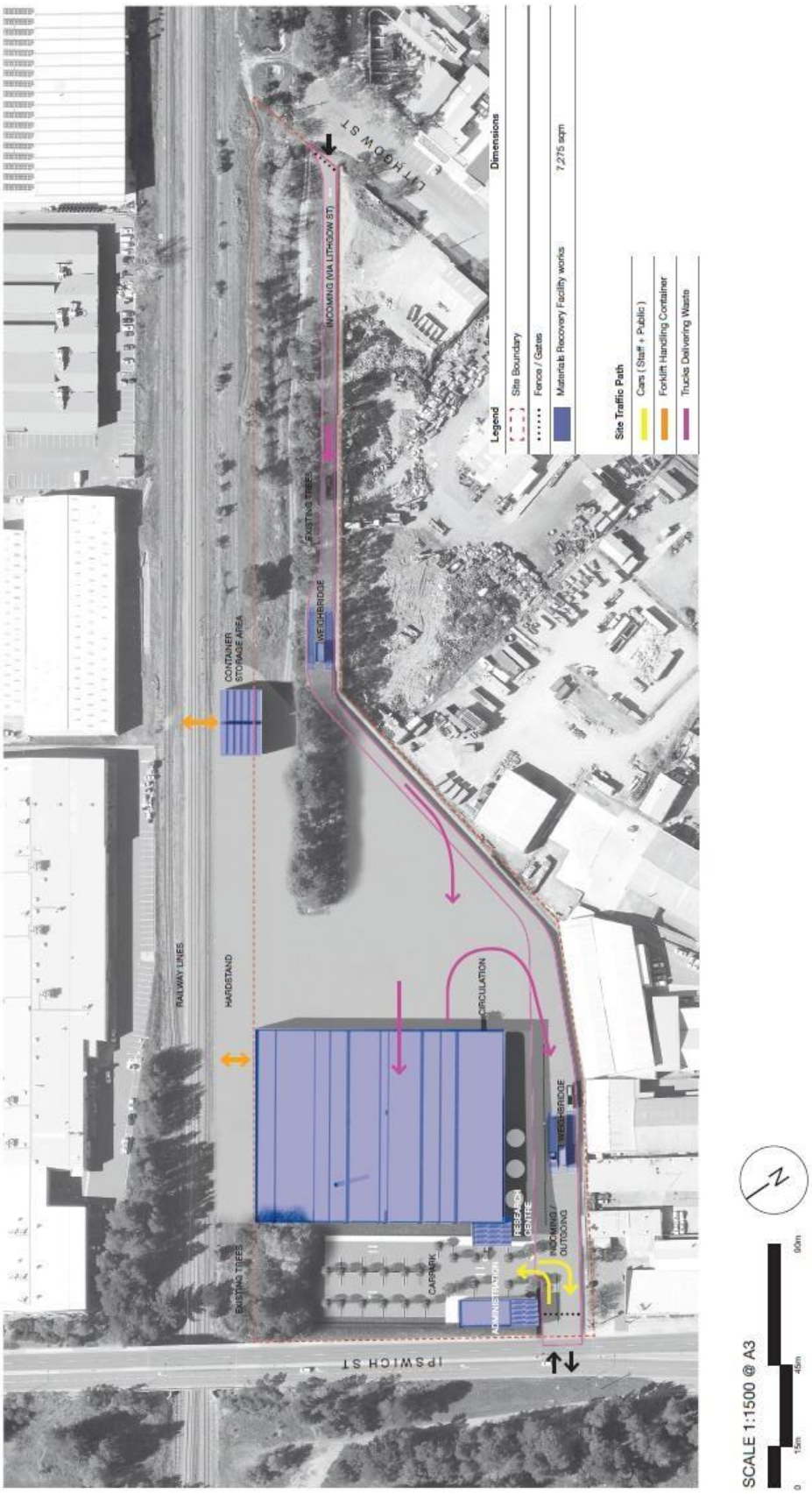
2.3 Project Description

CRS propose a Waste management solution using advanced recycling systems that would significantly contribute to achieving the goals set out in the Waste Management Strategy and Waste Feasibility Study discussion paper. The proposal includes the following features:

- A centrally located recycling facility for the receival of municipal, commercial and industrial waste;
- MRF building design to capture noise, odour and leachate and will have a capacity to process a maximum 300,000 tonnes per annum
- Two separate processing lines for MSW and C & I waste inside the MRF building;
- Capacity for the baling and containerisation for export of commercially viable recyclable materials;
- The site will contain two access points – one on Ipswich Street and one on Lithgow Street. This will allow waste vehicles to enter either via Ipswich or Lithgow Streets (depending on direction) and exit via a signalised intersection onto Ipswich Street (north and south) – twin weighbridge locations at both will mitigate any potential vehicle queuing and reducing the overall impact to existing traffic and improve safety.
- Administration will be housed in an existing building adjacent the site entry off Ipswich Street. On-site light vehicle parking will be provided;
- The site will not be 'open to the public' other than for pre-arranged tours for educational purposes during office hours.
- Small household loads will not be accepted.

Figure 9 shows the indicative site layout for the proposal.

Figure 9: Proposed site layout with indicative vehicle access and paths of motion



Source: Rothelowman

CRS has given significant attention to aesthetics and amenity in the exterior design of the facility. Consistent with many new developments in the Fyshwick area and others nearby such as the Canberra airport, CRS intends to create a series of buildings that are admired, not only for their environmental outcomes but for their clean, modern appearance.

CRS proposes buildings of a scale and appearance consistent with surrounding developments. The site will house buildings for the receival, recycling and baling/containerisation of products. The ventilation stack will extend some 21m above finished ground level (9m above the building roof), located as shown in

Figure 10, Figure 11 and Figure 12 below. All the waste handling activities will occur internally, thereby screening them acoustically and visually from surrounding premises as much as possible. CRS will also be installing fast closing vinyl doors on its main processing building as well as creating a negative pressure environment within the building. This will ensure odour and any other hazards are not an issue to surrounding industrial and residential areas.

Figure 10: View from Ipswich Street

Figure 11: View from Ipswich Street Driveway

Figure 12: Aerial view of the proposed facility

Source: Rothelowman

2.3.1 Waste Composition

CRS has identified two key waste streams, currently going directly to Mugga Lane landfill, that have the potential to be processed with recyclable materials recovered and or diverted from landfill. The data utilised has been extrapolated from TCCS market sounding waste composition audit information, made available in 2017.

The proposed composition of the MSW and C & I waste specifically targeted for recycling can be seen in Table 1. This table indicates that conservatively some 24.5% can be recovered from the targeted waste streams going to Mugga Lane landfill. CRS has assumed that a 40% recovery rate for each of the targeted materials (in grey in Table 1) and therefore assumes that the residual 60% is either contaminated or unable to be recovered.

CRS has been conservative in its proposed 20% recovery rate and recognises that there may be other initiatives in the future waste management environment within the Territory that may affect the targeted composition – this is normal in the industry. For the purpose of this EIS, CRS has made reasonable estimations that the overall 20% or better recovery rate is achievable. Currently CRS is close to achieving more than 85% recovery from its C& I and C & D processing at the Chipping Norton facility in Sydney.

CRS is predicting 40% recovery of the C & I waste in the proposed Fyshwick facility and is very optimistic that higher recovery rates can be achieved. Whilst the recyclability of the MSW stream may be more complex due to contamination the recovery from the C & I should exceed 40 % of its weight, therefore the overall combined recovery tonnes should be more than 20% as predicted. It should be noted that the listed Wood in the C & I column is approximately 50% of the total modelled timber going to landfill, of which 40% of that 50% would be conservatively recovered.

ACT NoWaste has confirmed in its Roadmap document that the “Kerbside bin audits reveal that up to 37% of ACT household rubbish bin contents are food waste and 25% recyclables” (p34 of Roadmap).

The 90% diversion refers to waste deemed worthy of processing for the recovery of recyclable materials in the potential MSW and C & I waste streams currently going to Mugga Lane Landfill. CRS use the compositional analysis of the breakup of wastes provided in the market sounding study by TCCS, to ascertain the waste profile and which of the waste would be targeted for recovery. CRS excluded waste such as contaminated soils and asbestos and 50% of the timber as being contaminated.

The recovery rate of 20% relates to the conservative overall target of processing the targeted waste at the proposed CRS MRF. As specified in Table 1, CRS will target in its sorting some 40% recovery from specific material volumes as an average:

MSW Composition:

- Paper 13.3%
- Organics 13.4% (may reduce with separate collection service
- Glass 4.1%
- Plastic 10.6%
- Metals 2.4%
- Inerts 2.4%

C&I Composition:

- Paper 8.4%
- Organics 2.7%
- Glass 1.9%
- Plastic 6%
- Metals 1.1%
- Inerts 38.9%
- Wood 8.5% (50% of total still to landfill)

CRS would expect the recovery rates to be higher than 40% for inert and metals and contamination may see other materials lower than 40%. CRS has averaged the recovery across the board of these targeted materials.

If ACT NoWaste was to continue to send red lidded bin waste (general municipal waste) to Mugga Lane landfill, then the recycled percentage may well rise above 20% as there is less wet and contaminated waste. It will be drier and easier to process and sort from the commercial streams. In this scenario the potential diversion rate from Mugga Lane landfill would be significantly reduced.

In Sydney, Benedict Recycling processes over 1,000,000 tonnes per year of Commercial and C&I waste and has done so for the last 20 years. Benedict Recycling is aware of the cost of landfilling versus recovery/recycling/diversion opportunities and runs a separate materials supply business with various recycled blends for reuse purposes. Benedict Recycling was Sydney's biggest glass processor before industry issues changed the market. Currently, Benedict Recycling is a processing business (not supported by collection contacts) and operates successfully in receiving waste, separating, sorting and finding markets for non-landfill residues.

Landfill is very expensive in NSW and if a levy is introduced then the motivation to recover/divert/ recycle will be greater than it is currently.

The CRS facility will be licenced, and the appropriate regulator can monitor the incoming/outgoing data that will have to be submitted. Other factors such as a levy, which are beyond CRS's control, will have an impact as well as other policy initiatives by ACT NoWaste (such as any FOGO and/or Green waste collections), or other facilities approved in the Territory. CRS has always operated in a commercial environment and will adapt to all the recycling market technologies, conditions and circumstances, as required.

The destination "end market" component of the proposal is a part of everyday business. The market component of the proposal is commercial in confidence. However, CRS is constantly seeking and developing connections and pathways to recycling markets as a constant component of the company's operations.

Table 1: Waste Composition and Predicted Recovery

Potential Waste Profiles Diverted from Mugga Lane in 2020

ACT MSW Profile			
	Category	%	Tonnes per annum
1	Paper	13.3	12,103
2	Food	37.7	34,307
3	Organics	13.4	12,194
4	Textiles	4.9	4,459
5	Glass	4.1	3,730
6	Plastic	10.6	9,646
7	Liquidpaperboard	0.3	273
8	Nappies	6.1	5,552
9	Metals	2.5	2,275
10	Hazardous	0.5	455
11	Inerts	2.4	2,185
12	Other	4.2	3,822
Total		100	91,000
High Recycle Potential Material			42,132
Possible recovery =		40%	16852

ACT C&I Profile (inc C&D "LIGHTS")			
	Category	%	Tonnes per annum
1	Paper	8.4	17,640
2	Food	7.7	16,170
3	Organics	2.7	5,670
4	Textiles	2	4,200
5	Glass	1.9	3,990
6	Plastic	6	12,600
7	Electric/insulation	0.6	1,260
8	Garbage bags	21.7	45,570
9	Metals	1.1	2,310
10	Hazardous	0.5	1,050
11	Inerts	38.9	81,690
12	Wood	8.5	17,850
Total		100	210,000
High Recycle Potential Material			141,750
Possible recovery =		40%	56,700

73,552 tpa

301,000 tpa

= 24.4% overall recovery

Legend:

- Potentially recyclable

2.3.2 CRS Waste Processing and recovery opportunities

The facility has been modelled at a maximum throughput capacity for 300,000 tonnes per annum of both unrecycled raw wastes and residues from other recycling processes. This will allow for the appropriate environmental assessment and allow for the growth of the population and consequent waste generation over time. While the commercial viability does not require 300,000Tpa CRS feel that it is best to make this the "worst case" outcome for EIS modelling and assessment.

Figure 13: Internal Building Layout

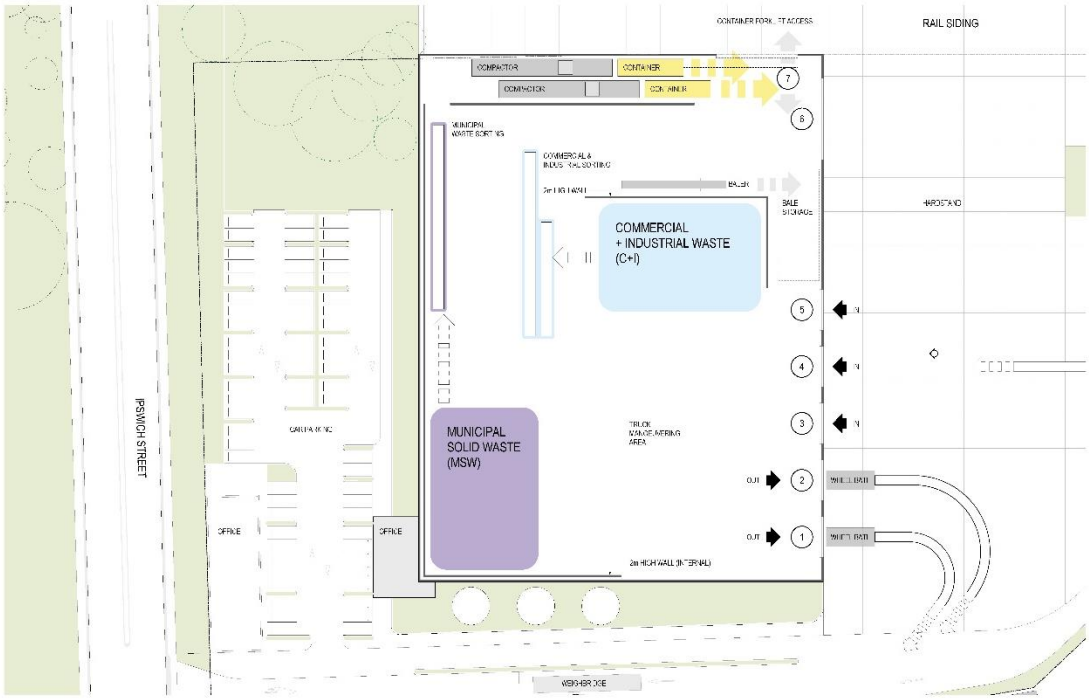


Figure 13 above shows the conceptual layout for the waste processing operations.

Wastes will be delivered via security-controlled gateways from Lithgow and Ipswich Streets. Vehicles will be weighed upon entry to the site and then proceed into the odour controlled MRF building. Vehicles will be directed where to unload, and the contents inspected for hidden or inappropriate materials. Vehicles, after unloading, will then exit the building and pass through a chlorinated wheel bath and then leave the site via a second weighbridge to Ipswich Street. Vehicles will activate a new set of traffic lights which will allow them the safely enter onto Ipswich Street (north or south) spreading vehicle traffic and minimising traffic flow conflicts.

All waste received will be immediately sorted before being fed into one of the MRF processing lines.

The MRF will have two separate processing lines specifically designed to process MSW waste and the C & I waste streams separately of which C & I is typically drier, bulkier and contains less organic waste. The separation processing will be a combination of mechanical and manual sorting to be able to remove reusable materials for export from the site (see Figure 15 and Figure 16).

Typically, organic materials such as paper, cardboard, timber and greenwaste would be recovered. Other materials such as certain plastics, metals, inert and non-combustible materials such as glass, soil, aggregates are also separated and exported from the site. Plastics #1 (HDPE), #2 (PET), #3 (PVC) #5(PP) and #6 (PS), metals, clean paper and cardboard and other extracted recyclables will be baled, containerised and then transported by rail from the site for sale in the appropriate recycling commodities market.

Inert non-combustible materials, such as soil fines, glass or aggregates will be conveyed to bins where they will then be transported by truck to an appropriate recycler of these commodities.

Where possible, the recyclables will be baled and packed into containers using forklifts. This will be done within the building. The only containers stored external to the buildings will be those in readiness for transport by rail to landfill which will be transported daily.

As the capacity and technology improves to separate materials, the CRS facility will be able to target different materials over time as Government policy or market demands dictate. For example, the proposed FOGO initiative in the new Waste Feasibility Study discussion document, could mean that CRS modifies its MSW processing line to separate appropriate food waste from both the MSW and Commercial waste streams and diverts this to the proposed FOGO processing facility (if built) rather than send to landfill. This is an example of the flexibility of approach by CRS to help the ACT achieve its waste management targets and goals.

It should be noted that CRS is not proposing to compost organics at Fyshwick. CRS can sort acceptable material and supply an approved FOGO facility, should the need arise. Should there not be an approved facility or a facility that can dispose of the compost lawfully, then FOGO waste will continue to be sent to landfill, as is presently the case.

The CRS MRF recycling goal is 20%. This can be achieved in a number of ways and is expected to be greater. CRS has targeted certain materials from both waste streams and then assumed 40% recovery of that material. This in fact may be greater, or less, in any given hour. Currently all the material that is proposed to be processed ends up in landfill. If CRS can achieve 20% of whatever it receives then this represents recovery of a significant amount of material that is currently being tipped in landfill. ACT NoWaste has only expressed concern surrounding recovery of less than 20%, when currently they are offering no processing for this material. CRS considers anything above what is presently occurring to be a success. However, is still adamant that 20% is easily achievable.

CRS has extensive experience in the sector and is fully aware that new technologies are developed constantly and then proved in the industry. For example, markets for pelletised organics are developing so other lawful uses will be explored and developed over time. Further approvals from the planning authority will be sought for improved machinery and technology as required.

Commercial operators are always looking for lawful opportunities and contingencies. CRS is aware that the Territory intends to introduce a levy and is not privy to its timing, mechanics or pricing, but it does work in other states who operate in a waste levy environment. Queensland removed its levy a few years ago and then received significant landfill waste, much of it from NSW. Queensland has since re-introduced a levy in mid-2019 which will change this landfilling dynamic in Queensland and NSW.

Currently, waste generated in the ACT is flowing to 6 different landfills outside of the ACT. In addition to Mugga Lane, CRS will have at least 6 different disposal options, accessible by road. CRS could enter into a reciprocal arrangement for emergency landfill with Mugga Lane (ACT Government), however no agreement is in place at this stage.

Market-based mechanisms refer to supply, demand and price. The business case is simple in that CRS charge a fee to receive waste; CRS pays a fee to dispose of waste to landfill. In between those two key elements CRS removes as much material as possible for recycling, to avoid the landfill disposal costs.

In this simple system, market-based mechanisms drive recycling. Access Recycling has been operating in the metals recycling industry for more than thirty years, processing in excess of 100,000 tonnes of metal across Australia annually, with greater than 99% of all materials recycled.

Benedict Industries has been operating in the C&I, C&D waste recycling industries for more than 50 years, processing more than 1 million tonnes annually, with greater than 85% recycled.

In this regard CRS uses the combined industry knowledge of both operators to divert as much material as possible away from landfill, within the constraints of the market-based mechanisms (such as demand and supply) available for any given commodity. The waste market is an everchanging market that is driven by mechanisms beyond the control of any individual operator. However, with the experience of both Access Recycling and Benedict Industries, whom are experienced operators, CRS has the ability to navigate the recycling market and respond or adapt to changing regulations, demand and supply sources.

In terms of available supply, according to the Waste Feasibility Study, the ACT has one of the highest rates of waste generation per capita, at 2.67 tonnes per person per annum, and recycles only 70% of it. CRS intends to utilise these figures to predict likely waste supply streams. In terms of demand, circumstances change frequently, as seen recently with China, however, as demand reduces in one area, it often increases in others. Or, technology and other economic factors are used to improve waste sorting and meet new demand requirements.

CRS knows from existing business operations, commodity prices change over time, and new technology creates whole new markets. One example of such market changes is the ACT Government's recent proposal to create an ACT Fogo industry. Market factors will remain and continue to drive recycling to the highest levels of commercial feasibility.

CRS conservatively proposes to recycle and therefore divert more than 20%, from the waste streams it proposes to process, from landfill. The unrecyclable residues would be transferred to the Woodlawn Bioreactor Landfill. If food waste was diverted (FOGO Scheme in place) from the waste stream received by CRS, then this would not inhibit the recovery rate as the contamination rates of the remainder of the MSW waste would be less and potentially more recoverable fractions may be possible. This could further increase the total diversion from landfill of the MSW residual wastes.

Transfer of the residues will require the installation of two "slug packer" compactors within the MRF building (see Figure 17) that will be used to load shipping containers. The transport containers are purpose built to contain liquid and odour. The containers are fully sealed except for a carbon filter vent. The container technology has already been extensively utilised daily, by Veolia in NSW, for some 15 years and these containers move some 900,000tpa of MSW waste to Woodlawn every year. Figure 14 shows the Veolia shipping containers stored externally and they are sealed, clean, unbranded and innocuous.

Figure 14: Veolia rail shipping containers

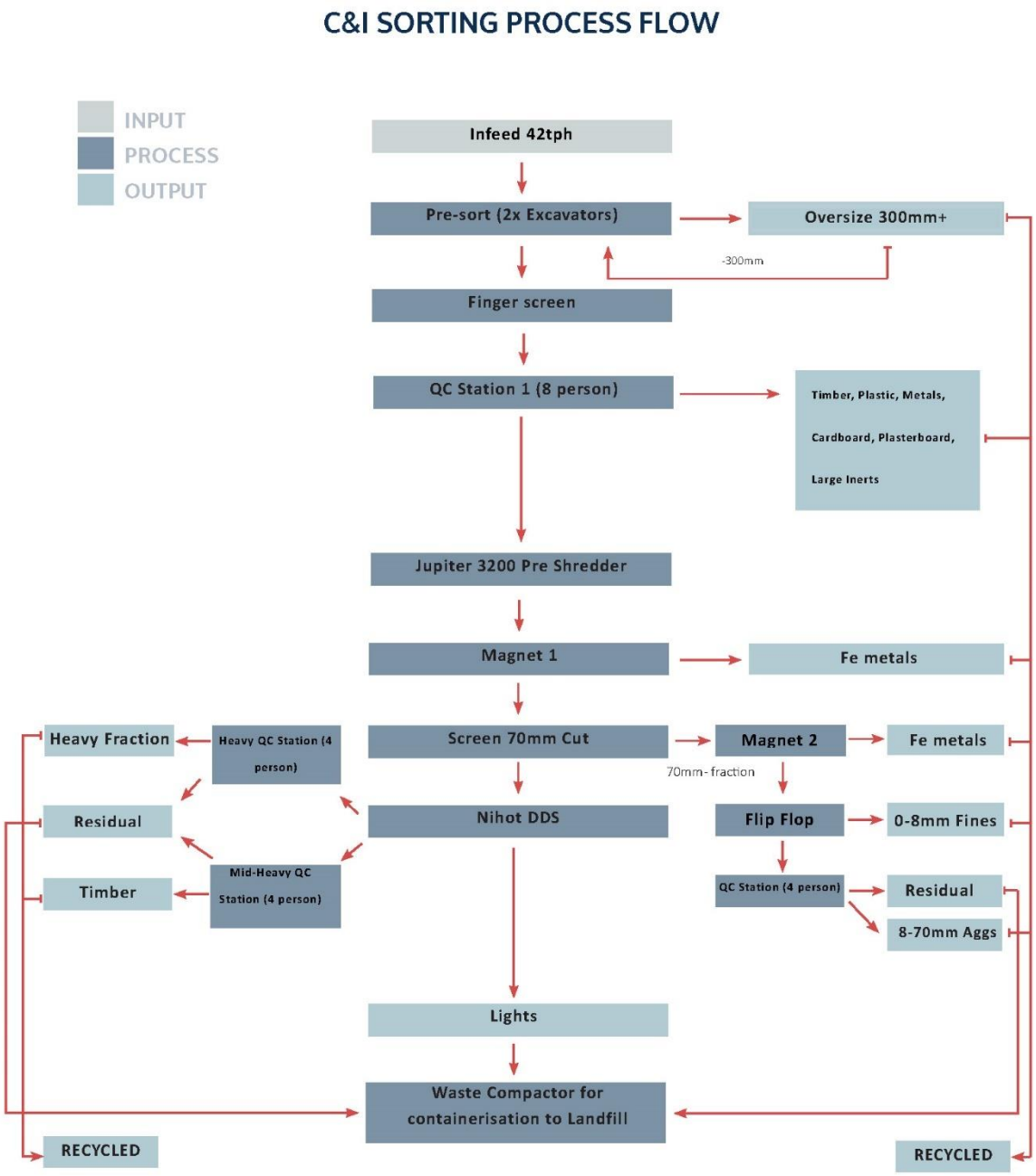
Figure 15 and Figure 16 below demonstrate the indicative process flow for the C & I and MSW processes. Both processes will be fed by small excavators whose job is to triage the waste arriving and identifying unacceptable waste and reject the materials. They will also sort material and isolate load that require less/or no sorting and resize material and remove encumbrances that will not pass through the mechanical sorting lines. There are bypasses built into the sorting lines to ensure that simple mechanical issues do not inhibit throughput rates significantly.

The Process Flowcharts demonstrate the type of process for the drier commercial waste which will incorporate a finger screen, shredder, magnets, a double drum separator to create three fractions (heavy-mid size and lights). There are several picking stations throughout for manual sorting.

The MSW waste which is wetter and more contaminated (this may vary depending upon whether a FOGO collection service occurs) will be a simpler process that requires garbage bag opening/shredding and magnets to remove metals. Picking stations to sort non-contaminated materials will also form part of the processing for the MSW stream.

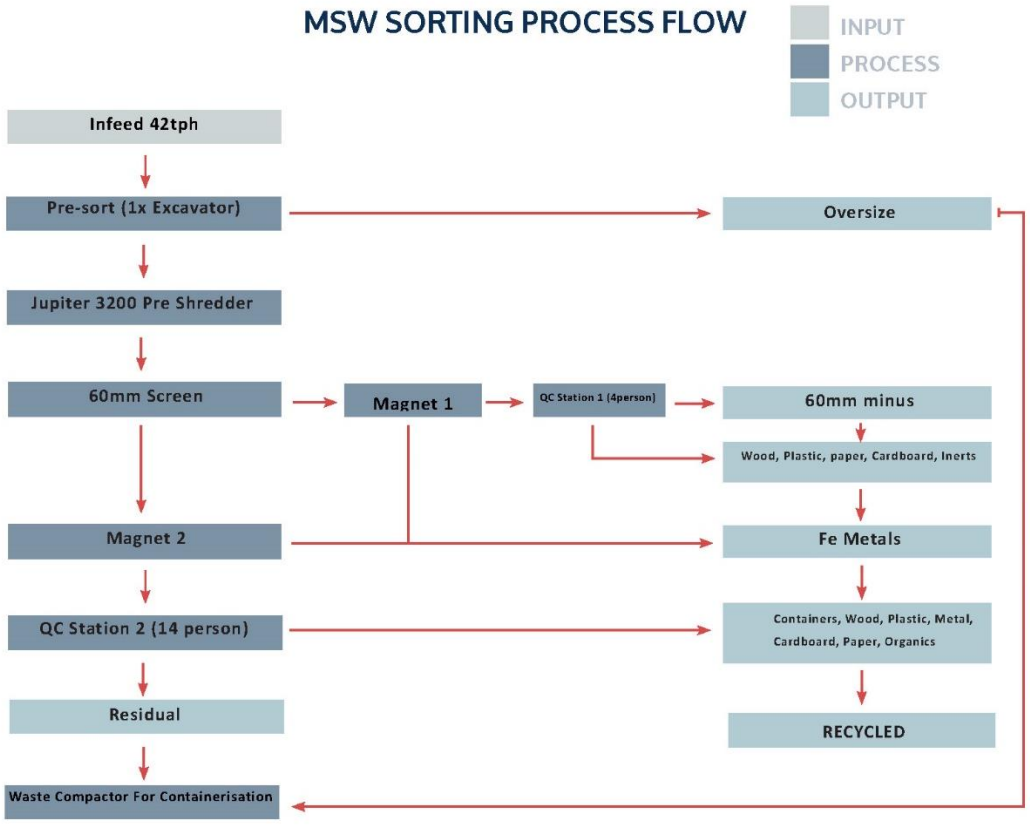
The exact final design will be dependent upon the planning and licence approval and the expected waste receival. As this may take time to develop and may vary over time, the purpose of the processing design is to have the space available to change the processing system to suit the material being received. The flexibility of this sorting is a crucial aspect for the longevity and relevance of the MRF facility.

Figure 15: Commercial & industrial waste processing flow



Source: OGTEC

Figure 16: Municipal solid waste processing flow



Source: OGTEC

2.3.3 Main Components

The MRF will be designed to process 300,000 tonnes of waste per annum as CRS believes that it is important to get the infrastructure layout to accommodate the requisite machinery and spaces to deal with the growth rate of the ACT's population and therefore waste generation. The numbers utilised in the assumptions for this proposal were sourced from the Market Sounding data room and distributed in 2017. CRS has assumed a 2020/21 start and full capacity for the purposes of assessing the environmental footprint at its maximum. CRS knows that the annual waste volume is not guaranteed and subject to market and government forces. CRS is confident that it can develop a robust and long-term facility to meet ACT demands as well as be commercially viable.

The numbers used in calculations have been extrapolated from the 2015 Market Sounding Data, provided by TCCS/ACT NoWaste, to assume a 2020/21 start date.

The facility at its maximum could receive and process an average of some 900 tonnes per day across 6.5 days per week based on initial assumptions. Processing would be on a two-shift basis. Allowing for 20% downtime this would be processing time of 12 hours per day (16-hour day), six days per week. This facilitates a processing throughput of some 75 tonnes per hour in total across the two processing lines in this scenario. There is capacity to increase daily processing output through increased hours of processing.

The main components for processing the recyclables are shown below for both the MSW (30-40%) and C & I (60-70%) waste streams. The processing flow is indicated but would have the capacity to be varied dependent on the recycled resource markets and the quality required. Over time this tended to vary so the flexibility of processing is critical. It is always a blend between person and machine to ensure the best outcomes.

Waste residues will be conveyor fed into two SSI 4500 compactors, or equivalent, inside the MRF building which will compact the residues into waterproof shipping containers (See **Figure 17**).

Upon loading the container seal around the door will be washed to ensure that the seal is clean and unobstructed before the container door is closed. The seals on the containers, like any other equipment, require visual inspection on each use and will be replaced annually or sooner if required.

Recyclables such as paper, cardboard and plastic will be baled before transport using a Persona LP85 VH Baler, or equivalent (see **Figure 18**).

Figure 17: SSI 4500 Compactors inside MRF building

Figure 18: Persona LP85 VH Baler

2.3.3.1 Construction Requirements

Several new structures are required as part of the proposal. These include:

- Weighbridges and Weighbridge Offices
- Waste receival and MRF building
- Intermodal container loading equipment

2.3.3.2 Safety measures

Several key safety measures will be implemented for the operation of the facility. These measures will minimise safety risks associated with the operation of the facility such as;

- An operational and environmental management plan
- Fire management system
- Dust and odour misting (if required)
- Vermin and pest control
- Staff and customer induction training and WHS procedures
- Incident and emergency protocols and reporting

The Management Plans will require approval by the relevant Authority prior to construction and operation.

2.3.4 Railway Freight

Adjacent to the subject site is the disused 'South Shunt' railway siding which previously connected the siding directly into the site for fuel handling activities. This internal siding that crossed into Block 9 & 11 Section 8 has now been disconnected for the purposes of remediation. The entire shunt is currently not used but will be utilised after refurbishment (by NSW Transport grant). The proposed rail freight terminal is subject to a separate merit track Development Application approved in June 2019.

In November 2014 Access Recycling signed a sub-license agreement with Transport for NSW to utilise the Kingston Rail Terminal (Canberra's only railway freight terminal) for a two-year period. In March 2015 Access began operating a weekly rail container freight service from Canberra to Port Botany. It was the first container freight train to operate out of the ACT in 30 years, and thus Access Recycling were able to remove sixty semi-trailer loads from the roads each fortnight. The rail service carried between 50 and 60 shipping containers of recycled metal to Port Botany fortnightly, from where it was exported to steel mills in South East Asia. In March 2016 the service was suspended, due to ongoing problems with the condition of the hardstand at the Kingston Terminal.

Kingston was not originally constructed for this purpose and could not support the weight of the container-handling forklifts. Ahead of suspending the service, work began to relocate the freight terminal to Fyshwick and resume the weekly rail service. A Development Application (DA201630668) was made as a condition of a Direct-Sale of Land to purchase a disused parcel of land between the Access Recycling depot and the rail corridor. The DA was successful with a Notice of Decision received 17 April 2017. Ministerial Approval for the Direct Sale of land was received, and the offer to purchase was made in late 2017. Arrangement and status of the consent and land sale are now the subject of legal clarification whilst a replacement DA (DA201834656 approved in June 2019) was lodged in November2018 whilst the legal process took place.

Approved DA201834656 includes construction of the RFT which is in the form of a raised concrete platform allowing the storage and handling of freight containers and allowing forklifts to load and unload freight.

It is expected that CRS can have an operational rail terminal in 2019, subject to the relevant consents, with the rail service to Port Botany expected to resume soon after for general freight. CRS has been granted a 20-year sub-licence to operate a rail terminal in the rail corridor which will operate independently of the MRF.

In the event the RFT is unavailable the MRF can operate independently and would rely on shipping the containers to Woodlawn by truck. This would add some two additional trucks, on average, to each operating hour until the RFT was made available again. These trucks can be managed by CRS to not impact on traffic peaks. This is not the preferred method of operation, but it does remain as the emergency plan should the railway be either temporarily closed or the approval is not granted.

2.3.5 Woodlawn Bioreactor Landfill

To tackle the rising volume of putrescible waste in the Sydney region at the turn of the millennium, the NSW Minister for Planning approved a proposal from Veolia to develop a rail transfer terminal, to move waste from Sydney to a landfill bioreactor and a treatment facility at the Woodlawn site. Veolia commissioned the construction of a rail transfer terminal in Clyde (21km west of Sydney's CBD) and the WBL came on-line in 2004.

In 2016 Veolia commissioned a second rail transfer terminal in Banksmeadow to serve Sydney's central and southern Councils, and thereby increased capacity to deliver waste to Woodlawn together with the Mechanical Biological Treatment Facility (MBT) to process municipal waste under contract with Councils, reducing tonnages to landfill and recovering the organic content from waste to produce a compost for mine site rehabilitation.

The Woodlawn Bioreactor landfill (WBL) currently manages around 30% of Sydney's putrescible waste and is capturing its methane emissions to generate clean energy for up to 10,000 homes. The Woodlawn facility is licenced to receive 1,100,000Tpa of waste, most of which is transported by rail. The NSW Government have approved an extension to the rail siding within Tarago to enable a more efficient use of the rail network between Goulburn and Canberra.

The facility is still recognised, 14 years later, as an example of best practice in municipal waste management and utilisation of leading landfill technology. Since opening in 2004, over 7 million tonnes of waste have been processed at the facility, most of which has been used to generate green electricity. The latest figures published by Veolia in September 2017 reveal that there will be enough power generation capability at full capacity to meet the energy requirements of up to 30,000 homes.

It is understood that for every megawatt of power produced by the Woodlawn Bioreactor, approximately 0.75 tonnes of physical waste will be recovered in the form of methane gas to be used for electricity generation. Therefore, for every tonne of waste deposited at the facility 1.33 megawatt/hour of clean electricity can be produced and used to power the facility, businesses, homes and local infrastructure.

The Woodlawn facility has prioritised sustainable and innovative waste management practices including:

- 7 Biogas engines that generate up to 7 megawatts of clean energy from what would otherwise be gas-emitting waste material.
- Agriculture incorporating a working farm that applies nutrient rich compost, produced from Sydney waste, to soils where proven beneficial outcomes are achieved.
- Aquaculture and horticulture capturing waste heat from energy production and using it for fish farming and hydroponic horticulture
- Mechanical and Biological Treatment (MBT) extracting organic content from the waste to produce compost for environmental rehabilitation.
- Windfarm (operated by Infigen Energy) that harnesses 48.3 megawatts of clean energy per year.
- Solarfarm utilising increased sun exposure from cleared land to produces 2.5 megawatts of clean energy per year.

2.3.6 Project Timeline

Year	Action
2015-2019	Planning Processes including Scoping, Draft EIS, Revised EIS, Ministerial Decision or referral, possible Inquiry, RFT Development Application, MRF Development Application
2020	MRF Development application, design detail, construction tenders, CMP, OEMP, Remediation finalisation and testing program
2020-2021	Construction and Licensing
2022	Operational Phase including EPA and ACT NoWaste reporting as required OEMP day to day requirements Annual licencing Operational and mitigation effectiveness monitoring

The above timeline demonstrates that the facility can be operational as soon as 2022. CRS see this facility as a key piece of the ACT's waste solution to achieve 90% landfill diversion by 2025.

Decommissioning of the facility is unlikely to be required due to the machinery reaching the end of its useful life. This is due to the ability to maintain the building and equipment indefinitely, with replacement of mobile plant every 10,000 hours or as required.

Should the facility become redundant due to less waste generated or advancements in waste management the building would be cleaned internally with machinery and equipment removed. The site would then be subject to an independent audit to ensure that the building could be utilised for a different industrial use.

2.4 Community Consultation

CRS has implemented a community consultation strategy well above the requirements of the EIS scoping documents. Substantial hours have been spent consulting with community groups and other key stakeholders. CRS understands this is a significant project that the community will be interested in. The view was formed that to be successful with the proposal, the community must be informed and be listened to. Special emphasis was placed on the latter. CRS recognised that to truly consult, a proponent must listen and take advice. This is entirely the reason for the second EIS scoping document. Many changes have been made since the proposal was first put forward removal of the waste-to-energy component, and traffic management modifications.

CRS have conducted a range of community consultation sessions with surrounding residents and interested parties. Information has been distributed via newsletters, presentations, the CRS website, media releases and media coverage (television, newspaper and radio), community meetings, stakeholder meetings and two-way interaction (including door-knocking, letterbox drops and a free call and email contact).

2.4.1 Consultation Approach

The objectives of the consultation process were to inform, involve and build an understanding of the proposed development between all relevant stakeholders including local business owners, industry, surrounding residences and community groups.

The approaches to engagement included:

- Providing information to residents, businesses, stakeholder and community groups;
- Two-way interaction on a range of issues relating to the project; and
- Receiving community and stakeholder feedback for consideration as part of the environmental impact assessment studies.

Consultation methods adopted during the EIS process included community newsletters, website information, media releases and media coverage, free call line and email contact, doorknocking and letterbox drops, stakeholder meetings, community meetings, stakeholder workshop and social media.

All issues and comments raised during consultation by the community, government agencies, and interest or stakeholder groups were recorded on a database. Various issues have then informed the proposal investigations and the ongoing design of the proposal.

2.4.2 Stakeholder Identification

The major stakeholders engaged and who were willing to meet and discuss the proposal during the consultation process of the EIS are summarised below:

Table 22: Stakeholder Identification Table

Elected representatives	Peak body consultation	Surrounding property owners, businesses and institutions	Community groups
Planning and Natural Resources Senator Zed Seselja	Australasian Rail Association	Fyshwick Food Markets	Canberra for Power Station Relocation Inc
Elizabeth Lee MLA	Canberra Business Chamber Board	Holcim Concrete	Canberra Friends of Dili
	Public Health Association	Narrabundah Family Medical Practice	Inner South Canberra Community Council (ISCCC)
	The Property Council	Narrabundah Early Childhood School	North Canberra Community Council
	ANU Representatives	St Edmunds School	Tuggeranong Community Council
	Institutes	St Benedict's School.	Narrabundah Residents Association
	The Conservation Council of ACT	Narrabundah High School	Old Narrabundah Community Council
	Unions ACT	Narrabundah College – Board and P+C	The Griffith Narrabundah Community Association
		Southside Village Residential Park	Friends of Jerrabomberra Wetlands
		Wentworth Avenue Medical Centre	Concerned Canberra Residents
		Narrabundah Family Medical Practice	

2.4.3 Neighbours

The following surrounding leaseholders were contacted (other than the door knocks and flyer distribution)

All Bids	Immediate Neighbour (Meetings and emails - Proforma objection mail out – generated some 140 client objection responses)
Austral Bricks	Near neighbour (Meetings and emails)
Timbo's café	Immediate Neighbour (No issues)
Access Recycling	Immediate Neighbour (No Issues)
Holcim Concrete	Immediate Neighbour (3 meetings and emails)
Tiger Waste	Immediate Neighbour (Letter of support)
Harvey Norman	Immediate Neighbour (1 Meeting and email question responses)
Horseland	Immediate Neighbour (email list)
Canberra Times	Near Neighbour (1 meeting and site visit by management)
Molonglo Group	Near Neighbour (email exchanges)
Coles Express (Shell)	Near Neighbour (email list)
Southside Village	Nearest known residential neighbour (Meetings and presentation)

Site visit offered to all on the mailing list, including neighbours for 31/1/18 - 8 people attended

Recreational Groups Contacted

None that were obviously affected

Volunteer conservation, landscape management or land care groups contacted

Conservation Council meeting attendance, meeting invites and email correspondence

Friends of Jerrabomberra Wetlands notifications and fliers

Local Community

Communications were managed by Newgate Communications until December 2017 and thereafter by Adam Perry (CRS Director). A register of communications was kept early but due to the volume of requests and the number of persons dealing with meeting requests, media and responding to public questions this was not continued. Records exist of phone conversations as they were followed up by emails. The 1800 number and flyers all contained contact details as does the CRS Website. In time the correspondence and phone communication has been done by Adam Perry on all matters. This has included media enquiries, resident meetings, one on one meetings etc

2.4.4 Consultation Methodology

Newgate Communications were engaged between February 2017 and December 2017 to manage the communications process. Purdon Planning has managed the communications in 2018 in conjunction with CRS. In that time there has been the following community awareness activities that have provided information such that CRS has distilled the project to what is contained in the current draft EIS:

27/28 February 2017	Group Industry Briefing - market sounding workshop – Comprising of residents from around Canberra and small businesses. This was conducted over two evenings to establish base information about technologies and waste industry awareness.
10 March 2017	A communications strategy was developed by Newgate which included understanding the results of the workshop and flagged the lack of knowledge regarding the WtE component and concerns Communications strategies were employed to build knowledge of the CRS proposals, initially with Government and political stakeholders. Communication tools were developed which included a CRS website, 1800 number/hotline and flyers. Media outlets were engaging to begin increasing public awareness using the Canberra Times, radio and websites such as "The Riot Act" Community engagement began with flyer distribution and door knocks A key stakeholder matrix was formulated at this point and formed the basis of email communications. This matrix was embellished and added to as interested parties became known
18 April 2017	Response submission by CRS to the ACT Government market Sounding "*To Build and Operate or Provide New Waste Services*" – The Government (ACT NoWaste) is now aware of our intentions)
19 May 2017	EIS Scoping application for materials recovery facility and waste to energy lodged
30 June 2017	EIS Scoping document received from the EPSDD (response from Planning is posted online on the EPSDD website)
5 July 2017	1800 Number in operation and website updated
20/21 July 2017	Launch of EIS proposal in media (print, TV and radio) and door knocking campaign and flyer distribution was conducted in Fyshwick and surrounding residential neighbourhoods to generate project awareness. Photographs of the proponents and the site were on the front cover of the Canberra Times on Friday July 21.
22 July – Aug 2017	Community and stakeholder visits to schools, businesses, representative bodies, politicians and individual responses to email and phone calls. Stakeholder mailouts were conducted and responses to resident action group website posts were conducted
23 August 2017	ISCCC Community forum held. ISCCC were appointed by the other resident groups to be the lead contact and organiser of activities with

	CRS. The media (TV, print and radio) were advised and attended the meeting and stories were posted before and after the meeting which assisted in project awareness
15 August 2017	Additional door knocking organised to be conducted in parts of Narrabundah, Causeway and Kingston Foreshore.
22 September 2017	the scale of the WtE component was halved to 15MW
9 October 2017	CRS determined to split the EIS into two components such that the MRF and rail component could be progressed while greater education occurred around the benefits and technology involved in WtE.
26 October 2017	Website update to reflect the change in project strategy
30 October 2017	A new flyer was letter box dropped to the same locations advising of the project amendments
9 November 2017	Workshop conducted to discuss the splitting of the project into two separate EIS processes – All key interested stakeholders were invited to attend
4 December 2017	Second scoping application for the materials recovery facility was lodged at the request of the EPSDD.
13 December 2017	CRS attended and presented at the Old Narrabundah Community Council public meeting
15 December 2017	CRS attended and presented at the Jerrabomberra Community Group meeting
15 January 2018	EIS Scoping document received from the EPSDD (response from Planning is posted online on the EPSDD website)
9 February 2018	Public meeting organised by CRS to advise on the imminent lodgement of the EIS
10 February 2018	Site visit advertised and attended interested parties
Feb-May 2018	EIS lodged and accepted
May- 27 June 2018	EIS was on public exhibition

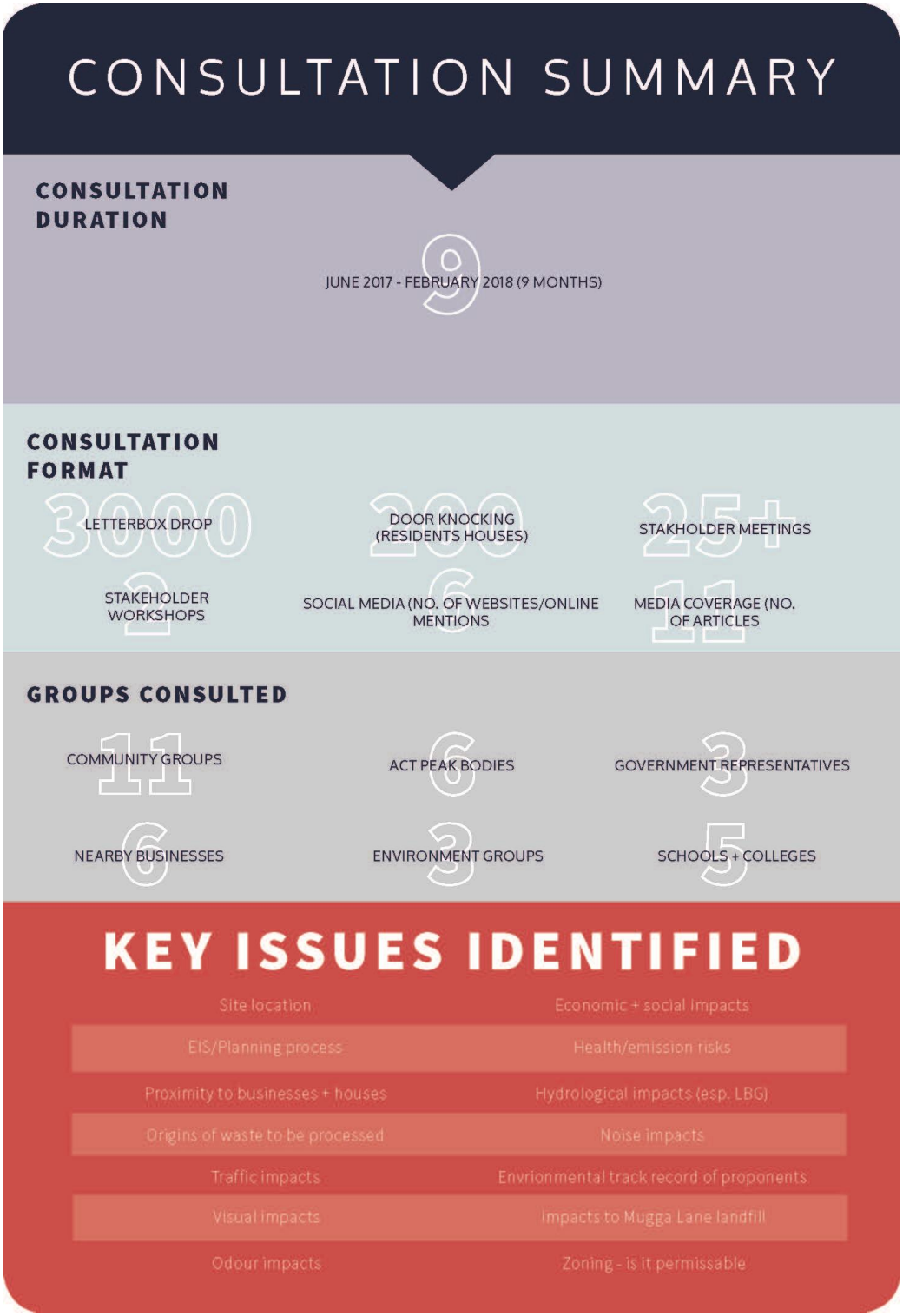
2.4.5 Areas of public concern

The following lists the major areas of concern raised by the public and stakeholders during the consultation period:

- Impact of air quality (odour, dust and vehicle emissions) and potential health issues
- The source of waste and responsibility for management of the waste
- Recycling – what can and cannot be recycled, end markets and the recycling philosophy
- Economic and social impacts
- Traffic and noise impacts
- The facility location
- The ongoing consultation processes
- Whether the proposal represents industry best practice or is required
- The approvals process and governance
- Disposal of residues
- The reputation of the proponent

- Zoning of the site and permissible uses
- Visual and noise impacts
- Freight rail component
- Carbon footprint

Each of these concerns have been addressed as part of the impact assessment detailed in 6.0.



All consultation sessions involved the announcement and clarification of the proposal, including what is proposed to be built, the site characteristics, the indicative EIS timeframe, the approval process and its cost.

All interested parties consulted were provided with information about the proposal including:

- The relevant ACT Policy
- Opportunities for the public to make submissions to the ACT Government
- The proposed location
- The proponent
- The EIS Process
- The technology
- Waste to Energy (not proposed by this application)
- Reasons for removing Waste to Energy component of the project
- Environmental impacts
- Safety, fire and hazard risks
- Other stakeholder and community engagement

A summary of all consultation is provided in **Table 2** below.

Table 2: Summary of Consultation to date

Consultation type	Info	When	Where
Distributed Community newsletter	Two newsletters were distributed to more than 3,000 nearby businesses and residences	Newsletter #1 – July 2017 Newsletter #2 – November 2017	Surrounding businesses and residences
CRS website	CRS's website gives a comprehensive overview of all information regarding the proposal	Online since June 2017	https://capitalrecyclingsolutions.com.au/
Media releases and media coverage	Canberra Times – "Waste plant a win" Canberra Times – "Fyshwick Recycling and renewable energy centre faces public grilling" ABC News - "Rubbish for Energy faces an uphill battle" Canberra Times - "$1 million NSW grant boosts Access Recycling new freight depot at Fyshwick"	27 July 2017 22 August 2017 27 August 2017 28 August 2017	
	Canberra Times – "Think of the neighbours" Canberra Times - "Waste to Power Plant Proposal Delayed" Canberra Times – "ACT Greens Slam Canberra's proposed Waste to Energy plants" Radio 2CC – Discussion on proposal Riot Act Blog – "Greens put torch to Fyshwick waste burner proposal" Conservation Council – "Waste a burning Issue?"	31 August 2017 27 October 2017 29 October 2017 8 November 2017 10 November 2017 16 November 2017	
Door-knocking	CRS and ActewAGL Retail door knocked to over 200 surrounding residents introducing the proposal	July 2017	Narrabundah residential area Fyshwick industries surrounding site Fyshwick Fresh Food Market
Letterbox drop	Newsletters were delivered to over 3,000 surrounding residences	July 2017	The Causeway/Kingston Foreshore Narrabundah and Fyshwick Southside Village Motor Park
Stakeholder Meetings	Elected government representatives (Zed Seselija and Elizabeth Lee)	Various	Various

Consultation type	Info	When	Where
	ACT Peak Bodies ▪ ACT rail association; ▪ Canberra Bushiness Chamber Board; ▪ Public Health Association; ▪ The Property Council; ▪ The Conservation Council of ACT; ▪ Unions ACT	Various	Various
	Surrounding property owners, businesses and institutions (including all schools and medical practices)	Various	Various
	Community Groups meetings: ▪ Canberra for Power Station Relocation Inc; ▪ Canberra Friends of Dili; ▪ Inner South Canberra Community Council; ▪ North Canberra Community Council; ▪ Old Narrabundah Community Council; ▪ The Griffith Narrabundah Community Association; ▪ Friends of Jerrabomberra Wetlands; ▪ Concerned Canberra Residents; ▪ Tuggeranong Community Council; ▪ Narrabundah Residents Association; and ▪ Jerrabomberra Residents Association	Various	Various
Stakeholder workshops With invites interested parties to date	Discussion regarding significant changes which were made to the project because of community feedback. This workshop was to discuss the ongoing community engagement process.	9 November 2017	Eastlake Football Club
Social Media	▪ 'Say no to Fyshwick incinerator" (Facebook site) ▪ Inner South Canberra Community Council (website) ▪ Old Narrabundah Community Council Inc (website) ▪ The Riot ACT, Canberra News and Opinion (Website site) ▪ Elizabeth Lee (twitter handle) ▪ The Canberra Times website (website)	Various	

All stakeholders have had opportunities for engagement and comment throughout the process. All comments and queries have been taken on board during the planning and design phase of the project. Appropriate mitigation methods and considerations have been adopted where possible.

Key consultation dates are as follows:

27 February 2018 the Draft EIS was lodged

16 April 2018 the Draft EIS was accepted

23 April 2018 the Draft EIS went on public exhibition for 30 days

22 May 2018 ESPDD advised the public exhibition would be extended by and extra 15 days

27 June 2018 Public Exhibition finishes

18 July 2018 ESPDD provides information raised from the public exhibition period and other Government departments

464 submissions were received and the responses to those submission are contained in Appendix S.

Notwithstanding this, the project will be subject to ongoing engagement and will involve:

- Reporting on the outcomes of the engagement activities;
- Incorporating lessons learnt into future local engagement;
- Regular updating of the CRS website as new information comes to hand;
- Distribution of updated engagement materials explaining the developments in the proposal;
- Progress and periodic engagement with key stakeholders to understand ongoing issues.

2.4.6 Commitment to further consultation

If approved, consultation will continue throughout the detailed design, construction and operational phases of the project.

A community and stakeholder engagement plan would be developed and implemented to appropriately reflect community information needs and any disclosure requirements of the ACT Government.

Consultation activities and tools during this period would include:

- Notification of construction works that may disturb residents and businesses;
- Notification of changing traffic and access conditions around the facility site;
- An 1800 community information telephone line and email address;
- Community information sessions or educational open days;
- Website updates including data on recycling alternatives;
- Newsletters; and
- Advertising in local and regional media when / as required.

The proposal would have an important educational role for the community, and CRS plans to work with schools and universities to ensure that the centre contributes to regional waste management awareness and knowledge building.

2.5 Alternatives to the proposal and criteria

The following section details alternatives to the proposal considered during the planning and design phase of the project. These considerations have been developed in accordance with the recommendations made in the scoping document.

Several alternatives to the current proposal have been assessed. These include;

- Further expansion of the Mugga Lane landfill site
- Alternative locations incorporating rail infrastructure elsewhere in the ACT.
- Alternative processing methods
- Alternative sites that are not connected to the rail system

2.5.1 Site Selection Criteria

As for every property purchase there are always a set of criteria every buyer will have. CRS wanted to acquire and own its own site and most critically, have access to rail. Included in the site selection criteria are appropriate land size, frontage distance to the rail track for access, dedicated siding to take the train off the main line for loading and unloading, street accessibility in a central location to both north and south Canberra and appropriate land zoning. The land must be viable for the venture proposed. As a privately funded venture the site must be able to be brought online in the quickest time possible. Finally, there must be land available for purchase.

CRS was interested in renewing its lease with TCCS at Kingston and making an investment in the poor ground and formalising the pavements. Extending the lease was rejected by TCCS.

CRS then conducted a corridor search the entire length of the rail corridor till 10km east of Queanbeyan. CRS also discussed with TfNSW the Cooma line (see 2.5.3). Applying the criteria below in 2015, at the time CRS was making the assessments, the subject site was identified as the best and only option that suited. The site alignment with key criteria is listed below:

I. Proximity to rail including appropriate siding length off the main line (support from rail entities as they own the land and track access)
II. Land size including room to manoeuvre onsite and conduct activities in a large building. The idea of separate entries and exits was also considered important if possible
III. Road accessibility to get trucks into and out of the site in a central location;
IV. Zoning is critical and an appropriate zoning for the activities proposed should make the process easier – changing zonings or land use permissibility adds greater complexity and time; and
V. Availability to purchase a site was a key aspect as the private investment is significant. The ability to own and develop in the long-term aspect was considered important to CRS.

2.5.2 Expansion of Mugga Lane Landfill

The Mugga Lane Resource Management Centre in Hume currently receives most of Canberra's landfilled waste. ACT Government data also suggests as much as 30,000 tonnes per annum of ACT's waste is being tipped across the border in NSW. CRS believes that landfilling of over 30% of the ACT's total waste currently represents a missed opportunity for higher order uses for MSW, C & I as well as "light" fractions of C & D waste recycling.

At the stated current total landfilling rate Mugga Lane Landfill will require expansion of this facility in the future. Expansion of Mugga Lane landfill will not solve current recycling rates, odour or litter issues. Further, expanding the landfill facility will not help facilitate the achievement of the ACT Waste Strategy's outcomes nor encourage any innovative recycling processing solutions to waste management in the ACT.

The Hume Industrial Planning study final report from 2007 stated the following regarding finding alternatives to Landfill:

> *"the landfill will need to expand, and it is acknowledged that ACT NoWaste are investigating viable alternatives. Possible alternatives to the expansion of the landfill include following the New South Wales example and shipping waste to a disused mine by train: a potential use for the nearby railway line; or finding an alternative site within the ACT" (Source: GHD – Hume Industry Planning Study Final Report September 2007 p 61)*

Waste processing and resource recovery, integrated with rail, with residues transported to the purpose-built bioreactor at Woodlawn is a better option for the following reasons;

- Improved resource recovery, extracting conservatively more than 20% of recyclable material which would otherwise go unrecovered to landfill;
- Extend the life of the current cells of the Mugga Lane landfill significantly, vastly reducing the need to expand in the future;

- Mugga Lane landfill could focus on higher gate value, lower volume problematic waste streams (contaminated soils, sewerage sludges etc) and the need for expansion seriously curtailed;
- Issues of landfill fire, windblown litter and odour can be addressed and managed;
- Integrate resource recovery with direct links into the commodities market locally, nationally and internationally
- Reduce transport costs by incorporating rail and by situating waste receival of MSW and C & I in a central location within Canberra
- Potentially continue with the existing drop-off arrangements at Mugga Lane landfill for the public, including greenwaste, building materials and recyclables etc

Notwithstanding this, there will always be a requirement for some landfill for specific wastes such as medical waste, sewerage sludge, contaminated soils, quarantine wastes, Copper, Chromium and Arsenic (CCA) coated timbers and asbestos. The benefit to the ACT of the CRS proposal is that Mugga Lane landfill can remain open as a facility with significant longevity to deal with the smaller volumes of the wastes that require this disposal outcome.

2.5.3 Alternative Rail Connected Sites

As stated previously, a fundamental component of this proposal is the use and integration of rail freight as part of the optimal waste management solution. Whilst the MRF residues could be transported by road from the proposed facility, rail is considered a more efficient and environmentally effective option as it takes truck transport vehicles off the road. Rail enables the long-term and efficient transport of recovered and diverted materials to the commodities markets and end processors. It also allows a direct connection to the existing rail facilities near Tarago, servicing the Woodlawn facility connected to rail to achieve maximum benefit about transport of recovered materials and residues.

From October 2014 to November 2015, Access Recycling used the Kingston rail yards to transfer its containerised recycled metal by train to Port Botany for export. After almost 12 months of operation the substandard nature of the facilities and sidings caused Access to abandon rail transport and resume using road transport to the rail freight facilities at Goulburn. It also initiated the process of finding a permanent rail site that could be developed for exporting recyclable materials to markets outside Canberra.

A study, at the time, of available and appropriately sized sites, that were for sale, along the rail corridors was conducted. The sites at Hume were ruled out as it was evident that the rail track was redundant and there were no strategic plans by rail authorities to invest in upgrading the line to Cooma. This line was compromised by being a single track with no shunting capacity and contained several bridges and tunnels that would need to be upgraded. There was no interest in this option from the rail authorities and a planning study for Hume said the following:

> *"The eastern edge of the Hume Industrial area, on the NSW side, is bound by the closed Queanbeyan- Michelago Railway line"*
>
> *"The rail link traversing the region was constructed in the late 1880s and is now managed by the Australian Railway Historical Society, in view of its historic significance. Longer-term future potential access to the rail line in NSW has been considered however, the potential for the development of large-scale commercially viable industrial production that has the capacity to service a rail line does not seem viable in the foreseeable future."*
>
> *"Since reviving the rail system will require large investments by the NSW Government, it should be demand-driven to be economically viable. This will also require large-scale industrial development, concentrating on heavy industry and manufacturing to make regular use of the railway sustainable. At this stage it is difficult to envisage a resource in the region that is available at the scale required to make rail viable."*
>
> (Source: GHD – Hume Industry Planning Study Final Report September 2007 p59)

The options were then to look at Kingston and Fyshwick. Proposed medium density residential developments and expansion along the Kingston foreshore towards the rail yards would have long term conflicting issues for industry. The current preference for a large residential suburb would possibly constrain access and operating hours.

The only site in the ACT that was available at the time, and at an appropriate scale was adjacent the former Shell distribution facility at 16 Ipswich Street (Block 9 Section 8) but no access to the rail easement. It is also adjacent to the Access Recycling yard which was a major advantage. There were problems with this site nonetheless and the only way to achieve enough access to the rail corridor (Block 11 Section 47) was by acquiring the adjacent site (Block 11 Section 8 Fyshwick). This block is in the process of being acquired by CRS from the ACT Government.

Importantly, the South Shunt provides access to the rail line for a length of approximately 370m which is often a difficult parameter to achieve within an existing mature industrial precinct. The non-operational South Shunt siding adjoins the proposed development area and connects to the Country Regional Network. The Country Regional Network in the ACT is licensed to Transport for NSW and is operated and maintained by John Holland Rail (JHR), under a 10-year contract that commenced in January 2012. Transport for NSW has provided in principle agreement to carry out rail infrastructure works that would facilitate the rail access component of the proposal, should Capital Recycling provide satisfactory evidence of all necessary planning approvals. The Access Recycling yard is adjacent to both sites and therefore the synergies allow an integrated approach, if space is required, for resource recovery, processing and transport of waste and waste products.

2.5.3 Alternative Mugga Lane/Hume for MRF location

The locating of the proposed MRF at the Mugga Lane landfill site or in Hume would only have the benefit of locating the facility closer to the Mugga lane landfill in terms of final tipping.

The key purpose of the proposal is to encourage and enable the sorting of wastes that are currently going direct into landfill. Therefore, an important consideration is the delivery of whatever is sorted, to alternative and multiple destinations. Canberra is not a prolific processor of recycled materials (other than concrete and greenwaste) and therefore the efficient transport of any recycled materials (if they are to be sorted) to other locations is a key consideration in site selection. It is very efficient to link to rail as a long-term solution and reduce total traffic and transport to bring recycling and other residues to appropriate processing markets. Sorted materials are not actually recycled until they are reused which is often forgotten in the process. Generating large stockpiles of sorted but unused material is not recycling. Understanding how to get materials to various markets is as important as the sorting process itself. The sorting of waste is not “recycling”, it allows the material to be potentially used as a resource – getting the resource to a place where it can be reused is a fundamental consideration.

Currently metal, concrete, inerts, cardboard/paper, plastic etc are re-processed somewhere else and in most cases not even in the ACT. Any diversion of greenwaste would suit that location as this is where it is already collected and processed. Drop-off locations are also important and there is no proposed change to these current arrangements other than the residues being taken to the CRS MRF for further sorting rather than being landfilled.

Food waste processing /composting has been suggested in the Waste Feasibility Study (WFS) but has not been approved or a suitable location identified and may not even occur in the ACT. All these materials, if not being processed at Mugga Lane/Hume would require additional traffic movements. The PEF proposal in the WFS discusses external markets and this will require additional transport- making this efficient would be a key aspect of making that proposal effective.

CRS is proposing to use the train network, where possible, to be environmentally and economically efficient to assist the viability of the recycling program success.

Recent changes to the recycling markets overseas has already demonstrated that an adaptive approach is central to an effective recycling program. The use of rail will allow the accessing of the whole east coast

of Australia as well as offshore opportunities and the central premise of proximity to rail is a key site selection issue.

2.5.4 Alternative Processing

Composting and other treatment options generally apply to the food waste and organic fractions of the waste stream. CRS has reviewed the option of processing it away from the ACT closer to end use markets. CRS ruled out doing this in the ACT due to smell and a lack of reuse markets (the use of composting at the scale proposed is not really addressed in the WFS other than mandatory government use). CRS has considered that a processing facility connected to rail could, in the long-term, service a composting facility also connected to rail but much closer to end users at scale. In the short-term CRS considered a processing and recycling and rail facility in the ACT would be the most useful and flexible priority. CRS would be happy to discuss the possibility of transporting food and greenwaste fractions to a composting site if the ACT Government wanted to do this. The idea of FOGO as a strategy has only been mentioned in the latest discussion document and CRS is unaware of the final strategy, site location or compost use plans.

CRS experience from over 30 years of recycling activities that resources are only recycled when they are reused (not stockpiled) the current situation with China has highlighted this and CRS is focussed on dealing with materials which it can not only process but also reuse. This will change from time to time and the flexibility of CRS's facility to respond to the processing needs of the ACT will remain well into the future.

As previously stated, CRS is proposing a recycling facility with the capacity to adapt to market conditions. In the absence of any Government strategic direction when the Draft EIS was submitted, it was felt that the recycling would be adapted over time to dovetail into the ACT Government's wishes. Greenwaste separation would be dovetailed into any dedicated greenwaste collection program; food waste can also be diverted to support the Government's wishes. The facility is an MRF for separating materials. It is not a composting facility or a Fogo facility and therefore these were not considered in the EIS as they have different requirements and economics. If those types of facilities exist in the ACT in the future, then the sorting activities could and would be adjusted to assist in the viability of those specific programs. Minimising waste to Mugga Lane landfill must still be the main goal.

2.5.5 Alternatives Sites Without Rail Connection

As part of the site selection process, CRS did not initially consider sites which did not have access to rail. This is because one of CRS' primary objectives was to take advantage of rail freight transport as this method of transport reduces impacts associated with truck transport such as traffic congestion and emissions. CRS were also motivated to take advantage of economies of scale and provide rail access to adjacent businesses in the area, including Access Recycling which is a company affiliated with CRS.

CRS see rail as a key component to a fully integrated waste management and resource recovery solution.

As part of the scoping document process, the ACT Government has requested CRS to identify alternative site locations without connection to rail that were considered.

However, as CRS did not consider sites which did not have connection to rail in its original site selection process, it would be ingenuine and misleading to provide a list of sites without rail connectivity.

On this basis, CRS does not consider it appropriate to address this request by ACT Government. Notwithstanding this, CRS has undertaken a traffic analysis assuming the subject site is not connected to rail and relying on trucks to transport waste to and from the site.

2.6 Avoidance of Potential Impacts

Key matters considered prior to selection of the proposed site to avoid impacts include:

- Generation of waste
- Provide greater resource recovery
- Transport costs
- Odour
- Traffic
- Vermin
- Fire management
- Discovery of small fractions of hazardous waste
- Visual impacts

Firstly, the impact of **generation of waste** has been considered as part of this proposal. The proposal will only generate waste during the construction phase, as would any other development of this scale and nature. The construction of a large building and hardstand is a normal type of construction activity and therefore any waste generated will be on a similar scale. It should be remembered that this proposal is for a waste processing facility and therefore will be recycling and managing the waste generated by the households and businesses of Canberra and the surrounding regions. The proposal will only generate waste during the construction phase. Any incidental waste from the on-site office and employee lunchrooms will be added directly to the MRF for processing.

Ultimately this proposed facility in Fyshwick will extend the life of the Mugga Lane landfill, reducing the capital costs required and **providing greater resource recovery** including the diversion of organics and lessening the methane production at landfill.

The proposed CRS facility will limit any environmental impacts given its location in an industrial area, and its ability to contain its processing activities within a new sealed building prior to export. The CRS facility will have a fixed footprint and will be able to concentrate on managing its environmental outputs as well as the processing of materials. No materials will remain on site as the objective of the processing is to either recover materials for reuse or send no recyclable materials to landfill. The Fyshwick site therefore is not an end for waste as is the case for a landfill.

Transport costs and impacts on local and national roads were also considered. It is contended that the integration of rail transport into the proposal (waste residues, recyclables, general freight), for the is more efficient than road transport in the long-term. If the objective was to only put waste into Mugga Lane landfill in the future, then transport costs would only change by the population growth and volume received. As the Territory has policy objectives relating to landfill avoidance in the future and reuse of waste, additional processing and facilities will be required that will require more trucks, truck journey's and more transport to take the recycled and reusable resources to markets. If the volume to landfill decreases, then the need to take the material to other destinations is inevitable. ACT NoWaste has acknowledged the benefit of the rail connection in its submission.

Odour is a key element that is applicable to this type of activity regardless of the site chosen. In terms of site proximity to urban built form, the management of odour within the building is well proven and has been modelled and implemented in much larger facilities with 4 times the amount of MSW waste passing through. Numerous effective mitigation methods are proposed to manage any potential impacts.

The impact on **traffic** will be minimal and the proposal offers duel street access allows for a managed flow and the proposal included signalisation for management and safety purposes. The site has remained empty from its previous use but is appropriately zoned for waste recycling means that locating this proposal in Fyshwick was logical as the site presents a unique opportunity with the rail interface, a key site selection criterion (see Sections 2.5.3). A site of this size and location will not remained unused nor will it to contribute to traffic. In this proposal the traffic impact has been modelled to not be significant and further mitigated to ensure the least impact

Vermin control and the avoidance of a habitat which encourages their establishment and reproduction will be a priority and carefully managed to avoid, control and eradicate any pests on-site. The MRF building is fully enclosed, sealed negative pressure environment with fast closing doors which limit the ability for bird species and vermin to enter the building and subsequently become established. Waste will be processed expeditiously providing limited opportunity to harbour any pests. All residues will be containerised in waterproof shipping containers. A comprehensive and regular pest control program will be included in the site's operation plan (see Section 6.8)

Fire management has been considered for the facility in accordance with the recently released *Management and storage of combustible recyclable and waste materials – guideline* issued by the Victorian EPA in November 2017. This document has been used as a guide in the absence of a like policy for the ACT. A number of measures including infrastructure and equipment such as fire suppression, smoke alarms, thermal cameras, fixed fire hoses and sprinkler systems have been included in the proposal to assist with early detection and limitation of fire spread or damage in the worst-case scenario (see Section 6.11.5).

Fires are more likely to occur in domestic recyclable material recovery facilities where there has been excessive stockpiling of material in outdoor areas. The CRSMRF will be focussed on a range of material and not paper/plastic centric to reduce risk and waste will be stored internally where there is a fixed firefighting system (see Appendix X).

ACT Fire & Rescue have been consulted and no issues with Fire Management have been raised by this entity.

Discovery of small fractions of hazardous waste during the processing operation of such a facility is possible. Hazardous waste includes materials like smoke alarms, medications, batteries, light bulbs, paints, flammable liquids, containers with toxic chemical residues, asbestos, copper chrome arsenate timber etc. A comprehensive OEMP will include the specific processes and procedures for discovery and correct disposal of any such waste and therefore minimising risk of exposure to staff (see model OMP in appendix P).

In terms of possible visual impact, some of the residents have likened the facility to an Ikea store in design. This analogy is a reasonable assessment of the architectural merit and is consistent with the precinct. There is significantly less traffic than an Ikea or Bunnings store. CRS is committed to creating a modern architectural structure that will set a high development standard for industrial structures and buildings in the precinct and assimilate with the surrounding buildings in scale. The proposed shape and scale are entirely consistent with the buildings that exist in the Fyshwick industrial precinct. The site coverage is approximately 25% of the site and other surrounding buildings are of a similar height but have 50-60% site coverage are in fact more intensive uses of the land (see 6.5).

2.7 Consequence of not proceeding

If the proposal does not proceed then:

- There is nowhere to place any type of significant waste management facility, of substantial processing scale in the ACT, that will not have some type of impact. The site in Fyshwick is central, accessible, appropriate and significant in size. It also has the significant advantage of rail connectivity. The site will be able to manage many of the environmental issues within the building structure and processing arrangements. This type of land will also enable the provision of upgraded rail facilities which are very difficult to situate and will need to be created in the future regardless of this proposal.
- A key consequence of not proceeding, is that the ACT may miss a significant opportunity to be an industry leader in Australia and be self-determining in the crucial areas of waste recycling and connected transport. This is always changing, and CRS is offering a facility with flexibility for the future.
- The organic fractions currently going to landfill will continue until the governments possible FOGO processing plant is located and operating – site selection has not even begun. In the meantime, CRS

can at least be removing greenwaste that is not collected by the "opt in" greenwaste service and other organics such as wood, paper and cardboard could still be being diverted to existing processing facilities, possibly years ahead of time.

- The commercial waste stream will remain untouched apart from education schemes relating to source separation and the investigation of a PEF plant.
- The production of PEF material could, for example, be processed at CRS in the future rather than delayed till after the commencement of the FOGO scheme. The PEF could easily be exported by rail as is indicated in the "roadmap" to "interstate or international cement kilns or power stations" as the Waste Feasibility Study has proposed (p22) These "alternative fuels" could deliver around 7% improvement in the Territory's resource recovery rate" (p22) The ACT Government will miss $50-60m of capital investment of unbudgeted infrastructure and strategic solutions that they have posed as a potential opportunity in their Strategy. Mugga Lane landfill will continue to fill up quicker than it needs too which will come at a capital cost to Government and the community at some stage.

The proposed MRF facility is a unique and standalone development solution that will increase resource recovery, improve transportation of recovered materials and residues and will decrease the reliance on landfilling space within the ACT.

2.8 Examples of Similar Facilities

Much of the industry in Australia has been a progressive morph from landfill to now landfill avoidance. Successfully implemented technology in Europe where landfill has been scarce and expensive for a long time and is now occurring in Australia and the range of solutions are many. Much of the current infrastructure is a product of adaption and growth. There are several larger scale and volume facilities currently in the market albeit relatively new. The largest investments have traditionally been in landfills and this is changing.

Specifics of recycling are dependent upon the waste stream and the end markets. Canberra has a higher percentage of garden waste in their MSW bins therefore the process of separation and recovery is different to other cities who may have a dedicated greenwaste collection bin service. This could well change in Canberra as green bins become available to all suburbs.

Table 3, below, shows key examples of similar facilities around Australia. Some of these include adaptations of existing facilities which may not be as efficient or effective as a purpose-built facility such as the one CRS is proposing. Finding exact replicas of the facility proposed around Australia is difficult considering the rapid advances in sorting technology. Examples of similar facilities in the UK utilising equivalent sorting equipment as those proposed for the Fyshwick site have also been included.

Table 3: Similar Facilities in Australia and Overseas

Where	Who	Tonnes p/a	Waste Streams	Shed	Notes
NSW					
Chipping Norton	Benedict Industries	300,000	C & I, C & D	Yes	Adapted Commercial Shed
Port Botany	Veolia	200,000	C & I	Yes	1997 Purpose Built shed
Greenacre	Veolia	200,000	C & I	Yes	Adapted Rail Shed
WA					
Perth	Cleanaway	250,000	MSW and C&I	Yes	2017 Purpose Built
Bildra Lake	SUEZ	80,000	C&I	Yes	
VIC					
Altona	Transpacific/ Cleanaway	85,000	C&I	Yes	Commenced 2012
Overseas Examples					
Swansea, Wales	Derwent Group	150,000	C&I	Yes	
London	Powerday	200,000	C&I	Yes	
South West UK	New Earth Solutions	100,000	MSW	Yes	

3.0 Statutory Context

3.1 Planning and Development Act 2007 (ACT)

The proposed development triggers an EIS under Part 4.2, Schedule 4 of the *Planning and Development Act 2007*. Part 4.2, Schedule 4 requires an EIS for a development that involves:

"*proposal for a waste transfer station or recycling 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, 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 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*."

As such, this report is submitted as a Draft EIS for public notification and review by the ACT Government under Part 4.2, Schedule 4 of the *Planning and Development Act 2007.*

PLANNING CONTEXT

STRATEGIC PLANNING CONTEXT

STATUTORY PLANNING CONTEXT

ZONE OBJECTIVES

A) Support the diversification and expansion of the ACT's industrial base and employment growth

B) Facilitate investment in a wide range of industrial and related activities, with efficient land utilisation and provision of infrastructure

C) Provide convenient access for ACT and regional residents to industrial goods, services and employment opportunities, including by encouraging active travel and access to transport.

D) Ensure that industrial development achieves high environmental standards of cleaner production, waste disposal, noise and air quality

E) Encourage the design and construction of industrial and commercial buildings that are energy efficient, functional and flexible

F) Ensure that development along major approach routes and major roads meets appropriate standards of urban design

G) Accommodate industry-associated retailing, services and other commercial uses without jeopardising an adequate supply of industrial land

H) Provide for a range of commercial and service activities at a scale that will protect the planned hierarchy of commercial centres and the Territory's preferred locations for office development

I) Meet the need for a mix of lower rent bulky goods retailing, specialised industrial, commercial and service activities alongside general industry

J) Preserve and promote viable industries that can coexist with more commercially oriented uses

k) Make provision for small-scale services that support surrounding industrial activities, or which meet the needs of the local workforce

3.1.1 Ecologically Sustainable Development

The proposed development adopts long-term actions regarding economic development, social development and environmental protection. The project – involving the separation, treatment and transport of waste via rail to the WBL, will divert waste from the Mugga Lane landfill, generate commercially reusable resources while also revitalising the ACT rail corridor which at present has nominal use.

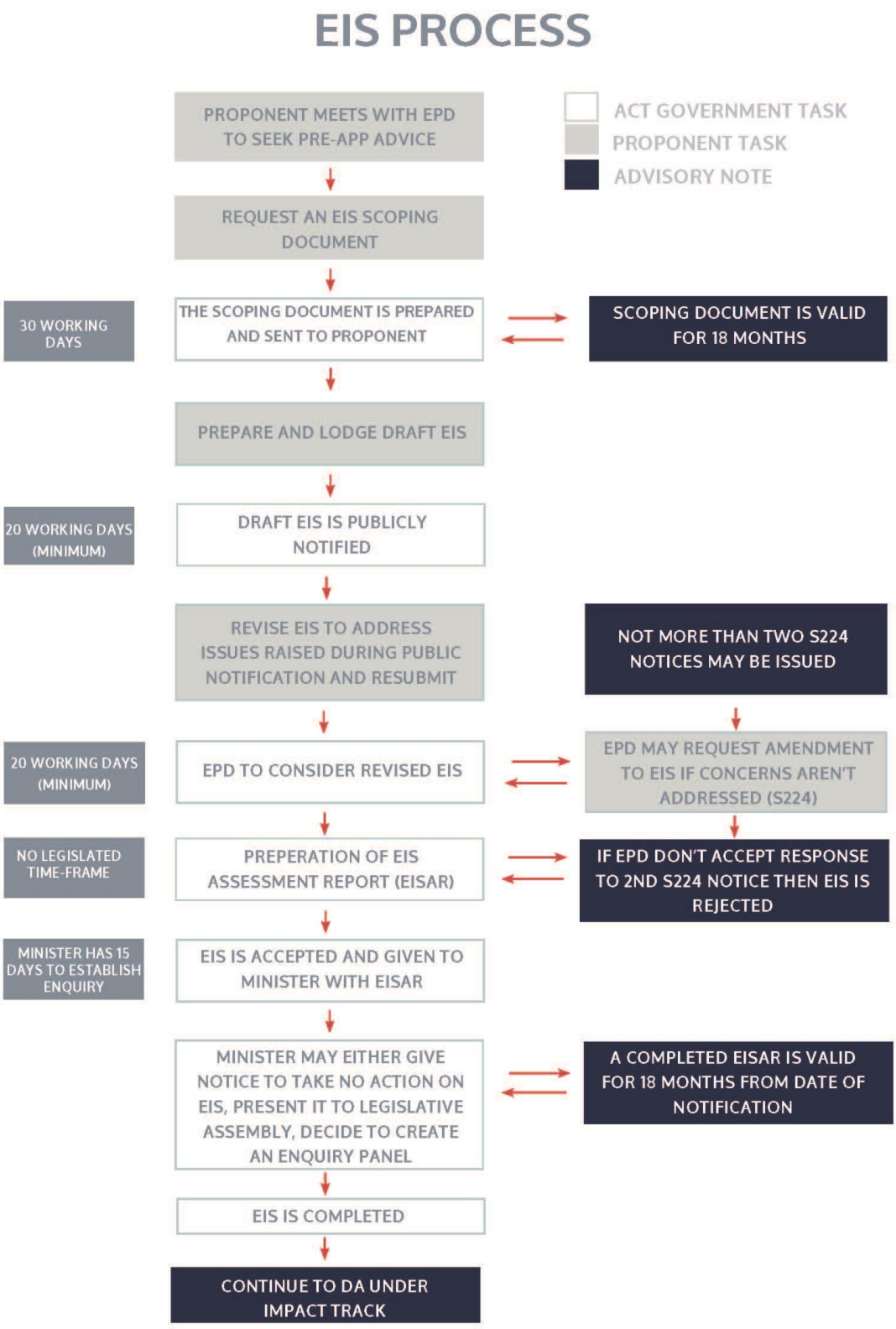
The MRF will have positive economic impacts as it will create jobs, rejuvenate the rail corridor, extend the life of the Mugga Lane landfill and produce renewable resources. Similarly, the MRF will have positive environmental outcomes through the separation and recycling and the extension of the Mugga Lane Resource Centre's life. Operation of the facility will not adversely impact the social development of the local area through the inclusion of appropriate odour, noise, traffic and hazard mitigation design considerations.

The development addresses the principles of ecologically sustainable development in the *Planning and Development Act 2007*. The general aim of the proposal is to reduce total Mugga Lane landfill volume and greenhouse gas emissions through greater recycling and diversion of residues to the WBL. These objectives particularly uphold the inter-generational equity principle.

3.1.2 EIS Process

An EIS is a document used by proponents to develop and inform key stakeholders about significant proposals. The document also acts as an information channel between the proponent, interested parties and community members. The document should eventually aid the Government in informing and imposing conditions of approval, should they be needed. A step-by-step of the EIS process is detailed in the infographic at Figure 19 below.

Figure 19: EIS process in the ACT



Source: Purdon Planning

3.2 National Capital Plan

The National Capital Plan (NCP) is the strategy giving effect to the Commonwealth's interests and intentions for planning, designing and developing Canberra and the Territory. The NCP requires sites located in areas of importance to meet a range of specific design, siting and general planning criteria.

The subject site boundary is located approximately 350m from Canberra Avenue and 100m from Monaro Highway. Development on blocks near Canberra's main approach routes and avenues, including Canberra Avenue and Monaro Hwy are subject to special consideration by the National Capital Authority. However, given the site does not sit adjacent to the Monaro Highway it is assessed that a DCP is not required for development of the site. This has been confirmed by the National Capital Authority.

The National Capital Authority has advised the following:

> "Site is partially situated within 200m of the centreline of the Monaro Highway which is defined as an approach route.
>
> The NCA has taken the view that this site does not front the Approach Route so will not require a DCP" (see Appendix V).

3.3 Territory Plan

The subject site is located wholly on land referred to as "Territory Land" and as such, the jurisdiction for planning and development proposals rests with the ACT Government.

3.3.1 Industrial Mixed-Use Zone (IZ2) and Services Zone (TSZ2)

Blocks 9 and 11 Section 8, Fyshwick are in the IZ2 Industrial Mixed-Use Zone.

The proposal will ideally integrate with the proposed RFT infrastructure situated entirely within part Block 11 Section 47 Fyshwick which is zoned TSZ2 (See **Figure 20 and Figure 21**).

The MRF proposal is situated wholly on IZ2 land and is therefore subject to the objectives and permitted land uses of that zone.

The RFT is subject to a separate Development Application (EIS not required) process and is situated wholly on TSZ2 land along the Canberra rail corridor and is consistent with the permitted uses of the zoning.

Should the RFT be not approved or an emergency eventuated then the intermodal containers would be taken by road.

The Territory Plan highlights several key objectives for IZ2 zones. The proposed MRF development is consistent of these objectives, as highlighted in **Table 4** below.

Figure 20: Territory Plan Extract

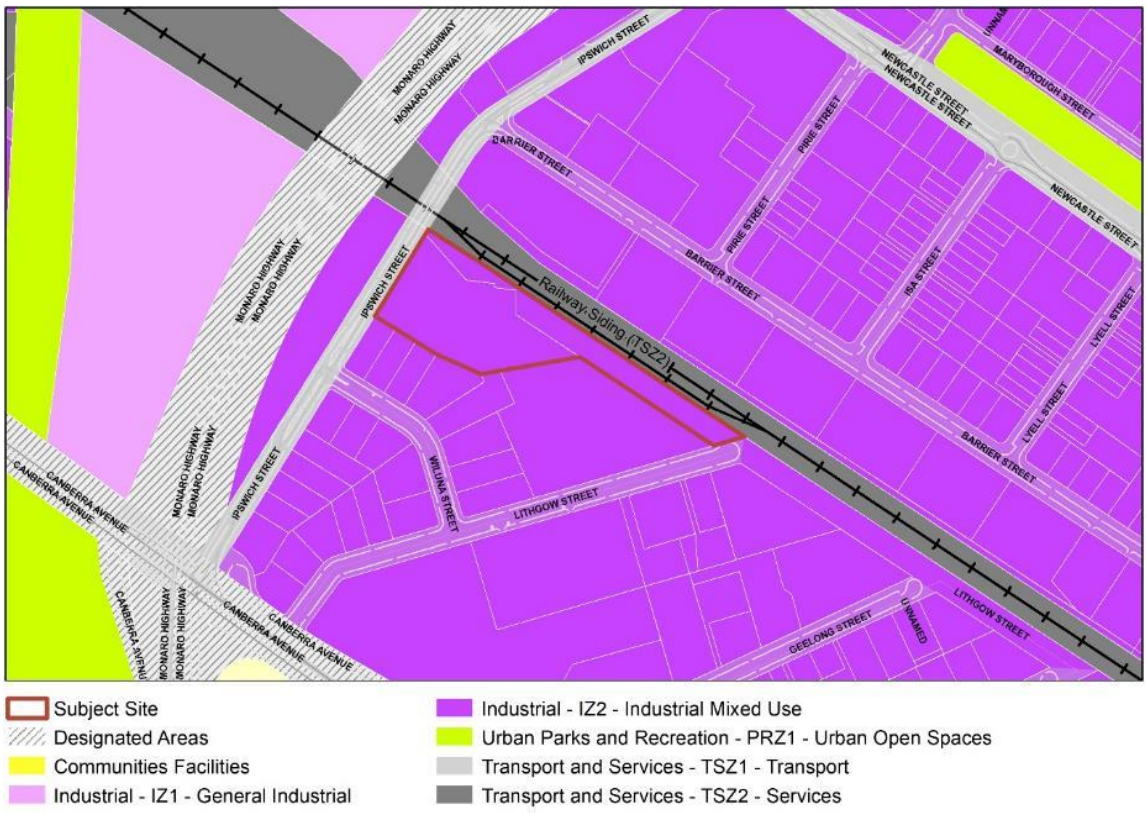


Figure 21: Site Layout and Zoning

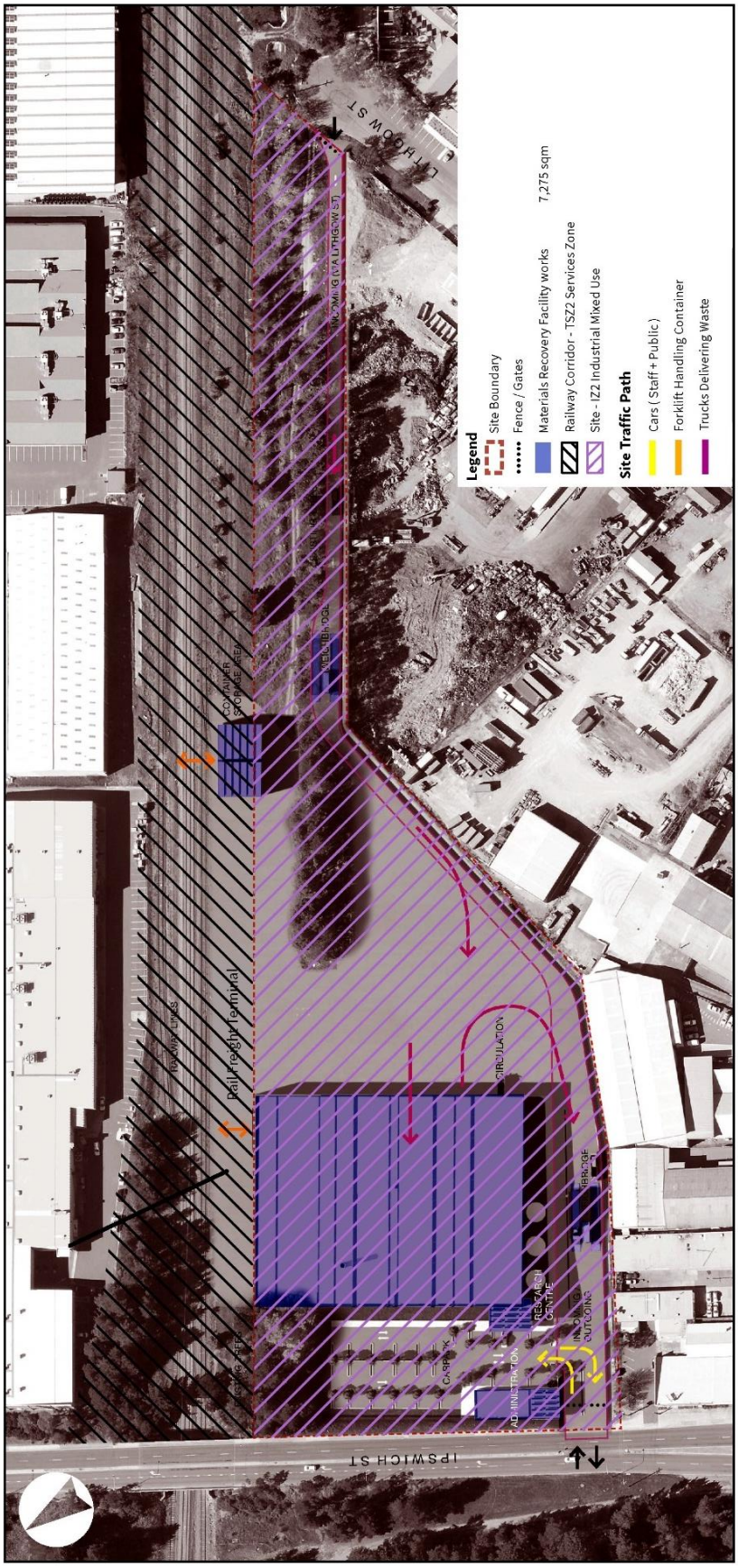


Table 4: IZ2 Industrial Mixed-Use Zone Objectives

Objective	Response
a) Support the diversification and expansion of the ACT's industrial base and employment growth	The MRF will employ some 48-fulltime staff and 10 additional part-time staff. There will also be many flow-on jobs created through the revival of freight rail in the ACT as part of the RFT operation. Noting that such a facility does not currently exist in the ACT, the proposed use also contributes towards a diverse economic base.
b) Facilitate investment in a wide range of industrial and related activities, with efficient land utilisation and provision of infrastructure	The proposed use contributes towards a broader range of industrial uses. The use does not exist within the ACT at present. The site has direct access to the South Shunt and as such, utilising this site for freight exports ensures optimal use of the rail shunt and is also an opportunity to integrate with existing underutilised rail infrastructure.
c) Provide convenient access for ACT and regional residents to industrial goods, services and employment opportunities	Given the site's central locality in the suburb of Fyshwick, the proposed use provides convenient access to employment opportunities
d) Ensure that industrial development achieves high environmental standards of cleaner production, waste disposal, noise and air quality	The adoption of innovative technology and design practices ensures the proposed MRF does not detract from air quality or noise. The proposal achieves high environmental standards through the reduction of greenhouse gas emissions and diversion of landfill from the Mugga Lane Landfill.
e) Encourage the design and construction of industrial and commercial buildings that are energy efficient, functional and flexible	The proposed MRF will be purpose built and include innovative design features to manage noise, odours, fire risk and leachate. This will ensure construction and operations are as energy efficient as possible and do not significantly impact the local area. The internal operations will be flexible for future recycling market directions.
f) Ensure that development along major approach routes and major roads meets appropriate standards of urban design	The proposed development is located on Ipswich Street, approximately 350m/120m from two major approach routes in Canberra Avenue and Monaro Highway. The development is to adopt modern design principles and will reflect the industrial character of the area.
g) Accommodate industry-associated retailing, services and other commercial uses without jeopardising an adequate supply of industrial land	The proposed use is predominantly an industrial use. It is considered that it will not jeopardise or interrupt the supply of industrial land in Fyshwick.
h) Provide for a range of commercial and service activities at a scale that will	The proposed use is an industrial use precinct. It is considered that the use is correctly located in

	protect the planned hierarchy of commercial centres and the Territory's preferred locations for office development	an industrial estate and is consistent with the hierarchy of commercial centres.
i)	*Meet the need for a mix of lower rent bulky goods retailing, specialised industrial, commercial and service activities alongside general industry*	The proposed development will be purpose built and is a specialised industrial use. The site is co-located alongside other industrial and recycling facilities to ensure a mix of activities in Fyshwick.
j)	*Preserve and promote viable industries that can coexist with more commercially oriented uses*	The proposed use is an industrial use. The use can coexist with more commercially oriented uses and will not negatively impact on any of these adjacent land uses.
k)	*Make provision for small-scale services that support surrounding industrial activities, or which meet the needs of the local workforce*	Not applicable.
l)	*The following Zone Objectives apply specifically to West Fyshwick:* *i. Encourage Canberra's regional role for food processing, wholesaling, distribution and marketing* *ii. Cluster uses which are compatible with and complementary to existing facilities, particularly with regard to food processing and warehousing and the markets, including some small-scale food retailing* *iii. Protect the safety and amenity of food related enterprises* *iv. Promote buildings along Canberra Avenue that maintain and enhance a character appropriate for a major approach road to the Central National Area*	The subject site is not in West Fyshwick.

3.3.2 Permitted Uses

Industrial Mixed-Use Zones permits the following uses under the merit track:

Ancillary use	Minor road
Bulk landscape supplies	Minor use
Bulky goods retailing	Municipal depot
Car park	Non-retail commercial use (business agency, financial establishment, office, public agency)
Caretaker's residence	Outdoor recreation facility
Club	Parkland
Communications facility	Pedestrian plaza
Community Use (child care centre, community activity centre, community theatre, cultural facility, educational establishment, health facility, hospital, place of worship, religious associated use)	Plant and equipment hire establishment
Consolidation	Public transport facility
Craft workshop	Recyclable materials collection
Defence installation	**Recycling facility**
Demolition	Restaurant
Development in a location and a type identified in a precinct map as additional merit track development	Scientific research establishment
Drink establishment	Service station
Emergency services facility	Shop (bulky good retailing, department store, personal service, retail plant nursery, supermarket, take-away food shop)
Freight transfer facility	Sign
Funeral parlour	Store
General industry	Subdivision
Indoor entertainment facility	Temporary use
Indoor recreation facility	Transport depot
Industrial trades	Varying lease (where not prohibited, code track or impact track assessable)
Light industry	Vehicle sales
Liquid fuel depot	Veterinary hospital
Major road	Warehouse
Major Utility Installation (distribution reservoir, major electrical sub-station, major gross pollutant trap, major pump station, major service conduits, power generation station, treatment plant, urban lake, pond, and/or retardation basin)	**Waste transfer station**

The proposed MRF proposal can be defined in the following terms under the Territory Plan:

> ***Recycling facility*** *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.*
>
> ***Waste transfer station*** *means the use of land for the collection of waste into bulk containers for the further transport to a landfill site, recycling facility or other waste disposal facility.*

These above uses are consistent with the Industrial Zoning for Blocks 9 & 11 Section 8 Fyshwick. The railway component, including hardstand and rail siding is situated wholly on Block 11 Section 47 Fyshwick

and is subject to a separate DA process. The site is zoned TSZ2 – transport Zone. The TSZ2 zone permits the following uses under the merit track:

Ancillary use	Minor road
Car park	Minor use
Cemetery	Municipal depot
Communication facility	Public transport facility
Consolidation	**Railway use**
Demolition	Recyclable materials collection
Development in a location and a type identified in a precinct map as additional merit track development	Recycling facility
Emergency services facility	Sign
Freight transport facility	Store
Hazardous waste facility	Subdivision
Incineration facility	Temporary use
Land fill site	Transport depot
Major road	Varying lease (where not prohibited, code track or impact track assessable)
Major Utility Installation (distribution reservoir, major electrical sub-station, major gross pollutant trap, major pump station, major service conduits, power generation station, treatment plant, urban lake, pond, and/or retardation basin)	Waste transfer station

The proposed RFT (subject to separate DA2018551083) can be defined as the following under the Territory Plan:

> ***Railway use*** *means any of the following uses:*
>
> *a) a railway line for passenger and/or freight movement;*
> *b) a railway station;*
> *c) a railway freight terminal; and/or*
> *d) a railway equipment maintenance depot;*
>
> *and includes land and reservations of land set aside for railway purposes (not light rail)*

The activity proposed on Block 11, Section 47 Fyshwick clearly will be a railway freight terminal. There is no specific definition of Railway freight terminal in the Territory Plan definitions, so it is appropriate to define the activity proposed as that of a freight transport terminal (using rail), which is also permissible in the zone as defined by the Territory Plan:

> ***Freight transport facility*** *means the use of land for the principal purpose of bulk handling and storage of goods and materials, whether or not facilities are included for parking, servicing and repair of vehicles used to transport the goods or materials on the site but does not include any retail sales or wholesaling from the site.*

The above use is entirely consistent with the activities proposed for this site. The zoning permits the train loading, unloading and container storage activity proposed in this EIS, the lease purpose clause for Block 9 and 11 Section 8 Fyshwick and the licence for part of Block 11 Section 47 Fyshwick and are considered appropriate for the site.

3.4 Territory Plan Codes

3..4.1 Fyshwick Precinct Map and Code

The site is identified as being in the RC2 Industrial Mixed-Use area of the Precinct Code. The Code sets gross floor area restrictions for shops in this area. This rule is not applicable to the MRF or RFT facility as the proposal is not for shop.

There are no other provisions of the Fyshwick Precinct Code relevant to the development proposal.

3.4.2 Industrial Zones Development Code

The Code includes several provisions which guide new development, including:

Restrictions on community uses	Materials and finishes
Restrictions on non-retail commercial uses	Interface
Restrictions on caretaker's residence	Crime Prevention through Environmental Design (CPTED)
Subdivision	Access and mobility
Demolition	Parking and site access
Building Height	Amenity
Setbacks	Environment
Building design	Services

Preliminary review of the Code identifies that the proposed MRF component on Blocks 9 and 11 Section 8 Fyshwick complies with all the relevant rules and criteria of the zone.

The proposed use and indicative design are consistent with the relevant rules and criteria of the Code. The design has been developed to date with the requirements of the Territory Plan considered and adhered to.

3.4.3 Transport Zones Development Code

The railway component of the site is sited wholly in Block 11 Section 47 Fyshwick, which is zoned TSZ2 – Transport Zone. Railway Use is consistent with the use for the licenced area as a rail siding and hardstand. The TSZ2 corridor has been specifically set to cater for the Canberra rail corridor. The proposed RFT use for freight is consistent with the TSZ2 – Services Zone.

3.4.4 General Development Codes

The Territory Plan also includes a range of general codes which guide the detailed design process and development. For the proposal to comply with the above Codes they may also need to comply with the following:

- Parking and Vehicular Access General Code
- Bicycle Parking General Code
- Crime Prevention through Environmental Design General Code
- Waterways: Water Sensitive Urban Design General Code
- Lease Variation General Code

The design responds to the rules and criteria of the Industrial Development code through building and site controls, built form (including height and setbacks) and parking and access. Amenity and Environmental considerations are addressed directly as part of this EIS document.

Preliminary review of the relevant Territory Plan Codes, including the Fyshwick Precinct Map and Code, the Industrial Zones Development Code, the Transport and Services Zone Development Code and the range of General Codes indicate the proposed development is consistent with the Territory Plan

A full Design and Siting submission covering all relevant codes of the Territory Plan will be submitted following this EIS process.

3.5 Other Statutory Requirements

3.5.1 Planning and Development Regulation 2008 (ACT)

The *Planning and Development Regulations 2008* give effect and detailed guidance to particular areas of the *Planning and Development Act 2007*. In relation to EISs the regulation firstly steps out what must be included in the preparation of an EIS, including:

1. *A non-technical summary and recommendations*
2. *A glossary of technical terms, abbreviations and acronyms*
3. *A description of the proposal including the location of the site, the land custodian status, the lease status, the proposed land use, the proposal's objectives, the time for implementation and details of any alternatives to the proposal considered*
4. *A description of the EIS process including statutory approval gained or required, base information for predicting significant environmental impacts and the criteria used for assessing the significance of each environmental impact and performance of any alternative.*
5. *A statement about the proposal's compatibility with the principles for environmental sustainability in the Territory Plan*
6. *Identify each potentially significant environmental impact including their environmental value, the findings of any investigation relating to the land, a description of the effects of the environmental impact on physical, human and ecological systems, an analysis of the significance of potential environmental impact of the development and a statement of the approach taken toward environmental management*
7. *A description of consultation undertaken for the EIS*

The Regulations also highlight the relevant entities for the preparation of scoping documents, the time for consulting such entities, the content of scoping documents and the criteria for consultants.

The relevant areas of the Planning and Development Regulations, as part of the Planning and Development Act 2007 have been addressed and have formed the base of this EIS Report.

3.5.2 Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The Environmental Protection and Biodiversity Conservation (EPBC) Act 1999 is the Commonwealth Government's central piece of environmental legislation. The EPBC Act sets restrictions on development which will have or is likely to have significant impact on areas which are of national environmental significance.

The proposed MRF will not impact on any of the nine matters of environmental significance protected under the EPBC Act. These matters are outlined in **Table 5** below.

Table 5: EPBC Matters of Environmental Significance

EPBC matter	Response
World Heritage property	The subject site nor any locations in close proximity to the site are World Heritage properties.
National Heritage property	The subject site nor any locations in close proximity to the site are National Heritage properties.
Ramsar wetlands	No wetlands listed under the Ramsar Convention are located on or near the subject site.
Threatened spaces and ecological communities	The site is not recognised as important habitat or as containing any threatened species.
Migratory species	The site is not recognised as containing important habitat for any migratory species protected under international agreements.
Commonwealth marine areas	The subject site is not a Commonwealth marine area.
The Great Barrier Reef Marine Park	The subject site is not located in the Great Barrier Reef Marine Park.
Nuclear actions	The proposal does not establish, significantly modify or relate to any nuclear activity.
A water resource relation to coal seam gas and large coal mining developments	The future operations on the site does not impact nor is related to a water resource associated with a coal seam gas or coal mine development.

3.5.3 Ozone Protection and Synthetic Greenhouse Gas Management Amendment (OPSGGMA) Act 2010 (Cth)

The OPSGGMA Act 2010, an amendment of the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989, protects the environment by reducing harmful emissions of ozone depleting substances and synthetic greenhouse gases. The Act seeks to help control the manufacture, import and export of ozone depleting substances and synthetic greenhouse gases and products containing these gases.

The proposed development supports the principles of the OPSGGMA Act as it will result in the diversion of waste from the Mugga Lane landfill. The operation of the MRF and RTF, will utilise rail and reduce greenhouse gas emissions and will expand the lifespan of the Mugga Lane landfill.

3.5.4 Energy Efficiency in Government Operations (EEGO) Policy (2006) (Cth)

The EEGO policy aims to improve energy efficiency and reduce environmental impact of Government operations. The intent of the policy is to influence all other organisation by leading the community by example.

The Government operations applicable to the EEGO policy include all Commonwealth Agencies under the Public Governance, Performance and Accountability (PGPA) Act 2013 and statutory bodies covered by the PGPA Act 2013 that derive over 50% of their funding directly or indirectly from the Commonwealth.

Capital Recycling Solutions Pty Ltd (CRS) are the major proponent in this development. Given no Commonwealth Agencies or statutory bodies are involved with the proposal, the EEGO Policy is not applicable.

3.5.5 Australian Government ICT Sustainability Plan (ICTSP) 2010-2015 (Cth)

The ICTSP 2010-2015 aims to identify the standards that should be applied in government purchasing of ICT products and services and include measures to improve the ICT environmental performance across government departments, particularly in terms of energy efficiency.

As with the EEGO Policy, both stages of the proposed development are to be completed through the joint venture and creation of two private companies. Therefore, the ICTSP is largely irrelevant to the proposed development.

3.5.6 Australian Government Data Centre (AGDC) Strategy 2010-2025 and Data Centre Optimisation Targets Policy (DCOTP) (Cth)

The AGDC Strategy is a Government wide (Commonwealth) approach to controlling the government's ICT infrastructure and data centre facilities. The Strategy aims for all agencies to adopt modern technologies and practices to increase efficiency of data centres; data centre sites and services be shared to reduce duplication and unnecessary cost of infrastructure; and, data centre sites to optimally match the business needs and requirements of the agencies.

The DCOTP is part of the AGDC Strategy. The Policy aims to drive down the operating costs of data centre, reduce data centre CO2 emissions and assist in achieving the Government's energy efficiency targets.

The proposal is to be a privately-run facility with no association to Federal Government agencies operating under the Financial Management and Accountability Act 1997. Therefore, the AGDC Strategy and Data Centre Optimisation Targets Policy are not applicable.

3.5.7 The Environment Protection Act 1997 (ACT)

The Environment Protection Act 1997 (ACT) is the primary legislation protecting the environment from pollution and its effects in the ACT. The Act provides a regulatory framework which helps reduce and eliminate the discharge of pollutants into the air, land and water.

The Environment Protection Act also establishes the Environmental Protection Authority (EPA) as the statutory body responsible for environmental regulation and policy. The EPA administers the Act covering air and water quality, waste, contaminated land, noise, pesticides and hazardous waste.

The proposed development is directly compliant with the main objectives of the Act as it promotes clean production technology, reuses and recycles materials and minimises waste.

3.5.8 Waste Management and Resource Recovery Act 2016 (ACT)

Part 2 Objects and principles

8 Objects of Act

The objects of this Act are to—

(a) manage waste according to the following hierarchy:

(i) minimise the generation of waste;

CRS has no issue with this and are not opposed to any initiatives that the ACT seeks to introduce from time to time to encourage waste minimisation.

(ii) maximise the recovery and re-use of resources;

CRS is committed to recycling existing waste fractions that are being landfilled - this will assist in maximising recovery.

(iii) minimise the amount of waste that goes to landfill;

CRS intends to divert at least 20% of the waste it receives from landfill which assists in achieving this objective.

(b) support innovation and investment in waste management;

CRS is seeking to commit some $50-60 millions on its facility and associated equipment. Innovation in the sorting and separation of wastes will be an ongoing focus to recycle appropriate resources for the reuse markets and quality required.

(c) promote responsibility for waste reduction;

As per (i) above

(d) promote best-practice waste management.

As per (iii)(b) above

9 Principles to be considered

(1) The objects of this Act are to be achieved by considering the following principles:

(a) the inter-generational equity principle;

(b) the polluter pays principle;

(c) the precautionary principle;

(d) the proximity principle;

(e) the waste minimisation principle.

(2) In this section:

inter-generational equity principle *means that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.*

The proposal aligns with the three fundamental principles forming the basis of intergenerational equity and sustainable development.

1. *Options Principle: Conservation of the natural and cultural resource base so that options remain available for future generations:*

The proposal will not negatively impact on options for future generations given that the process will improve recycling and materials recovery and will divert materials for landfill. The proposal is adaptable and could be leveraged to create RDF and FOGO outputs.

2. *Conservation of Quality Principle: Each generation must maintain the quality of the Earth leaving it no worse for future generations*

The proposal will reduce greenhouse emissions, divert materials from landfill, improve recycling.

3. *Conservation of Access Principle: provides that each generation should give its members equitable rights that access the legacy of past generations and should conserve this access for future generations:*

The proposal is expected to have no adverse impact on this principle.

Diversion from landfill of recyclables and any inadvertent hazardous content will in the short term improve the volume and risk of material disposed of in the ground. The appropriate disposal and/or reuse of recyclable materials, particularly those that are co-mingled and are currently all deposited in the ground, is an improvement for the future. As more re-purpose facilities are created so does the potential for more landfill diversion.

polluter pays principle *means that polluters should bear the appropriate share of the costs that arise from their activities.*

This will be function of potential levies to be created by Government to assist in the avoidance of waste to landfill and encouraging the use of the levy to create the re-purposing facilities and recycling markets.

precautionary principle *means that, if there is a threat of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

The CRS facility will be receiving waste material from licensed operators and will itself have to have an operating licence and performance criteria. CRS will dispose of recyclable materials to licensed reuses and re processers and residues will go to a licensed landfill. There is no risk of irreversible environmental damage as the facility does not store or keep waste material long term and is a sealed building to prevent impact on the environment always

proximity principle *means that waste and recovered resources should be managed as close to the source of generation as possible.*

CRS is ideally located to comply with this objective as the proximity to the waste sources and the railway will minimise the distance of trucks required to collect rubbish, as well as improve the dispersion of recyclables to markets outside of the ACT as landfill diversion occurs and more sorting takes place. The farther the facility is away the more trucks that will be required and additional emissions, wear and tera on vehicles and roads.

waste minimisation principle *means that waste is handled in a way that minimises and, if practicable, eliminates harm to the environment.*

By proposing to handle waste inside a custom-built facility that has specific focus on the capture and treatment of leachate, prevention of odour, noise and vermin including birds, in-situ firefighting facilities and correctly managed site conditions to capture and control stormwater and create a barrier for site penetration from rain and for latent hydrocarbons from leaching out. All these elements will be included in the written CMP and OEMP documents to limit any harm to the environment

Part 5 Waste facility licences

18 Requirement to hold a waste facility licence

A person must not operate a waste facility unless the person holds a waste facility licence.

Noted and agreed

Note Section 107 (Unauthorised waste activity) makes it an offence to operate a waste facility without a licence.

Noted and agreed

23 Licence conditions

A licence is subject to—

(a) a condition that the licensee must comply with this Act; and

(b) any other condition the waste manager imposes when issuing the licence.

Examples—conditions—par (b)

1 stating how food waste must be managed at a waste facility

2 imposing time limits on the storage of skips after collection, before the skips must be taken to a waste facility

3 stating that a waste facility may not receive certain types of waste

4 imposing requirements about sorting or processing certain waste material before using the residual waste for energy generation

Note 1 A decision under this section is a reviewable decision (see s 120).

Note 2 A reference to an Act includes a reference to the statutory instruments made or in force under the Act, including any regulation (see Legislation Act, s 104).

Note 3 An example is part of the Act, is not exhaustive and may extend, but does not limit, the meaning of the provision in which it appears (see Legislation Act, s 126 and s 132)

Part 6 Waste transporter registration

30 Requirement to be registered as waste transporter

A person must not operate as a waste transporter unless the person is registered.

Noted and agreed. CRS will only be a transporter or waste residues and recyclables after processing for which it will require a licence. The collection of household rubbish is by Government contracted transporters and the rest is carried by private contractors

Note Section 107 (Unauthorised waste activity) makes it an offence to carry on business as a waste transporter if not registered.

Noted and agreed

34A Registration conditions

A waste transporter registration is subject to—

(a) a condition that the registered waste transporter must comply with this Act; and

(b) any other condition the waste manager imposes on the registration when the application is approved.

Examples—par (b)

1 limiting the kind and quantity of waste to be transported

2 requiring a kind of waste to be transported in a particular way

Note 1 A decision under this section is a reviewable decision (see s 120).

Note 2 A reference to an Act includes a reference to the statutory instruments made or in force under the Act, including any regulation (see Legislation Act, s 104).

Note 3 An example is part of the Act, is not exhaustive and may extend, but does not limit, the meaning of the provision in which it appears (see Legislation Act, s 126 and s 132).

Part 11 Reporting

65 Waste activity report

(1) A licensee or registered waste transporter must give the waste manager a report (a waste activity report), in writing, about waste activities carried out in a reporting period.

Noted and agreed

Note If a form is approved under s 127 for this provision, the form must be used.

(2) The report must—

(a) contain information prescribed by regulation; and

(b) be given to the waste manager not later than 1 month after the end of the reporting period.

(3) In this section: reporting period means the period prescribed by regulation.

Part 12 Exemptions

67 Declaration exempting person or activity

(1) The waste manager may, on application or on the manager's own initiative declare the following exempt from a provision of this Act:

(a) a person or class of people;

(b) waste activity of a particular kind or generally.

Note 1 If a form is approved under s 127 for an application, the form must be used.

Note 2 A fee may be determined under s 126 for an application.

Note 3 A reference to an Act includes a reference to the statutory instruments made or in force under the Act, including any regulation (see Legislation Act, s 104).

(2) A declaration under subsection (1) may be made only—

(a) in an emergency; or

Examples—emergency

- fire
- flood
- fuel shortage

Note An example is part of the Act, is not exhaustive and may extend, but does not limit, the meaning of the provision in which it appears (see Legislation Act, s 126 and s 132).

(b) if the waste manager is satisfied that—

(i) it is not practicable to comply with the provision; and

(ii) noncompliance with the provision will not have any significant adverse effect on public health, property or the environment.

Note A decision under this section is a reviewable decision (see s 120).

(3) An exemption in a declaration may include conditions.

(4) A declaration—

(a) made in circumstances mentioned in subsection (2) (a)—is a notifiable instrument; and

Note A notifiable instrument must be notified under the Legislation Act.

(b) made in circumstances mentioned in subsection (2) (b)—is a disallowable instrument.

Note A disallowable instrument must be notified, and presented to the Legislative Assembly, under the Legislation Act.

(5) A declaration made in an emergency may commence when it is made or on a later date stated in the declaration.

3.5.9 Waste Management and Resource Recovery Regulation 2017 (ACT)

Part 2 Waste facility licences

6 Information for licence application—Act, s 19 (2) (b)

Noted. CRS will apply and require a licence to operate the MRF

The following information is prescribed:

(a) the applicant's name, business address, email address and telephone number;

(b) if the applicant is a partner in a partnership—the partnership's name;

(c) if the applicant is not a company registered under the Corporations Act but has an ABN—

(i) the ABN; and

(ii) the name, business address, email address and telephone number of each person who is to have day-to-day control of the waste facility's business;

(d) if the applicant is a company registered under the Corporations Act—

(i) the company's ACN; and

(ii) the name, business address, email address and telephone number of each director and public officer;

(e) identifying particulars of land to which the application relates;

(f) if someone other than the applicant is the lessee of the land—the written consent of the lessee of the land;

(g) if the application relates to unleased territory land—the written consent of the director-general responsible for the Planning and Development Act 2007;

(h) the kind of waste activity to be conducted at the facility to which the application relates;

(i) the waste categories that may be dealt with in the course of waste activity at the facility.

Examples—par (e)

1 block and section number

2 street address

Examples—par (h)

1 landfill

2 storage

3 sorting

4 recycling

Note An example is part of the regulation, is not exhaustive and may extend, but does not limit, the meaning of the provision in which it appears (see Legislation Act, s 126 and s 132).

7 Entities to be consulted before licence application

decision—Act, s 22 (2)

(1) The following entities are prescribed:

(a) the chief officer (fire and rescue service);

Noted and has been done for the EIS and will be done again for any development application or licencing detail

(b) the environment protection authority;

Noted this has been done for the EIS and will be done again for any development application or licencing detail

(c) if the application relates to a facility for the storing, sorting, treating, processing or disposing of clinical waste—the chief health officer.

The CRS facility does not accept this category of waste

(2) In this section:

clinical waste—see the Clinical Waste Act 1990, dictionary.

Part 5 Reporting

25 Waste activity report information—Act, s 65 (2) (a) Noted

(1) The following information is prescribed:

(a) for a report by a licensee—

(i) if the licensee's waste facility received waste from a registered waste transporter—details of each registered waste transporter that delivered waste to the facility, including the registration details of each waste transporter vehicle that delivered waste; and

(ii) if the facility received waste from an entity other than a registered waste transporter—the registration details of each entity vehicle that delivered waste to the facility; and

(iii) the dates on which waste was received at the facility; and

(iv) the waste categories received at the facility; and

(v) the amount of waste in each load received at the facility,

expressed as either—

(A) a unit of weight or, if it is not practicable to determine the weight, a unit of volume; or

(B) the total number of items of a particular waste category; and

(vi) the dates on which waste was collected from the facility; and

(vii) the waste categories collected from the facility; and

(viii) the amount of waste in each load collected from the facility, expressed as either—

(A) a unit of weight or, if it is not practicable to determine the weight, a unit of volume; or

(B) the total number of items of a particular waste category; and

(ix) details of places where waste collected from the facility were to be transported;

(b) for a report by a registered waste transporter—

(i) the places, other than a waste facility, where waste was collected by the transporter; and

(ii) the dates on which waste was collected by the transporter; and

(iii) the waste categories collected by the transporter; and

(iv) the amount of waste in each load collected by the transporter, expressed as either—

(A) a unit of weight or, if it is not practicable to determine the weight, a unit of volume; or

(B) the total number of items of a particular waste category; and

(v) details of each waste facility to which the transporter delivered waste, and from which the transporter collected waste; and

(vi) details of places where waste collected from a waste facility were transported.

(2) However, information mentioned in subsection (1) is not prescribed for a report given by a particular licensee or registered waste transporter if the waste manager notifies the licensee or registered waste transporter, in writing, that the information need not be included.

Note Power to make a statutory instrument includes power to make different provision in relation to different matters or different classes of matters, and to make an instrument that applies differently by reference to stated exceptions or factors (see Legislation Act, s 48).

(3) In this section:

place includes any of the following:

(a) a suburb or locality;

(b) a street or street address;

(c) a unit's plan;

(d) a centre of retail trade.

26 Reporting periods for waste activity report—Act, s 65 (3)

The period prescribed is each quarter.

Noted

Note Quarter—see the Legislation Act, dictionary, pt 1.

Schedule 1 Waste categories

(see dictionary, def waste category)

1.1 Meaning of electronic waste—sch 1

In this schedule:

electronic waste—see the Environment Protection Act 1997, dictionary.

1.2 Categories of waste

The various categories of waste are listed in **Table 6** below.

Table 6: Categories of Waste

Waste Category	*Accepted/Not Accepted*
1 aggregate, road base or ballast	[Accepted in mixed loads]
2 aluminium (non-ferrous)	[Accepted]
3 asbestos	[Not accepted]
4 ashes	[Not accepted]
5 batteries	[Not accepted]
6 biosolids or manures	[Not accepted]
7 bricks or concrete	[Accepted in mixed loads]
8 ceramics, tiles or pottery	[Accepted in mixed loads]
9 commingled recyclables	[Accepting in mixed loads]
10 composts or mulches	[Not accepted]
11 contaminated soil	[Not accepted]
12 dredging spoil	[Not accepted]
13 electronic waste	[Accepted]
14 ferrous metal (iron or steel)	[Accepted]
15 food or kitchen	[Accepted]
16 glass	[Accepted]
17 mattresses	[Not accepted]
18 mixed waste (more than 1 waste type mentioned in this schedule)	[Accepted]
19 non-ferrous metal (other than aluminium)	[Accepted]
20 oil	[Not accepted]
21 paper or cardboard	[Accepted]
22 pharmaceutical or clinical	[Not accepted]
23 plasterboard	[Accepted]
24 plastic	[Accepted]
25 problem waste	[Not accepted]
26 residue or reject	[Accepted]
27 shredder floc	[possibly Accepted]
28 soil (uncontaminated or virgin excavated natural material)	[Accepted in mixed loads]
29 veterinary waste	[Not accepted]
30 wood, trees or timber	[Accepted]

3.5.10 State Environmental Planning Policy No.33 (NSW)

The NSW State Environmental Planning Policy No. 33 Hazardous and Offensive Development (SEPP 33) requires new developments to be considered for their potential to be hazardous or offensive. The ACT EPA has requested that this development be assessed as to whether it is potentially hazardous.

The materials recovery facility (MRF) are not listed in Appendix 3 of SEPP 33 as Industries that may be potentially hazardous. Waste processing is listed as a potentially offensive industry from the waste itself and it possible impact on air and water.

3.5.10.1 Hazardous materials

Potentially hazardous or offensive development is defined by SEPP 33 as development which poses a significant risk to, or which would have a significant adverse impact on, human health, life, property or the biophysical environment, if it were to operate without employing any control measures. This includes developments for the handling, storing or processing of hazardous materials. A development is classified as a hazardous or offensive development if the thresholds in Applying SEPP 33 — which compare the quantities of stored or used hazardous materials to the distance from publicly accessible areas — are exceeded. The hazardous materials classifications in Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission 2007) (the Dangerous Goods Code) are used in Applying SEPP 33.

The hazardous materials that are proposed to be stored and used under the proposal are diesel, oils, grease and liquid petroleum gas (LPG). These materials will be stored in the main processing building with the exception of diesel which will be stored in a purpose built 30,000 L tank adjacent to the main processing shed. No hazardous wastes will be accepted onto the site in terms of waste delivered. There may be incidental small amounts of hazardous wastes in the MSW waste stream from what people put in their red lid bins. Typically, this would include household generated wastes such as cleaning chemical remnants, paint, aerosols, sharps, batteries and smoke alarms etc. There are free collection and disposal programs for these types of hazardous wastes and therefore they are possible but incidental. The storages, quantities and hazardous properties of the materials are provided in **Table 7**.

Table 7: Dangerous goods and other potentially hazardous materials to be stored onsite

Classification	Name	Storage conditions	Approximate quantity
Dangerous Goods			
Class 2.1 Flammable Gas	LPG	One pressurised 7,500 L tank.	7,500 L
	Battery terminal spray	Purpose built container, in enclosed storage room in MRF building	0.4 L
	Hi press spray grease	Purpose built container, in enclosed storage room in MRF building	0.4 L
	Acetylene	Two size G bottles (for 9.3 m^3 of gas at atmospheric pressure)	20 kg
Class 2.2 Non-flammable, non-toxic gas*	Oxygen	Three size G bottles (for 8.9 m^3 of gas at atmospheric pressure)	8 kg
	Contact cleaner aerosol	Purpose built container, in enclosed storage room in MRF building	0.4 L

Classification	Name	Storage conditions	Approximate quantity
Class 3 Flammable Liquid PG III	Hi-Tec heavy duty degreaser	Purpose built container, in enclosed storage room in MRF building	10 L
Class 8 Corrosive substances PG III	Chemtech Heavy Duty Degreaser	Purpose built container, in enclosed storage room in MRF building	10 L
Class 9 Miscellaneous dangerous substances PG III*	Diesel**	30,000 L metal tank kept in bunded and roofed storage container.	30,000 L
Other hazardous materials			
	Oils (engine, hydraulic, and diesel)	Purpose built containers, in enclosed storage room in MRF building	500 L
	Penetrant spray	Aerosol container, in enclosed storage room in MRF building	2 L
	Lubricant	Purpose built container, in enclosed storage room in MRF building	0.5 L
	Anti-bacterial soap	Purpose built container, in enclosed storage room in MRF building	20 L
	Grease	Purpose built container, in enclosed storage room in MRF building	15 kg
	Coolant	Purpose built container, in enclosed storage room in MRF building	40 L
	Hazardous Waste incidentals	Purpose built sealed bin	40kg

Notes: * Exempt from “Applying SEPP” risk screening test

** The dangerous goods code states that diesel is not subject to the code as it has a flash point of more than 60°. The Work Practice Data Sheet provided by Chemwatch identifies Diesel as a Dangerous Good Class 9.

A screening test against the thresholds in SEPP 33 for dangerous goods is provided in **Table 8**. All Class 3 PG II and III flammable liquids have been grouped together as Class 3 PG II which has a more stringent screening distance. The term ‘sensitive’ in the table refers to residential or other more sensitive land uses and ‘other’ applies to all other land uses (e.g. commercial or industrial).

Table 8: Applying SEPP 33 screening test

Dangerous goods classification	Total quantities	SEPP 33 screening threshold	Potentially hazardous
Class 2.1 (LPG only)	4 t*	10 t	No
Class 2.1 (liquefied excluding LPG)	20 kg	Greater than 500 kg at specified distance	No
Class 3 Flammable Liquid PG III	10kg	Greater than 5T at specified distance	No
Class 8 PG III	10 kg	50 t	No

Notes: *Conversion used for LPG 1L = 0.53kg

The screening test determines hazardous materials that are likely to be in waste streams and do not meet the criteria to be classified as a "Hazardous Development" under the NSW regulations referred to as SEPP33.

3.5.10.2 Transport of hazardous material

Applying SEPP 33 also sets threshold limits for the transportation of hazardous materials to and from a site. The number of weekly and annual deliveries and the approximate quantities per load to the site are below the SEPP 33 transport screening thresholds as shown in Table 9.

Table 9: Applying SEPP 33 transportation screening test

Hazardous materials	Deliveries		Quantities per load	Potentially hazardous
	Weekly (peak)	Annual		
Class 2.1 Flammable Gas	0.5	6	7,500 litres	No
Other hazardous materials	2	27	15,000 litres	No

3.5.10.3 Other risk factors

Applying SEPP 33 requires an assessment of other hazards/risk factors outside the scope of the risk screening method. An assessment of other types of hazards associated with the facility is provided in Table 10.

Table 10: Other types of hazards

Type of hazard	Comments
Any incompatible materials (hazardous and non-hazardous materials)	No
Any wastes that could be hazardous	No[1]
The possible existence of dusts within confined areas	No
Types of activities the dangerous goods and otherwise hazardous materials are associated with (storage, processing, reaction, etc.)	Only as indicated in **Table 7**
Incompatible, reactive or unstable materials and process conditions that could lead to uncontrolled reaction or decomposition.	No
Storage or processing operations involving high (or extremely low) temperatures and/or pressure.	No
Details of known past incidents (and near misses) involving hazardous materials and processes in similar industries.	No known incidents involving hazardous materials/processed at recycling industries.

Notes: Wastes delivered to the site will be inspected and will not be accepted if they contain hazardous materials.

3.5.10.4 Hazard management

A range of hazard control measures will be implemented during construction and operation of the proposal. Each of these will be appropriate for the hazard they are designed to control and will generally follow the *Hierarchy of Hazard Controls* (WorkCover NSW) in the absence of equivalent standards in the ACT. These include:

engineering controls:

- design — components will be designed and constructed to comply with relevant standards; and
- enclosure — components will be enclosed as appropriate. For example, tanks will be bunded.

administrative controls:

- operating procedures;
- scheduled maintenance; and
- training and reinforcing correct work procedures.

The storage and use of hazardous materials will be in accordance with the following Australian Standards:

Australian Standard 1940:2004 The Storage and Handling of Flammable and Combustible Liquids; and *Australian Standard 1596:2008 The Storage and Handling of LP Gas*.

3.5.10.5 Potentially offensive industry

The air, noise, and water emissions from the proposal have been assessed to determine if it is classified as a potentially offensive industry as defined under the NSW SEPP33.

Air quality

The Odour Unit (air quality consultants) and Todoroski Air Sciences have assessed potential air quality impacts from the operations. The Odour Unit has modelled design and ventilation including a range of mitigation measures. (see Section 6.8 and Appendix I and Q).

The Odour Unit's concluding remarks were: -

Based on the odour criterion of 2 ou (99%, 1 s), this assessment has found that no adverse odour impacts at sensitive places are likely for the proposed plant operation. Modelling indicates near full compliance with our self-nominated odour IAC of 2 ou (99%, 1 s) derived from NSW EPA, which, in the absence of ACT guidance, we believe is consistent with no environmental nuisance.
The modelling is based on actual odour emissions from a similar NSW plant processing only MSW, but with adjustments to the emission rates to account for the presence of less odorous C&I waste in the combined waste stream to the facility. It is also based on an allowance of 5% odour emissions from fugitive (uncontained) sources, such as leakage through doorways where all have been assumed in the modelling to be opened during operational hours, when in practice the opening time would be very brief with the building fully sealed at all other times. Given the conservative air exchange rate (5 ac/h) and the use of fast-acting doors, TOU considers the 5% fugitive odour emission factor to be very conservative.

As such, the assessment concludes that the proposed full enclosure of the MRF tipping area within a building maintained under negative pressure and with air discharged via a stack represents practicable and reasonable mitigation measures that should prevent environmental odour nuisance, satisfying SEPP33 as it won't be potentially offensive.

Noise

Rudd's Consulting Engineers assessed potential noise impacts from the proposal (see Section 6.10 and Appendix J). The assessment concluded that noise modelling results predicted that noise emissions will be able to comply with the relevant criteria and will not lead to any unacceptable impacts on the amenity of the industrial area and wider region.

Water

Arcadis and Cardno assessed the proposed surface water management system which will connect to the existing stormwater network (see Section 6.3 and Appendix H). Arcadis and Cardno have concluded that the proposal will not significantly increase runoff peak flows, discharge volume or the sediment load in runoff. All waste processing is done inside the MRF building and therefore, the proposal will not have a significant impact on flows or water quality in the receiving environment.

Waste

Arcadis conducted a review of wastes, the report is available in Appendix H. The facility will accept MSW, C & I and the light fractions of C & D waste streams. No special, liquid, hazardous restricted solid wastes will be accepted at the site. The MSW waste stream will have a small fraction of incidental household hazardous materials. All loads will be inspected prior to and upon tipping to ensure that hazardous waste is not part of the general operations and any fractions will be removed and disposed of in accordance with the proposed Operations & Environmental Management plan (OEMP). The Management Plan will be prepared and approved by the Environment Protection Authority prior to construction and/or operation.

Is the proposal a potentially offensive industry?

An assessment of the storage and transport of hazardous materials against Applying SEPP 33 determined that the proposal is not a "potentially offensive industry" as defined under the NSW SEPP33.

Other hazards

The following other hazards have been considered:

- Bushfire: This has been assessed and not considered a risk (see Section 6.12).
- Flooding: the site is not subject to flooding, within a flood plain or flood risk area.
- Mine subsidence area: the site is not located within a mine subsidence area.

The noise, air water and waste quality assessment confirm that the proposal will not result in unacceptable levels of pollution or impacts on the amenity of the area or region. Therefore, the proposal is not a potentially offensive industry.

3.5.11 ACT Work Health and Safety Act 2011 (ACT)

Management of risks

A duty imposed on a person to ensure health and safety requires the person—

a) to eliminate risks to health and safety, so far as is reasonably practicable; and
b) if it is not reasonably practicable to eliminate risks to health and safety, to minimise those risks so far as is reasonably practicable.

What is reasonably practicable in ensuring health and safety

In this Act: "reasonably practicable", in relation to a duty to ensure health and safety, means that which is, or was at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters including—

a) the likelihood of the hazard or the risk concerned occurring; and
b) the degree of harm that might result from the hazard or the risk; and
c) what the person concerned knows, or ought reasonably to know, about—
    i. the hazard or the risk; and
    ii. ways of eliminating or minimising the risk; and
d) the availability and suitability of ways to eliminate or minimise the risk; and
e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk—the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

Primary duty of care

1) A person conducting a business or undertaking must ensure, so far as is reasonably practicable, the health and safety of—
    a. workers engaged, or caused to be engaged, by the person; and
    b. workers whose activities in carrying out work are influenced or directed by the person, while the workers are at work in the business or undertaking.
2) A person conducting a business or undertaking must ensure, so far as is reasonably practicable, that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking.

3) Without limiting subsections (1) and (2), a person conducting a business or undertaking must ensure, so far as is reasonably practicable—
    a. the provision and maintenance of a work environment without risks to health and safety; and
    b. the provision and maintenance of safe plant and structures; and
    c. the provision and maintenance of safe systems of work; and
    d. the safe use, handling, storage and transport of plant, structures and substances; and
    e. the provision of adequate facilities for the welfare at work of workers in carrying out work for the business or undertaking, including ensuring access to those facilities; and
    f. the provision of any information, training, instruction or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking; and
    g. that the health of workers and the conditions at the workplace are monitored for the purpose of preventing illness or injury of workers arising from the conduct of the business or undertaking.

Both Benedict and Access Recycling have decades of combined experience working in the recycling fields and ensuring the safety of workers. The proposed facility along with operational procedures are consistent with the ACT Work Health and Safety Act 2011.

4.0 Strategic Context

4.1 National Capital Plan

The subject site is located 350m from Canberra Avenue and the site boundary to the Monaro Highway is some 120m. The site is not subject to special conditions under the National Capital Plan (NCP), the subject site is not located in a 'Designated Area' under the NCP. Submission from National Capital Authority stated that:

"Site is partially situated within 200m of the centreline of the Monaro Highway which is defined as an approach route. The NCA has taken the view that this site does not front the Approach Route so will not require a DCP" (see Appendix V).

Notwithstanding, the proposed development is considered to be consistent with the NCP planning principles for Approach Routes and Main Avenues. The Monaro Highway is noted to be a national arterial road under the NCP. The general policies for arterial roads are:

I. generally, not provide frontage access to development, except where such access will meet appropriate design standards and road safety needs
II. generally, intersect with the local road network through distributor roads.
III. The final alignment of proposed arterial roads is subject to consultation with the National Capital Authority.

This proposal does not impact these policies.

4.2 Territory Plan

The Territory Plan is prepared and administered by the EPSDD as required by Section 12(1)(a) of the *Planning and Development Act 2007*.

The object of the Territory Plan is to ensure the planning and development of the ACT provide the people of ACT with an attractive, safe and efficient environment in which to live, work and have their recreation.

4.2.1 Statement of Strategic Directions

The Statement of Strategic Directions sets out the principles for giving effect to the main object of the Territory Plan as required by the *Planning and Development Act 2007*.

The principles in the Statement of Strategic Directions provide a framework to guide the planning and development of the ACT and a basis for considering proposed variations to the Territory Plan.

The principles outline the 'triple bottom line' approach relating to environmental, economic and social sustainability.

The spatial planning and urban design principles are divided into specific principles relating to urban areas, non-urban areas, and urban design that are intended to guide the more specific policy content of the Territory Plan.

4.3 2018 ACT Planning Strategy

The Strategic direction and actions of the 2018 ACT Planning Strategy are as follows:

COMPACT AND EFFICIENT CITY	
Strategic Direction	**Action**
1.1 Support sustainable urban growth by working towards delivering up to 70% of new housing within our existing urban footprint, and by concentrating development in areas located close to the city centre, town and group centres and along key transit corridors.	1.1.1 In order to manage growth and achieve a compact and efficient city, work towards achieving up to 70% of new housing within the existing urban footprint by identifying, investigating and planning for infill development in line with key location criteria.
	1.1.2 Investigate the opportunities for higher density development within future urban intensification locations in order to inform prioritisation and staging of future development, land release and infrastructure (social and physical) investment options in locations that meet that meet certain criteria.
	1.1.3 Undertake preliminary land use investigations for the potential City to Woden light rail line to determine the opportunities for urban intensification afforded by increased transport accessibility.
	1.1.4 Building on the Master Plan Program, investigate opportunities for district-level strategic and spatial planning approaches (see District level planning section) for districts likely to accommodate substantial infill growth and/or significant change.
1.2 Investigate the potential for new residential areas to the west of the city to meet future housing need.	1.2.1 Undertake environmental, infrastructure and planning studies for the western edge of the city to identify suitable areas for a range of uses.
1.3 Use infrastructure efficiently to support our growing community.	1.3.1 Continue to align land use planning and infrastructure planning to support the growth of the city.
1.4 Continue to work with the NSW Government and Councils to implement joint initiatives to understand and manage growth in the Canberra Region.	1.4.1 Progress joint ACT and NSW planning actions identified in the NSW Government's 'South East and Tablelands Regional Plan 2036' including an agreed set of principles to inform a new cross-border infrastructure funding model and a cross-border land and housing monitor.
	1.4.2 Continue to collaborate with the NSW Government and councils in the region and other stakeholders on planning and related issues through the Canberra Region Joint Organisation (CBRJO) and other forums.
1.5 Protect the ACT and NSW border interface.	1.5.1 Support the provision of adequate buffer areas between the urban areas of the ACT and adjoining land uses within NSW, in order to achieve compact and efficient growth, avoid land use conflict, protect rural and environmentally important areas, and maintain the setting and approaches to the National Capital.
DIVERSE CANBERRA	
Strategic Direction	**Action**

2.1 Respect Canberra's culturally rich and diverse community to foster inclusion and participation in our community.	2.1.1 Continue to build on an evidence-based approach to planning the city.
	2.1.2 Incorporate cultural and linguistic, age and gender diversity in comprehensive engagement on strategic planning to strengthen participation in the planning of our city.
	2.1.3 Take a district-level approach to planning for our diverse community to investigate the implications on a range of local infrastructure, housing and place making approaches.
2.2 Enhance the diversity and resilience of our centres to meet the needs of the community, support economic viability and improved liveability.	2.2.1 Investigate a new approach to Canberra's centres hierarchy policy.
2.3 Improve the character of our city centre to improve liveability and activity.	2.3.1 Establish an approach to the urban design of the city centre that focusses on interconnected precincts and considers matters relevant to the city centre location.
	2.3.2 Support the implementation of the City Renewal Authority and other initiatives to enhance sustainability and revitalise the city.
	2.3.3 Support and plan for the growth of commercial and residential development within the city centre to meet a diverse range of business investment and lifestyle choices that effectively uses existing infrastructure.
2.4 Recognise and protect existing industrial areas and service trade areas as important elements of a diverse economy.	2.4.1 Investigate planning measures to manage competing demands and protect the role and function of service trade and industrial areas.
2.5 Plan for adequate employment land in the right location that supports a diverse range of uses including commercial and industrial land linked to supportive infrastructure, transport options and investment opportunities.	2.5.1 Investigate the changing nature of employment and its spatial distribution implications in the ACT in order to inform planning and infrastructure decisions.
	2.5.2 Continue investigations into the establishment of new employment areas and other land uses including the Eastern Broadacre area and other potential sites.
	2.5.3 Undertake district level investigation to consider how planning can support the growth of our knowledge clusters.
2.6 Protect and enhance infrastructure that supports the economic development of Canberra and the region.	2.6.1 Continue to work with the NSW Government and regional councils to advocate for strategic infrastructure that benefits the Canberra Region and has the capacity to drive economic development.
	2.6.2 Work with the Australian Government and other stakeholders on the high-speed rail concept ensuring proposed corridors are protected.
	2.6.3 Incorporate appropriate provisions for the National Airports Safeguarding Framework in the review of the Territory Plan.

	2.6.4 Plan for complementary and compatible economic development opportunities around Canberra Airport.
	2.6.5 Support the development of the freight network by limiting inappropriate development (e.g.: sensitive uses) and direct access points along national freight routes, particularly the Monaro, Federal and Barton Highways.
	2.6.6 Participate in discussions with key stakeholders including the Canberra Airport and regional neighbours to understand the potential and key requirements for a freight hub or hubs within the Canberra region.
SUSTAINABLE AND RESILIENT TERRITORY	
Strategic Direction	**Action**
3.1 Transitioning to a net zero emissions city through the uptake of renewable energy, improved building design and transport initiatives.	3.1.1 Investigate appropriate planning policy and statutory mechanisms to encourage the development of net zero emissions buildings, precincts and suburbs.
3.2 Reduce vulnerability to natural hazard events and adapt to climate change.	3.2.1 Review planning policy and statutory mechanisms to incorporate climate change adaptation considerations and resilience criteria into urban planning and design processes.
3.3 Integrate living infrastructure and sustainable design to make Canberra a resilient city within the landscape.	3.3.1 Support the implementation of a living infrastructure plan for the ACT through the review of planning policy and planning mechanisms for the maintenance and enhancement of the urban forest into precinct, estate and district level planning processes, and relevant development and design guidelines.
	3.3.2 Support the implementation of climate wise design and materials in statutory planning provisions, precinct and estate planning processes, and relevant development and design guidelines.
3.4 Plan for integrated water cycle management to support healthy waterways and a liveable city.	3.4.1 Implement the revised WSUD General Code and integrate consideration of WSUD into precinct and estate and suburb planning and design processes.
	3.4.2 Evaluate and implement cost-effective opportunities for stormwater irrigation of living infrastructure and priority public open space areas, as part of integrated water cycle planning in precinct, and estate and suburb planning and design processes.
3.5 Protect biodiversity and enhance habitat connectivity to improve landscape resilience.	3.5.1 Identify and establish environmental offset areas within planning processes to mitigate any unavoidable impacts of development on ecosystems and biodiversity of national significance and other protected matter.
	3.5.2 Incorporate consideration of natural habitat and conservation areas into urban planning and design processes to promote habitat connectivity and support the establishment of biodiversity refuges.

3.6 Reduce waste, improve resource efficiency and decrease our ecological footprint.	3.6.1 Investigate appropriate requirements under the Territory Plan for the provision of appropriate resource recovery infrastructure and waste service requirements in planning provisions for medium and higher density residential and mixed-use developments.
	3.6.2 Encourage reduced waste and improved resource efficiency in new development and support the continued reduction of the ACT's ecological footprint.
LIVEABLE CANBERRA	
Strategic Direction	**Action**
4.1 Deliver social infrastructure that meets community needs and supports strong communities.	4.1.1 Investigate social infrastructure in infill and urban expansion (greenfield) areas to meet community needs.
	4.1.2 Undertake district-level assessment of land used to deliver community-focussed functions to inform the strategic release and development of land for community use to maximise whole-of-community benefit.
	4.1.3 Investigate land under concessional lease to strategically determine the future use of that land for greatest public benefit.
4.2 Deliver recreation, open (green) space and public spaces that support social interaction, physical and mental health and engagement in public life.	4.2.1 Investigate planning mechanisms to deliver a range of sport and recreation opportunities to meet changing community need by taking a strategic city-wide approach.
	4.2.2 Investigate opportunities to enhance the network of accessible, high quality local open space to meet changing community need through a district planning approach.
4.3 Strengthen neighbourhoods and support their diverse character by creating strong local activity hubs.	4.3.1 Continue to support local community and business capacity by developing place-making approaches to support vital neighbourhoods.
	4.3.2 Investigate planning mechanisms to respond to the changing role of local centres and their long-term viability, and place within the hierarchy.
4.4 Deliver housing that is diverse and affordable to support a liveable city.	4.4.1 Plan for a range of higher density development in appropriate and clearly defined locations with a mix of apartment and dwelling types to improve diversity and access to support ageing in place, families, affordability and adaptability.
	4.4.2 Identify priority areas for medium density housing in locations that meet diverse community needs.
	4.4.3 Building on the Housing Choices consultation, continue to develop planning mechanisms to facilitate the delivery of medium density housing options.
	4.4.4 Building on the Housing Choices consultation investigate options for dual occupancies in the RZ1 zone and RZ2 zone.

	4.4.5 Investigate planning provisions to facilitate the delivery of affordable housing across the spectrum of community needs.
4.5 Encourage high quality design, built form and places for a changing climate.	4.5.1 Investigate a range of processes to improve the design and quality of our buildings and public places.
	4.5.2 Investigate policy and planning mechanisms to improve streetscape design for better tree canopy cover and improved verge design of streets.
	4.5.3 Integrate policy and planning mechanisms to enhance living infrastructure for the planning and design of residential areas in our neighbourhoods.
ACCESSIBLE CANBERRA	
Strategic Direction	**Action**
5.1 Enhance accessibility by better integrating transport and land use.	5.1.1 Support the integrated transport network by focussing urban intensification in town centres and around group centres and along the major public transport routes and balancing where greenfield expansion occurs.
	5.1.2 Support the delivery of the government's transport strategy to expand movement options (particularly active travel) and the delivery of the government's Climate Change strategy to reduce greenhouse gas emissions from transport.
	5.1.3 Investigate parking provision requirements to confirm they support broader government accessibility and transport policy.
	5.1.4 Plan and strategically locate community infrastructure, services and open space in order to optimise accessibility and meet the needs of a growing and changing population.
5.2 Deliver well designed, safe and sustainable streets and public spaces to create walkable neighbourhoods that are inclusive and fair.	5.2.1 Apply the Movement and Place Framework in future precinct planning to recognise people and place in the design and function of precincts.
	5.2.2 Support the Active Travel Office to improve walking and cycling network connectivity and urban amenity, particularly close to key transport corridors, local and town centres and education institutions.
	5.2.3 Through place making and improved urban design, deliver high quality streets and places to facilitate social inclusion, activity and improve accessibility.
5.3 Create a better experience for walking and cycling into and within the city centre and our town centres.	5.3.1 Work with the City Renewal Authority and other partners to create high quality, lively and safe streets and public spaces in the city centre that encourage walking, cycling and public transport use.
	5.3.2 Support the development of high quality, lively and safe streets and public spaces in our town centres that encourage walking, cycling and public transport use.

	5.3.3 Review parking arrangements in the city centre and develop a city parking strategy.

4.4 Statement of Planning Intent

The Statement of Planning Intent was issued by the Minister for Planning in 2015 to set out principles which give effect to the Territory Plan and therefore govern planning and land development in the ACT.

The Statement of Planning Intent establishes four key planning priorities, and associated actions, that reflect the key messages heard from the community and stakeholders:

- Creating sustainable, compact and liveable neighbourhoods with better transport choices
- Delivering high quality public spaces and streets through placemaking
- Delivering an outcome-focused planning system to reward design excellence and innovation
- Engaging with the community, business and research sectors to optimise planning outcomes

The statement builds on the strategic framework set out in the 2012 ACT Planning Strategy, Transport for Canberra and the ACT Government's climate change strategy and action plan.

4.5 ACT Climate Change Strategy

The ACT seeks to maintain itself as a world leader in acting against climate change. The ACT is committed to setting ambitious greenhouse gas emission reduction targets to achieve its goal of zero emissions by 2050. The Climate Change Strategy and Action Plan ('AP2') guides strategic direction relating to climate change. The overall vision will be realised through the achievement of the following outcomes:

1. Reduced greenhouse gas emissions
2. A fair society in a low carbon economy
3. Adapting to a changing climate
4. Leading a sustainable future

In achieving the above outcomes, relevant emission reduction goals and actions have been applied to four relevant sectors:

- Residential sector
- Non-residential sector
- Transport sector
- Waste sector

The ACT Climate Change Strategy AP2 2012 notes in its Chapter 7 Reducing Waste Sector Emissions the following:

> *"The ACT Waste Management Strategy 2011–2025 sets a clear direction for the management of waste in the Territory towards 2025. It builds on the success of the No Waste by 2010 Strategy released in 1996 that successfully reduced the waste sent to landfill from nearly 60% of total waste in 1995–96 to below 30% by 2003–04. The Strategy covers waste from the household, commercial and industrial, construction and demolition sectors and biomass from wood and garden waste."* ***(p62)***
>
> *"Emissions from the waste sector are primarily caused by the anaerobic decomposition of organic material sent to landfill. This leads to the release of methane, a greenhouse gas with a global warming potential around 21 times that of carbon dioxide. While a significant portion of the methane is captured and used for renewable power generation at Mugga Lane and Belconnen landfills, a proportion is inevitably lost [estimated at 30% globally], constituting around 3% of the Territory's greenhouse gas emissions."* ***(p62)***

"The ACT Waste Management Strategy adopts the waste management hierarchy which aims to extract the maximum practical benefits from products while generating the minimum amount of waste. The hierarchy employs strategies which aim to:

1. avoid products becoming waste (reduce and reuse)

2. find an alternative use for waste (recycle and recover), and

3. ensure safe and appropriate disposal as a last resort.

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 and lower greenhouse gas emissions." **(p64)**

CRS understands the waste hierarchy and its proposal is not designed to interfere with any program designed to avoid the production or recycling of waste. Minimising of the waste to landfill, in both short and long-term strategies achieve the same outcome. Removing the inevitable methane leakage and finding alternative uses for materials can occur for an additional 20% of the material currently going to landfill. Removal of short-term greenwaste and potentially long term, food waste will have a significant impact on the production of methane but will also inhibit the production of electricity currently soured from this methane.

The ACT Waste Management Strategy 2011-2025 notes in Chapter 7 Outcome Four – Carbon Neutral Waste Sector the following:

The government will:

1. Continue methane capture from landfill.

2. Minimise organic waste going to landfill.

3. Investigate options to adopt Energy-from-Waste technologies.

4. Increase recycling to avoid greenhouse gas emissions.

5. Promote energy efficient waste collection and transport systems. **(p36)**

"Around 50% of waste sent to landfill is organic, made up of food, wood, paper and garden wastes. Organic waste comes from all waste sectors-household, commercial and construction and demolition.

The new dry-Commercial-waste Material Recovery Facility (commercial MRF) is planned to recover over 40,000 tonnes of material a year that would otherwise have been landfilled. Much of this material will be organics such as paper, timber and cardboard. The commercial MRF is expected to be operational in 2014." **(p37)**

"A Material Recovery Facility for residual waste from households (Residual -waste MRF) could recover nearly all of the organic material currently sent to landfill as well as mixed wastes from the commercial sector that are too wet or contaminated to be processed in the new Commercial MRF. There may be over 50,000 tonnes a year of wet-mixed Commercial waste" **(P37)**

"Recycling avoids the generation of greenhouse gases by both reducing the production of raw materials and diverting waste away from landfill. Recycling can also reduce water and energy use. Estimations of these savings have been made for different types of recycled materials. Indicative figures based on ACT NoWaste recycling data for 2009–10 and Commonwealth estimates are shown in its Table 1." **(P39)**

TABLE 1 GREENHOUSE GAS AND WATER SAVINGS FROM RECYCLING

Type of material	Tonnes recycled 09–10 A	water saving per tonne (KL)	Water savings (kL) B	GHG saving per tonne	GHG emissions savings (tCO_2–e)
Paper	51224	15.58	798,000	1.54	79,000
Timber	47543	0.07	3,000	0.15	7,000
Glass	16783	2	34,000	0.33	6,000
Aluminium	2319	233.2	541,000	15.80	37,000
Steel cans	1026	1.1	1,000	0.81	1,000

A – Figures provided by Territory and Municipal Services Directorate, ACT Government.

B – Figures from GHD (2009) 'Waste Technology and Innovation Study' for the Department of the Environment, Water, Heritage and the Arts (DEWHA) at http://www.environment.gov.au/settlements/waste/publications/waste-technology.html.

Source: ACT Waste Management Strategy 2011–2025

> *"The ACT Government is committed to increasing recycling and to develop markets for recoverable waste streams as described under Outcomes 1 and 2."* ***(P39)***

It should be noted from the extracts and table above that the removal of paper, timber, glass, aluminium and steel cans are all positive in terms of greenhouse gas and water savings. All these materials (and others including greenwaste) are proposed to be recycled by CRS as indicated in **Table 1** of the EIS**.** Of course, CRS is proposing to recycle other materials such as concrete and inerts, plaster board and other metals where there is production saving in the cost to the environment of mining raw materials to replace those that can be reused

As a result of a Discussion Paper in December 2017, ACT Climate Strategy to a Net Zero Emissions Territory, the ACT has set a new zero net emissions target by 2045.

In addition, interim emissions targets for 2025, 2030 and 2040 have been established. This now replaces the previous aspirational target of zero net emissions by 2050 (now 2045).

On 18 September 2018 the Legislative Assembly passed the **Climate Change and Greenhouse Gas Reduction (Principal Target) Amendment Bill 2018** to amend the zero net emissions target in the **Climate Change and Greenhouse Gas Reduction Act 2010 (ACT**). The bill proposed to reduce the principal target of zero net emissions from 2050 to 2045.

4.6 Transport for Canberra 2012-2031

The Transport for Canberra policy was prepared in conjunction with the 2012 ACT Planning Strategy to ensure relationships between land use and transport support a shift to more sustainable Canberra. As such, Transport for Canberra sets the policy direction for transport around six core principles:

1. *Integration with land use planning*
2. *Encourage active travel*
3. *Provision of sustainable transport options to decrease transport emissions*
4. *Increase safety of people and how they get around*
5. *Equity is accessible, regardless of level of mobility*
6. *Efficiency and cost effectiveness – providing good value transport options by managing demand across the entire transport system*

This proposal is considered to meet these objectives in the following ways:

1. Rail infrastructure was originally developed alongside the industrial area of Fyshwick to integrate industrial land uses which require rail freight transport. The proposed use is an industrial based use which is seeking to utilise partially existing rail infrastructure to accommodate a desired land sue. On this basis, the proposal is considered to directly respond to objective 1 of this policy.

2. The development will include bicycle parking facilities to encourage active travel and therefore meets objective 2.

3. This proposal is seeking to reactivate a dormant rail corridor in order to utilise existing but presently underutilised Canberra rail network to export goods from the site. CRS also intends to allow other business to use the rail shunt to export and import goods to/from Canberra. The ACT Government 'Building an Integrated Transport Network – Freight Report (2016)[2] States:

> "*Due to its limited interaction with urban areas and other freight vehicles, rail is often a safer option for the longer distance movement of dangerous or hazardous materials that are necessary inputs or by-products of servicing urban areas. Accordingly, as the urban environment changes, maintaining a viable rail freight link within the ACT is an important consideration as other parts of the freight network become subject to more intensive use".*

Further, the report notes:

> *"Rail freight can also draw on an extra reservoir of community goodwill, linked mainly to rail's ability to 'take trucks off the road' and a lower environmental (emission) footprint, assuming good capacity utilisation".*

Further, a 15% reduction in road freight transport in Australia would save about 450 million litres of diesel each year. It would also reduce, each year, carbon dioxide emissions by more than one million tonnes and total external costs by more than A$600 million (Laird, 2014)[3].

On this basis, it is considered that the proposal to utilise rail as a mode of transport is a sustainable option which will contribute to reduction of transport emissions and directly aligns with the ACT Government policy objectives.

[2] Building An Integrated Transport Network – Freight. (2016). Retrieved from https://www.transport.act.gov.au/__data/assets/pdf_file/0005/1230782/ACT-Freight-Strategy-ACTGov-ACCESS.pdf

[3] Laird, P. (2014, March 14). Too many loads on our roads when rail is the answer. Retrieved March 27, 2019, from https://theconversation.com/too-many-loads-on-our-roads-when-rail-is-the-answer-24118

4. The proposed mode of transport negates a large proportion heavy vehicle traffic associated with the proposal.

   In 2011, independent road safety researcher Peter Mackenzie examined how many lives could be saved if a 15% shift of freight from road to rail (the so-called "contestable freight") was to take place. For articulated trucks in 2011-12, the number based on the 134 fatalities noted above is 20 (Mackenzie, 2011)[4].

   Further, the above quote from the ACT Government 'Building an Integrated Transport Network – Freight (2016) report states that rail is a safer option.

   On this basis, use of rail freight of transport is a safer transport option and directly aligns with the policy objective.

5. This policy objective is not entirely relevant to this proposal. Notwithstanding this, the proposed facility will be access compliant and the site is connected to the ACT public transport network. The Proponent also intends to make the re-activated rail shunt available to other business who wish to use rail to import and export goods.

6. Use of rail is efficient and cost effective as demonstrated in response to objective 3 above. The Proponent also intends to allow other business to utilise the rail shunt to import/exports goods from the CRS site. This ensures demand for rail freight can be met. At present there are no active rail shunts for export and import goods in the ACT. The proposal meet objective 6.

In summary, the proposal is considered to be entirely consistent with the objectives of the Transport Canberra 2012-2031 Policy.

4.7 ACT Sustainable Energy Policy 2011-2020

The Sustainable Energy Policy establishes the policy framework for managing social, economic and environmental challenges faced by the Territory towards 2020 relating to energy production and use. The framework consists of four key targeted outcomes:

1. Secure and affordable energy
2. Smarter use of energy
3. Cleaner energy
4. Growth in the clean economy

The movement of waste to landfill at Woodlawn does not detract from the ACT Sustainable Energy Policy 2011-2020 in the sense that the ACT is part of the National Energy Market (NEM). As part of the NEM, *"the ACT has no significant electricity generation and imports all-natural gas and transports fuels, the exceptions being some generation from mini hydro, landfill methane gas and solar" "The remainder of our electricity is sourced from the NEM from generators from other states" (p*6) Should waste go to Woodlawn then it too will be used for methane generation and then electricity production which is part of the NEM.

"The ACT has established targets for the use of renewable energy of 25% by 2020" (p11)

"Modern technologies offer possibilities to transform municipal wastes into renewable electricity.

This is already occurring at the Mugga Lane Resource Management Centre and Belconnen where methane is captured and currently used to generate around 24,000-28,000MWh of electricity each year. This reduces the ACT's overall emissions by converting the methane to electricity and displacing other forms of

[4] MacKenzie, P. (2011). The Safe System- Are We on The Wrong Track and Falling at The First Hurdle? (Rep.). http://acrs.org.au/wp-content/uploads/Mackenzie-P-The-Safe-System-Are-We-on-The-Wrong-Track-and-Falling-at-The-First-Hurdle.pdf

non-renewable power generation. Generation capacity is expected to reduce over time in line with natural reductions in methane production at these sites.

The draft Sustainable Waste Strategy 2010-25 was released in December 2010 and provides a pathway to recover organic wastes currently sent to landfill, thereby largely eliminating emissions from landfill. By recovering and recycling wastes the strategy reduces the energy use and emissions associated with the production of the material in the waste stream, such as glass, metals and plastics.

Where it provides the highest value use, a portion of the sorted wastes may be diverted to a proposed energy-from waste facility to generate electricity, heating or cooling as well as producing valuable by-products such as biochar." (p25)

CRS will influence the volume of organic material going to landfill. The removal of woods, cardboard, paper and greenwaste will reduce the organic component therefor reduce the potential methane generating component. As the long-term strategy is to divert the organic as recognized in the policy above there will be no major change to the expected policy outcomes. If food waste was also diverted in time by CRS this will increase the organic diversion but that is desirable by various Government policies

4.8 Canberra Sewerage Strategy

It is noted in the Canberra Sewerage Strategy 2010-2060 that there are issues with current sewerage sludge incineration equipment and that strategic replacement options may cost as much as $57 million. It is not proposed to accept or process any sewage residues at the MRF

The proposal is to develop an MRF to create sorting and recycling systems to generate commercially reusable products. The development is directly in line with the sustainability commitments outlined in the principles of the ACT Government strategic documents listed above.

The diversion of waste from landfill, separation and transport via rail all directly assist in establishing a cleaner economy, diverting waste from landfill – prolonging their life span and therefore decreasing Canberra's greenhouse gas emissions.

5.0 Risk Assessment

The following section highlights the potential risks associated with the proposed development. A risk assessment matrix has been developed to provide a summarised rating for each relevant risk.

5.1 Risk Assessment Methodology

The risk assessment for the proposed MRF was guided by the risks identified within the Scoping Document and the Preliminary Risk Assessment (CRS, 2017). No new risks have been identified beyond those in these two documents.

Following detailed consideration of risks identified in the scoping document, a consolidated list of pre-mitigation risks was tabulated which is presented in Section 5.2.

To assist the review of the EIS, the risks have been categorised into functional groupings, which are addressed by sub-consultant inputs and findings throughout Section 6.0.

Pre-mitigation risks which are identified as being Medium risk or above are given a residual risk assessment following implementation of risk mitigation measures.

5.1.1 Likelihood

The likelihood of an impact occurring is based on its associated probability. Generally, the process of assigning probability is undertaken by professionals in the given field. Whilst best efforts are made in such assessments there is a level of uncertainty which must be considered. A conservative approach has been undertaken about attributing likelihood to the impacts identified.

Table 11 demonstrates the criteria for attributing likelihood.

Table 11: Evaluating Risk Likelihood

	Likelihood	Description
1	Remote	Extremely rare/unprecedented
2	Unlikely	Not expected to occur in most circumstances
3	Possible	Possibility of occurring
4	Likely	Likely to occur
5	Almost Certain	Expected to occur

5.1.2 Consequence

Consequence is the categorisation of the possible outcome of an impact occurring. As with the categorisation of likelihood, the assessment of consequence is a subjective process and so it is also a requirement that a conservative approach be adopted. If a consequence is hard to categorise, the impact may be significantly higher than that foreseeable.

Table 12 below describe the categories applied to the evaluation of consequences.

Table 12: Evaluating Risk Consequences

Level	Descriptor	Social	Economic	Environment
1	Minimal	People are largely unaffected nor are they concerned	Minimal to no loss	No environmental harm
2	Minor	Temporary or localised effect causing negligible harm.	Several thousand dollars lost and/or remediation costs involved	Minor environmental damage that may be reversed (i.e. impact limited to one species or location)
3	Moderate	Widespread and temporary or localised but permanent effect and/or displacement of people	Several hundred thousand lost in revenue or remediation costs	Isolated but significant environmental damage that may be reversed with significant effort
4	Major	Extreme alarm among the community and widespread effect on the livelihoods of people that cannot be immediately remedied.	Million-dollar loss of revenue or remediation costs	Severe loss of environmental amenity and a danger of continued environmental degradation
5	Severe	Entire communities or groups effected, and livelihood diminished. Long term harm and/or Loss of life.	Several million dollars in lost revenue and/or remediation costs	Major widespread long-term (5 years or longer) environmental damage and loss.

5.1.3 Combined Risk Assessment

The combined risk assessment provides a basis for which the final rating can be determined for each relevant risk. The combined risk assessment assesses and combines both the likelihood and consequence of each risk.

Table 13: Combined Risk Matrix

	Minimal	Minor	Moderate	Major	Severe
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

5.2 Pre-mitigation Risk Assessment

The pre-mitigation risk assessment addresses all relevant risks which were highlighted during the planning and design phase of the project and in preparation of the scoping document. The final pre-mitigation risk assessment utilises the requirements of the Scoping document and the combined risk matrix above to determine the overall risk rating of each risk aspect. EPSDD assessed all risks as Medium in the scoping and CRS has assessed some as greater or less. Where there is a discrepancy below Medium, CRS has provided justification for the variation.

Table 14: Pre-mitigation Risk Assessment

Description			Pre-Mitigation Risk Assessment		
Aspect	**ID**	**Risk Scenario**	**Likelihood**	**Consequence**	**Risk Rating**
Planning and Land status	PL-1	Sterilisation of adjacent land uses	Unlikely	Moderate	Low
Traffic and transport	Traff-1	Increased traffic congestion from cars and trucks during construction	Likely	Minor	Medium
	Traff-2	Reduced network efficiency due to increased traffic from staff and diverted trucks from Mugga Way	Likely	Minor	Medium
	Traff-3	Reduced road safety	Possible	Moderate	Medium
	Traff-4	Increased Rail Movements	Likely	Minimal	Low
Utilities	Util-1	Impacts on existing infrastructure	Possible	Moderate	Medium
	Util-2	Contaminated storm and waste water egressing from the site during extreme weather	Possible	Moderate	Medium
Materials and waste	MW-1	Increased waste to landfill during construction	Likely	Minimal	Low
	MW-2	Spread of waste to other sites	Possible	Minor	Low
	MW-3	Excess stockpiling during operation and cleanup when operation ceases	Possible	Moderate	Medium
	MW-4	Waste spread during transport	Possible	Minor	Low
Landscape, visual and lighting	LV-1	Visual impacts on the surrounding areas such as building bulk and scale, stockpiling and lighting the facility	Possible	Minor	Low
	LV-2	Visual impact of the facility on the surrounding streetscape	Possible	Minor	Low

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Soils and geology	Geo-1	Potential existing contamination	Almost Certain	Moderate	Very High
	Geo-2	Potential spills contaminating soils	Unlikely	Moderate	Low
Water quality and hydrology	Hyd-1	Contaminated stormwater or wastewater impacting on receiving land and water	Possible	Moderate	Medium
	Hyd-2	Risk to Jerrabomberra Creek and Wetlands	Unlikely	Major	Medium
Air Quality and Climate Change	CCAQ-1	Dust from construction activities	Likely	Minor	Medium
	CCAQ-2	Odour from transport and processing of waste	Possible	Moderate	Medium
	CCAQ-3	Impacts on climate change	Unlikely	Major	Medium
	CCAQ-4	Cumulative impacts of the development on air quality in the locality	Possible	Moderate	Medium
	CCAQ-5	Hazardous emissions from the plant including cumulative impacts with other developments in the air shed	Likely	Minor	Medium
	CCAQ-6	Poor quality waste or dangerous contaminants in waste material impacting on operations or air quality	Likely	Minor	Medium
Socio-economic and health	SEH-1	Facilities and materials storage providing harbor to vermin and pest animals which impact on health and amenity	Possible	Minor	Low
	SEH-2	Minimise the occurrence and therefore disposal of hazardous waste that poses a risk to the environment or human health	Possible	Moderate	Medium
Noise, vibration	NVL-1	Noise during construction	Likely	Minor	Medium
	NVL-2	Noise from operation of the facility and vehicle movements	Likely	Minor	Medium

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Hazard and Risk	HR-1	Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses	Possible	Moderate	Medium
	HR-2	Risk of bushfire or fire on neighbouring premises impacting the proposed facility	Unlikely	Major	Medium
	HR-3	Insufficient water supply from tanks and mains for fire suppression in the event of an emergency	Unlikely	Major	Medium
	HR-4	Hazard aircraft operations from ventilation stack emissions	Remote	Major	Low
	HR-5	Critical infrastructure failure	Possible	Moderate	Medium
	HR-6	Safety of Workers	Possible	Moderate	Medium

The above pre-mitigation risk aspects and ratings form the basis for the following sections which assess the overall impacts, including their perceived risk, mitigation measures adopted and the residual risk.

6.0 Assessment of Impacts

The following sections discuss potential impacts and mitigation measures as they relate to the MRF proposal:

- Planning and land status
- Traffic and transport
- Utilities
- Materials and waste
- Landscape, visual and lighting
- Soils and geology
- Water quality and hydrology
- Air quality and climate change
- Socio-economic and health
- Noise and vibration
- Hazard and risk

For each section, a section summary is provided with an overview, identification of pre-mitigation risks from Section 5.2 and finally, consideration of mitigation measures and residual risk.

6.1 Planning and Land Status

Section Summary
- This section provides an overview, by Purdon Planning of the possible risks posed by the proposal to adjacent land status including possible sterilisation of adjacent uses. - This section assesses the proposal's possible impacts on surrounding use including the dedicated industrial estate, nearby residential areas and the possible expansion of the East Lake Urban Renewal Area (2007).

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Planning and Land status	PL-1	Sterilisation of adjacent land uses	Unlikely	Moderate	Low

6.1.1 Site context – Sterilisation of Surrounding Land Uses

The proposed site is in a dedicated industrial area of the ACT, and at present is a minimum distance, from the site boundary, of approximately 450m to the nearest residential area, the Canberra South Motor Park in North Symonston, south of Canberra Avenue. The nearest residence in Narrabundah is some 630m away on the other side of the Monaro Highway and Canberra Avenue. Two submissions received during public notification noted that there was a residence on Wiluna Street. After extensive research it was discovered that there was a residence behind a lot in a newly created industrial lease (created in 2002). This residence, which is some 110m boundary to boundary on the southern side of Wiluna Street and is some 140m from the proposed MRF building has now been considered as part of this EIS.

This risk rating for PL-1 has been assessed as being unlikely to occur with moderate consequence.

Unlikely to occur is described in Table 11 as “not expected to occur in most circumstances”. Sterilisation of surrounding land uses is assessed as unlikely to occur because:

- the site is located within an industrial area
- is not near residential dwellings (Wiluna St exception)
- The proposed land use is a permitted use under the zone and therefore adjacent land holders could have reasonable expected this land use to occur on site
- Existing adjacent land uses are waste sorting related and there is no evidence to suggest that these existing operations have sterilised adjacent sites
- The previous land use (petrol storage/transport facility) is considered to carry equal, if not greater, risk of sterilisation to adjacent sites
- The Proponent has already undertaken steps to reduce contamination on site
- Mitigation measures have been built into the design of the facility and include containerisation of all waste, full enclosure of the waste sorting machinery within a sealed building and design of a visually interesting building which is an improvement on existing site conditions

Moderate consequence is described in Table 12 as “several hundred thousand lost in revenue or remediation costs”. The consequence of sterilisation is assessed as such because mitigation measures have been put in place as part of the project design and largely remove any risk of impact. Assuming worst case scenario, the damage associated with sterilisation of adjacent blocks would not exceed more than several hundred thousand dollars in damage. This is because:

- Building design largely removes risk of sterilisation through full enclosure of all waste sorting machinery and containerisation of waste
- If sterilisation were to occur, closure of this facility would reverse the impacts and therefore any money lost as a result of sterilisation would be recouped by adjacent landowners
- The site is within an industrial area and the proposed use is permissible. It is not unreasonable to assume that land values in the area reflect the potential uses which could occur on adjacent sites.
- The previous land use (fuel depot and storage facility) would have had a much greater impact and likelihood of sterilisation. However, there is no evidence to date to suggest that when the fuel depot and storage facility was operational adjacent lessees suffered sterilisation or economic loss as a result. It is therefore reasonable to assume that the risk of same occurring as a result of this proposal is even lower and therefore the potential for economic loss is moderate to low.

Fyshwick Markets

The CRS proposal is some 830 metres and well outside any recommended separation buffers. The market is separated physically and visually by the elevated Monaro highway. The Fyshwick Markets are an enormous attractor of people and vehicles. There is an admission in the public comments that traffic is already congested around the markets. The markets attract cars, trucks bringing produce and even trucks removing rubbish.

The CRS Proposal and The Food Markets share only one road in common and that is Canberra Avenue which is a major arterial road. There are no streets in common that would be affected by either development.

Dairy Road Development

It is difficult to assess or consider an unknown development that is currently commercial and industrial in nature with limited details of the scheme available. It is referred to as stage 8 (last stage) of the East lake plan and would seem to retain an industrial focus. Newspapers and the website have alluded to significant patronage:

> "In just over six months, visitation to the site has increased from 200 people per week to more than 10,000 people per week. Dairy Road is already becoming a place to make, see and do." (Molonglo group website)

CRS is not aware of any traffic analysis available nor the impacts of this growth to be able to assess. A recently approved brewery is in existence.

A review of the East Lake Urban Renewal area from 2007 shows a potential mixed-use zone across the Monaro Highway (See **Figure 22**). This is approximately 300m from the proposed facility. Whilst this proposal is possible, there are no firm plans for development of this site from the ACT Government.

The ACT EPA released a Draft Separation Distance Guidelines for Air Emissions in November 2014. In this draft, it outlines that the separation distances from sensitive receptors should be a minimum of 300m for "Materials Recovery Facilities" and "Waste Transfer stations". The proposal meets this requirement.

East Lake Development

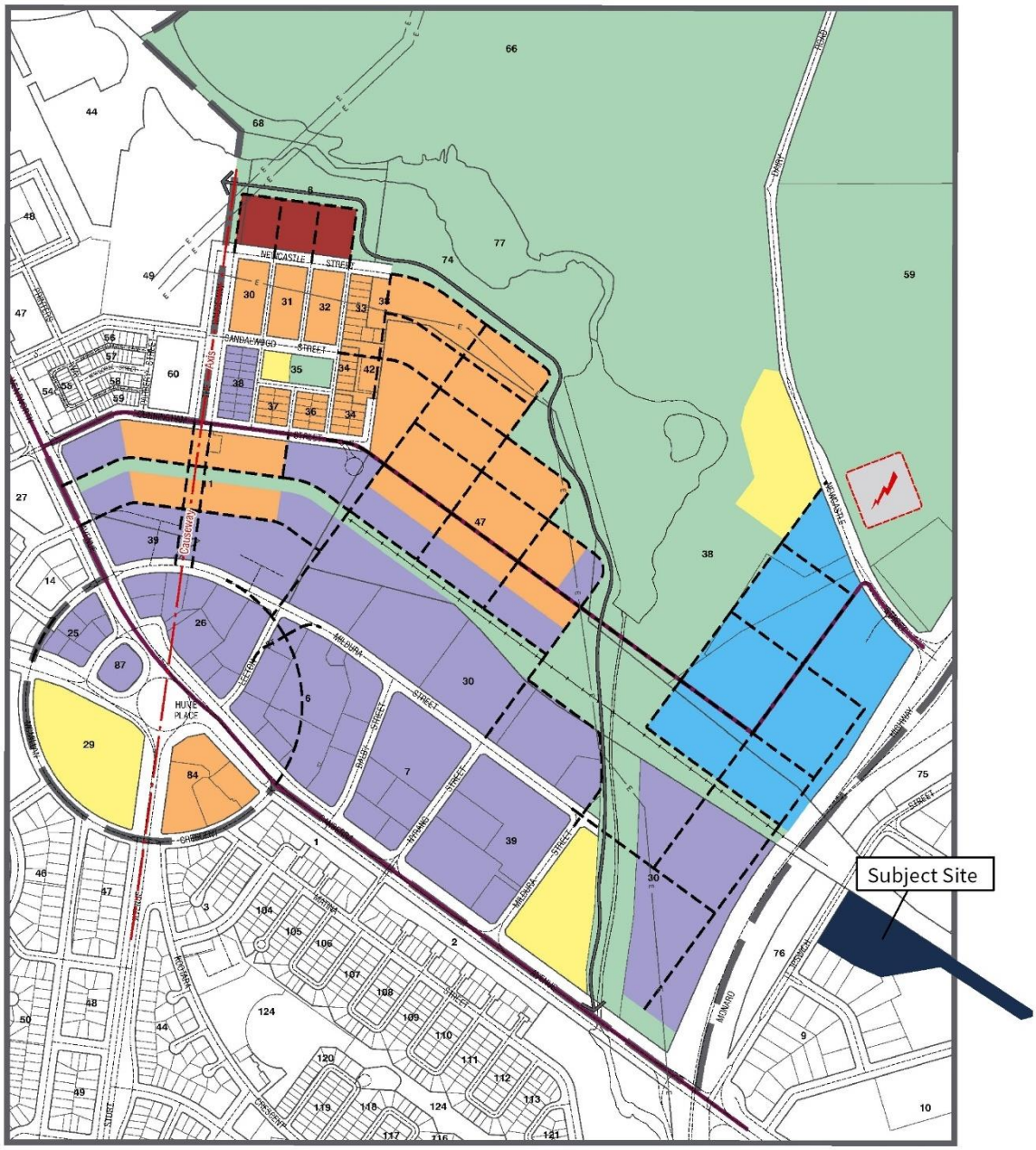
The East Lake proposal was considered in both the noise and odour assessments

The noise levels predicted in table 12 (p19) of the Rudds Noise Assessment (See Appendix J) were compliant at the Western boundary of the CRS site therefore it will be compliant at the edge of the possible future stage 1 of the East Lakes development. It is noted that Ipswich street and the elevated Monaro Highway are in between East Lake and the subject site and is a large generator of traffic noise. The orientation of the CRS MRF is to the north and east to avoid noise towards the west.

The predicted noise levels on Ipswich street were also assessed in tables 15 & 16 (p23) and found to be compliant with the limit. "The likelihood of increasing noise levels was minimal, so a detailed long-term assessment was not considered necessary" (Rudds Noise Management Plan for CRS p.23)

Traffic analysis – planning must have considered the range of land uses available in Fyshwick as the Shell facility was still functioning the timing of formative planning.

Figure 22: East Lake Urban Renewal area 2010



Source: ACT Government

The following comments exist regarding implementation of the East Lake proposal:

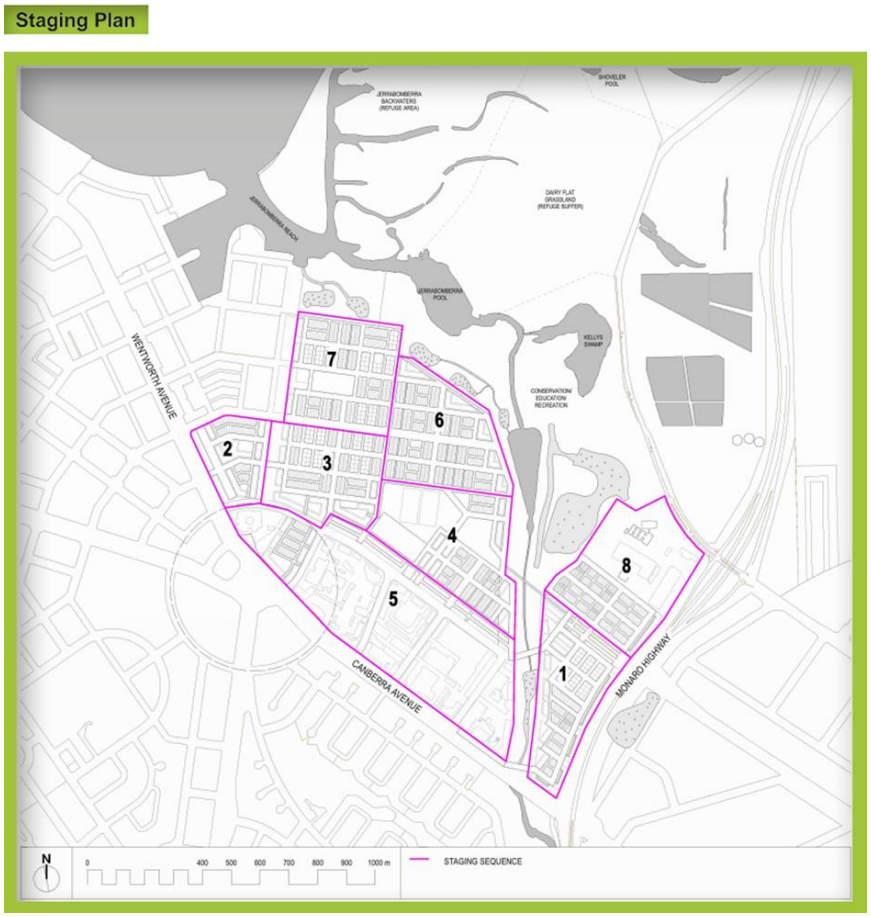
"Implementation:

- The proposed East Lake Planning and Design Framework is scheduled to be considered by government in late August 2010.
- Following approval of the framework, there are several steps in the process leading to the sale of houses in East Lake.
- This process aims to provide land to developers by mid-2012."

The EPSDD website clearly articulates the possibility of development but offers no concrete details or timetable of the land release of its final form. It remains at the consultation stage after 8 years. The land proposed to be used by CRS is existing established Industrial land that is appropriately zoned for the activities proposed and is already in existence. CRS can only assume that this was considered by ESPDD in the strategic planning process as the stage 1 (shown below) precinct will be bounded on three sides by existing industrial land and activities and has Canberra Avenue adjoining to the South, Monaro Highway (elevated) to the east and the existing train line to the north.

All these activities will have impacts such as noise and fumes and vehicle movements. CRS can also assume with the proposed rail works associated with this development that TfNSW is aware of the strategic planning as well as supporting the CRS proposal and signing a 20-year lease for the rail freight terminal.

Figure 23: East Lake Staging Plan



Source: East Lake Planning and Design Framework

6.1.2 Assessed Risk – Sterilisation of Surrounding Land Uses

Assessment of the possible effects on the surrounding uses has formed part of the planning and design process, with perceived risks mitigated through the design.

There was a perceived risk identified as part of the scoping document which highlighted that development of such a proposal may render nearby blocks of land unavailable for uses that are permissible in the zone. It is important that surrounding land is not inadvertently sterilised from future uses due to a proposal on the subject site.

It is acknowledged that possible impacts from the proposed facility, as identified in the scoping document, have the perceived risk of causing a possible sterilisation of some adjacent use. These possible impacts are identified as:

- Air Quality (Section 6.8 and Appendix I & Q
- Noise and Vibration (Section 6.11 and Appendix J), and
- Hazard and risk (Section 6.12)

These potential impacts are addressed in full in the assessment

Adverse impacts on property values has been cited as a potential impact of this proposal. It is worth pointing out that the former use as fuel storage and distribution depot would also have been considered in any land sales and purchase that occurred while it was operational up to ten years ago. As it currently remains dormant and with low level contamination, land sales and purchase in the last ten years will have also considered the potential development of that significant portion of land, adjacent to the rail line for some type of use. It is important to consider whether this type of facility in an industrial precinct, adjacent to two waste processing facilities and two concrete batching plants would further inhibit land value or enjoyment.

It is also important to note that developments like the proposal are often placed central to urban areas around Australia and throughout Europe and the UK, without impact to surrounding uses. Examples of such proposals include;

1. Veolia Banksmeadow rail transfer and C & I processing facility, Banksmeadow (MSW and C & I)
2. Bingo Recycling and recovery facility, South Sydney (C & D waste)
3. Port Botany Transfer station, Port Botany (C & I waste)
4. New Earth Solutions, Bristol, UK

CRS has analysed the property value impacts in the suburbs adjacent to the most recently constructed Banksmeadow waste transfer station in Sydney.:

A 5-year growth look (2012-2017) presented on Realestate.com.au /investment analysis at a comparable (albeit much larger in volume, trucks, potential odour and noise) facility in Banksmeadow and the consequent impact on the nearest residential process is taken from Realestate.com.au website figures showing in August 2017. The five-year approach considers the public knowledge and planning phase of the proposed Banksmeadow facility as well as the current operations where known (Table 15).

Table 15: 5-year real estate growth (2012-2017)

CRS Fyshwick			
Nearest Residential	Narrabundah	House	6.0% annual growth
		Units	1.6% annual growth
	Kingston	House	No Data – mainly units
		Units	0.2% annual growth
	Griffith	House	6.4% annual growth
		Units	0.4% annual growth
Veolia Banksmeadow			
Nearest Residential	Hillsdale	House	No data – mainly units
		Units	8.5% annual growth
	Matraville	House	13% annual growth
		Units	8.8% annual growth
	Botany	House	12.3% annual growth
		Units	6.2% annual growth

Source: Realestate.com.au/investment

Fyshwick is coming off a low rent yield period so it is very difficult to say that there will be any impact particularly if the operational impact is negligible which is the purpose of this EIS.

As is the case for this type of proposal, they are constructed central to urban areas to reduce transport costs and to maximise efficiency by being placed close to the Waste source. This means that design must be compatible with surrounding uses, reducing impacts so as not to detract from use of surrounding development.

6.1.3 Conclusion – Sterilisation of Surrounding Land Uses

Due to the mixed-use industrial (adjacent) and residential areas nearby (approximately 450m away), the proposal has been designed and oriented to ensure that impacts are contained within the site and/or minimised as far as practicable.

The technology and design used to mitigate each identified impact reduces the likelihood and/or possible impacts for the identified risks to the surrounding land uses.

It is therefore concluded that any potential sterilisation of future development being built within or proximate to the Fyshwick industrial area is a low risk.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Planning and Land status	PL-1	Sterilisation of adjacent land uses	Unlikely	Moderate	Low

6.2 Traffic and Transport

Section Summary

- This section provides an overview of analysis and modelling, conducted by AECOM (Appendix E), of the possible traffic and transport risks posed by the proposal, including the increased traffic during construction and increased traffic movement diverted from the Mugga Lane landfill to the site.
- The assessment conducted by AECOM has assumed the maximum volume of traffic generated by an MRF facility that processes a maximum of 300,000 tpa. Should this tonnage be required to be exceeded then further application to ACTPLA would be required
- This section assesses the possible traffic impacts the proposal will have on the surrounding industrial estate and nearby residential areas.
- Assessment of transport and traffic impacts has formed part of the planning and design process. Pre-mitigation traffic and transport related impacts have been identified as potentially having very high risks.
- Implementation of appropriate mitigation measures has resulted in the risk rating decreasing within acceptable levels.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Traffic and transport	Traff-1	Increased traffic congestion during construction	Likely	Minor	Medium
	Traff-2	Reduced network efficiency due to increased traffic from staff and diverted trucks from Mugga Lane landfill	Likely	Minor	Medium
	Traff-3	Reduced road safety	Possible	Moderate	Medium
	Traff-4	Increased Rail Movements	Likely	Minimal	Low

Traff-4 (Increased Rail movement) has been given a pre-mitigation risk rating of Low, as opposed to Medium, due to the Likelihood being categorised as Likely and the Consequence listed as Minimal.

The proposal is designed to leverage the existing rail line and will leverage the one freight train per day that was formerly loaded and unloaded at the Kingston Rail Freight Terminal until 2012. Increased Rail freight will merely result in additional carriages for the one day per train. Activation of an RFT in Fyshwick is likely to result in additional rail movements.

The consequence of additional rail movements is considered Minimal as this is an existing rail line which has enabled both passenger and freight trains into Canberra for decades.

6.2.1 Site context – Traffic and Transport

The proposed site is in the dedicated industrial area of Fyshwick, located on Ipswich Street approximately 400m from the major arterial roads in Canberra Avenue and some 100m from the Monaro Highway (See Figure 24). In the SIDRA traffic analysis undertaken by AECOM the impact of the proposed development on the current traffic conditions during the AM and PM peaks is highlighted in Figure 25 and Figure 26.

Figure 24: Surrounding street network

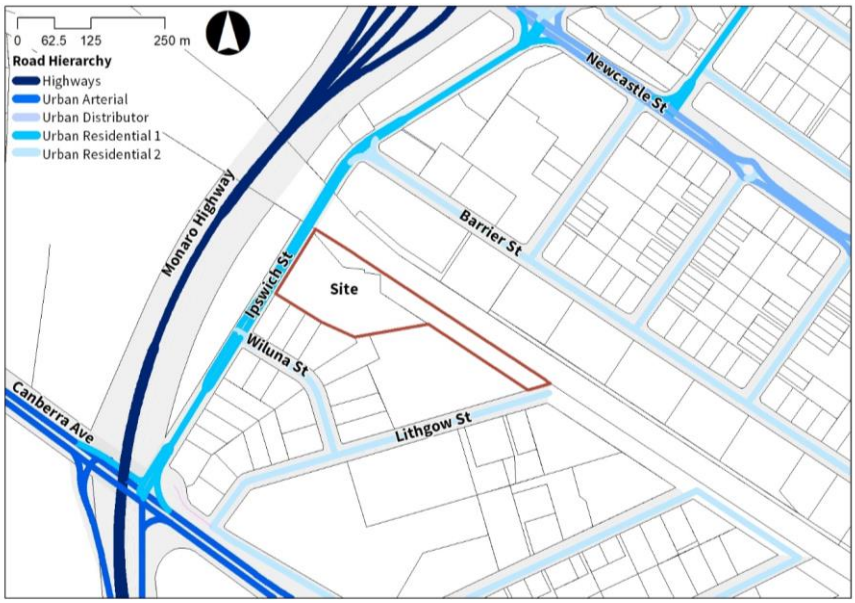
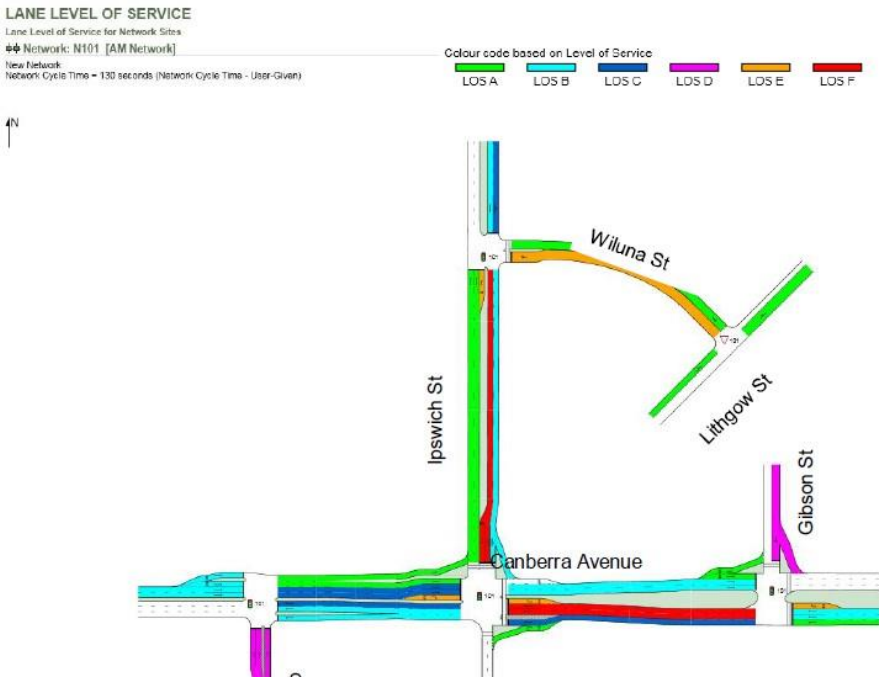
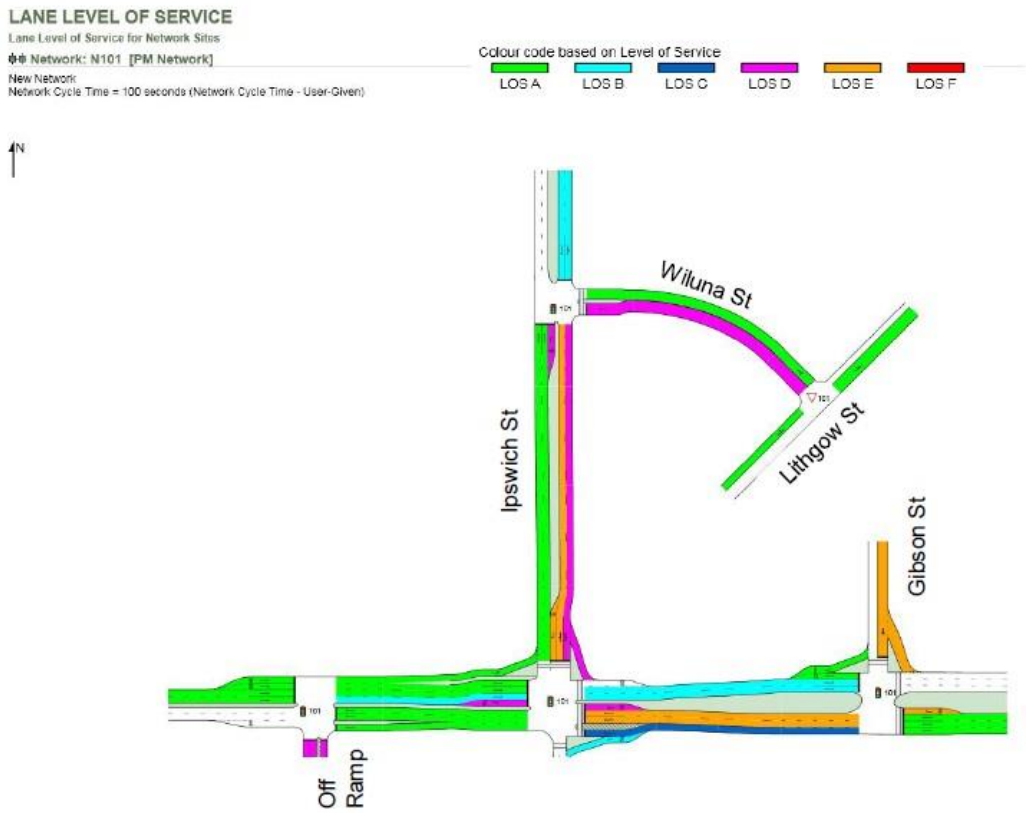


Figure 25: SIDRA – Post Development AM Peak Lane Level of Service - 8.00 – 9.00am



Source: AECOM

Figure 26: SIDRA – Post Development PM Peak Lane Level of Service - 4.15-5.15 PM



Source: AECOM

6.2.2 Community Concerns – Traffic and Transport

Concerns have been raised by the community during consultation relating to transport and traffic impacts primarily surrounding peak traffic movement, proposed truck routes and car parking. These concerns and associated responses are summarised below:

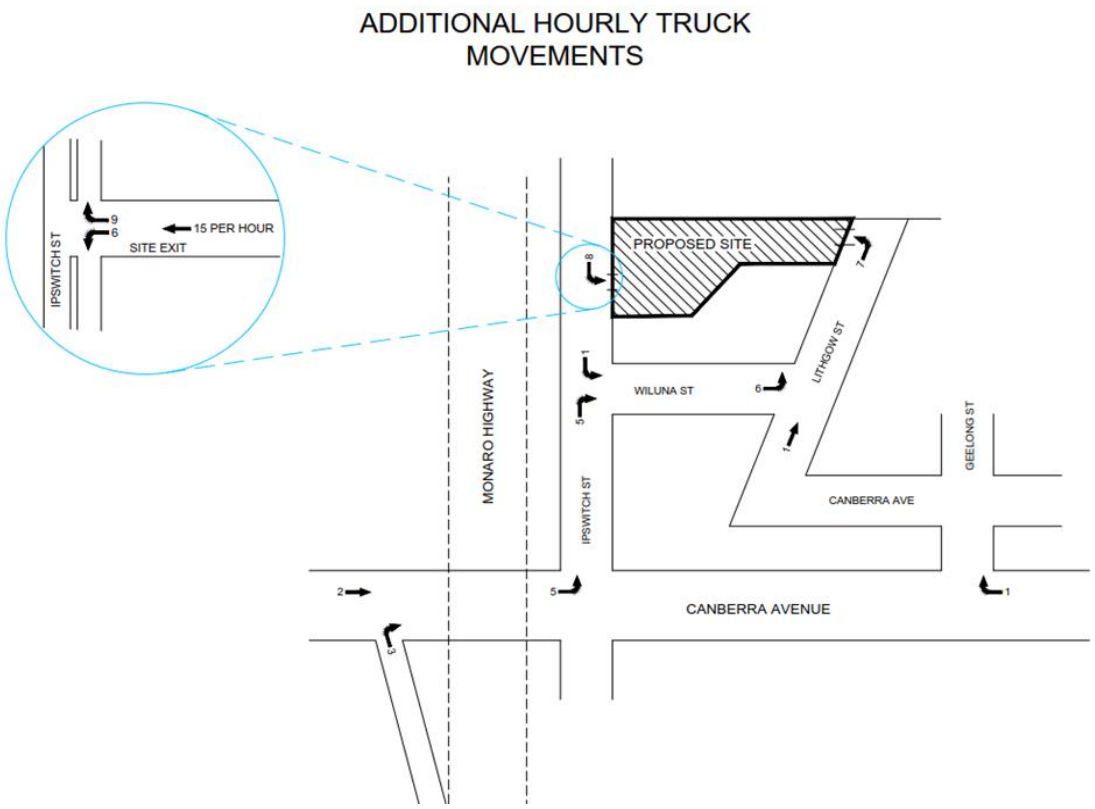
Community concerns	Response
Trucks will be backed up along Ipswich St and disrupt traffic flow.	Entry is to be from Lithgow Street with onsite queuing space and dual weighbridges. This will negate any queuing on Ipswich Street.
Is it possible to have the entrance off Lithgow Street and exit onto Ipswich Street? And plenty of signage to say that trucks are turning ahead.	This suggestion has been incorporated into this design.
Will parking be an issue?	Workers cars for the two shifts starting at 6.00am and 2.00pm will enter and exit from Ipswich Street to the dedicated staff car park which has ample space. These time periods are well outside the daily peak periods for traffic of 8.00-9.00am and 4.15-5.15pm weekdays.
The facility is surrounded by expanding activity, truck routes and co-ordination will be essential.	Agreed. Most trucks will operate outside of peak times to avoid impact on surrounding activities and traffic. It should be noted that the nearby Bunnings and its associated car intensive movements will be moving to the airport precinct thereby reducing traffic volumes in the precinct.
Operating hours need to benefit the wider community by spreading out site access times.	The facility will operate from 6.00am to 10.00pm Monday to Saturday with an 8.00am to 2.00pm window on Sundays. This will assist collectors in managing and spreading around the peak traffic time on Ipswich Street.

6.2.3 Assessed Risk – Traffic and Transport

Given the site's proximity to Ipswich Street, Canberra Avenue and the Monaro Highway some change in traffic impacts are likely to occur. The predicted additional daily traffic movements are shown in **Figure 27** below.

The impact on existing traffic has been considered in context with the existing daily peak traffic flow during the planning and design process and appropriate mitigation methods have been adopted. Two areas of risk have formed part of this risk assessment - traffic generated during construction and vehicle movements diverted from the Mugga Lane landfill.

Figure 27: Additional hourly heavy vehicle movements 2020/21



Source: AECOM

6.2.3.1 Traffic generated during construction

It is almost certain that additional traffic will be generated because of construction of the proposed development. It should be noted that this type of building construction and associated hardstand is not unusual and is similar in scale and process to that of other large warehouses. There will be some increased vehicle volumes, from delivery trucks and workers vehicle's which may result in the intensification of traffic congestion along Fyshwick's collector roads at times. It should be noted that concrete batching is available from two facilities at the end of Lithgow Street and therefore the agitator trucks will only need to travel some 30m to access the site which is at the end of a cul-de-sac. Increased traffic density theoretically could pose a nuisance for drivers during construction hours and in the local area and possibly pose safety concerns for pedestrians. Having two separate entrances and exits at this construction stage will allow this to be managed and any risk minimised.

Given the site's locality in the Fyshwick industrial area, and proximity to major collector streets the construction traffic impact is minor as vehicles will come and go and all activities will take place on site and not require any street space.

6.2.3.2 Reduced network efficiency due to increased traffic from staff and diverted trucks from Mugga Lane landfill

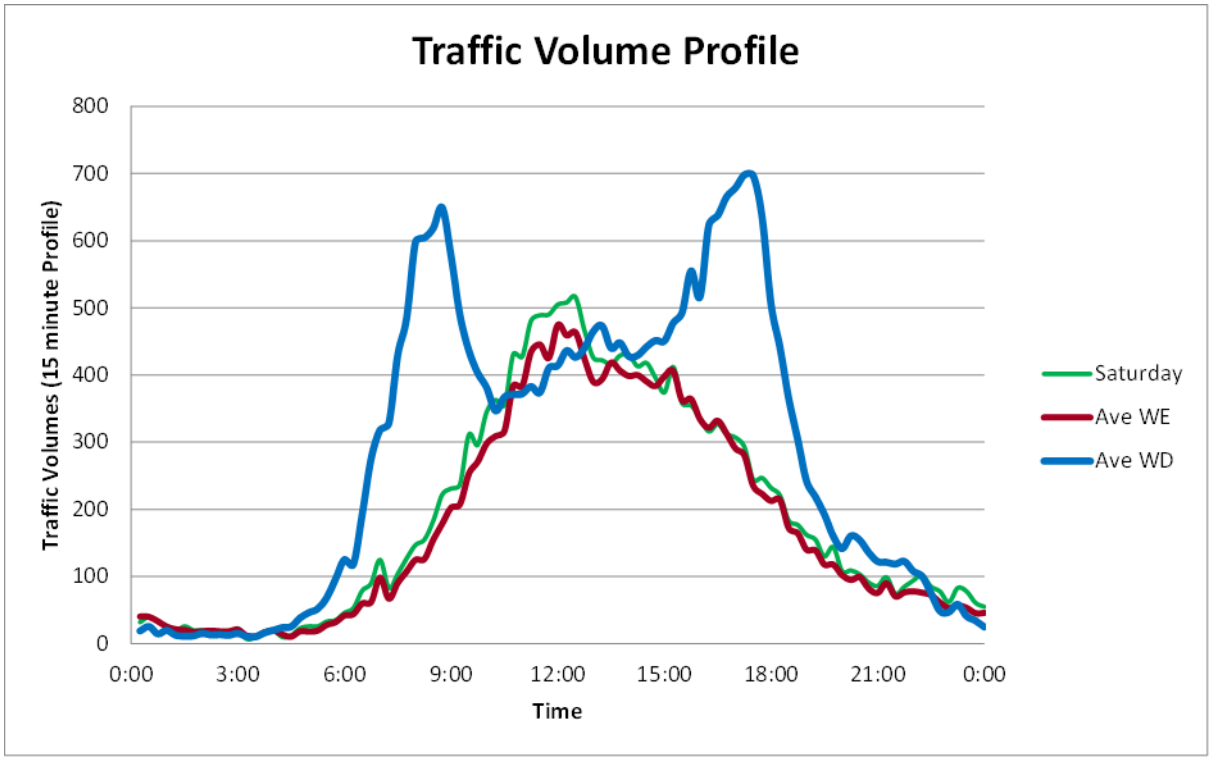
The MRF will divert traffic from the Mugga Lane landfill facility. This is almost certain to occur as the proposed development directly seeks to ease congestion at the Mugga Lane landfill.

There will be an increased volume of heavy vehicles for day-time users of Ipswich and Lithgow Streets. However, the impact of diverted vehicle movement is minor given the site's connectivity to the wider street network, including arterial roads in Canberra Avenue and Monaro Highway.

To understand and measure the impact of any traffic increase it is important to measure the existing traffic situation for the area.

The traffic volume profile for the area is shown in **Figure 28** below. This is based on SCATS intersection data. Is compares the average weekday and weekend volumes as well as Saturday. The diagram shows the clear weekdays AM and PM network peaks as measured by AECOM.

Figure 28: Traffic Volume Profile



Source: AECOM

Unlike commuter traffic where peak hours increase the demand to the development, heavy vehicles and waste collection drivers in general, avoid peak traffic times as they affect the operation and economics of operating a large vehicle. Traffic modelling and considerations used the highest volume weekday for heavy vehicle waste collection and over estimation of the expected vehicles by using the highest possible yield of vehicles waste diverted from Mugga Lane landfill and other commercial waste. The traffic information used already represents the worst case. If the report focused on the peak periods only then we would have to report even lower heavy vehicles numbers.

Traffic has also been modelled for various scenarios including where operation hours are reduced to 7.30 and 12.00pm (5 days per week) and commercial trucks are limited to the hours of 6.00am and 5.00pm (6.5 days). The results of this traffic sensitivity modelling can be seen in the Aecom Report attached with this submission (See Appendix Y).

6.2.3.3 Reduced Road Safety

Concerns regarding the impact of heavy vehicles in the streets around the proposed site and the impact on the structural integrity of the road surfaces.

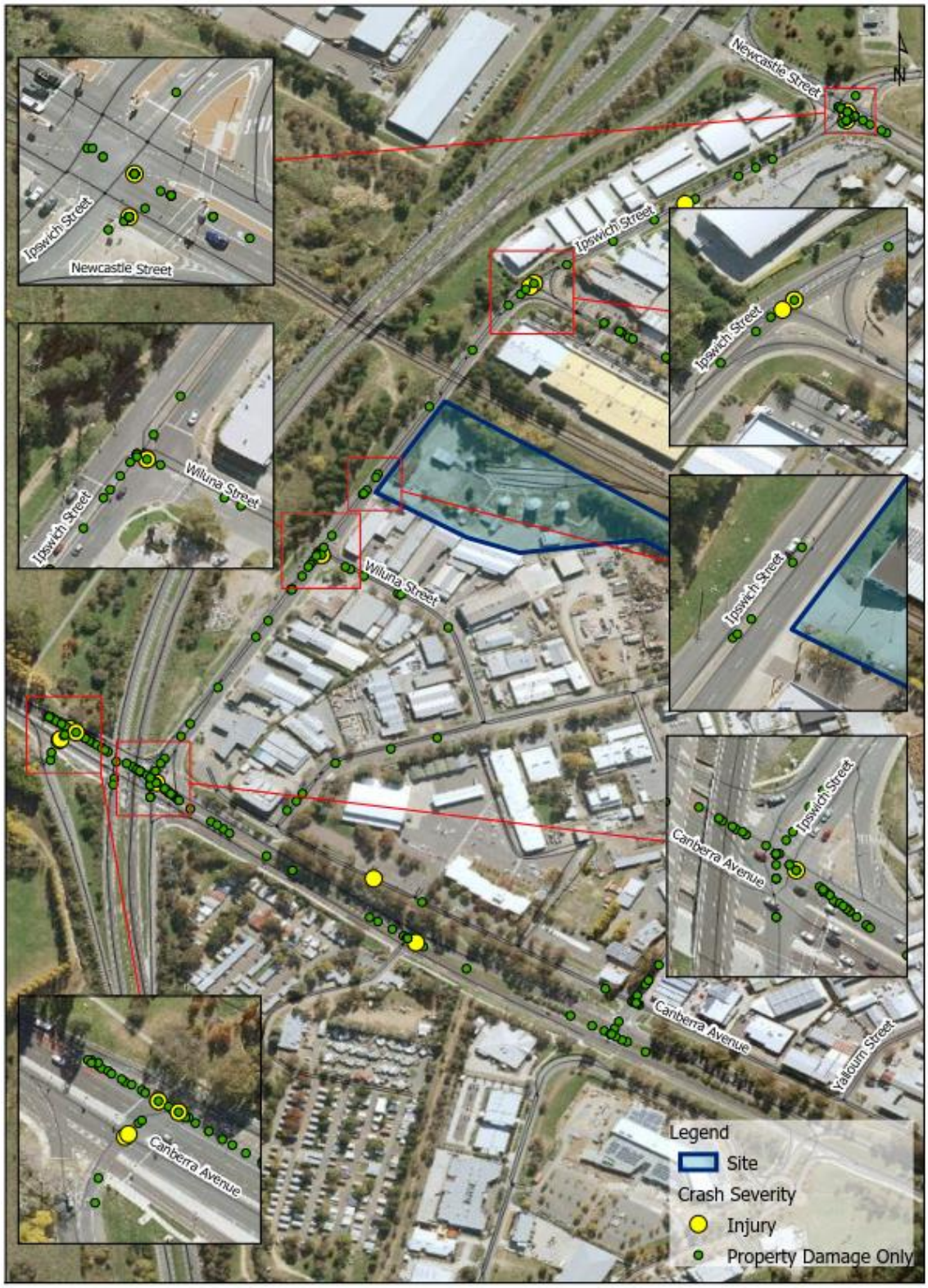
A review by AECOM of the crash history along the site frontage and broader area was considered and it was found that there was no significant crash history in proximity to the site. A plot of the nearby crashes showing the most recent five-year period of recorded data from January 2012 to December 2016 is show in Figure 29. There were no fatality crashes recorded in the study area. In the broader area there were 16 injury crashes and 276 property damage only crashes recorded. Within the area, the most common crash type were rear end crashes, accounting for 62% of the crashes. Right-thru crashes at intersections were the second most common type of crash, accounting for 7% of all crashes in the study area.

In front of the proposed site access point, there were five recorded crashes over the 2012-2016 period. Four out of the five crashes were rear end crashes the fifth crash a vehicle veered off the carriageway, striking an object. All crashes were property damage only crashes. Three of the rear end crashes occurred on wet surface where there was heavy or light rain. The crash where the vehicle veered off the carriageway occurred on a muddy or oily surface. These would indicate that adverse environmental conditions could be a contributing factor. The available data was not able to determine the vehicle classification, i.e. heavy vehicle or passenger vehicle.

6.2.3.4 Increased Rail Movements

The RFT will operate independently to the MRF and is the subject of a separate DA process (now approved). The RFT will enable the loading and unloading of general rail freight as this capability is not currently available to Canberra.

Figure 29: Crash Severity Plot (2012-2016)



Source: AECOM

6.2.4 Mitigation Measures – Traffic and Transport

6.2.4.1 Traffic generated during construction

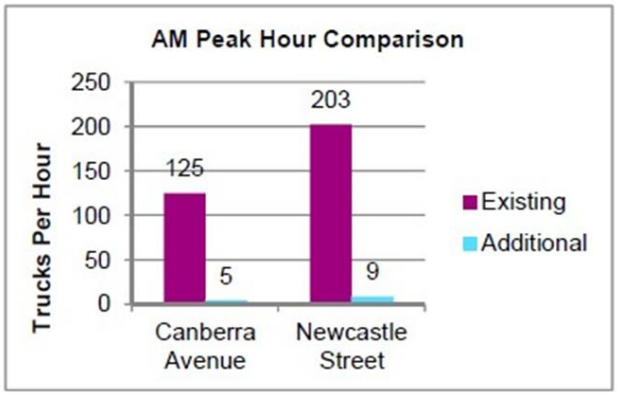
In addition to a traffic management plan to be endorsed by TCCS prior to construction and operation, the following traffic mitigation measures are proposed:

- Dual entry and exit to/from the site ensure traffic flows are un-interrupted
- construction activities will be predominantly mid-site to prevent queuing/back up on to the street
- trucks or cars will not be parked on the street. There is sufficient space on site for car parking
- Signs, detours and safety barriers will be used to protect the public
- Hoardings or fencing will be utilised to ensure vehicle and pedestrian safety is not compromised during construction.

6.2.4.2 Reduced network efficiency due to increased traffic from staff and diverted trucks from Mugga Lane landfill

The proposed MRF development, at its maximum design capacity, would result in an additional 230 heavy vehicle movements per day. Averaged across the 16 hours the facility will operate per day, this equates to 15 heavy vehicle movements per hour, or one every 4 minutes. The additional vehicles represent approximately 5% of the existing heavy vehicle movements throughout the road network. A 5% increase in the increase in heavy vehicles representing less than 0.2% of the total vehicles during AM peak. This is based on the worst-case day and expected to be lower for the rest of the week. 0.2% is not statistically significant. This increase is negligible considering the volume of traffic the surrounding road network currently carries, including during peak periods. This is particularly evident along Newcastle Street and Canberra Ave, where AM peak traffic movements are more than 3000 vehicles per day.

Figure 30: Comparison of AM peak hour generated heavy vehicles to existing movements



Source: AECOM

AECOM have concluded the "*highest impact will be on Wiluna Street and Lithgow Street, which will have the highest volumes of additional waste vehicle movements – 15 vph in 2020/21 or 1 vehicle every 4 minutes. In response to this, and other concerns raised by submissions, CRS has revised the proposed traffic management arrangements to allow the southbound trucks delivering waste on Ipswich Street to be able to turn left into the site and therefore avoid using Wiluna Street. This would be rigid trucks only and would reduce the number of trucks per hour in Wiluna Street to approximately 6vph rather than 14vph (1vph arrives up Lithgow Street – total 15vph)*".

The route alterations and mitigation measures have significantly decreased the impact additional heavy vehicles will have on the surrounding road network. This is detailed in AECOM's Traffic and Transport Assessment where they concluded that the overall additional traffic volumes, even if applied to the peak periods, would have no noticeable effect to the existing level of service.

In addition to a traffic management plan to be endorsed by TCCS prior to construction and operation, the following traffic mitigation measures are proposed to reduce the impacts of trucks being diverted from Mugga to Fyshwick:

- The impact of traffic will be spread over a 16-hour day and therefore can largely avoid peak times.
- There will be a minimal increase on average, during peak times, however, this is expected to reduce because the numbers are calculated from the facility operating at peak capacity which will not be achieved daily.
- The extended hours of operation of the CRS facility (6.00am – 10.00pm) compared to the existing Mugga Lane landfill (6.15am to 5.30pm) will allow the commercial operators to adjust their collection timetables to achieve efficiencies, including avoiding peak traffic periods
- The impact of scenario modelling was conducted by AECOM and included as Supplementary information to Appendix E. The sensitivity modelling included scenarios (see Appendix Y) where truck would arrive on a narrower band of hours and what impact this may have on the network. The various scenarios included the shortest hours:

    Government trucks between the hours of 7.30 and 12.00pm (5 days)

    Commercial, Freight, Recycling trucks between the hours of 6.00am and 5.00pm (6.5 days)

Overall the scenario analysis indicates that while the operating hours of the facility does generate greater movements in the AM peak, it is unexpected to impose a sizeable negative effect on traffic conditions in the area. The percentage of additional traffic caused by the development on Ipswich Street is expected to range between 0.8% and 2.3% dependent on the operating hours tested in these scenarios. Scenario 4 [above] is believed to be relatively conservative which is believed to be relatively stringent. Scenario 4 would see a 2.3 % traffic increase in the morning peak in Ipswich Street.

Rail Freight Terminal Unavailable

If the rail freight terminal was unavailable, then road-based transfer of the containers would occur. This would result in an average increase of two trucks per hour based on the following assumptions by AECOM (See Appendix W):

Yearly Waste Volume	300,000 tonnes/year

Minus 30% of recycling volumes for trucks already removing material by road (18,000 tonnes/year) – this was already assessed already in current traffic calculations

30% of 60,000tonnes/year	18000 tonnes/year (Section 2.5.7 – AECOM Appendix E)
Resulting volume of material by road	283,690 tonnes/year
Site will operate 338 days/year	804 tonnes/day (Section 2.5.5 – AECOM Appendix E)
Assuming 28 tonnes per truck (1 Container)	30 trucks/day (Section 2.5.7 – AECOM Appendix E)
Assuming 16 hours of operation	2 Trucks/hour increase to road traffic

(source AECOM – Appendix W)

AECOM has concluded on this additional increase that:

"This would increase the average hourly generation shown in table 8 or our report [see Appendix E] from 15 to 17 vehicles per hour. This would represent approximately 5.4% of the existing heavy vehicle movement at Newcastle Street. This is an additional 0.4% to the 5% stated in the conclusion of the report [see Appendix E]. The comparison to the total peak hour traffic would change from 0.3% to 0.4%" (source AECOM – Appendix W)

If the rail freight terminal was temporarily or permanently unavailable for use, the following traffic mitigation measures would be put in place:

- Containers would be exported interstate via road until the rail network is reinstated, or in the instance of a permanent rail closure, permanently via road
- The timing of removal of containers from the site by road is controlled by CRS (unlike the delivery of waste) and CRS would therefore be able to manage truck movements where possible to avoid traffic peaks and minimise any perceived impacts associated with truck transport

6.2.4.3 Reduced Road Safety

The adjoining land (Block 11 Section 8 Fyshwick) will allow access to Lithgow Street; the acquisition of Block 11 will allow all traffic to enter and leave the site in a forward direction where practicable.

Approximately 35% of traffic movement to the facility is expected to travel north along Ipswich St from Canberra Avenue. Initially, waste truck routes were earmarked to enter the site directly from Ipswich Street and leave onto Lithgow Street. These routes have since been altered in this document to now utilise the signalised intersection at Wiluna and Ipswich Streets to then enter the site from Lithgow Street. Trucks will then exit onto Ipswich Street by way of a new signalised intersection that CRS will construct to lessen the number of trucks on Wiluna Street by allowing southbound rigid vehicles to turn left into the site off Ipswich Street.

The introduction of traffic lights will improve safety at the driveway exit to Ipswich Street. The vertical and horizontal geometry of the site provides enough sight distance, which allows for the introduction of traffic signals

Furthermore, the new traffic lights would operate in conjunction with the existing Wiluna Street traffic lights and would not be expected to contribute to delays in existing travel times. This will also formalise the pedestrian arrangements in Ipswich Street so that their safety is considered. This arrangement will be like the existing arrangement for the McDonalds store in Newcastle Street, in Fyshwick. The revised intersection proposed (worst case) can been seen in **Figure 31**, below, which shows the swept paths for trucks entering and leaving the site on Ipswich Street as proposed. Only rigid trucks would be entering the site from the north., articulated trucks would still enter from Lithgow Street.

Figure 31: Ipswich Street Intersection swept paths

Source: AECOM

The following road safety measures will be implemented to remove any risk of injury or damage to the public:

- Traffic Management Plan to be approved by TCCS
- Directional and safety signage to be included in the DA
- Boundary fencing to prevent illegitimate pedestrian access
- Dual site entry/exit to ensure forward moving entry/exit to remove risks associated with heavy vehicles reversing
- Traffic lights at the verge crossing Wiluna Street will improve safety

6.2.4.4 Increased Rail Movements

The addition of recyclable materials and residues from the MRF operation will add containers to the operation of the rail freight terminal, However, this is unlikely to increase the total number of rail movements to more than one additional train per day on average (in addition to the existing 6 commuter services per day). It should be remembered that the MRF site was receiving direct rail freight back in 2010 and that the ACT Government also put in a two-year rail freight trial in 2014. These rail movements would be replacing those rather than adding to them. Some risk is considered possible but with minimal impact given the rail line is already in place, has been used in the past for freight and is currently in operation for passenger freight. The rail activity will take place in the daytime window.

The RFT will operate independently of the MRF and is the subject of a separate DA. The RFT will enable the loading and unloading of general rail freight as this capability is not currently available to Canberra. Should there be an issue with the approval of the RFT (preventing waste material leaving the site by rail) then it has been determined by AECOM that there would need to be an additional 2 trucks per hour required to take the containers and residues from the site (see Appendix E). It has also been suggested by ACT NoWaste that the waste volumes may be substantially lower than the 300,000Tpa that AECOM has modelled for and therefore the additional 2 trucks are within the worst-case modelling if this is the case. The preference is to use rail and only rely on road transport if there was an issue with the rail line itself beyond three days

The following mitigation measures will be implemented to reduce the impacts of increased rail movements:

- Rail movements will only occur outside the night-time (between 7.00am and 10.00pm to ensure there is no additional impact to residential dwellings which are in adjacent residential suburbs.
- A 2.7m noise attenuation barrier will be built on the southern boundary and forklifts will be fitted with noise attenuation equipment to reduce the impact of any noise associated with loading and unloading of containers

6.2.5 Residual Risk – Traffic and Transport

6.2.5.1 Traffic generated during construction

If the planning for the site is successful the proponent will prepare and submit construction traffic management plans to the required level of detail to satisfy TCCS requirements as part of the next, more detailed, design phase for development of the site. This will include details on construction traffic movements, construction related traffic management plans, details on expected cut and fill to determine the amount of material to be imported or exported to / from the site. The current concept for the site is looking to minimise import or export of material reducing haulage and truck movements during construction. The Management Plan will be prepared by the Proponent and/or other appropriately qualified consultant and approved by Transport Canberra & City prior to construction and/or operation.

The concrete for the site is proposed to come from the batching plants on the adjacent blocks and as such, will have a negligible impact on the broader road network for that aspect.

6.2.5.2 Reduced traffic network efficiency from staff and diverted trucks from Mugga Lane landfill

AECOM has determined that there will be negligible impact on the network and the extended hours will reduce that impact further. Future development cannot be determined as they are in their infancy and the obligation rests with the EPSDD to determine development impact from both ends therefore future proposals that involve change of land use such that they will connect of be closer to existing sources of traffic should have that considered in the strategic planning assessment. CRS and AECOM have assessed what can be determined in terms of traffic and the increases are minimal to the network.

6.2.5.3 Reduced Road safety

The road safety analysis prepared by AECOM (See Appendix S – response to public submissions) indicates low risk. The inclusion of traffic lights to assist egress from the site and pedestrian traffic along Ipswich Street will also mitigate safety concerns so the residual risk for road and pedestrian safety is low

6.2.5.4 Increased Rail Movements

No direct mitigation measures are proposed for increased rail movements as this is Low Risk. This assessment is on the basis that the proposed waste sorting facility is likely to modestly increase frequency of rail movements from 2012 levels. It should be noted that the MRF is separate to the RFT. However, if both components are pursued, rail movements can be expected as likely to occur once per day on average as a result of the proposal.

The impact of these rail movements is assessed as minimal which is defined in Table 12 as “people are largely unaffected nor are they concerned”. This is because the site is located on a rail corridor and it is reasonable for lessees who own land along a rail corridor to expect and anticipate rail movements to occur. The rail movements potentially associated with the proposal are not excessive and are unlikely to be greater than one per day.

The subject site previously had direct rail access and as such, this proposal is considered to have a reduced impact when compared to historical uses.

6.2.6 Conclusion - Traffic and Transport

AECOM have concluded the “The highest impact will be on Wiluna Street and Lithgow Street, which will have the highest volumes of additional waste vehicle movements – 15 vph in 2020/21 or 1 vehicle every 4 minutes. CRS has suggested a practical solution to reduce the number of trucks on Wiluna Street by some 60%.

The increased peak hour number of trucks generated will be approximately 5% of the total number of trucks passing through Canberra Avenue / Ipswich Street and Newcastle Street and Ipswich Street. The increase would represent about a 0.2% increase to the total vehicle volumes during the peak hour. The proposed truck movements will operate between 6 am and 10 pm, which spreads trucks outside of the road network peaks. The additional volumes, even if applied to the peak periods, would have no noticeable effect to the existing level of service of the surrounding road network.

TCCS have reviewed sensitivity modelling done by AECOM in relation to various narrower hours of operation and commented that “no significant impact will occur on surrounding road network.”

Should the rail network be unavailable then the conservative increase of 2 trucks per hours to transport containers by road has been outlined and has negligible change to the overall traffic assessment numbers (see Appendix W)

The direction of travel for the vehicle arrivals are in the opposite direction of the high demands shown in the SIDRA analysis and as such are not likely to impact the existing level of service on the existing network.

Even though there is no warrant for the development and there is low incidence of traffic accident events, for the safety of all road users, CRS proposes to install traffic signals at the Ipswich Street exit from the site. This will improve road and pedestrian safety on Ipswich Street. This is not expected to significantly impact the travel times for south bound traffic on Ipswich Street.

The existing driveway on Ipswich Street has an existing median opening and complies with sight distance and stopping distance requirements but it is considered the addition of vehicle activated traffic signals is a good proposal to prioritise safety.

As such, the likelihood and consequence of the perceived risks have decreased significantly, as displayed in the revised matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	**ID**	**Risk Scenario**	**Likelihood**	**Consequence**	**Risk Rating**
Traffic and Transport	Traff-1	Increased traffic congestion	Possible	Minor	Low
	Traff-2	Reduced network efficiency due to increased traffic from staff and diverted trucks from Mugga Lane landfill	Possible	Minor	Low
	Traff-3	Reduced road safety	Unlikely	Moderate	Low
	Traff-4	Increased Rail Movements	Likely	Minimal	Low

6.3 Utilities

Section Summary

- This section provides an overview of assessments done by Cardno and sub-consultants L&D Consulting (HAZMAT assessment) and Arcadis (Waste Analysis Report) (Appendix H) of the risks the proposal poses regarding existing site conditions and new and existing utility connections. Areas of concern include impacts on existing infrastructure and management of storm and waste water.
- This section assesses if there are any utilities impacts the proposal will have on the surrounding industrial estate and nearest residential areas.
- Assessment of the utility connections and associated impacts have formed part of the planning and design process so that appropriate risk mitigation methods can be implemented.
- Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	**ID**	**Risk Scenario**	**Likelihood**	**Consequence**	**Risk Rating**
Utilities	Util-1	Impact on existing infrastructure	Possible	Moderate	Medium
	Util-2	Contaminated storm and waste water egressing from the site during extreme weather	Possible	Moderate	Medium

6.3.1 Community Concerns - Utilities

The community has not highlighted any key concerns relating to utility impacts of the MRF and RFT functions of the proposal to date.

6.3.2 Assessed Risk – Utilities

Assessment of the utility requirements of the proposed development have been considered during the design and planning phase of the project. A summary of the existing services information has been completed for the subject site, particularly regarding electrical, gas, telecommunications, water supply and waste water. Given the proposal for entire site redevelopment and the nature of the proposal, the project is likely to impact utility provision and connection.

6.3.2.1 Impact on existing infrastructure

The following utility services information has been collated from Dial Before You Dig (DBYD) enquires, WAE records, correspondence with service providers and visual site inspections as prepared by Cardno Ltd.

The existing utility infrastructure includes:

Electrical	There is an existing service connection to the subject site from Ipswich Street, including a high voltage substation located outside the site entrance south-west of Block 9. Power supply can be obtained from the existing service connection to the site from Ipswich Street. Connection will not have a significant adverse impact on power supply to the surrounding area.
Gas	There is no natural gas connection to the subject site; however, a 100mm high-pressure steel gas main is present within the western verge of Ipswich Street. Preliminary advice suggests that gas services can be connected from the high-pressure main in the Ipswich Street verge. The main has enough capacity to supply the proposed development. However, a long service tie would need to be bored under Ipswich Street to the site to facilitate the connection. It is not expected that natural gas will be required for this proposal.
Telecommunications	There is a current Telstra connection (office is still wired and cabled) to the subject site and Telstra conduits and manholes are present on both sides of Ipswich Street. There are no existing NBN or TransACT services near the subject site. Preliminary advice suggests that network connection via the existing Telstra manhole can be provided. Telstra requires exclusive access to a P100 lead-in conduit near the property boundary to connect to the Telstra access point.
Water supply	There is an existing watermain leading into through Block 11 and into Block 9 off Ipswich Street. A fire hydrant is present at the end of the main and there is enough capacity and pressure available to the site. The watermain will need to be relocated to allow the proposed development.
Sewer	An existing sewer tie exists from the subject site to a sewer main on the eastern verge of Ipswich Street. Operations of the MRF and RFT will result in liquid trade waste and generate waste water.

Stormwater	Under the existing site arrangements, and consistent with a former large fuel handling facility, significant infrastructure is in place to capture and manage all site runoff. This includes the contouring of the site, interception drains, sumps, and oil skimmers. It is anticipated that this infrastructure is superior in design and capability, due to the expected requirements of a multi-million litre fuel storage site, then would be need for the proposed MRF and RFT. Preliminary assessment suggests that some of the existing stormwater management system could be refurbished and utilised. The proposal will be profiled to connect with existing stormwater arrangements (see Cardno Conceptual drainage diagram 4-3 in Appendix H).

6.3.2.2 Contaminated Stormwater & Waste Water Egressing Site

External Areas of the Site

The subject site is to incorporate large portions of hardstand in its design to accommodate waste truck circulation. As such, large downpours could result in contaminated stormwater and waste water egressing the site. Excessive overland flow due to an unusual weather event could cause some contaminated stormwater as it picks up various pollutants including solid material, organic matter and chemicals within the precinct. Contaminated stormwater can be associated with various environmental impacts such as algal blooms, erosion, increasing sediment disposition and the disruption aquatic species.

Internal Building

Given the nature of the proposal design, with all waste processing activities taking place within a sealed building, the production of some leachate within the building is almost certain. Leachate is any liquid that has come into contact with waste or waste processing areas. Based on Cardno's previous experience, facilities like that of the proposal could produce up to 2,000L of leachate each day. This accounts for liquid from the MSW waste stream and wash-down water used to clean the terminal building. Leachate can contain high levels of dissolved solids, chemical oxygen, low pH levels, volatile organic compounds and heavy metals. If left untreated, leachate can create severe environmental challenges.

6.3.3 Mitigation Measures - Utilities

A Waste Management Strategy has been prepared by Cardno Ltd (Appendix H). The strategy addresses the above risks and suggests a range of mitigation measures be adopted.

6.3.3.1 Impacts to existing infrastructure

The following mitigation measures will be implemented to mitigate the impact to existing utility infrastructure:

- The site was previously used as a major storage and transport facility so many of the relevant connections are in place, available or can be adapted.
- The development proposes to utilise existing utility connections on-site where appropriate.
- Existing utility infrastructure is expected to possess ample supply to service the proposed development.

6.3.3.2 Contaminated Stormwater & Waste Water Egressing Site

External Areas of the Site

- The following mitigation measures will be implemented to reduce the possibility of any contamination to stormwater and waste water exiting the site:
- All waste handling and processing activities to be located inside the MRF so there will be no contact between the waste and stormwater outside the building.
- Material stored outside the MRF building will already be loaded into waterproof and sealed shipping containers.

- There will be a wheel bath incorporated for trucks leaving the building to capture any tyre borne contaminants and this wheel bath will be chlorinated and connected back to the leachate collection system in the building.
- The minimisation of any external contaminants and dust etc will also be managed by mechanically sweeping the hardstand surfaces as part of the operational plan.

Internal Building

The following mitigation measures will be implemented inside the MRF building to reduce the possibility of contaminated waste water (leachate) spreading outside of the building:

- The building will be designed with a 150mm bund around the perimeter to contain any leachate within the building and prevent any unusual stormwater activity (flooding) from impacting the inside of the MRF building.
- The 150mm bund will be a roll over design in the doorways to allow vehicle movements in and out.
- To effectively manage leachate within the building a 20,000lt leachate tank will be installed to capture all leachate from the bunded tipping floor and around the compactors and processing equipment.
- The fall of the floor (internal building) will be such that the MSW waste tipping area and the C&I waste tipping area will be separated, and leachate will drain the collection tank.
- The baling area will be the highest point of the building floor to keep the recycled materials free of any liquid.
- The proposal is to collect leachate and periodically injected into the waterproof sealed waste containers, at the time of compaction, to assist in the beneficial decomposition of waste at Woodlawn Bioreactor Landfill.
- Some twenty-eight containers per day would dispose of approximately 5,200L of leachate per day if 200 litres were injected into each one.
- There will also be the option of pumping out to a licensed liquid waste processor
- CRS has investigated the possibility of a trade waste agreement if the leachate chemical composition can meet Icon Water criteria. This cannot be determined until operation commence.

6.3.4 Residual Risk – Utilities

6.3.4.1 Impacts on existing infrastructure

As the site requires redevelopment, risks associated with utility connection and stormwater are possible during construction. However, mitigation measures adopted are appropriate in alleviating the impacts and will result in the subject site being a significantly better outcome that it currently is as a disused facility.

6.3.4.2 Contaminated Stormwater & Waste Water Egressing Site

A range of methods have been considered will be implemented to mitigate any potential uncontrolled contaminated waste water and stormwater from egressing the site. A range of design and operation methods as detailed in section 6.33 above will significantly mitigate any impact off-site. The enclosed waste processing activities will be the best way to separate the waste from any storm event which will negate any impact.

6.3.5 Conclusion – Utilities

Given the site's locality within an existing industrial area, the impact of utility connection can be significantly decreased. Additionally, measures to capture and manage stormwater run-off to the stormwater network can be achieved as it would be for other industrial developments. Any leachate will

be contained in the building and any inadvertent contaminants outside the building will be limited to dust which will be managed through regularly cleaning activities and mechanical sweeping as would occur on any other industrial site. The fact the site has been sealed with hardstand make this process significantly easier to manage and control. The site can be significantly mitigated to appropriate levels to control stormwater and leachate. This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Utilities	Util-1	Impacts on existing infrastructure	Unlikely	Moderate	Low
	Util-2	Contaminated storm and waste water egressing from the site during extreme weather	Unlikely	Moderate	Low

It should be noted that the consequence of each impact remains unchanged. Mitigation methods decrease the likelihood of each risk scenario, decreasing its overall risk rating.

6.4 Materials and Waste

Section Summary
- This section provides analysis by Purdon Planning as to the risks the materials and waste impacts associated with the MRF and RFT processes. Areas of concern relate to the generation of waste during construction, stockpiling and pest control. - This section also assesses the materials and waste impacts the operation of the proposal will have on the surrounding residential and industrial areas. - Assessment of the materials and waste impacts have formed part of the planning and design process. Appropriate risk mitigation methods have been implemented. - Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Materials and Waste	MW-1	Increased waste to landfill during construction	Likely	Minimal	Low
	MW-2	Spread of waste to other sites	Possible	Minor	Low
	MW-3	Excess stockpiling during operation and cleanup when operation ceases	Possible	Moderate	Medium
	MW-4	Waste spread during transport	Possible	Minor	Low

6.4.1 Community concerns – Materials and Waste

There were concerns regarding the site's proximity to residential areas and the health risks it poses raised by the community. However, most of these concerns related to the emissions associated with the mooted WtE facility – The WtE proposal has been removed and therefore some of these concerns are less relevant.

The community's major queries relating to the MRF process were regarding the source of waste and what can/cannot be recycled. The key issues are summarised in the table below:

Community concern	Response
Will you ship waste in from interstate, like NSW?	CRS will process waste from the ACT region. ACT currently receives waste from Queanbeyan-Palerang. Conversely a significant amount of ACT rubbish is currently tipped in NSW
Will you be taking existing waste from Mugga Lane landfill?	The intention is to target the MSW and C&I waste streams that have not been processed for recyclables.
What things won't be captured and recycled?	Hazardous waste will not be accepted. Please see discovery protocol at Section 6.9. Food waste can be separated should there be a composting requirement or facility in the future, otherwise it will go to landfill along with

	contaminated or soiled material that cannot be recycled.
How will kitchen waste/food be dealt with?	It will pass through the MSW sorting process (as it will be both mixed and inside garbage bags), bag opened and loosely shredded and after being picked through for recyclables, the food waste can be separated for composting at another facility. The residues will then be containerised for transport to landfill.
Concern that if we do the recycling in the proposed facility, the community will be less interested in doing it themselves	The community has had and will have every opportunity to recycle before it ends up in a bin – there is nothing that CRS will be doing to discourage the community from source separation programs or Government initiatives in this space.

6.4.2 Assessed Risk – Materials and Waste

Assessment of the materials and waste impacts of the proposed development have been considered during the design and planning phase of the project. Given the site requires re-development and the nature of the proposal, materials and waste impacts are inevitable, however small.

6.4.2.1 Increased waste to landfill during construction

Redevelopment of the site has been assessed as likely to result in an increase to waste transported to landfill during construction, as would any site redevelopment. Reuse of material and fill in the development of the site will be undertaken as far as practicable.

The impact of this is considered minimal and as a result the risk is deemed low.

6.4.2.2 Spread of waste to other sites

As a materials recovery facility, there is a perceived risk that materials will be stockpiled on site which will result in spread of waste to other adjoining sites. Large stockpiles of waste have the potential to impact the visual amenity and functionality of neighbouring sites.

Waste will not be stockpiled on site outside the MRF building and all waste or recyclables pending sorting or export, will be containerised and sealed in the building to prevent risk of windblown debris and spread to adjacent sites. The only waste stored outside will be sealed containers ready for transport.

The primary spread of waste on a landfill site is via wind blowing light waste off site. The approach to contain all processing of wastes inside the building means that spread of waste to other sites is remote. The effect of which is listed as minor as any spread of waste would be expected to be at a very small scale if at all.

6.4.2.3 Excess stockpiling during operations

There is a perception waste will be stockpiled outside the building prior to its disposal. Stockpiled waste has the potential to cause ecological and environmental impacts as well as impacts on visual amenity. Excess stockpiling may require clean-up and related contamination treatment if remaining after closure of the facility.

If there is a significant issue in the MRF such that the daily waste stream could not be received, then the collectors of the waste would be diverted to alternative licensed facilities or landfills.

If there is an issue with the rail network which prevents transport via rail network, then there is the capacity to store containerised and/or vary the train export timetable. If these measures fail there is

potential to utilise trucks to carry the waste to licensed facilities, such as Woodlawn until the rail service is restored.

6.4.2.4 Waste Spread during transport

The spread of waste during transport has been identified as a perceived risk with the potential for waste to fall from transport vehicles. This is considered possible in rare occasions as all loads would be required to be appropriately sealed or and/or fastened during transport to the site, by licenced contractors.

There is a perception that this is a new risk from vehicles travelling to Fyshwick rather than Mugga Lane landfill. The same trucks already carry waste around Canberra and must be licensed. The risk is no greater than is currently the situation in other areas of Canberra.

Once waste arrives at the subject site, it will be tipped and processed inside the MRF building and containerised before transporting again which will significantly reduce the risk of waste falling off vehicles. The EPA already has regulations about the safe and secure transport of waste materials.

The transport of waste residues from the site by shipping container is a proven method in use in NSW currently. CRS proposed to adopt this proven method. However, will use fully sealed containers to prevent leakages of leachates and odour.

6.4.3 Mitigation Measures – Materials and Waste

Given the above perceived risks, a range of mitigation measures are being proposed.

6.4.3.1 Increased waste to landfill during construction

The following measures will be implemented to mitigate risks associated with increased waste generated during construction:

- There is space on the site to stockpile construction materials that can be recycled and/or reused during construction phases.
- Existing on-site buildings are made of predominately steal and masonry. Much of this material will be recyclable and will not be required to be landfilled.
- The construction will effectively follow existing contours and cut and fill will be minimised.
- Any contaminated material identified in the construction phase will be taken to an appropriately licenced disposal facility.

6.4.3.2 Spread of waste to other sites

The following mitigation measures will be implemented to reduce the risk of waste spread to adjacent sites:

- All truck unloading and loading will occur within the enclosed MRF building to reduce the possibility of waste spreading during the tipping process. The building will have rapid closing doors to prevent wind from impacting the tipped wastes
- The processing and recycling activities will occur indoor to ensure no spread of waste
- No external storage of waste is proposed unless it is in a waterproof shipping container ready to be loaded onto the train.
- CRS will be conducting regular pavement sweeping and will be employing people to specifically manage the yard and landscaping areas Trucks transporting wastes for both the C & I and MSW streams are in operation currently.
- Covering of loads will be employed to minimise the potential for waste spreading to surrounding locations during transport.
- Fencing is proposed to secure the site and prevent any possible windblown waste from leaving the site.

- The site will be regularly cleaned to further mitigate fugitive waste leaving the site.

6.4.3.3 Excess stockpiling during operations

The identification and separation of non-conforming materials will either be reloaded back onto the truck delivering it or it will be safely separated and then containerised for collection or delivery to an appropriate handler. For example: -

MRI-e cycle Solutions, based in Fyshwick, can provide services to collect and handle the following materials (some considered hazardous) on an as needs basis:

- Cars and Vehicles
  - Batteries – Lead Acid
- Electrical Equipment
  - Batteries – Lead Acid (dispose safely)
  - Batteries – Rechargeable (dispose safely)
  - Batteries – Single Use (dispose safely)
  - CDs & DVDs (dispose safely)
  - Computers & Accessories (recycle, refurbish, reuse, dispose safely)
  - Electrical appliances (recycle, dispose safely)
  - Electrical appliances – Battery operated (recycle, dispose safely)
  - Mobile phones (recycle, refurbish, reuse, dispose safely)
  - Power tools (dispose safely)
  - Printer cartridges (recycle, dispose safely)
  - Smoke detectors (dispose safely)
  - Televisions (recycle, dispose safely)
  - Video and Audio tapes (recycle, dispose safely)
- Lighting
  - Fluorescents
- Metals
  - Aluminium – Scrap (dispose safely)
  - Electrical Cables

Any fragments of asbestos if found would be double wrapped and sealed in heavy duty plastic and delivered as required to an appropriately licenced waste disposal facility on a need's basis.

The following mitigation measures will be used to mitigate excess stockpiling on site:

- All waste is to be separated, processed and then the residual waste containerised within the building.
- Water and airtight sealed containers will then be stored for transport via rail as soon as practical (objective is daily).
- Residual Waste will be top loaded into the compactor units and when the appropriate size and weigh bale is created it will be inserted by hydraulic ram into the purpose- built shipping containers to ensure no excess waste remains on site.
- Recycled materials which will be stored and baled (cardboard/paper/plastic) when there is a bale worth. These bales will be stacked and when there is a truck or container load, they will be transported by train or road to re-processers.
- Materials such as masonry/brick/concrete/aggregate/sand are heavy but not voluminous and will remain in the bin under the processing line until there is a full load to send out.
- Other materials such as timber and plasterboard will also be stored and transported as necessary.

- Ferrous and Non-ferrous metals will be collected in a bin and sent to Access recycling as required.

Onsite Equipment Failure

The following measures will be implemented to mitigate risk of onsite equipment failure causing business interruption:

- Operative alternatives will be implemented to ensure backup processing methods can operate in the instance of a failure
- Generators will be provided on site to backup power failures
- In the instance that equipment fails, waste can be diverted to other licensed facilities as a possibility
- There will be two separate processing lines with by-pass arrangements should a specific conveyor belt or piece of equipment fail.
- There will be two waste compactors to load shipping containers.
- The ventilation system will utilise two variable speed extraction fans that will operate at 50-75% capacity such that if one was to fail then the other can be operated at greater capacity while the other is serviced or replaced.
- There will be at least two items of each equipment such as forklifts, loaders and excavators to allow operations to continue. These will have service contracts/replacement arrangements from suppliers to allow operations to not be affected.
- CRS will carry a range of critical parts for all equipment to minimise downtime. It should be noted that there is a minimum of 8 hours everyday downtime where servicing and maintenance can occur.

Electricity Interruption

To prevent electricity interruptions, the following mitigation measures will be implemented:

- Connection to portable generators will be included as part of the OEMP to be approved by the relevant Authority.
- Generators will be sourced from a local hire company for short notice deployment.

Fire Interruption

The following measures will be implemented to mitigate a fire interruption:

- Loads will be inspected for hazardous and non-conforming waste as it arrives and is tipped.
- There is an opportunity at this stage to assess waste that may be a fire risk and isolate or reject the load.
- Benedict Recycling has developed an in-situ automatic thermal camera fire prevention system for its enclosed waste management facilities (see **Appendix X** for full description). This has been installed in its Unanderra facility and is also being installed in Newcastle and then the other Benedict facilities'. The system is an automated back stop in case something is missed in the receival and sorting phases. It is not intended to stockpile waste so the time it is in the facility is already reduced. In the event of there being any (the stockpile locations are already identified in **Figure 9** of the EIS) rise in temperature of a stockpile the automated fire system operates as follows:

    - Installation of thermal imaging cameras to track temperature variations and stream infrared images with embedded temperature readings, identifying any "hot spots" within the monitored areas, typically any stockpiles. The thermal cameras can look 6m deep into a stockpile.

- The system will automatically trigger when the set temperature is detected (currently the system is set at 68 degrees). The site alarm system is also triggered by the temperature exceedance and a third-party remote monitoring control room will then advise the site supervisor, who can observe the building remotely. The need for the fire brigade can be determined. A strobe light and siren are activated locally in the shed.

- Water Cannons/Sprinklers are triggered to target the stockpile and wet the identified hotspot. Water cannons will deliver water at 160litres per minute and are currently set for a 30 sec duration, however this is programmable. The cycle will keep repeating until the temperature readings fall below the programmed threshold.

- The thermal imaging cameras continuously assesses the temperature and can be monitored together with general security cameras from the site office or remotely via the internet. The water cannons can also be manually activated via a remote-control panel.

- The camera system runs continuously, however, the water cannons are not left on automatic during operating hours as the heat signature of the operating equipment will trigger the system.

Railway Track Interruption

The following mitigation measures will be implemented to mitigate railway truck interruptions:

- Programmed rail maintenance is already scheduled so can be planned for.
- catastrophic rail track event that closed the track for longer than 3 days would necessitate the transfer of containers by road to Woodlawn.
- The intermodal containers proposed can be carried by non-specific container trucks which are readily available for subcontract at short notice.
- This would add two extra truck movements per hour for the duration of the emergency and would be an unusual circumstance that would affect all rail activities into Canberra (See Appendix W).
- Should the Government wish to assist in the emergency planning then an alternative could be to use Mugga Lane landfill in this circumstance, but it would still involve truck movements as an emergency measure.

Business Interruption Alternatives

The following measures can be implemented to combat business interruptions:

- Customers would be advised, and they could adapt collection times to assist.
- Dependant on the type of waste other licensed receivers may be approached to assist.
- If the equipment, electricity, container loading and train access were all unavailable (due to a fire for example) a section of the building that is unaffected would be utilised for the following short-term operation.
    - Container tilt equipment would be brought in from Access Recycling to allow the containers to be end filled without the compactors (if they were unavailable)
    - Containers would be loaded directly with mixed heavy/putrescible waste by an excavator with a set of grab buckets.
    - The containers would be loaded by forklift onto standard intermodal trucks and transported to Woodlawn.
    - Within 4-5 hours Wastepro/GotoGo, who provide walking floor truck and trailers to the waste industry in Sydney, will provide 3 semi-trailers to transport the light, bulky dry commercial and industrial waste component. Typically, these trailers carry some 22 tons

(110m3 capacity) and are used for waste transfer in and around cities. These would be loaded off the floor by the Access Recycling excavator until normal operations resume.

6.4.3.4 Spread of waste during transport

The following measures will be implemented to prevent the risk associated with the spread of waste during transport:

- Transporters of waste are regulated and licences under the ACT Waste Management and Resource Recovery Act 2016 and Regulations 2017. CRS will be transporting Waste residues by sealed containers and recyclables in bales or covered trucks where possible.
- CRS will contract to the delivery of waste operators and therefore carriers will be required to ensure no waste can be spread outside during transport.
- Waste transported by sealed shipping container will also ensure that no waste or leachate escapes from the container in transit.
- Upon loading the containers with the compactor, the seal around the door will be washed to ensure that the seal is clean and unobstructed before the container door is closed.
- The seals on the containers, like any other equipment, require visual inspection on each use and will be replaced annually or sooner if required. This will require approval as part of the OEMP.

6.4.4 Residual Risk – Materials and Waste

6.4.4.1 Increased waste to landfill during construction

This is a mitigated risk and will only be for the duration of the construction period.

6.4.4.2 Spread of waste to other sites

As outlined above, the vigilance in yard maintenance will be in the OEMP and will mitigate potential risks.

6.4.4.3 Excess stockpiling during operations

There are contingencies throughout the design and operation as described in 6.4.3.3 to ensure that stockpiling will not be a risk in the building as operational functions have contingencies. There is excess capacity in the two sorting process lines and emergency bypass arrangements for specific equipment failure. There are two waste compactors, allowing for maintenance and failure contingencies and there will be a surplus of containers. The extended hours allow for catch up processing and allows for the waste to arrive across a 16-hour window. Given all the contingencies there is little residual risk of stockpiling of waste inside the building and none outside the building.

6.4.4.4 Spread of waste during transport

This is licensed and regulated with EPA. The customers will be account customers and their patronage will only if they follow the rules of induction.

The OEMP will include containerisation procedure to ensure waste is sealed in shipping containers properly while stored and transported

6.4.5 Conclusion – Materials and Waste

A range of mitigation measures will be implemented during construction to decrease the impacts associated with the MRF. Operational contingencies and consistent yard maintenance will ensure appropriate mitigation of the perceived risks and decreasing their overall impact to appropriate levels. This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Materials and Waste	MW-1	Increased waste to landfill during construction	Possible	Minimal	Very Low
	MW-2	Spread of waste to other sites	Remote	Minor	Negligible
	MW-3	Excess stockpiling during operation and cleanup when operation ceases	Remote	Moderate	Very Low
	MW-4	Waste spread during transport	Unlikely	Minor	Low

It should be noted that the consequence of MW-1, MW-2 and MW-3 remains unchanged. Mitigation methods decrease the likelihood of each risk scenario, decreasing its overall risk rating.

6.5 Landscape, Visual and Lighting

Section Summary
- This section summarises the visual amenity and landscape risks the proposal poses. Areas of concern are in relation to the bulk and scale, stockpiling, lighting and impact on surrounding streetscape. (See Appendix F) - This section assesses landscape and visual impacts the proposal will have on the surrounding industrial estate and nearby residential areas. - Although initially low to very low, landscape and visual impacts have formed part of the planning and design process. Appropriate risk mitigation methods have been implemented. - Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Landscape, Visual and Lighting	LV-1	Visual impacts on the surrounding areas such as building bulk and scale, stockpiling and lighting the facility	Possible	Minor	Low
	LV-2	Visual impact of the facility on the surrounding streetscape	Possible	Minor	Low

6.5.1 Community concerns – Landscape, Visual and Lighting

The major visual and landscape concerns the community raised during consultation were in relation to the stockpiling of waste. The primary community concern area addressed below:

Community concern	Response
The existing Access Recycling site looks like it is stockpiling glass and looks very messy. Is this an indication of what the new site will look like?	Only enough recycled material will be stored in the building until a container or truck can be appropriately loaded for its transportation. Therefore, the existing stockpiles of glass at the Access Recycling site are not an indication of what the new site will look like and this will be removed by March 2018 (Is not part of the Access Operation).
How high will the stack be on the new facility?	The ventilation stack will be 21m (9m above the building roof).
What is the maximum amount of paper, cardboard and other flammable materials that are to be stored at the facility?	As above, there will be only enough stored to either load a container or a truck to then be transported. CRS expects to only stockpile some 3 days production of recyclables as there are various types and a full truck load is required to minimize truck movements

6.5.2 Assessed Risk – Landscape, Visual and Lighting

Assessment of the visual and landscaping risks the proposed development creates have been considered during the design and planning phase of the project. The perceived areas of concern include the building bulk and scale, stockpiling, lighting at the facility and the visual impact on the surrounding streetscape.

6.5.2.1 Visual impacts from building bulk and scale, stockpiling and lighting the facility

The site currently accommodates a disused petroleum storage facility. As such, any reuse of the site will require redevelopment.

Construction of a building with a large bulk or scale (like an Ikea or Bunnings as the residents have suggested) – may involve building height and size that has the potential to visually detract from the area if contradictory with the local character.

Stockpiling of waste has the potential to become an eyesore and severely impact the visual amenity of a local area. This was of major concern to the public, as highlighted through the community consultation process

The facility is to operate from 6am to 10pm on Monday to Saturday and 8am to 2pm on Sundays. As such, the facility is required to be adequately lit to permit safe night-time use. Facility lighting may pose as a nuisance to local users, this is especially evident in residential areas. However, given the site is in a designated industrial area, the visual impact associated with facility lighting is minor.

6.5.2.2 Visual impact of the facility on the surrounding streetscape

A visual analysis of the subject site, viewed from three different directions, has been prepared by Rothelowman Architects. These pictures indicate clearly that the general bulk and scale of the building will be minimal and consistent with the industrial character of the local area (see **Figure 32**, **Figure 33** and **Figure 34**).

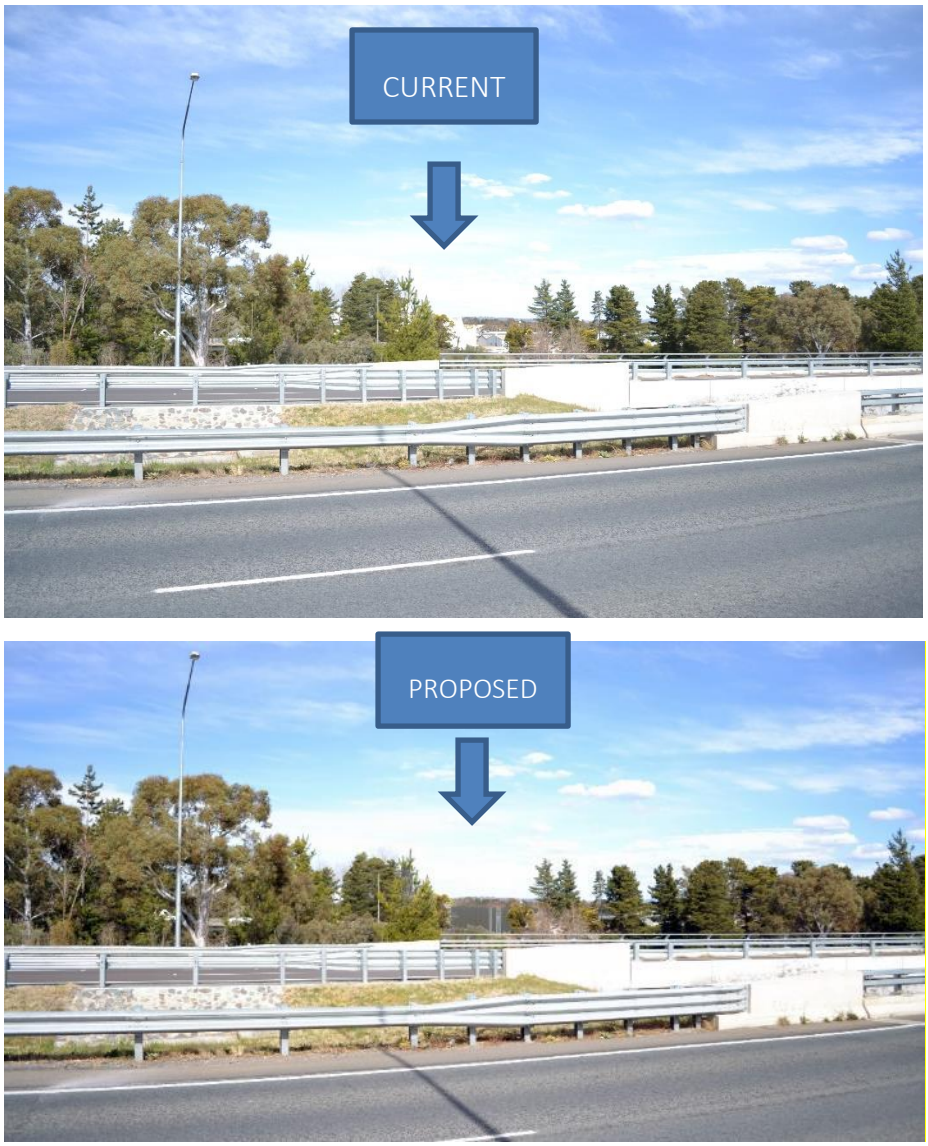
Based on these images, the likelihood of visual impact occurring has been assessed as low with minimal consequence. This is because the images show minimal visibility of structures from adjacent areas and because the Project Team genuinely considers the proposed buildings to improve visual amenity when compared to the dilapidated buildings, storage tanks and unkept state of the site at present.

The proposed buildings have been designed to minimise impact but also to present a visually interesting façade through use of colour and texture. The buildings proposed are not greater in scale or bulk than existing structures and buildings throughout Fyshwick.

Figure 32: Visual impact looking west-north-west from the Newcastle St bridge footpath

Figure 33: Visual impact from Monaro Highway / Canberra Ave overpass (Current and Proposed)

Figure 34: Visual impact looking from Monaro Highway / Newcastle St exit ramp (Current and Proposed)



6.5.3 Mitigation Measures – Landscape, Visual and Lighting

Given the above risks, a range of mitigation measures have been adopted.

6.5.3.1 Visual impacts on the surrounding areas such as building bulk and scale, stockpiling and lighting the facility

The following mitigation measures are proposed to reduce the potential visual impact:

- A large number of pine trees (tallest feature on the site) will be retained.
- The removal of the three large white petroleum tanks currently onsite and the tallest being some 16 m will also enhance the visual amenity of the site.
- Construction will see the site fenced and tidied up.
- The new buildings will see a significant visual enhancement when compared to the existing site condition.
- The series of photos clearly show that the scale of this development is barely noticeable amongst the other Fyshwick buildings which are of a similar height and context.
- access road from Lithgow street will pass between the Southern boundary and the existing line of pine trees providing significant visual screening of arriving trucks.
- There is also a 2.7m acoustic fence along the Southern boundary which will screen the proposal from the south.
- Waste will only be unloaded and processed in the building.
- No waste will be stored outside the building unless inside a waterproof shipping container.
- The expeditious treatment of waste for recyclables and the minimal storage of waste required to fill a shipping container ensures stockpiling is minimised.
- Waste-filled shipping containers will be stored on the hardstand on site. A maximum of 28 waste filled shipping containers will be stored on site prior to transportation. These will be neatly stacked (up to three high) and largely unseen from the public realm, as demonstrated in **Figure 32**, **Figure 33** and **Figure 34** above.
- The site must facilitate safe night-time use, as such, an appropriate amount of lighting must be incorporated to achieve relevant Australian Standards.

6.5.3.2 Visual impact of the facility on the surrounding streetscape

The following measures will be implemented to reduce the visual impact to surrounding streets and properties:

- The current large white disused fuel tanks sitting on the site are to be removed which will enhance the streetscape and will remove a prominent visual feature from the site.

6.5.4 Residual Risk – Landscape, Visual and Lighting

The nature of the proposed development will result in a degree of visual impact, despite mitigation efforts.

6.5.4.1 Visual impacts on the surrounding areas such as building bulk and scale, stockpiling and lighting the facility

Mitigation methods including the provision of landscaping has significantly decreased the bulk and scale of the proposed built form. The residual visual impact is negligible and entirely consistent in bulk and scale with neighbouring development in Fyshwick.

The expeditious treatment of waste on site will ensure stockpiling of waste is minimised and, in any event, this occurs inside the building where there is no visual impact.

It is considered there will be no residual risk in relation to the night lighting as this will promote safety and security in the area and has no impact on night-time hours for residences.

There will only be improvement on the existing situation so there will be no residual risk.

6.5.5 Conclusion – Landscape, Visual and Lighting

The bulk and scale, lighting and visual impact of the proposed development is minor to negligible. The design is consistent with the character of the designated industrial area in which it is located. This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Landscape, Visual and Lighting	LV-1	Visual impacts on the surrounding areas such as building bulk and scale, stockpiling and lighting the facility	Unlikely	Minor	Very Low
	LV-2	Visual impact of the facility on the surrounding streetscape	Unlikely	Minor	Very Low

It should be noted that the likelihood of each impact remains unchanged. Mitigation methods decrease the consequence of each risk scenario, decreasing its overall risk rating.

6.6 Soils and Geology

Section Summary

- This section provides an overview of the analysis, conducted by WSP Australia Pty Ltd (WSP) (Appendix G) as to the existing site conditions and remediation status as well as soils and geological risks associated with the MRF and RFT processes. Areas of concern relate to the potential existing contamination levels and potential for contaminant spills.
- This section assesses wider soils and geological impacts the proposal will have.
- Geological and soil impacts have formed part of the planning and design process. Appropriate risk mitigation methods have been implemented.
- Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Soils and Geology	Geo-1	Potential existing contamination	Almost Certain	Moderate	Very High
	Geo-2	Potential spills contaminating soils	Unlikely	Moderate	Low

6.6.1 Community concerns – Soils and Geology

The community has not raised any key concerns regarding the soil and geology impacts of the proposal to date.

6.6.2 Assessed Risk – Soils and Geology

Block 9 has already been the subject of significant site investigations and remediation works since 1999. The site has had a much longer history as a petroleum depot and the effort to determine and remediate the impact of that history are extensive and have been reviewed by WSP. A summary of the timeline in relation to remediation of the site includes:

1999	Woodward Clyde	Preliminary investigation of Shell Canberra depot
1999	PPK Environment	Phase 2 site assessment
2004	IT Environmental	Canberra depot stockpile sampling
2005	IT Environmental	Site assessment report
2006	IT Environmental	Site assessment report
2006	Coffey Environments	Factual groundwater monitoring event
2007	Coffey Environments	Factual groundwater monitoring event
2007	URS	Human health and environmental risk assessment
2008	ENSR AECOM	Comprehensive environment site assessment
2010	AECOM	Delineation environmental assessment
2011	AECOM	Human health and environmental risk assessment
2017	ECS	Environmental management plan (EMP)
2017	GHD	Independent site audit and audit statement
2017	WSP	Current EIS assessment – Remedial Action Plan (RAP)

Assessment of the historical context and the potential for the proposal to impact on the current soil and geological situation has been considered during the design and planning phase of this project. Given the site was previously utilised for petroleum storage, it is likely that there are some residual pockets of deep contamination from the petroleum activities. The historical site investigation, remediation and monitoring deem these pockets of contamination to be stagnant and remain periodically tested as part of the long-term remediation plan.

There is a perceived risk that construction will disturb the subsoil contamination pockets and cause off site contamination and there is a risk to onsite workers over time from the vapours of that contamination seeping through.

The Management Plans will require approval by the relevant Authority prior to construction and operation.

6.6.2.1 Potential existing contamination

The site is located adjacent to the rail corridor, in a designated industrial area with the presence of several above ground storage tanks (ASTs).

It was confirmed by WSP during their development of the remedial action plan (RAP) where they identified the risk of on-site vapour associated with the residual hot spots from the petroleum hydrocarbons in the soil and groundwater on the site. There are several above ground storage tanks (AST) and a couple of below ground storage tanks (BST) as well as surface piping, fuel loading gantry and interceptor pits that require investigation and removal. The unmitigated presence of contaminated soils and the extent of the contaminants poses some environmental and health risks to users of the site over time or if disturbed.

6.6.2.2 Potential spills contaminating soils

The MRF process will handle many forms of household and commercial waste but will not accept liquid or hazardous waste, although this may inadvertently and periodically happen. It is, very unlikely there is a possibility of soil contamination from a spill as the building itself is bunded and sealed with concrete and a membrane. Outside the MRF Building the site will also be sealed and prevent further soil contamination. Spill kits will be provided, and staff trained in their use for inadvertent small spillages.

6.6.3 Mitigation Measures – Soils and Geology

6.6.3.1 Potential existing contamination

The following mitigation measures are proposed to reduce the risk associated with existing onsite contamination:

- Several mitigation methods have been examined by WSP and recommended in their Remedial Action Plan (RAP) to be adopted as per Appendix G.
- Development of a final remediation plan in conjunction with the final design that will see the removal of key latent onsite fuel handling and storage equipment.
- The remediation plan will be independently audited and include soil management and sampling.
- The remediation plan will determine the extent of the earthworks required and which material is reusable and what must be disposed of. Copies of the plan will be given to the EPA and EPSDD before commencement of works.
- The RAP also includes the construction of a vapour barrier, to be installed under the new MRF building slab to prevent the permeation of any sub soil vapours into the building and affecting staff and users. This is considered the best method to sufficiently minimise on-site vapour risk to the future use associated with the residual petroleum hydrocarbon contamination in soil and groundwater at the site. WSP also recommended the best way to minimise risk of vapour barrier failure is to install an additional level of contingency during the construction phase.
- A passive ventilation system installed beneath the proposed vapour barrier is considered the most effective. This may be in the form of a gravel and pipe gas blanket which leads to passive venting.
- WSP advises that HDPE barrier systems have been effectively applied in both Australia and Internationally for the protection of structures from vapours and bulk gasses. WSP has included a monitored natural attenuation (MNA) program into the RAP document (See Appendix G) as part of the ongoing monitoring and management program for the site and made contingency management a post remediation management requirement to be implemented under the site EMP.
- CRS has already cleaned and remediated much of the above ground equipment and the rail siding area. All other existing potentially contaminating infrastructure is to be removed.

6.6.3.2 Potential spills contaminating soils

The following measures will be used to mitigate any risk of contaminating soils further:

- A Construction Environmental Management Plan (CEMP) and an Operational and Environmental Management Plan (OEMP) will be prepared prior to commencing any demolition and construction works to deal specifically with any spillages in both the construction and operating stages. The Management Plans will be prepared by the Proponent or other appropriately qualified consultants and approved by Transport Canberra & City prior to construction and/or operation.
- The proposed MRF building design and process is such that any inadvertent spillages would occur indoors, in a bunded concrete slab structure.

- The waste is expeditiously processed inside the building for recyclables and the residues containerised for its transport via rail.
- The controlled environment will ensure any spills can be contained and treated appropriately while also preventing further soil contamination.
- The leachate collection system will collect any inadvertent liquids.
- It should be noted that the facility does not accept liquid waste, so any liquid will be inadvertent, small in volume or will be wash down water.
- The building floor will be drained to a leachate collection tank as a fall back, but any isolated spill would be contained and cleaned up before there was any possibility of further contamination

6.6.4 Residual Risk – Soils and Geology

6.6.4.1 Potential existing contamination

Due to the history of the site and its locality in a designated industrial area, risks associated with soil contamination will always exist. The latent fuel plume has remained undisturbed and CRS will be designing the building to limit any further disturbance. CRS will be sealing the site which will assist in stopping rainwater seeping into the soil and potentially intersecting with the plumes.

The incorporation of a vapour barrier system under the building slab, further remediation, a monitoring program and a final design to allow the sub surface to be undisturbed as much as possible will ensure the risk to the building and its occupants are negated. The implementation will ensure the site is suitable for the proposed MRF development.

6.6.4.2 Potential spills contaminating soils

The mitigation measures in the design of the building and additional staff training and prescribed spills management procedures in the OEMP will ensure that any isolated spill will not result in the future contamination of soils.

6.6.5 Conclusion – Soils and Geology

Although pre-mitigation risk assessment highlighted site contamination as posing a very high risk, mitigation measures to be implemented during the design and planning phase of the proposed development are considered appropriate in minimising risks to an appropriate level.

WSP have concluded that the RAP (See Appendix G) will require the removal of the *"existing potentially contaminating site infrastructure (e.g. above and below ground storage tanks) and subsequent validation"* and assumes the *"protection of site structure to be constructed as part of the proposed development on-site"*.

"It is concluded the implementation of this detailed RAP [including the MNA program] will render the site suitable for the proposed use as an alternative waste treatment facility from the perspective of management of hydrocarbon contamination of soil and groundwater".

Prior to any works, a Construction Environmental Management Plan (CEMP) and a final remediation plan needs to be prepared and reviewed by a site auditor, EPA and EPSDD. This includes a technical specification for the vapour protection and installation, ongoing monitoring of the contamination levels in the groundwater and a risk assessment to the workers involved in the civil works required as well as waste classification letters for any exported and VENM certification for imported materials during the construction period.

The CEMP will require approval by the relevant Authority prior to construction and operation.

This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Soils and Geology	Geo-1	Potential existing contamination	Likely	Minimal	Low
	Geo-2	Potential spills contaminating soils	Unlikely	Moderate	Low

It should be noted that the likelihood of existing contamination has dropped from pre-mitigation assessment due to removal of contaminated infrastructure, mitigation measures have resulted in the reduction of its consequence. Contrastingly, mitigation methods decrease the likelihood of future spills and any impact from a spill as opposed to their consequence.

6.7 Water Quality and Hydrology

Section Summary

- This section provides an overview of any risks to the water quality the MRF and RFT process may pose. The assessments are a combination of work done by Cardno (Arcadis) and WSP (Appendix G + H). The areas of concern include impacts relating to untreated storm and waste water run-off and risks to Jerrabomberra Wetlands.
- This section assesses the water quality impacts the proposal will have on the surrounding industrial precinct and nearby water bodies, including Jerrabomberra Creek and Wetlands.
- Assessment of the associated water quality impacts have formed part of the planning and design process. Appropriate risk mitigation methods have been implemented.
- Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Water quality and hydrology	Hyd-1	Contaminated stormwater or wastewater impacting on receiving land and water	Possible	Moderate	Medium
	Hyd-2	Risk to Jerrabomberra Creek and Wetlands	Unlikely	Major	Medium

6.7.1 Community concerns – Water Quality and Hydrology

Community concern	Response
What are the potential environmental impacts of the disposal of plant residues?	All residues will be transported and disposed of at a licensed waste facility or appropriate facility like AMCOR or Visy. Therefore, there will be no local environmental impacts
What are your plans in terms of storage, particularly for the residue?	All leachate will be stored in a tank on site. The leachate will be injected into waste filled containers to assist in the decomposition at the Woodlawn facility other options will be to pump out to a licensed liquid waste processer. If operational, a trade waste connection will be applied for to deal with any emergency scenarios.

6.7.2 Assessed Risk – Water Quality and Hydrology

Assessment of the water quality and hydrology impacts of the proposed development have been considered during the design and planning phase of the project. These have been derived from the Waste Management Strategy prepared by Cardno (Arcadis) (see Appendix H for full report) and this has been discussed in part in section 6.3 - Utilities.

Given the nature of the proposal, without the implementation of relevant mitigation measures the project could theoretically impact water quality.

6.7.2.1 Contaminated Stormwater or Wastewater Impacting Receiving Land and Water

During the construction phase Arcadis as a subconsultant to Cardno (see Appendix H) makes the following assessment about the residual onsite contamination: -

"There are hydrocarbon impacts in the upper metre of soil at the site. Accordingly, it will be important to ensure that any exposed or stockpiled soils are managed to prevent dust generation. Similarly, stormwater collected in excavations or in bunds around stockpiles is likely to be impacted with TRH and BTEX compounds and should not be discharged to stormwater without testing prior to disposal".

The contamination on site is addressed by WSP in its Remedial Action Plan (RAP) (Appendix G). Section 7 of that assessment by WSP addresses specifically the management of soil during construction and the detail of this would be developed in a Construction Environmental Management Plan (CEMP). The Management Plan will be prepared by the Proponent or other appropriately qualified consultant and approved by the Environment Protection Authority.

The subject site incorporates large portions of hardstand in its design to accommodate waste truck circulation. As such, large downpours may result theoretically in contaminated stormwater and waste water egressing the site. Overland flow and untreated stormwater could pick up various pollutants including solid material, organic matter and chemicals. Untreated stormwater can be associated with various environmental impacts such as algal blooms, erosion, increasing sediment disposition and the disruption to aquatic species.

Also, given the nature of the proposal, the production of some leachate within the building is almost certain. Leachate is any liquid that has come into contact with waste or waste processing areas. Based on Cardno's previous experience, facilities like that of the proposal produce approximately 2,000L of leachate each day. This accounts for liquid from the waste itself and wash-down water used to clean the MRF building. Leachate can contain high values of dissolved solids, chemical oxygen, low pH levels, volatile organic compounds and heavy metals. If not handled properly leachate can cause severe environmental issues.

6.7.2.2 Risk to Jerrabomberra Creek and Wetlands

Jerrabomberra Creek and Wetlands is one of the most valuable wetland habitat areas in the ACT, and of national and international importance. The area is of ecological importance due to the habitat for migrating birds.

The Arcadis site audit report notes that the impact from historical site activities was determined to be constrained to the vicinity of the site (less than 100m from the site boundary).

The site is some 400m from Jerrabomberra Creek and therefore is beyond the range identified for contaminant migration from the site to be able to reach the creek or affect the wetlands. From the closest point on Jerrabomberra Creek to the site, it is a further 1.2km to the wetlands, providing further distance for attenuation processes to occur.

The site is connected to an existing stormwater and sewer system. The railway line, Ipswich street and Monaro highway are elevated above the site and act as a buffer between the site and the creek and wetlands.

Arcadis consider that the predicted maximum transport distance of 100m from the site is typical of hydrocarbon impact in clay and weathered shale and that plumes of greater length are rare. Longer plumes tend to be associated with larger infrastructure (e.g. refineries and bulk storage depots) which have a much wider footprint and larger losses of product.

Therefore, even in the event of inaccuracies being present in the modelling and predictions leading to the consultants estimates under-predicting the potential transport distance there remains a "safety factor" of four in the assessment. Arcadis is satisfied that there is negligible risk that the site impacts can affect Jerrabomberra Creek or the associated wetlands.

AECOM (2011) also said "Jerrabomberra Creek was identified as the nearest surface water receptor down the hydraulic gradient of the site is approximately 500m north west of the site" and it "considered it unlikely that dissolved phase contaminants will migrate to this receptor.

6.7.3 Mitigation Measures – Water Quality and Hydrology

Given the above risks and the recommendations presented in Cardno's Waste Management Strategy (see Appendix H), a range of mitigation measures will be adopted.

6.7.3.1 Contaminated Stormwater or Wastewater Impacting Receiving Land and Water

During the construction phase Arcadis as a subconsultant to Cardno (See Appendix H) makes the following assessment about the residual onsite contamination:

"There are hydrocarbon impacts in the upper metre of soil at the site. Accordingly, it will be important to ensure that any exposed or stockpiled soils are managed to prevent dust generation. Similarly, stormwater collected in excavations or in bunds around stockpiles is likely to be impacted with TRH and BTEX compounds and should not be discharged to stormwater without testing prior to disposal".

The contamination on site is addressed by WSP in its Remedial Action Plan (RAP) (Appendix G). Section 7 of that assessment by WSP addresses specifically the management of soil during construction and the detail of this would be developed in an environmental management plan (EMP) as part of the construction management plan (CMP). The CMP will be prepared by the Proponent or other appropriately qualified consultant and approved by the Environment Protection Authority.

The following mitigation measures will be implemented to reduce the risk of contaminating stormwater or wastewater:

- All stormwater collected from exposed soils will be retained on site for assessment prior to disposal.

- The management of any stockpiles in the construction phase should be covered and managed to avoid any stormwater runoff as the priority mediation measure options for any impacted water include disposal as liquid waste or retention and treatment on site prior to disposal.
- In terms of operations all waste treatment activities are to be located indoors and all waste treatment to occur expeditiously upon its arrival to ensure the amount of waste stored on site will be minimised.
- The absence of external waste will mitigate all solid material and organic matter and therefore the opportunity for it to be swept away by storm water.
- The fact that the majority of Block 9 will be covered in hardstand will allow stormwater to be collected and directed to the network.
- To effectively manage leachate, a 20,000 litres leachate tank will be installed in the MRF building to capture all leachate from the tipping floor, around the compactors and wash-down water. Leachate would ideally be injected into the waste containers to assist in the beneficial decomposition of waste at Woodlawn. 26 containers would dispose of approximately 5,200L of leachate per day. There would be some 4 days storage capacity in the leachate collection tank.
- The Leachate collection system and the stormwater system are separate and divided by a 150mm bund inside the building and separated by the building itself. Leachate is managed in the building as is the waste. Only loaded and sealed containers will be removed from the building by forklift. There is no interface of waste or leachate outside the building to influence stormwater quality.
- There will be the option to pump out the leachate collection tank from time to time using a licensed liquid waste collection and treatment provider. CRS is also investigating obtaining a trade waste agreement with Icon Water for long term disposal. However, this would not happen until operational and the chemical composition of the leachate can be measured and monitored but at this stage this is a possible outcome.

6.7.3.2 Risk to Jerrabomberra Creek and Wetlands

The following measures will be implemented to reduce risk to Jerrabomberra Creek and Wetlands:

- All waste processing and storage activities will be conducted indoors
- The RAP proposes that the EMP includes monitoring of the existing water wells and can be extended to include periodic surface water monitoring

6.7.4 Residual Risk – Water Quality and Hydrology

Due to the nature of the proposal, some risks associated with waste and stormwater run-off are possible. However, mitigation measures adopted in the WSP RAP document for the construction phase will avoid many of the perceived risks. These include limiting the extent of cleared areas, installation of well material, temporary bunding. HPDE covers over stockpiles, silt fences to surround stockpiles and protection of existing drains with silt fencing and haybales. The CEMP will include workers inductions in relation to the contaminants and how they relate to the water table and storm water. Contaminated stormwater or wastewater impacting on receiving land and water

Various methods have been considered and will be implemented to mitigate untreated waste water and stormwater from egressing the site. Completely separating waste operations from the stormwater system is the best method and the reason for a large shed.

6.7.4.1 Risk to Jerrabomberra Creek and Wetlands

As stated previously, conducting the waste unloading, loading and processing within the MRF building and employing mitigation measures such as bunding the perimeter of the MRF building to separate the stormwater from any leachate collected in the building means that the residual risk is low.

6.7.5 Conclusion – Water Quality and Hydrology

A range of storm and waste water mitigation measures will be implemented to decrease the impacts associated with harmful substances egressing the site, particularly during construction. The adherence to a CEMP will assist in mitigation and minimising residual risk. These measures are considered appropriate in alleviating most risks and decreasing their overall impact to appropriate levels. This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Water quality and hydrology	Hyd-1	Contaminated stormwater or wastewater impacting on receiving land and water	Unlikely	Moderate	Low
	Hyd-2	Risk to Jerrabomberra Creek and Wetlands	Remote	Major	Low

It should be noted that the consequence of each impact remains unchanged. Mitigation methods decrease the likelihood of each risk scenario, decreasing its overall risk rating.

6.8 Air Quality and Climate Change

Section Summary

- This section provides an overview of the work done by consultants, Purdon's, The Odour Unit (Appendix I) and Todoroski Air Sciences (Appendix Q), as to any possible risks posed by the proposal to adjacent lands or persons including possible dust from construction, transport vehicle emissions and odour from processing activities and plant.
- This section assesses the possible impacts the proposal will have on air quality and odour surrounding uses including the dedicated industrial estate and nearby existing and possible future residential areas.
- Assessment of the possible air quality and odour effects on the surrounding uses has formed part of the planning and design process, with perceived risks analysed and mitigation methods adopted.
- After implementation of mitigation measures proposed, the risk rating for a foreseeable impact and consequence is within acceptable levels.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Air Quality and Climate Change	CCAQ-1	Dust from construction activities	Likely	Minor	Medium
	CCAQ-2	Odour from waste transport and the recycling processing	Possible	Moderate	Medium
	CCAQ-3	Impacts on climate change	Unlikely	Major	Medium

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
	CCAQ-4	Cumulative impacts of the development on air quality in the locality	Possible	Moderate	Medium
	CCAQ-5	Hazardous emissions from the plant including cumulative impacts with other developments in the air shed	Likely	Minor	Medium
	CCAQ-6	Poor quality waste or dangerous contaminants in waste material impacting on operations or air quality	Likely	Minor	Medium

6.8.1 Community Concerns – Air Quality and Climate Change

The odour impacts of the MRF component as the primary community concern is addressed below:

Community concern	Response
Will trucks be leaving the facility with waste on board? Will it smell?	All waste unloading, and processing activities will occur within the building and will be subject to odour mitigation measures. Trucks will only leave the site loaded either with sorted recyclables or the load is rejected. Waste to landfill will be containerized and be able to be transported by rail or road. It is not expected that the truck will smell any different to when it travels the streets of Canberra.

6.8.2 Assessed Risk – Air Quality and Climate Change

Assessment of the possible air quality and odour effects on the surrounding uses has formed part of the planning and design process, with perceived risks analysed and mitigation methods adopted. Six areas of risk including dust from construction, odour from transport and waste processing, impact on climate change, cumulative impacts on air quality, any hazardous emissions and poor quality and dangerous waste impacts.

6.8.2.1 Dust from construction

There was a perceived risk that the construction period of the proposed development may increase dust particle concentration in the air. The increased density of dust particles can be associated with many respiratory conditions, including asthma and emphysema. Large volumes and large particles of dust may cause coughing, sneezing, eye irritation, hay fever and asthma attacks. People with existing respiratory and heart conditions, babies, infants and the elderly are most at risk. The environmental impacts of dust are significant, as the nutrient disposition can lead to the spread of weed species and algal blooms in waterways. It should be noted that there are adjacent and nearby existing outdoor dust generating activities including metal recycling, concrete batching plants, firewood sales and a timber mill.

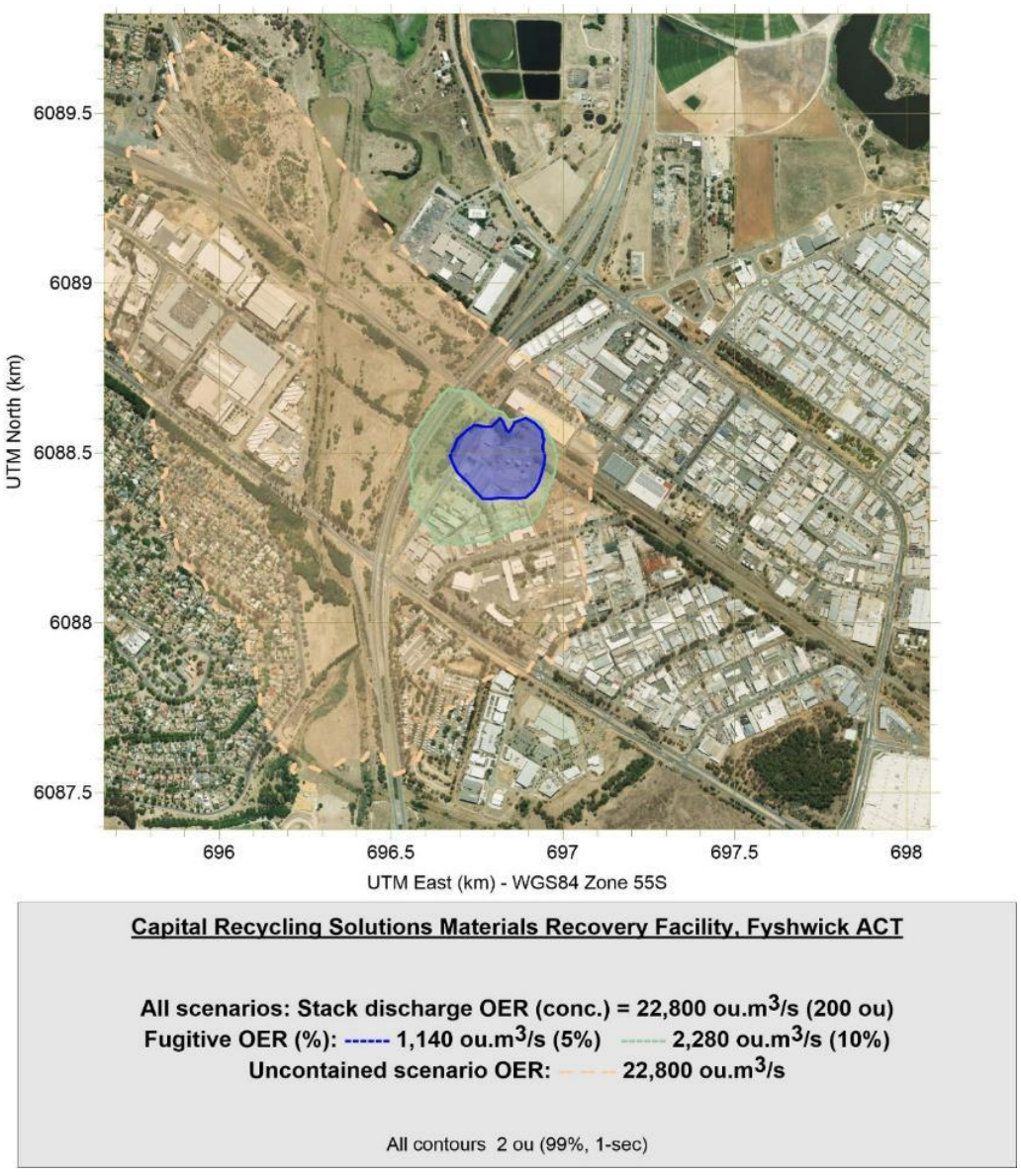
Given the site's locality in the Fyshwick industrial area and relative proximity to nearby residential areas, the impact of this risk has been identified as a likely.

There is a perceived risk that the transport and processing activities relating to the MRF development will create an undesirable odour, particularly to nearby residential areas. The nearest residential area is located 450m away (**Figure 7**). A modelled stack discharge indicates the adverse odour impact is confined within the mixed-use industrial zone (see **Figure 35**). The model demonstrates that **uncontained odour** (shown in orange below) has the potential to drift into the neighbouring residential areas in northern Narrabundah and Symonston. As such, appropriate mitigation measures have been adopted.

The likelihood of odour being a perceived risk has been identified as being possible, with the consequence being moderate.

Odour from the storage of waste in containers was expressed as a concern for neighbours

Figure 35: Odour Impact – All Scenarios



Source: The Odour Unit Pty Ltd

6.8.2.2 Impacts on climate change

According to the United Nations:

"Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.[5]"

According to the CSIRO:

"Like all greenhouse gases, methane absorbs infra-red radiation from the earth and then radiates this heat back into the surrounding atmosphere, warming it. However, methane is a more potent greenhouse gas than carbon dioxide. About 20% of the total warming of the atmosphere since 1750 is due to methane emissions from human activities, which has increased global average temperatures by about 1 degree Celsius. The relative capacity of different gases to warm the atmosphere, taking into account their 'lifetimes', is called the global warming potential. Methane remains in the atmosphere on average for between eight and twelve years[6], whereas 50% of carbon dioxide emitted to the atmosphere is lost in about 30 years (Inman 2008). The global warming potential of methane, when compared to carbon dioxide over a 100-year lifetime, is about 25 times greater.[7]"

The proposal will have a beneficial outcome for climate change objectives, through the reduction of greenhouse gas emissions through the reduction of organics in the landfill. The MSW and C&I waste streams that make up the bulk of this waste buried at Mugga lane landfill receive very little treatment to recover materials for recycling. CRS will do this, recovering more than 20% for recycling which would and could include organic fractions such as timber, paper, cardboard, greenwaste and food waste. This has benefits in terms of greenhouse gas abatement, when we consider products derived from recycling as opposed to virgin materials.

6.8.2.3 Cumulative Impacts on Air Quality

Accumulation of odour has been identified as a perceived risk for the proposal. It should be noted that all the waste materials proposed to be processed are from bins outside houses and businesses. The waste discarded in these bins is then taken to an odour controlled and managed building where there are no production processes that would create any emission other than that existing when collected.

6.8.2.4 Hazardous emissions from plant including cumulative impacts with other developments in the air shed

The impact of trucks bringing waste to Fyshwick is perceived to increase the risk of harm by diesel emissions. The internal operations of the MRF will create hazardous dust that will then be ejected in the precinct by the unfiltered ventilation system.

6.8.2.5 Poor quality waste or dangerous contaminants in waste material impacting on operations or air quality

The concern is that waste received in bulk or even in small fractions will be hazardous and will affect the health of the workers and by the ventilation system may project contaminants into the air that may be hazardous to the people and building surrounding.

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[5] www.un.org/climatechange/the-science/

[6] *Lassey et al., 2007*

[7] www.csiro.au/~/media/EF/Files/Fugitive-methane-emissions-from-unconventional-gas-2017-05.pdf

6.8.3 Mitigation Measures – Air Quality and Climate Change

Considering the above risks, a range of mitigation measures have been adopted through the planning and design phase.

6.8.3.1 Dust from construction

The following measures will be put in place to reduce the risk associated with dust from construction:

- Applying appropriate volumes of water-based dust suppression. The ground will be dampened during earthworks and when dust is being raised. The volume of water applied will depend on the climatic conditions to ensure excess water does not create polluted run-off.
- Ensuring vehicles only leave via an established and stabilised site access point.
- Ensuring relevant equipment have dust suppressors fitted.
- A temporary wheel bath will be installed for the construction period.
- Known contaminated soils (if any are disturbed) be covered if stockpiled to prevent dust and protect from rain.

6.8.3.2 Odour from waste transport and the processing of recyclable material

The following measures will be put in place to reduce the risk associated with odour from transport and processing:

- Waste residues are not to be stockpiled on site except inside the MRF building. All waste from trucks is to be processed expeditiously and waste residues containerised for transport via rail as soon as practical.
- A negative pressure environment with minimal doors and openings. This will be created by using a ventilation extraction system that will rotate the entire volume of air within the building five times per hour.
- Fast-opening vinyl doors will be fitted to the MRF building. The fast opening doors will maintain the negative-pressure environment and will minimise fugitive odour as trucks enter and leave the building.
- According to industry best-practice, the containers will be fitted with activated carbon filters on their vents, thus minimising odours from this source.
- Upon loading the shipping containers, the seal around the door will be washed to ensure that the seal is clean and unobstructed before the container door is closed. The seals on the containers, like any other equipment, require visual inspection on each use and will be replaced annually or sooner if required. This will ensure that no leakage can occur while containers are stored or transported.

6.8.3.3 Impacts on Climate Change

CRS has addressed the role waste management plays in the ACT Climate change strategy (see Section 4.3). There are various Strategies that discuss Climate Change, and these are the ACT Climate Change Strategy AP2 2012 and it is also addressed in the ACT Waste Management Strategy 2011-2025. The clear focus from these Strategies is to address the production of methane gases by removing organic wastes from landfill and:

1. avoid products becoming waste (reduce and reuse)
2. find an alternative use for waste (recycle and recover), and
3. ensure safe and appropriate disposal as a last resort.

CRS understands the waste hierarchy and its proposal is not designed to interfere with any program designed to avoid the production or recycling of waste. Minimising of the waste to landfill, in both short and long-term strategies achieve the same outcome. Removing the inevitable methane leakage and finding alternative uses for materials can occur for an additional 20% of the material currently going to landfill. Removal of short-term greenwaste and potentially long term, food waste will have a significant impact on the production of landfill methane but will also inhibit the production of electricity currently sourced from this methane.

TABLE 1 GREENHOUSE GAS AND WATER SAVINGS FROM RECYCLING

Type of material	Tonnes recycled 09–10 A	water saving per tonne (KL)	Water savings (kL) B	GHG saving per tonne	GHG emissions savings (tCO_2–e)
Paper	51224	15.58	798,000	1.54	79,000
Timber	47543	0.07	3,000	0.15	7,000
Glass	16783	2	34,000	0.33	6,000
Aluminium	2319	233.2	541,000	15.80	37,000
Steel cans	1026	1.1	1,000	0.81	1,000

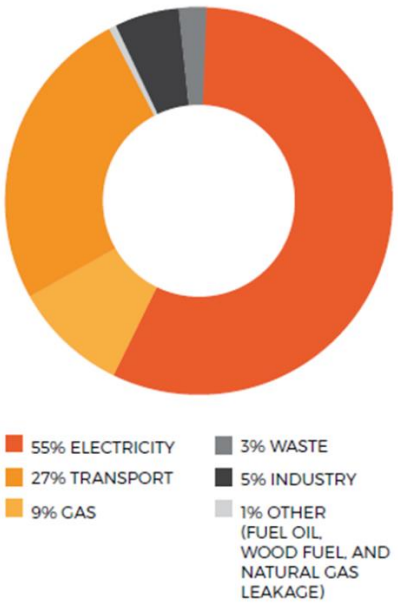
A – Figures provided by Territory and Municipal Services Directorate, ACT Government.

B – Figures from GHD (2009) 'Waste Technology and Innovation Study' for the Department of the Environment, Water, Heritage and the Arts (DEWHA) at http://www.environment.gov.au/settlements/waste/publications/waste-technology.html.

It should be noted from the extracts above and the table above that the removal of paper, timber, glass, aluminium and steel cans are all positive in terms of greenhouse gas and water savings. These materials (and others including greenwaste) are proposed to be recycled by CRS as indicated in **Table 1** of the EIS. CRS is proposing to recycle other materials such as concrete and inerts, plaster board and other metals where there is production saving in the cost to the environment of mining raw materials to replace those that can be reused.

The ACT Climate Change Strategy "To a Net Zero Emissions Territory" Discussion Paper released to promote an amended target of zero net emissions by 2045 (rather than 2050) was introduced in December 2017 and discusses the following in relation to waste management:

Figure 3: ACT emissions in the 2015–16 Greenhouse Gas Inventory, showing electricity and transport as the major contributors to our emissions



Source: "To a Net Zero Emissions Territory" p.12

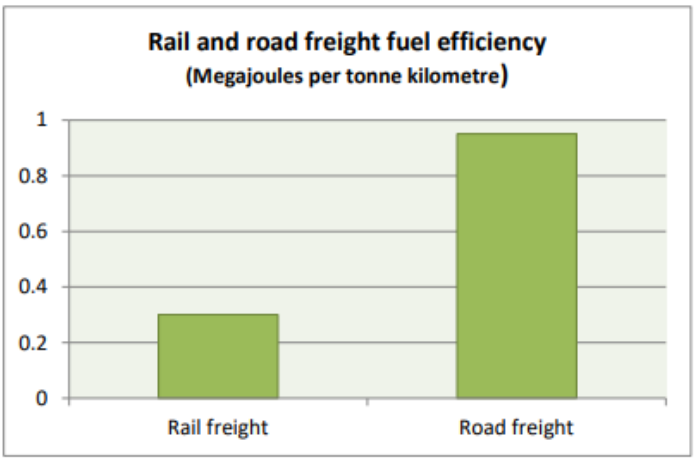
The Waste industry contributes some 3% of the total emissions and this has largely been identified as the breaking down of organic waste at landfill.

Key targets of the discussion paper are to remove emissions from solid waste (divert organics, achieve higher recovery rates for MSW, C&I and C& D wastes), best available land fill capture technology.

CRS is proposing to contribute directly in all these strategies and any residues going to Woodlawn, are going to an excellent and fully engineered landfill (from day 1).

Transport is also a contributor to emissions as shown the pie graph above. The EIS has proposed the preferred method of operation is to utilise rail to transfer residues and recyclables and there is a clear long-term environmental benefit as the business of waste processing and recycling effort increase. The objectives of ACT Government policies are to avoid landfill and recycle more as well as reduce GHG. As more processing occurs and more facilities are built so will the number of truck movements required increase. For example, the collection of one red lidded bin requires one truck. The collection of a green waste bin will require another truck and the collection of FOGO will require another service all to the same house.

There may be efficiencies in the frequency of collection but that will mean that the rubbish may be in the residential bins longer. Further, compost will also require an additional truck movement to take the material to its end use. The reality is that there will inevitably be more road transport movements required in the future if landfill is to be avoided. CRS is proposing rail as a more efficient long-term solution to transport.



Rail freight is still twice as energy efficient as road freight even after the 'full fuel' cycle is considered. This takes into account fuel use from all aspects of the transport task including line haul, road pickup and delivery, energy production and distribution, manufacture of transport equipment and construction of roads and railway lines (the 'full fuel' cycle)[39].

Source: Submission to Inquiry into National Freight and Supply Chain Priorities - Rail Future Institute July 2017.p 7

"Reducing the environmental impact of freight transport should be integral to supply chain priorities. Increased use of rail freight can reduce Australia's greenhouse gas emissions from supply chains. Transport contributed 18% of Australia's greenhouse gas emissions in 2016. Transport emissions were 52% higher in 2016 than in 1990. Road transport causes 84% of transport emissions (road freight 21%) compared with 3.5% for rail transport. Australia's greenhouse gas emissions from transport are the eighth highest in the world because of the nation's high use of road transport. Rail freight is over three times more fuel efficient than road freight. Rail freight uses only 0.30 Megajoules of fuel for each tonne kilometre of freight transported compared with 0.95 Megajoules of fuel used per tonne kilometre by trucks"

Source: Submission to Inquiry into National Freight and Supply Chain Priorities - Rail Future Institute July 2017p 6

"Rail freight is also important to supply chains over relatively short distances.

> *"There are numerous short-haul urban and regional rail flows in Australia and overseas that lie well below this conventional 1,000 kilometres, indeed to under 30 kilometres." - Bureau of Industry, Transport and Regional Economics – Why short-haul intermodal rail services succeed*

Various freight trains in Australia fall into what is termed 'short-haul rail', traversing distances much less than the 'conventional' view that rail freight is only viable over distances 1,000 kilometres or greater. These 'short-haul' freight trains have an important role in supply chains – for example, transporting stone 65 kilometres from Kilmore East in Victoria to facilities in Melbourne, cement 20 kilometres from Railton to Devonport in Tasmania, woodchips a similar distance to the Port of Albany in Western Australia or the many 'short haul' regional container trains which operate on the east coast including in Tasmania."

Source: Submission to Inquiry into National Freight and Supply Chain Priorities - Rail Future Institute July 2017 p3

"My research, most recently updated in 2012, found the total average external costs for the movement of one tonne of freight one kilometre in a non-urban area by an articulated truck is 2.79 cents, and by rail freight is 0.24 cents (with respective road and rail external costs in urban areas being 3.88 and 0.61 cents per tonne km). The difference is mainly due to unrecovered road system costs (one cent per net tonne km) and the average accident risk cost for freight moved by articulated trucks being 0.85 cents as against 0.04 cents per tonne km for rail. The ratio is about 20 to 1, suggesting that rail is twenty times safer than articulated trucks as a way of moving freight…

Based on relative fuel use calculations and the size of the Australian articulated road freight task (151 billion tonne kilometres in 2011-12 as noted by the Australian Bureau of Statistics using about 4.3 billion litres of diesel), and rail using one third of the diesel that trucks use in moving non-bulk line haul freight, this would save about 450 million litres of diesel each year. It would also reduce, each year, carbon dioxide emissions by more than one million tonnes and total external costs by more than A$600 million."[8]

CRS has proposed the use of rail as its ideal development strategy and has included it in this EIS for completeness. The proposal can operate using trucks to landfill and ports, however, this would not produce the best environmental outcome possible.

The following measures have been implemented to mitigate the risk associated with climate change:

- The Proponent is seeking to utilise rail as a mode of transport. If 15% reduction in road freight transport in Australia would save about 450 million litres of diesel each year. It would also reduce, each year, carbon dioxide emissions by more than one million tonnes and total external costs by more than A$600 million (Laird, 2014)[9].
- On this basis, it is considered that the proposal to utilise rail as a mode of transport is a sustainable option which will contribute to the long-term reduction of transport emissions and directly aligns with the ACT Government policy objectives.

6.8.3.4 Cumulative Impacts on Air Quality

CRS has proposed to fully enclose its future MRF operations in a purpose-built negative pressure building and discharge odour emissions via a stack. The expeditious processing and containerisation will ensure that that there is no exacerbation of odour and the continuous removal of material and avoidance of stockpiles will eliminate any cumulative impact.

6.8.3.5 Hazardous Emissions from plant including cumulative impacts with other developments in the air shed

Consideration of separation distances

The South Australian Environment Protection Authority (SA EPA) document *Evaluation distances for effective air quality and noise management* (SA EPA, 2016) recommends a separation distance of 300m for resource recovery facilities from sensitive land uses.

The nearest existing sensitive land uses to the Project site are identified as the Canberra South Motor Park located approximately 450m south of the Project and the residential area of Narrabundah located approximately 650m to the southwest of the Project. The Project site is consistent with this guideline.

It is noted that there is also a proposed land release area identified as East Lake, located approximately 200m to the northwest of the Project site. The Project area is physically separated from East Lake by the Monaro Highway, which is a source of air emissions and has a recommended a separation distance of

[8] https://theconversation.com/too-many-loads-on-our-roads-when-rail-is-the-answer-24118 March 2014

[9] Laird, P. (2014, March 14). Too many loads on our roads when rail is the answer. Retrieved March 27, 2019, from https://theconversation.com/too-many-loads-on-our-roads-when-rail-is-the-answer-24118

100m. The separation distance for the Project site to the East Lake area is therefore generally consistent with the guideline.

Consideration of truck air quality impacts

Truck air quality impacts are considered as part of the Todoroski Air Sciences assessment (see Appendix Q).

For the vehicles travelling within the site, the proposed measures to minimise dust emissions from this activity include *having all trafficked areas hardstand to reduce wheel generated dust emissions and regular cleaning of* trafficked areas. Exhaust emissions can be minimised through ensuring all vehicles are maintained regularly and engines are switched off when not in use for extended periods.

The Project site will have significant on-site queuing space and dual weighbridges to limit any on-street queuing risk. The types of trucks delivering waste to the site are sealed however there could be some residual odour from some vehicles. This odour source would be transient in nature and would not be expected to remain in one place for any extended period.

We note that the Project would see a redistribution of air emissions associated with trucks along the roadways as they travel towards the Project site instead of a licensed landfill, as would occur without the Project.

Consideration of train exhaust emissions

The anticipated rail movements associated with the Project would be one train arriving and leaving per day on average. The potential air emissions associated with the train exhaust from one train is not considered a major source and would be able to operate at the Project site without adverse air quality impacts.

We note that in some situations, train passing loops can operate within proximity to sensitive receptors (<100m) without impact. In the situation of the Project site, the nearest existing sensitive receptors are approximately 450m away, hence potential impacts from train exhaust emissions are unlikely for the Project.

Any development of the East Lake precinct will include a railway station, so the impact of the commuter train terminus will be closer and a more immediate source of emissions.

Existing ambient PM2.5 and 10 levels

A campaign of ambient air quality monitoring for the area surrounding the Project site was conducted by Todoroski Air Sciences over the period 23 October 2017 to 21 November 2017. The monitoring campaign aimed to characterise the ambient air quality levels at the site with ambient air quality in other parts of the Australian Capital Territory (ACT).

Below, Figure 36 presents the project setting and Figure 37 shows the location of the ambient air quality monitoring sites for the Project and comparison monitoring sites operated by ACT Health.

Dusts are generally measured as Particulate Matter 10 (PM10) which represents particles measured at 10 micrometres. Fine particulate matter 2.5 (PM2.5) represents fine dust/matter at 2.5 micrometres.

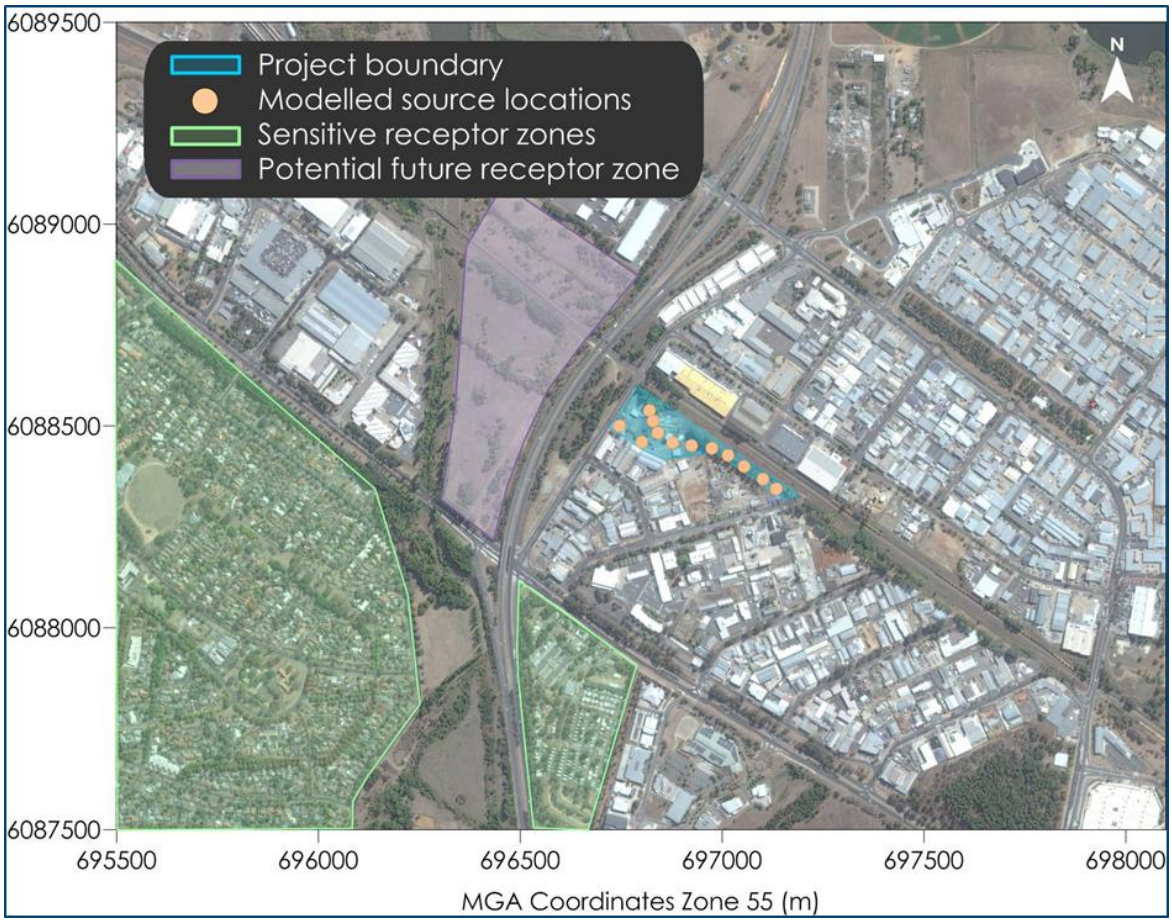
A summary of the recorded PM 10 and PM2.5 monitoring results during the monitoring campaign period is presented in Figure 38 and Figure 39. The PM2.5 monitoring levels recorded at the ACT Health monitoring sites for the same period are also shown in the figure.

The results indicate similar trends and slightly lower levels for the Project monitoring stations compared to the ACT Health monitoring stations. The variation between the measured levels is likely due to the different influences from local sources but also differences in the measurement techniques. The PM2.5

levels recorded in all study locations during the study period were well below the 24-hour criterion of 25µg/m³ and are not considered elevated. (See Appendix Q for full reporting)

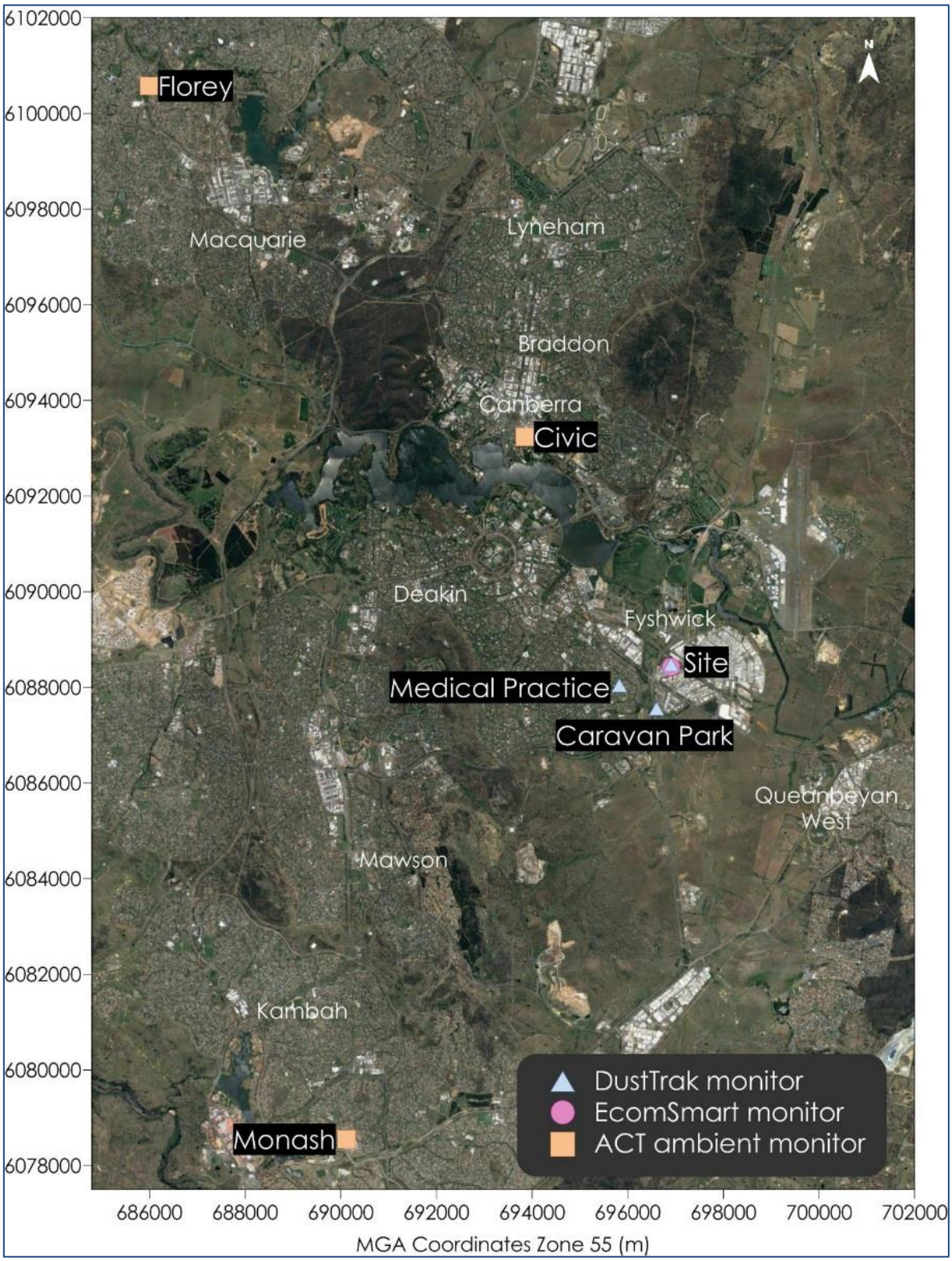
Overall, the results of the monitoring campaign infer that for areas surrounding the Project site, the ambient air quality PM2.5 levels would be like other areas in the ACT.

Figure 36: Project Setting



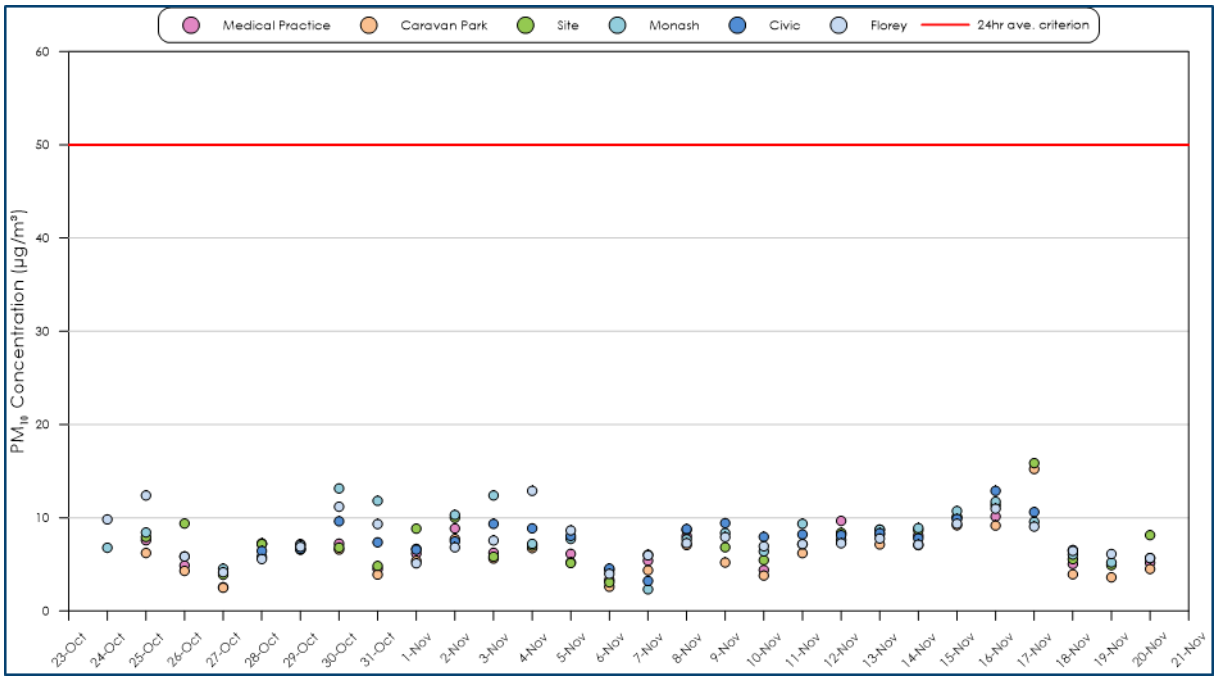
Source: Todoroski Air Sciences

Figure 37: Ambient air quality monitoring locations



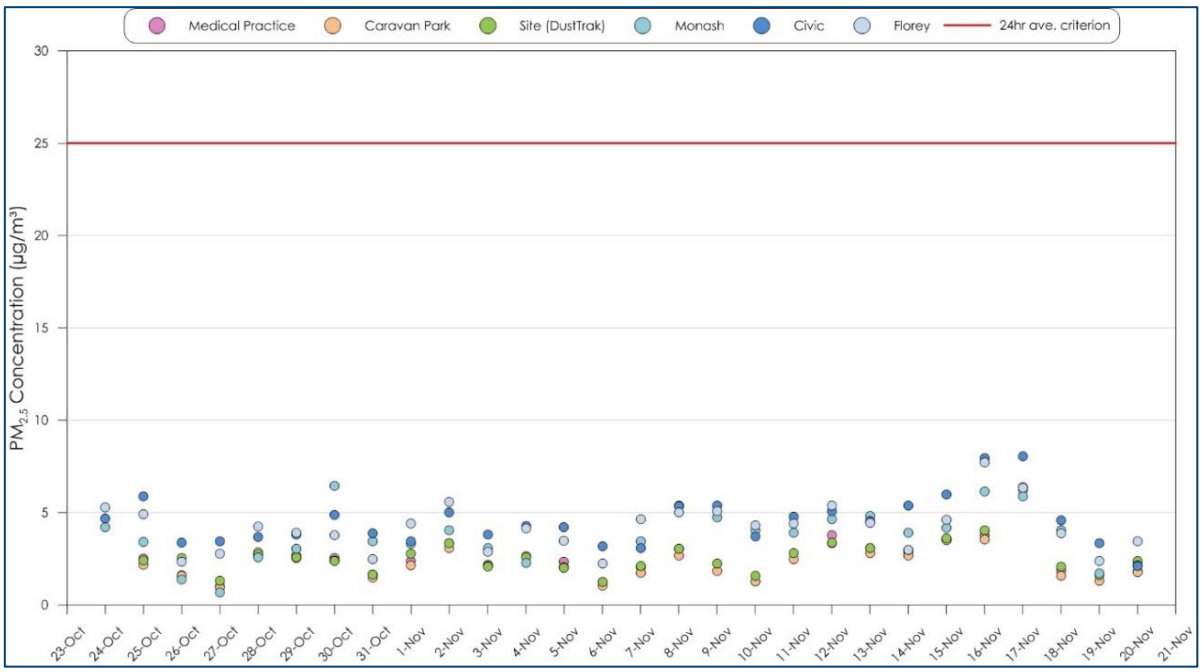
Source: Todoroski Air Sciences

Figure 38: Summary of 24-hour average PM10 concentrations



Source: Todoroski Air Sciences

Figure 39: Summary of 24-hour average PM2.5 concentrations



Source: Todoroski Air Sciences

Table 16 below summarises the annual average PM2.5 data for the last three years from the ACT Health operated air quality monitoring stations. The results indicate that all levels recorded were below the annual average criterion of 8µg/m3. The Monash station recorded the highest annual average PM2.5 of the three stations and the closest station to the Project site, Civic, consistently recorded the lowest levels.

The monitoring results suggest that existing annual average PM2.5 levels near the Project site are below the relevant criterion. Considering the potential for dust emissions generated at the Project would not be significantly greater than existing operations in the area and would also be dispersed via the ventilation outlet, the potential for impacts occurring are unlikely.

Table 16: Annual average PM2.5 concentration (µg/m3)

Year	Civic	Florey	Monash
2015	5.9	6.6	7.2
2016	5.6	7.1	7.1
2017	5.8	7.2	7.9

Source: Todoroski Air Science)

Assessment of potential air quality impacts

To determine the potential for adverse air quality impacts in the surrounding environment due to the Project, air dispersion modelling using the CALPUFF model has been applied.

The model setup is in general accordance with methods provided in the NSW EPA document *Generic Guidance and Optimum Model Setting for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia'* (TRC Environmental Corporation, 2011).

Dust emission estimates for the Project have been calculated by analysing the various types of dust generating activities taking place, the quantities of materials moved and handled and applying suitable emission factors sourced from US EPA developed documentation (US EPA, 1985 and Updates).

The estimated annual Total Suspended Particulates (TSP) dust emissions for the operation of the Project are presented in Table 17.

The monitoring results suggest that existing annual average PM2.5 levels near the Project site are below the relevant criterion. Considering the potential for dust emissions generated at the Project would not be significantly greater than existing operations in the area and would also be dispersed via the ventilation outlet, the potential for impacts occurring are unlikely.

The activities highlighted in blue would occur within a purpose-built building and the estimated dust emissions would be discharged via the building stack. The modelled stack parameters are the same as those used in the *Capital Recycling Solutions Material Recovery Facility and Rail Freight Terminal Odour Impact Assessment* (The Odour Unit, 2018). Similarly, 10% of the dust emissions generated in the purpose-built building were modelled to escape as fugitive emissions via the roller doors.

Emissions from each operational activity of the Project were represented by a series of volume sources or as a point source in the CALPUFF model.

Table 17: Estimated TSP emission rate for the Project (kg/yr)

Activity	TSP Emissions
Delivering waste material on-site	5,452
Unloading material to stockpile within building	419
Loading material to crusher	419
Primary shredding material	180
Primary sorting/ screening	330
Secondary shredding material	450
Secondary sorting/ screening	540
Unloading material to stockpile	419
Loading product to truck for dispatch	419
Delivering material off-site	3,684
Wind erosion	1,068
Diesel exhaust	58
Total TSP emissions (kg/yr)	**13,438**

Dispersion modelling predictions

Todoroski Air Sciences in is assessment, presented the predicted dust concentrations spatial distributions of the predicted incremental impacts associated with the operation of the Project:

Maximum 24-hour average $PM_{2.5}$ and PM_{10} concentrations;

Annual average $PM_{2.5}$ and PM_{10} concentrations;

Annual average TSP concentrations; and,

Annual average dust (insoluble solids) deposition rates.

The results indicate that for the assessed pollutants, the predicted incremental effects at the identified sensitive receptor zones are below the relevant impact assessment criteria. (see Table 18)

The potential cumulative impacts were assessed based on the maximum levels of predicted incremental impacts at the identified sensitive receptor zones combined with the estimated background levels. In conclusion, no cumulative particulate (dust) impacts would exceed criterion.

Table 18: Background air quality levels

Pollutant	Units	Period	Maximum predicted due to Project	Background level	Cumulative level	Criterion
PM_{10}	µg/m³	24-hour	4	18.0	22	**50**
PM_{10}	µg/m³	Annual	0.7	10.7	11.4	**25**
$PM_{2.5}$	µg/m³	24-hour	0.9	14.5	15.4	**25**
$PM_{2.5}$	µg/m³	Annual	0.15	7.1	7.3	**8**
TSP	µg/m³	Annual	2.3	38.5	40.8	**90**
Deposited dust	g/m²/month	Annual	<0.02	1.7	1.7	**4**

6.8.3.6 Poor quality waste or dangerous contaminants in waste material impacting on operations or air quality

The key to waste acceptance is setting a standard at the beginning such that there are minimal ongoing issues. It should be again stressed that dangerous or hazardous materials will not be accepted. Facility induction for customers and safe operating and handling procedures for staff (depending up the material) will be in place and required by the operating licence which comes after development approval. Examples of these types of OMP documents and procedures are included for reference purposes in the appendices. When there are final conditions of consent and licencing discussions operating procedures can be finalised. The facility licence will require sign off to the procedures and adherence. This was discussed in 3.5.8 of the EIS, so it was addressed and now sample OMP and CMP documents are included as attachments and these will be modified to match the conditions of consent.

The identification and separation of bulk non-conforming materials, hidden in a load, will either be reloaded back onto the truck delivering it or it will be safely separated and then containerised for collection or delivery to an appropriate handler. The classification of the types of waste and their disposal option are dependent on the material. For example:

MRI-e cycle Solutions, based in Fyshwick, can provide containers and collection services to handle the following materials (some considered hazardous but will have no impact on the air quality or health if procedures are followed) on an as needs basis:

- Electrical Equipment
    - Batteries - Lead Acid (Dispose Safely)
    - Batteries - Rechargeable (Dispose Safely)
    - Batteries - Single Use (Dispose Safely)
    - CDs & DVDs (Dispose Safely)
    - Computers & Accessories (Recycle, Refurbish, Reuse, Dispose Safely)
    - Electrical Appliances (Recycle, Dispose Safely)
    - Electrical Appliances - Battery Operated (Recycle, Dispose Safely)
    - Mobile Phones (Recycle, Refurbish, Reuse, Dispose Safely)
    - Power tools (Dispose Safely)
    - Printer Cartridges (Recycle, Dispose Safely)
    - Smoke Detectors (Recycle, Dispose Safely)
    - Televisions (Recycle, Dispose Safely)
    - Video and Audio Tapes (Recycle, Dispose Safely)
- Lighting
    - Fluorescents
- Metals
    - Aluminium - Scrap (Dispose Safely)
    - Electrical Cables

Any fragments of asbestos, if detected, would be double wrapped and sealed in heavy duty plastic and delivered as required to an appropriately licenced waste disposal facility on a need's basis.

Any containers containing hazardous materials will be isolated and stored in a leak proof bin and removed to a processor as required.

Todoroski considers that "Waste pathogen risks at the Project would be no different to those encountered in domestic and commercial bins. The building enclosure at the Project would be under negative pressure and with the building air discharged via a ventilation outlet. This represents a practicable and reasonable mitigation measure which should prevent environmental odour nuisance and would also be expected to prevent any potential impact associated with pathogens from the waste material." (See Appendix Q)

The waste being processed is currently being tipped at Mugga Lane landfill. Whatever impacts on air quality will already be occurring and any separation of materials by CRS will be improving this situation and diverting problematic materials that will be a very low percentage of materials being handled.

The safety of workers is paramount therefore the occupational health requirements are that specific procedures and reporting will be required as per the model OMP documents attached.

6.8.4 Residual Risk – Air Quality and Climate Change

Given the nature of the proposed development, residual risks related to air quality will remain. However, all mitigation methods are appropriate in alleviating impacts felt by residents in neighbouring residential areas which would otherwise occur in an uncontrolled scenario.

6.8.4.1 Dust from construction

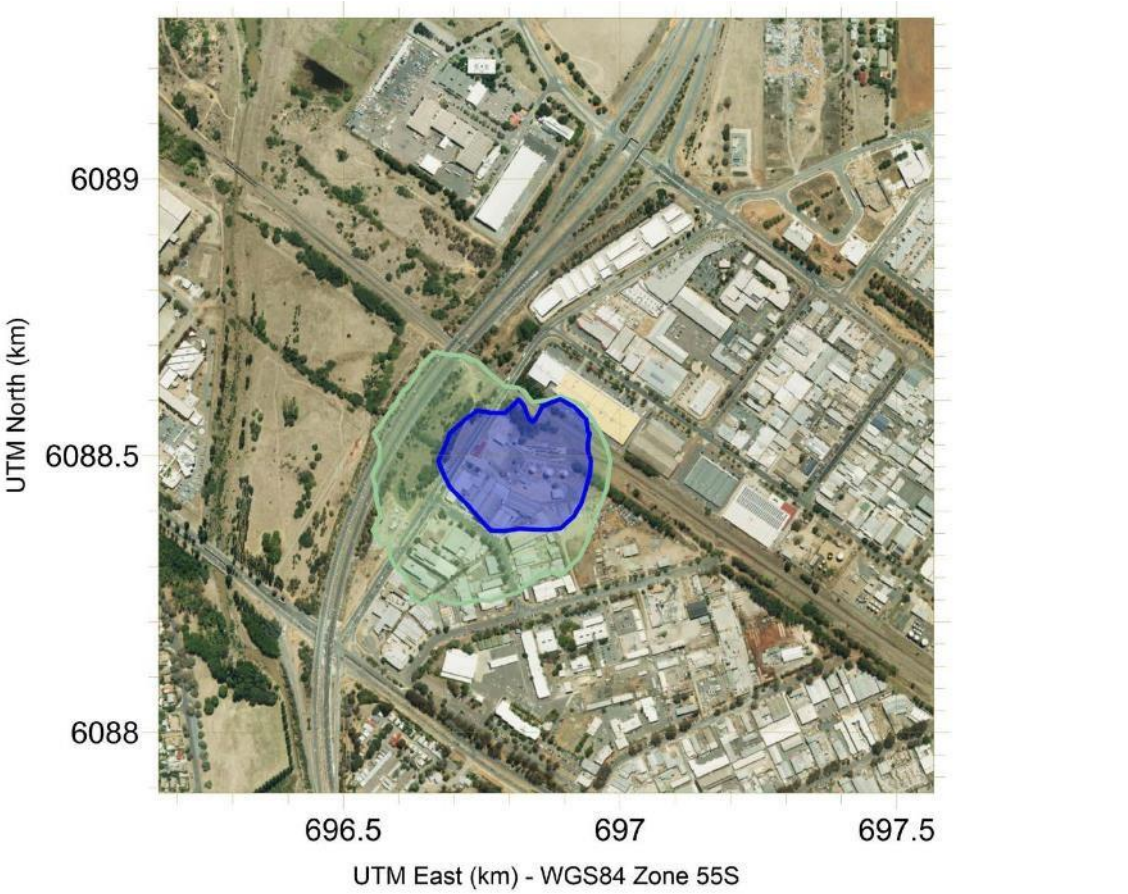
Although the mitigation methods to be implemented will significantly decrease the presence of dust produced because of construction, it should be noted that it will not be completely prevented during construction. However, the mitigation methods are appropriate in limiting impacts to the immediate industrial zone and are commensurate with the standard impacts arising from the construction of any warehouse and hardstand of a similar size.

6.8.4.2 Odour from transport and waste processing

Despite all mitigation methods, there will always be potential for residual odours. Delivery trucks are bringing waste and CRS can control how these trucks conduct themselves on site. The types of trucks delivering waste are generally enclosed and sealed but there may be some associated odour as there would normally be in the street. The trucks will be closest to neighbours when they are empty and leaving the facility. Laden trucks will arrive adjacent to the existing metal recycling facility (Access Recycling) and waste collection truck and bin yard (Tiger Waste) on Lithgow Street.

The methods to be implemented will significantly reduce odour impacts with odours up to 28,500 ou.m3/s will be contained within the site boundary (**Figure 40**). Mitigation measures such as a negative pressure MRF building, fast opening and closing doors, an odour dispersion extraction and vent stack system will ensure minimal odour disturbance.

Figure 40: Odour Impact – Post Mitigation - Contained (most realistic Scenario)



Source: The Odour Unit Pty Ltd

6.8.4.3 Impact on climate change

CRS is proposing to contribute directly in all these strategies and any residues going to Woodlawn are going to an excellent and purpose designed landfill that has been an engineered landfill with capture technology since day 1 of operation. The proposal is likely, therefore, to have a positive impact on climate change in terms of reducing fugitive methane emissions at landfill. The waste industry changes and as landfill option reduce and technology becomes affordable so does the opportunity to meet the 2045 target.

6.8.4.4 Cumulative impacts on Air Quality

The sensitivity test run by the Odour Unit was run as a reference to gauge the effectiveness of the stack dispersion measure compared with a naturally ventilated option. The results show that substantial improvements would be achieved using stack dispersion for odour mitigation.

The assessment by the Odour Unit concluded that full enclosure of the MRF tipping area within a building maintained under negative pressure and with air discharged via a stack represents practicable and

reasonable mitigation measures that should prevent environmental odour nuisance, satisfying ACT General Environmental Duty obligations.

It is recommended that air quality monitoring for the project include the following:

- Annual stack emissions monitoring to measure odour and dust and validate emission rate used in the modelling and model predictions.
- A field odour survey at locations on-site and off-site to validate the effectiveness of the proposed ventilation outlet and other mitigation measures. Odour surveys are to be conducted within the first two months of commissioning and ongoing at a frequency to be determined by an appropriate risk assessment.
- Regular daily visual monitoring of dust plumes conducted by staff.

6.8.4.5 Hazardous Emissions from plant including cumulative impacts with other developments in the air shed

The impact of dust and vehicle emissions is not considered to be more than that currently occurs from existing businesses which are well within the dust levels and ACT background levels. This can be verified with initial operational stack testing and then annual stack emissions to validate emissions rates and daily visual monitoring by staff.

Appropriate safeguards will be in place to ensure the likelihood of ventilation failure is reduced where practicable. This includes regular maintenance of ventilation equipment and having replacement ventilation equipment on hand. The odour unit has nominated that there will be two variable speed fans operating at 75% capacity so there will be opportunity to conduct regular and emergency maintenance activities while the other fan remains in operation. Key spare parts will be onsite to minimise shut down risks.

6.8.4.6 Poor quality waste or dangerous contaminants in waste material impacting on operations or air quality

There will be a detailed OEMP, procedures and customer inductions. There will always be someone that will inadvertently put the wrong material in their waste bin. This will not be a significant volume. Given our customer base will be limited then the repercussions on persons who do the wrong thing will be heavy. CRS has no interest in dealing with hazardous materials as it is counterproductive to their hour by hour recycling mission. Vigilance of load inspections is the front line and customer training is part of that process. CRS will have facility licence obligations that will need to be continuously complied with.

6.8.5 Conclusion – Air Quality and Climate Change

Given the proposed location within an industrial area, and the mitigation measures proposed to reduce odour emissions and air pollution, it is contended that adverse impacts to the surrounding areas can be sufficiently mitigated to levels of no adverse impact.

The Odour Unit made the concluding remarks in their report:

"Based on the odour criterion of 2 ou (99%, 1 s), this assessment has found that full compliance, and therefore no adverse impacts, is likely for the proposed plant operation. The modelling is based on actual odour emissions from a similar NSW plant processing only MSW, but with adjustments to the emission rates to account for the presence of less odorous C & I waste [70% of the waste] in the combined waste stream to the facility. It is also based on an allowance of 5% odour emissions from fugitive (uncontained) sources, such as leakage through doorways. Given the conservative air exchange rate [5 times air replacement/hour in the building and the use of fast acting doors, The Odour Unit considers the 5% fugitive odour emission factor to be conservative".

As such, the assessment concludes that the proposed full enclosure of the MRF tipping area within the building under negative pressure with air discharged via stack represents practicable and reasonable mitigation measures that should prevent environmental odour nuisance".

In simple terms this means that odour will be contained to acceptable levels due to the mitigation measures employed as part of the design.

There are other mitigation measures available and would be implemented if required. These would include – taller stack, air locks at doorways and doorway misting. None of these measures are considered necessary and the worst-case waste profile has been modelled.

There is a positive impact on climate change by this proposal as outlined above.

Todoroski Air Sciences has examined the likely air quality (dust) impacts resulting from the operation of the Project. Air dispersion modelling was used to predict the potential for off-site dust impacts in the surrounding area due to the operation the Project.

It is predicted that all the assessed air pollutants generated by the operation of the project would comply with the applicable assessment criteria at the identified sensitive receptor zones and therefore the operation of the Project would not lead to any unacceptable level of environmental harm or impact in the surrounding area.

Overall, the assessment demonstrates that, the Project can operate without causing any significant air quality impact in the surrounding environment.

A revised risk matrix, post mitigation is below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Climate Change and air quality	CCAQ-1	Dust from construction activities	Likely	Minimal	Low
	CCAQ-2	Odour from transport and processing of waste	Unlikely	Moderate	Low
	CCAQ-3	Impacts on climate change	Remote	Major	Low
	CCAQ-4	Cumulative Impacts of the development on air quality in the locality	Unlikely	Moderate	Low
	CCAQ-5	Hazardous emissions from the plant including cumulative impacts with other developments in the air shed	Possible	Minor	Low
	CCAQ-6	Poor quality waste or dangerous contaminants in waste material impacting on operations or air quality	Possible	Minor	Low

As can be seen in the above table, the generally the consequence of impacts remains unchanged, however the likelihood of an impact occurring is reduced through the various mitigation measures employed. The reports by The Odour Unit and Todoroski Air Sciences has determined that the impact of delivery waste to the facility and processing within the building will have no impact on the air quality.

6.9 Socio-Economic and Health

Section Summary
- This section provides an overview of the risks the MRF RFT process poses in relation to human health and well-being. Areas of concern include harbouring pest animals and the possible occurrence of storage/generation/spill of waste. - This section assesses the socio-economic impacts the proposal will have on the surrounding residential and commercial areas. - Assessment of the socio-economic and health impacts have formed part of the planning and design process. Appropriate risk mitigation methods have been implemented. - Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Socio-economic and health	SEH-1	Facilities and materials storage providing harbour to vermin and pest animals which impact on health and amenity	Possible	Minor	Low
	SEH-2	Minimise the occurrence and therefore disposal of hazardous waste that poses a risk to the environment or human health	Possible	Moderate	Medium

6.9.1 Community concerns – Socio-Economic and Health

There were concerns raised by the community regarding the site's proximity to residential areas and the health risks it poses. However, all these concerns related to the emissions associated with the mooted WtE facility. WtE has been removed from the proposal and can only be approved through a separate application process and separate EIS. **No specific health concerns were raised by the community relating to the MRF process.**

6.9.2 Assessed Risk – Socio-Economic and Health

Assessment of the socio-economic and health impacts of the proposed development have been considered during the design and planning phase of the project.

This risk has been assessed as very low because the likelihood of occurrence is possible, but the consequence is minor. The assessment of very low is based on mitigation measures being built into the design of the facility. Therefore, the pre-mitigation risk is Low. Were these measures not already in place the risk level would be higher.

The facility is completely sealed (apart from when the truck doorways are open to allow a truck in or out) and with vermin control measures, such as traps employed where applicable. Materials are not generally stored on site and are being processed as they arrive in the facility.

Waste residues will be containerised if stored outside ready for transport and will neither harbour vermin or other pests or provide a source of food for these animals.

The Proponent will have regular pest inspections as part of the OEMP to quickly eradicate any pests should they be found on site. As it will be difficult for vermin to enter and then remain in the facility it is unlikely, they will establish themselves within the facility. Facilities and materials storage providing harbour to vermin and pest animals which impact on the health and amenity.

The nature of the proposal, being an MRF, has the potential to attract and harbour pest animals such as rats/mice, cockroaches and an array of bird species as has been experienced in uncontrolled/open-air waste treatment facilities. Not only are pest species attracted to these open-air facilities, but they also alter the behaviour of surrounding animal species and therefore disrupt environmental functions. The increased density of vermin animals around waste treatment facilities can also have associated health impacts as pest species can carry and contribute to the spread of disease.

6.9.2.1 Minimise the occurrence and therefore disposal of hazardous waste that poses a risk to the environment and human health

The nature of the development, as an MRF is likely to result in the occasional discovery of some hazardous waste in the waste streams. These types of wastes are already described in the ACT Government's education campaigns and separate disposal options are available to deal with these types of Hazardous wastes. It is noted that currently this material is still going to landfill. Through separation, hazardous waste can be safely extracted and diverted for appropriate disposal. Examples of hazardous waste are:

- Smoke Alarms, Medications, Batteries (household, car, phone, laptop and rechargeable), Light Bulbs, Paints, Flammable liquids, containers with Toxic and Chemical residues, asbestos, CCA timber etc.

The unmanaged handling of hazardous waste may contribute to numerous human health impacts which may be triggered through physical contact or inhalation, depending on the type of waste.

6.9.3 Mitigation Measures – Socio-Economic and Health

Given the above risks, a range of mitigation measures will be adopted.

6.9.3.1 Facilities and materials storage providing harbour to vermin and pest animals which impact on the health and amenity

The following measures are to be implemented to reduce the risk of vermin and pest animals:

- The sorting facilities are located within a fully enclosed, sealed negative-pressure environment.
- The inclusion of fast-closing vinyl doors ensures such an environment is maintained.
- Additionally, all waste treatment will occur expeditiously.
- These practices will minimise the amount of waste stored on site and will therefore limit the attraction to pest animals.
- No waste will be stored outside the MRF building unless it is containerised in waterproof shipping containers.
- The indoor controlled environment will ensure any pest problems can be addressed internally without any major impacts to surrounding industrial and residential areas.
- Additionally, CRS, as a part of it OEMP will employ a pest control contractor to ensure that the environment is systematically and regularly managed to avoid the possibility of the site or its activities being conducive to pest breeding.

6.9.3.2 Minimise the occurrence and therefore disposal of hazardous waste that poses a risk to the environment and human health

The following measures will be implemented to reduce the risk of hazardous waste contamination:

- Waste audits suggest that less than 1% of the waste stream would be those types of waste with left over paint, household chemicals and batteries being typical contributors. The proposed MRF is targeted at municipal solid waste (MSW) and commercial and industrial waste (C & I). The operational sorting process will involve the loads being tipped on the floor and obvious hazardous waste being observed and separated at this point.
- The sorting process will allow several opportunities for the waste to be observed and picked and this is where smaller hazards can be separated.
- All this waste is currently going to landfill so the sorting and removal of these material is a significant improvement on the current situation.
- Dependant on the nature of the hazard there will be an Operational Management Plan for the effective separation, containment and disposal to correct recycler or licensed landfill/facility. Refer Appendix P for model examples of OMP's that will specifically address the processes for waste inspection and separation and safe disposal of hazardous materials. The OMP will be prepared by the Proponent or other appropriately qualified consultant and approved by Environment Protection Authority to construction and/or operation.

The MRF building ventilation system replaces the volume of the air in the building five times every hour which will ensure that any incidental vapour/fumes are quickly and consistently dispersed.

6.9.4 Residual Risk – Socio-Economic and Health

Due to the nature of the proposal, all risks associated with hazardous waste and pest animals are unavoidable. However, the mitigation measures adopted are appropriate in alleviating any impacts to adjacent land users.

6.9.4.1 Facilities and materials storage providing harbour to vermin and pest animals which impact on health and amenity

The treatment of waste within an enclosed building, containerisation of waste residues expeditiously and limited stockpiling in the building as well as programmed regular pest control management by a licensed contractor will mitigate health risks relating to pest animals. Any residual risk relates to the vigilance of the pest controller and staff. This will be addressed through implementation of the OMP resulting in a low residual risk.

6.9.4.2 Minimise the occurrence and therefore disposal of hazardous waste that poses a risk to the environment and human health

As explained above, the collection and treatment of MSW and C & I waste will produce some level of hazardous materials. This function is a lack of awareness or reluctance of people disposing of the waste properly. As this occurs in every other waste handling facility around the world, there will be strict waste acceptance guidelines, inductions and internal operating procedures for the identification, separation, containment and disposal of any inadvertently received hazardous material. This will ensure the residual risk is low.

6.9.5 Conclusion – Socio-Economic and Health

A range of socio-economic and health mitigation measures will be implemented to decrease the impacts associated with pest animals and the discovery of hazardous wastes. These measures are considered appropriate in alleviating most risks and decreasing their overall impact to appropriate levels. This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Socio-economic and health	SEH-1	Facilities and materials storage providing harbour to vermin and pest animals which impact on health and amenity	Possible	Minor	Low
	SEH-2	Minimise the occurrence and therefore disposal of hazardous waste that poses a risk to the environment or human health	Possible	Minor	Low

It is noted that the consequence of each impact remains unchanged. Mitigation methods decrease the likelihood of each risk scenario, decreasing its overall risk rating.

6.10 Noise and Vibration

Section Summary

- This section provides an overview of the assessment by Rudds Consulting Engineers of any noise or vibration risks posed by the proposal (Appendix J), including noise produced during construction and noise from general operations and vehicle movements.
- This section assesses noise impacts the proposal will have on the surrounding industrial estate and nearby residential areas.
- Noise and vibration impact during construction may be difficult to ameliorate. However, given the site is in an industrial area, removed from sensitive receptors it is contended that the noise and vibration limits will not be exceeded.
- Noise and vibration during operation can be reduced through the building and plant design, given that most of noise generating sources are contained within the building.
- Noise generated from external machinery can be reduced through the selection of equipment which generate lower noise emissions and can be modified to achieve compliance if necessary.

Description			Pre-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Noise and vibration	NVL-1	Noise during construction	Likely	Minor	Medium
	NVL-2	Noise from operation of the facility and vehicle movements	Likely	Minor	Medium

6.10.1 Community Concerns – Noise and Vibration

The community highlighted numerous areas of concern relating to noise and vibration. These are summarised below:

Community Concerns	Response
What will be the proposed Frequency of rail movements at the new facility when operational? Will the rail component be assessed in the EIS?	CRS expects an average of one train per day (54 containers) which will include general freight and materials and residues exported from the MRF.
What will be the noise from the freight rail?	No more than any other train using the train network, including the passenger service which currently operates 6 times per day.

6.10.2 Perceived Risk – Noise and Vibration

Assessment of the possible noise and vibration generated have been considered during the design and planning phase of the project. Given that the site requires redevelopment and the nature of the proposal, the project will likely involve several noise and vibration generators. Key areas of concern relate to construction noise, noise generated from the MRF facility = operations and vehicle movements across the site.

6.10.2.1 Noise from construction

Redevelopment of the site, like every other large building and hardstand development, will produce various amounts of noise and vibration as part of construction phases, particularly in relation to demolition, site preparation and/or building maintenance. If not properly managed, construction-related noise can be a nuisance for surrounding workers, pedestrians, residents and natural environments. Key areas of construction which will require attention include:

Noise generated outside of day operations (7am-10pm).
Mobile machinery and fixed plant equipment used on site.
Road noise due to increased traffic generation during construction.

This is a standard construction exercise and will comply with the normal EPA requirements and procedures pertaining to noise and vibration.

Considering that the site is in a dedicated industrial area, the consequence of noise generation and heavy vehicle movements are minor. There are standard steps available to limit noise emissions from the site to ensure minimal disruption to nearby neighbours.

6.10.2.2 Operating and transport noise

Internal operations

The development proposes to process incoming waste expeditiously after it is arrival on site. As such, a range of operating noise impacts need to be considered:

- Fixed plant and equipment, both internal and external to all proposed buildings.
- Noise associated with the ventilation and odour management system.
- Mobile noise sources such as trucks tipping, forklifts, front-end loaders and, small excavators.

Operational noise for machinery and plant contained within the building is the easiest to manage. Most of the equipment, such as the sorting and recovery elements of the MRF are contained within the building. Construction of the building will involve the containment of odour and therefore operational noise within the building will also be contained.

External operations

The noise impact due to rail loading operation is the highest risk for noise leakage off site to the north. The nature of the siding is such that noise barriers (apart from the train itself) cannot be fixed and therefore the container handling forklifts need to be able to comply with the noise requirements on the northern boundary.

Canberra has a regular passenger train which has 3 inbound services and 3 outbound per day. Therefore, there are 6 passenger services every day that receive priority over freight services.

The general timetable for trains passing through Fyshwick is:

Inbound	Outbound
11:15	06:45
16:00	12:00
17:40	17:30

Therefore, the additional rail traffic (one train arriving and leaving per day on average) associated with the RFT operation has some potential in increasing rail noise and vibration impact, particularly for the existing residents in residential areas that live along the existing rail line, particularly Oaks Estate.

Trucks delivering to the site will tip and manoeuvre within the MRF building and then depart parallel to the Southern boundary. Noise leakage to the owners and occupiers on the southern side have some possible noise and vibration risk from these movements.

6.10.3 Mitigation Measures – Noise and Vibration

Given the above risks, a range of mitigation measures have been adopted.

6.10.3.1 Noise from construction

The following mitigation measures will be put in place to ensure impacts associated with construction noise are reduced:

- Noise levels will comply with EPA standards
- The construction process will aim to prevent generation of vibrations which are a significant contributor to noise levels from construction
- Noisy activities will be limited to usual business hours only, unless otherwise agreed with EPA (noting business hours is when adjacent lessees will be most affected)
- Physical structures will be used as noise barriers where possible
- Noise reduction devices such as mufflers and suppressors will be fitted properly to reduce noise impacts

The above mitigation measures are expected to maintain construction noise generation levels within acceptable EPA levels.

6.10.3.2 Operating and transport noise

Internal operations

The following measures will be used to mitigate the impact of operating and transport noise:

- Equipment used within the building has been assessed for the various acoustic outputs by Rudds Consulting Engineers as shown in the extract below. The building has been purpose designed to reduce acoustic and odour impact.
- The noise and vibration mitigation for fixed machinery utilised during normal operations will include options such as enclosures, rubber mounts, acoustic attenuators and/or localised noise barriers.
- There is also the opportunity to use internal insulation if required.
- Mobile and fixed machinery will be selected to comply with the EPA noise standards.
- The main building will have fast shutting roller doors to mitigate a range of impacts. These fast-shut doors will also reduce noise impacts.
- CRS has committed to construction of an acoustic fence (refer section 7.2) which will be 2.7m high and constructed with colorbond material. This will reduce the residual noise impact and is in line with the recommendations of Rudds Consulting Engineers.

External operations

In order to mitigate the impact of noise associated with external operations the following measures have been incorporated:

- Freight containers will be loaded by a container forklift onto a train during daylight hours only.
- A train (54 containers) can be loaded in approx. 2.5 hours and therefore it is not expected that the container forklifts will be working continuously.
- The actual forklift will be engineered to comply with the noise requirements. This will be addressed specifically as part of the DA process for the RFT component.
- Noise impacts generated from truck movements (particularly along the Southern boundary) and increased traffic congestion are to be alleviated through incorporating a fixed noise barrier along this boundary.
- Any vehicle queuing, while laden, will take place adjacent to the Access metal recycling yard. Laden trucks will be assisted by the downward slope to pass through the site, limiting the noise typically emitted when powering up a slope.
- Trucks will climb up Lithgow street which is in the heart of the industrial precinct and farthest from the residential locations.

The following noise sources were analysed by Rudds Consulting Engineers as part of the noise impact assessment:

TABLE 11 EQUIPMENT NOISE LEVELS

Equipment	Sound Level
Lindner Jupiter Shredder	Lp 86.2 dBA at 3 metres
Lindner Ecostar Dynamic Screen	Lp 86.2 dBA at 3 metres
Waste Compactors (2 of) SIS (US) 4500 EX	Lw 112 dBA
Front End Loader. Volvo L150 or CAT 966 or equivalent	Lw 111 dBA
2 tonne Gas Powered Forklift	Lw 98 dBA
Container Handler – Clark Equipment Omega 54 (or similar)	Lw 110 dBA
Delivery Trucks	Lw 98 dBA
Air extraction and filtering equipment associated with the shed. Fantech 45 kW fan or similar.	Lw 93 dBA - Fan
81 class locomotives (or similar)	Lw 100 dBA

An assessment of operations at the site has been undertaken based upon the following operational scenarios:

1. Daytime operation will include receival of waste and train loading and unloading activities and operation of the MRF. This includes a single locomotive located near the western end of the site at the rail siding, container handler and trucks entering and leaving the site and trucks at weighbridges (3 trucks every 10 minutes assumed).
2. Night-time operations (hereafter referred to as the morning shoulder period from 6 am to 7 am) will involve operations within the MRF shed and receival of waste (approximately 1 truck every 10 minutes expected) only and no other external operations will occur. There will be no train loading during the night-time period.
3. There will be no site operations occurring between 10 pm and 6 am.

Source: Rudds – Appendix J page 16

6.10.4 Residual Risk – Noise and Vibration

6.10.4.1 Noise from construction

There will be no residual risk as once the construction phase is completed and any construction noise impacts will be eliminated.

6.10.4.2 Operating and transport noise

The mitigation measures highlighted above will reduce the impact of noise on adjacent premises. Although the ACT noise controls focus on noise at the site boundary, the Rudds Noise Assessment extends to residential areas.

Daytime noise produced during construction and noise regarding mobile sources such as truck and train movements will be able to meet prescribed noise criteria with the proposed mitigation in place.

Temperature inversion will not change noise levels at site boundaries, which are the compliance points.

6.10.5 Conclusion – Noise and Vibration

Rudds have concluded in their findings: -

> *"The proposed location is already an area that has heavy industry, including a large metal recycling facility, a sawmill, and two concrete batching plants and the proposed development is in-character with the area.*

The MRF building can be constructed to minimise noise emissions to the environment, thus achieving compliance with the ACT Zone Noise Standards at the property boundaries.

Trucks manoeuvring on the site and the container handlers are the major outdoor noise sources. These pieces of equipment are predicted to exceed the Zone Noise Standard noise limits on some occasions without some noise mitigation provided".

Rudds have provided advice as to the construction of an acoustic fence to shield the neighbouring properties on the southern boundary from noise associated with these activities. A proposed reduction in the sound level of the container handlers is also required through noise reduction engineering.

After construction of the southern fence, and the noise mitigation to the container handlers, it is possible that some exceedances of the night-time criteria may occur between 6.00am and 7.00am due to heavy vehicle movements across the site.

The proposed haulage routes all use existing major highways or roads that already have significant heavy vehicle movements, including Monaro Highway and Ipswich Street (a designated B-Double haulage route) and the expected increase in road traffic noise at the nearest noise-sensitive receiver locations are within acceptable limits.

The site is in a designated industrial area, this in combination with the array of mitigation measures implemented reduces the impact associated with noise to a level which is perceived to be acceptable. This is highlighted in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Noise and, vibration	NVL-1	Noise during construction	Likely	Minimal	Low
	NVL-2	Noise from operation of the facility and vehicle movements	Possible	Minor	Low

6.11 Hazard and Risk

Section Summary

- This section summarises the hazards and risks associated with the proposed development. Areas of concern relating to spontaneous combustion (Cardno) bushfire (Blackash Bushfire Consulting), water supply and infrastructure failure (Cardno and Purdon Planning) and hazards to aircraft operations (CASA) (Appendix H, K and M).
- Although the likelihood of such risks is remote, the risks associated with such hazards have formed part of the planning and design process.
- Mitigation measures have significantly decreased the associated likelihood of each risk scenario and therefore the overall risk rating.

Description			Pre-Mitigation Risk Assessment		
Aspect	**ID**	**Risk Scenario**	**Likelihood**	**Consequence**	**Risk Rating**
Hazard and risk	HR-1	Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses	Possible	Moderate	Medium
	HR-2	Risk of bushfire or fire on neighbouring premises impacting the proposed facility	Unlikely	Major	Medium
	HR-3	Insufficient water supply from tanks and mains for fire suppression in the event of an emergency	Unlikely	Major	Medium
	HR-4	Hazard aircraft operations from the vent stack air	Remote	Major	Low
	HR-5	Critical infrastructure failure	Possible	Moderate	Medium
	HR-6	Safety of Workers	Possible	Moderate	Medium

6.11.1 Community Concerns – Hazard and Risk

The major hazard and risks the community raised during consultation were in relation to fire at the facility. This is addressed below:

Community Concern	Response
What happens if there is a fire at the facility? What is the worst case in terms of toxic emissions	The idea is to avoid fire and then implement the fire management plans and systems to minimize its impact. The impact of a fire at the facility will be less severe than a fire at an open-air landfill as the facility is a controlled environment. The facility contains only several days' worth of material as opposed to years.

6.11.2 Assessed Risk – Hazard and Risk

The perceived areas of concern relating to hazards and risks relate to spontaneous combustion fire, adequate water supply and infrastructure and equipment.

6.11.2.1 Plant based or spontaneous combustion fire impacting on the facility or surrounding land uses

Cardno has identified the possibility of spontaneous combustion occurring within the mixed waste stream and baled recyclables within the building.

6.11.2.2 Risk of Bushfire or fire on neighbouring premises impacting the proposed facility risk

This risk has been assessed as unlikely but with major consequence, resulting in an overall medium risk. It has been assessed as having a medium likelihood of occurrence as it is acknowledged that the adjacent metal recycling facility carries risk of fire and if this fire were to spread, the impact could be potentially major.

It is understood that Access Recycling Canberra have recently undertaken several steps to reduce the fire hazard on the adjacent site. These measures include:

- All cars are de-polluted in an undercover workshop as the arrive on site and prior to further handling
- Batteries are removed as potential ignition source
- All fluids and fuels are removed and disposed of regularly (bunded tanks are emptied fortnightly)
- Car stockpiles are separate to all other stockpiles and kept to minimum (no more than 2 truckloads on site)
- Whitegoods and post-consumer goods, which are highly flammable, are also stored separately and kept to a minimum (no more than 2 truckloads on site)
- There is 3-4m space between all stockpiles and the boundary fence adjacent to the subject site
- There have been more fire hose reels installed around the perimeter of the site, and in the car depollution area
- There are now fixed camera systems in place which have already recorded break and enter and an arson attempt in January 2019

These measures will reduce the overall risk of fire from neighbouring premises and it should be noted that the activities of the Metal recycling facility are some 200m away from the proposed MRF building.

Further, Bushfire Consultant – Blackash advised "The land is zoned IZ2 Industrial Mixed Use, which is not non-urban land, therefore the proposal is exempt development assessments and no bushfire requirements are applicable". Further, Blackash states:

> *"However, Benedict Industries recognises the need to provide a safe and resilient community for the future industrial development and it has chosen to follow an assessment methodology in this report which is considered "best practice."*
>
> *There are no formal referral mechanisms or Standards that apply in the ACT for industrial development.*
>
> *The Building Code of Australia does not provide for any bushfire specific performance requirements for the proposed development and as such AS3959, 2009 does not apply as a deemed to satisfy provision.*
>
> *However, where the ESA is consulted, the Commissioner has powers to recommend conditions or to refuse to support an application. As there are no provisions in the ACT, the guiding principle confirmed during discussions with ESA staff) of this bushfire assessment is to comply with the NSW Standards and the ACT Standards.*
>
> *The proposed development is designated as "other" development in NSW* ***Planning for Bushfire Protection 2006*** *and should comply with the aim and objectives of that document. Section 15 of this document demonstrates such compliance.*
>
> *This report has considered all elements of bushfire attack and provided the proposed development is constructed in accordance with the recommendations included in section 13 of this report.*
>
> *This Report is a Bush Fire Hazard Assessment and Management Plan that provides the required information to assist in determining compliance in accordance with the aims and objectives of* ***Planning for Bushfire Protection 2006*** *and the ACT bushfire framework.*
>
> *The report demonstrates compliance with all aspects of the bushfire framework in the ACT and as such, ought to be supported"*

On this basis, the bushfire risk has been assessed as Medium.

6.11.2.3 Insufficient water supply from the mains for fire suppression in the event of an emergency

This risk has been assessed as medium with unlikely rate of occurrence and major consequence.

The site already has firefighting infrastructure in place, and these will be adapted. The ACT emergency services advice is they are satisfied with the water supply in the precinct in the case of a fire event, the site should have access to adequate water supply. Fire services require access to an appropriately pressurised main. There are existing fire services on site and a dedicated hydrant which can be adapted into the final design. On this basis, it is considered unlikely that there would be insufficient capacity.

6.11.2.4 Hazard aircraft operations from the vent stack air

The risk is assessed as low because the likelihood of occurring is remote, but the impact could be major. This assessment has been confirmed by the Aerodrome Engineer at the Civil Aviation Safety Authority - CASA (Australian Government) where they considered an application to assess the parameters of the proposal. This was done prior to the lodgement of the Scoping Request and CASA found no issue. A copy of the CASA response is included at Appendix M.

The Canberra Airport has also confirmed that the proposed facility will have no impact on flight safety (see Appendix U).

6.11.2.5 Critical Infrastructure failure

Hazard related infrastructure and equipment must be properly installed (relevant Australian Standards) and included on site to ensure appropriate safety standards are upheld.

6.11.2.6 Safety of workers

The provisions of the ACT Work, Health and Safety Act 2011(WHS) specifically provides for the regulatory obligations, rights and requirements to ensure worker safety. CRS acknowledges and takes seriously this obligation and will provide the relevant operating and induction procedures to meet the requirements of the Act. The detail of this will be provided in writing for sign off, prior to any operations and will be posted online. It should be noted that Benedict industries currently has 9 sites that all operate with the benefit of approved Environmental Management Plans (EMP), Operational Management Plans (OMP) and safe work procedures specific to the site circumstances. All workers and customers will be inducted to the site procedures.

The Management Plan will be prepared by the Proponent or other appropriately qualified consultant and approved by the relevant Authority.

6.11.3 Mitigation Measures – Hazard and Risk

Given the above risks, a range of mitigation measures have been adopted.

6.11.3.1 Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses

A series of mitigation measures are to be implemented to alleviate the risk associated with spontaneous combustion occurring. These measures include:

- Load acceptance protocols which would include initially spreading and inspecting every load that is tipped for any smouldering elements or igniting substances. Any risks would be isolated and removed. It should be noted that MSW waste contains 30-60% moisture and does not readily burn. Loads that are problematic or generate fire risk would not be accepted.
- Wastes will be processed for recyclable material expeditiously. This will eliminate the time necessary to create spontaneous combustion as the material will be processed and removed.
- Waste residues will be compacted into sealed ISO containers – the design of these eliminates oxygen flow and therefore limits fire risk.
- Fixed fire management equipment will be installed above the tipping floors and the equipment. (see Section 6.4.3.3)
- Fixed camera systems (including thermal) so that the building can be monitored in the office and weighbridges. (see Sections 6.4.3.3 and 6.11.3.5)

6.11.3.2 Risk of bushfire or fire on neighbouring premises impacting on the proposed facility

As noted above, the IZ2 Industrial Mixed Use, is not non-urban land and therefore no bushfire requirements are applicable in accordance with ACT legislative framework. CRS recognises the need to provide a safe and resilient community for the future industrial development and it has chosen to follow an assessment methodology in this report which is considered "best practice." Upon review of the standards, Blackash has determined that the proposal meets all the criteria of the NSW Planning for Bushfire Protection 2006 (BPB). This is the "best practice" document for industrial, commercial and warehousing type development, as discussed in 6.11.2.2. In order to comply with these standards, the following measures will be implemented:

- In order to comply with best practice standards, an Asset Protection Zone is to be established and maintained to the site boundaries.
- Fire hydrant spacing, and sizing will comply with Australian Standard 2419.1-2005 and will not be located within any roadway.
- Roads and driveways will be designed to provide safe operational access to structures and water supply for emergency services, while occupants are seeking to evacuate from an area.
- An emergency management plan as part of the CMP and OEMP, would be developed to ensure currency and compliance with current guidelines. The CMP and OMP/OEMP will be prepared by the Proponent or other appropriately qualified consultant and approved by the relevant Authority.

6.11.3.3 Insufficient water supply from tanks and mains for fire suppression in the event of an emergency

The following measures will be implemented to reduce the risk of insufficient water on site:

- Cardno indicates that there is currently a 150 diameter watermain with a fire hydrant system present.
- While development on the site will require some infrastructure reconfiguration, water pressure will be designed to be boosted and compliant with the Australian Standards

The ACT Emergency Services have advised that they have no objection to the proposal (see appendix R).

6.11.3.4 Hazard aircraft operations from ventilation stack emissions

No mitigation measures have been proposed as an application was made to CASA outlining the location, height, diameter, temperature and velocity of the air leaving the ventilation stack on the roof of the MRF Building.

The application was based on a "worst case" scenario modelled by CASA. Written advice was received back from CASA noting that the ventilation plume "will not be hazardous to aircraft operations" and there will be "no requirement to include the plume symbol in the aviation charts". (see appendix M)

6.11.3.5 Critical Infrastructure failure

The following measures have been implemented into the design to reduce the risk of critical infrastructure failure:

- Regular maintenance and upkeep of infrastructure and contingency equipment options
- Development of preventative fire systems
- Inclusion of a back-up power supply
- In the instance of a critical infrastructure failure or railway delays, redirecting waste from the site to other licenced Landfill operators to prevent stockpiling is a possibility but would only occur in a worst-case scenario and only until infrastructure can be reinstated on site

Onsite Equipment Failure:

The following measures have been put in place to mitigate the risk of an onsite equipment failure:

- should there be any equipment failure= an operating alternative will be put in place to ensure processing and sorting continues site
- Critical onsite infrastructure is to be installed in duplicate to ensure that in the instance of a failure, a back-up is available. The following infrastructure items will be duplicated:
    - double in and out weighbridges
    - multiple in and out doorways with fast closing doors and wheel baths
    - There will be two separate processing lines with by-pass arrangements should a specific conveyor belt or piece of equipment fail
    - There will be two waste compactors to load shipping containers.
    - The ventilation system will utilise two variable speed extraction fans that will operate at 75% capacity such that if one was to fail then the other can be operated at greater capacity while the other is serviced or replaced.
    - There will be at least two items of each equipment such as forklifts, loaders and excavators to allow operations to continue
    - All equipment will have service contracts/replacement arrangements from suppliers to allow operations to continue or be repaired expeditiously
    - CRS will carry a range of critical parts for all equipment to minimise downtime.
    - a minimum of 8 hours downtime will be scheduled daily to allow servicing and maintenance to occur.

Electricity Interruption:

The following measures have been put in place to reduce the impact of an electricity interruption:

- Access and connection to portable generators will be implemented as part of the OEMP to be developed prior to operation and construction and to be approved by the relevant Authority
- Hire equipment will be sourced from local hire companies for short notice deployment.

Fire Interruption

The following measures are to be implemented to reduce the potential impact associated with a fire:

- Loads will be inspected for hazardous and non-conforming wastes as it arrives and is tipped. There is an opportunity at this stage to assess waste that may be a fire risk and isolate or reject the load.
- Benedict Recycling has developed an in-situ automatic thermal camera fire prevention system for its enclosed waste management facilities (see Appendix X for full description). CRS proposes to use this fire detecting system as part of this proposal. The system includes:
    - An automated back stop in case something is missed in the receival and sorting phases.
    - In the event of there being any (the stockpile locations are already identified in Figure 9 of the EIS) rise in temperature of a stockpile the automated fire system operates as follows:•Installation of thermal imaging cameras to track temperature variations and stream infrared images with embedded temperature readings, identifying any “hot spots” within the monitored areas, typically any stockpiles. The thermal cameras can look 6m deep into a stockpile. The system will automatically trigger when the set temperature is detected (currently the system is set at 68 degrees). The site alarm system is also triggered by the temperature exceedance and a third-party remote monitoring control room will then advise the site

supervisor, who can observe the building remotely. The need for the fire brigade can be determined. A strobe light and siren are activated locally in the shed. Rise in temperature of +8 degrees in a matter of minutes is identified by fixed thermal cameras (Cameras can "look" 6m deep into a stockpile).

- Water Cannons/Sprinklers are triggered to target the stockpile and wet the identified hotspot. Water cannons will deliver water at 160 litres per minute and are currently set for a 30 second duration, however this is programmable. The cycle will keep repeating until the temperature readings fall below the programmed threshold.
- The thermal imaging cameras continuously assesses the temperature and can be monitored together with general security cameras from the site office or remotely via the internet. It will repeat the process if necessary, until the temperature reduces below the thermal temperature setting. The water cannons can also be manually activated via a remote-control panel.
- The camera system runs continuously but the water cannons are not left on automatic during operating hours as the heat signature of the operating equipment will trigger the system. System triggers phone alerts to management.

There is no incentive to wet the waste stockpiles as it is harder to process and creates leachate. The prevention of inappropriate waste acceptance is key, keeping onsite stockpiling to a minimum is also important. The firefighting technology is used as a preventative measure when the site is manned and unmanned. Together, the risk of fire is minimised and therefore fires, and business shut down is avoided.

Railway Track Interruption:

The following measures will be implemented to reduce the impact of a railway interruption Programmed rail maintenance is already scheduled into the rail use as the track is shared by daily commuter use.

A catastrophic rail track event that closed the track for longer than 3 days would necessitate the transfer of containers by road to Woodlawn. The intermodal containers proposed can be carried by non-specific container trucks which are readily available for subcontract at short notice. This would add two extra truck movements per hour (See Appendix W) for the duration of the emergency and would be an unusual circumstance that would affect all rail activities into Canberra.

Should the Government wish to assist in the emergency planning then or alternative could be to use Mugga Lane landfill in this circumstance, but it would still involve truck movements as an emergency measure.

Business Interruptions:

Should there be a business interruption of differing time frames, and an alternative arrangement is required, then there are a range of measures would be put in place.

In some instances, customers (waste collection contractors) would be advised and waste collection schedules would be adjusted to ensure waste is not stockpiled. This would be more difficult if the waste is household waste. In this case, waste would likely be tipped at an alternative (appropriately licensed) facility until such time as CRS operations resume.

If the closure was longer term, commercial waste could also be disposed at other licensed receivers may be approached to assist until such time as the CRS facility is operational.

If the equipment, electricity, container loading and train access were all unavailable due to a fire, for example (although the fire prevention equipment would prevent this), a section of the building that is unaffected would be utilised for the following short-term operation.

Mobile container box tilt from Access Recycling would be used in the building and shipping containers would be end loaded directly with mixed heavy/putrescible waste by an excavator with a set of grab buckets. The containers would be loaded by forklift onto intermodal trucks and transported to Woodlawn.

Within 4-5 hours Wastepro/GotoGo, who provide walking floor truck and trailers to the waste industry in Sydney, will provide 3 semi-trailers to transport the light, bulky dry commercial and industrial waste component. Typically, these trailers carry some 22 tons (110m3 capacity) and are used for waste transfer in and around cities. These would be loaded off the floor by the Access Recycling excavator until normal operations resume.

The following contingency table identifies operational alternatives should the site or access to the site be closed for short or long term period. Operational alternatives are always subject to formal negotiations which would naturally occur when there is some Consent certainty in place.

Table 19: Business Interruption Contingency Table

	1 Day	2-3 Days	Week	Month	Year
Half CRS Shed out of action	Specific contingencies dependent upon the cause as per Section 6.11 in the EIS: Equipment used for waste sorting can be bypassed. This means that waste will pass through the shed and can be routed past any disabled part of the shed. If the Compactors were both out of operation, waste would be stockpiled The proposal includes duplicate sorting systems which are set up to manage C&I and MSW respectively. These can be re-tasked in the event of half shed shut down Back-up power sources will be kept on site or sourced from a hire facility in case of a power shut down	Specific contingencies dependent upon the cause as per Section 6.11 in the EIS: Equipment used for waste sorting can be bypassed. The proposal includes duplicate sorting systems which are set up to manage C&I and MSW respectively. These can be re-tasked in the event of half shed shut down If the shed is half shut and shipping containers are unable to be loaded from the compactor end of the building, containers can be end -loaded using equipment borrowed from Access recycling Back-up power sources will be kept on site or sourced from a hire facility in case of a power shut down	Specific contingencies dependent upon the cause as per Section 6.11 in the EIS: Equipment used for waste sorting can be bypassed The proposal includes duplicate sorting systems which are set up to manage C&I and MSW respectively. These can be re-tasked in the event of half shed shut down If the shed is half shut and shipping containers are unable to be loaded from the compactor end of the building, containers can be end-loaded using equipment borrowed from Access recycling Walking floor trailer (110m3) will be bought from Sydney to be loaded by excavator and cart non-putrescible waste	Specific contingencies dependent upon the cause as per Section 6.11 in the EIS: Equipment used for waste sorting can be bypassed. The proposal includes duplicate sorting systems which are set up to manage C&I and MSW respectively. These can be re-tasked in the event of half shed shut down If the shed is half shut and shipping containers are unable to be loaded from the compactor end of the building, containers can be end loaded using equipment borrowed from Access recycling Walking floor trailer (110m3) will be bought from Sydney to be loaded by excavator and cart non-putrescible waste	N/A

	1 Day	2-3 Days	Week	Month	Year
			component to appropriate licenced landfill Back-up power sources will be kept on site or sourced from a hire facility in case of a power shut down	component to appropriate licenced landfill Back-up power sources will be kept on site or sourced from a hire facility in case of a power shut down	
Full Shed out of action	Contact Commercial waste collection operators to reorganise dates so that waste is not collected until the shed is operational again Municipal waste collection trucks diverted directly to Mugga Lane/Transfer stations.	Contact Commercial waste collection operators to reorganise dates so that waste is not collected until the shed is operational again Municipal waste collection trucks diverted directly to Mugga Lane or other appropriately licensed landfills/facilities available.	Municipal and Commercial collection waste trucks diverted directly to Mugga Lane or other appropriately licensed landfills/facilities available.	Municipal and Commercial collection waste trucks diverted directly to Mugga Lane or other appropriately licensed landfills/facilities available.	Seek DA for temporary structures/works for construction of a temporary shed/alternate site. Municipal and Commercial waste trucks diverted directly to Mugga Lane/Transfer stations or Other appropriately licensed landfills/facilities available.
Train line out of action	Continue to load waste into shipping containers and store containers on the hardstand until train line reopens organise additional trains to catch up	Continue to load waste into shipping containers and store containers on the hardstand until train line reopens organise additional trains to catch up	Transfer all waste in containers by road to Woodlawn	Transfer sealed containers by road to Woodlawn, or another putrescible licenced landfill Non putrescible waste can be transported using walking floor trailers (110m3) by road to a range of licensed landfills	Transfer sealed containers by road to Woodlawn, or another putrescible licenced landfill Non putrescible waste can be transported using walking floor trailers

	1 Day	2-3 Days	Week	Month	Year
					(110m3) by road to a range of licensed landfills
No road access to site/Precinct out of action	Containerise residual waste on site. Contact Commercial operators to reorganise collections. Government Trucks diverted directly to Mugga Lane/Transfer stations.	Residual Containers by rail to Woodlawn Direct all Collection Trucks to use Mugga Lane/Other appropriately licensed landfills/facilities available.	Direct Collection Trucks to use Mugga Lane/Other appropriately licensed landfills/facilities available.	Direct Collection Trucks to use Mugga Lane/Other appropriately licensed landfills/facilities available.	Direct Collection Trucks to use Mugga Lane/Other appropriately licensed landfills/facilities available.

6.11.3.6 Safety of workers

Safety of workers is assessed as having a medium risk. This assessment is based on a possible likelihood of possible and, a moderate consequence. The Proponent will always be responsible for providing comprehensive WH&S training and for ensuring the safety of its staff .

Specific plans and procedures will be created and approved prior to any operations commencing. These plans will include CMP and OMP (includes EMP and OH&S procedures) that will include the following:

- Traffic management
- Control and monitoring of incoming wastes
- Waste handling
- Hazardous waste prevention and response
- Leachate management
- Odour, noise and dust controls
- Fire management
- Vermin and pest management and controls
- Spill management
- Complaints and incident reporting
- Staff training requirements

Model OMP and CMP documents for similar facilities are provided in the appendices (Appendix P).

6.11.4 Residual Risk – Hazard and Risk

6.11.4.1 Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses

There will always be some risk but there are appropriate mitigation measures in terms of waste receival, inspection and fixed fire management systems in place to minimise the risk of an event. The size and downtime of any event is significantly minimised also.

6.11.4.2 Risk of bushfire or fire on neighbouring premises impacting on the proposed facility

Based on the recommendations noted in Section 6.11.4.1, the residual risk is considered negligible.

6.11.4.3 Insufficient water supply from tanks and mains for fire suppression in the event of an emergency

Based on the mitigation measures discussed in 6.11.4.3, the residual risk is assessed as very low.

6.11.4.4 Hazard aircraft operations from ventilation stack emissions

There is no residual risk unless any of the parameters of the stack or plume were to change significantly upon which further application to CASA would be required.

6.11.4.5 Critical Infrastructure failure

Based on the mitigation measures noted in Section 6.11.2.5, the residual risk of critical infrastructure failure is low.

6.11.4.6 Safety of workers

The obligations of the ACT Health Work and Safety ACT 2011 compel the employer and the employee to adhere to the approved plans and procedures put in place prior to licencing and operations.

Benedict industries currently operates some 9 sites that have and utilise OMP, EMP and WHS programs and procedures. Benedict employs several dedicated employees whose job is to ensure the adherence to the plans put in place and that staff are kept up to date on the methods to ensure, amongst other things, minimal risk to worker safety. CRS would operate in the same manner.

A model example of a recent CMP and OMP is attached for reference. A customised version will be developed when final development and licence conditions are issued.

6.11.5 Conclusion – Hazard and Risk

Although the pre-mitigation risk assessment highlighted for each of the risks outlined above have a low risk of hazard related risks, appropriate mitigation measures will further alleviate some of the associated danger. This is displayed in the revised risk matrix below:

Description			Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Likelihood	Consequence	Risk Rating
Hazard and risk	HR-1	Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses	Possible	Minor	Low
	HR-2	Risk of bushfire or fire on neighbouring premises impacting the proposed facility	Remote	Minor	Negligible
	HR-3	Insufficient water supply from tanks and mains for fire suppression in the event of an emergency	Remote	Moderate	Very Low
	HR-4	Hazard aircraft operations from stack emissions and flaring	Remote	Moderate	Very low
	HR-5	Critical infrastructure failure	Unlikely	Moderate	Low
	HR-6	Safety of Workers	Unlikely	Minor	Very Low

6.12 Health Impact Assessment

The overall objective of the Health Impact Assessment (HIA) prepared by EnRisk (Appendix L) is to follow the requirement set by the ACT Government in terms of assessing and evaluating health impacts from the project. The HIA was undertaken in accordance with;

- Health Impact Assessment: A Practical Guide
- Health Impact Assessment Guidelines 2001
- Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards, 2012

The above guidance requires the consideration of impacts that relate to a wider definition of health and well-being within the community. Health and health inequalities are affected by a wide range of factors, as illustrated below. These factors may be affected by a specific project in different ways. In some cases, the changes will result in negative impacts on health (and hence the HIA needs to determine what these impacts are and how they can be minimised) or positive impacts or benefits (and it is important that the HIA identify these and determine if these benefits can be enhanced).

The HIA was undertaken as a desktop assessment in accordance with this guidance, based on information made available (see attached reports). The HIA has evaluated positive and negative impacts, from the following key technical studies. Since the Draft EIS, EnRisk has added to its report and included the assessment of Air Quality (separate to the Odour Assessment) and the assessment of ground contamination. The technical studies addressed in this amended assessment are listed below:

- Environmental Impact Statement (EIS)
- Community Stakeholder and Engagement Report
- Air Quality Assessment
- Odour Assessment
- Geology and Remediation Assessment
- Noise Assessment
- Bush Fire Protection Assessment
- Remedial Action Plan
- Traffic Assessment
- Scoping Application
- Environmental Impact Statement (EIS)
- Community Stakeholder and Engagement Report
- Odour Assessment
- Geology and Remediation Assessment
- Noise Assessment
- Bush Fire Protection Assessment
- Traffic Assessment
- Air Quality Assessment
- Scoping Application

The HIA has considered the operation of the proposed project and potential impacts to the health of the off-site community. The assessment has considered a range of issues that have the potential to affect the health of the community (either positive or negative), which relate to changes to noise, hazards (including fire, hazardous waste and bushfire risks), odour, traffic, visual landscape, vermin, economic and social environment.

Based on the assessment undertaken, the project is associated with some benefits to the community, particularly in relation to employment. Where negative impacts have been identified, these are negligible in terms of community health due to the proposed process, design, control, mitigation and management measures to be implemented:

"*The HIA has considered the operation of the proposed project and potential impacts to the health of the off-site community. The assessment has considered a range of issues that have the potential to affect the health of the community (either positive or negative), which relate to changes to noise, hazards (including fire, hazardous waste and bushfire risks), air quality, odour, traffic, visual landscape, pestilence, contaminated land, economic and social environment.*

Based on the assessment undertaken, the project is associated with some benefits to the community, particularly in relation to employment. Where negative impacts have been identified, these are considered to be negligible in terms of community health due to the suggested and proposed process design, control, mitigation and management measures to be implemented." (Appendix L, Section 10)

A summary of the EnRisk HIA outcomes is available in Table 20 .

Table 20: Summary of the EnRisk Health Impact Assessment Outcomes and Enhancement/Mitigation Measures

Health Aspect/Issue	Reference in HIA	Health Impacts	Impact Identified (positive or negative and significance)	Types of measures that could be implemented to enhance positive impacts or mitigate negative impacts
Air Quality	Section 5	Annoyance during construction. During operation particulate exposures are linked with a range of adverse health effects.	Negative but negligible	Management of construction works, as well as works involving the removal or remediation of contaminated soil, to minimise the generation of dust.
Odour	Section 6	Annoyance, stress, anxiety at levels below defined health effects.	Negative but negligible	The odour assessment has outlined emissions control and mitigation measures that should be implemented.
Noise	Section 7	Sleep disturbance, annoyance, children's school performance and cardiovascular health.	Negative but negligible	The noise assessment has outlined mitigation measures required to ensure noise emissions comply with the relevant guidance. Post development monitoring to ensure mitigation measures are effective. Minimise truck movements during the 6am - 7am shoulder period.
Fire	Section 8	A major fire incident can result in loss of life, property damage or injury	Negative but negligible	The Bushfire assessment outlines controls and mitigation measures required to ensure the safety of the facility. A number of suggestions have been made for onsite management of fires. A comprehensive plan for on-site management of fires is required.
Economic Environment	Section 9	Reduction in anxiety, stress and feelings of insecurity of those people employed in the facility.	Positive	The identified positive outcomes in the local community can be enhanced by encouraging employment of people who live within the local community.
Traffic	Section 9	Injury or death, stress and anxiety.	Negative	Ensure truck movements avoid the morning and afternoon peak traffic periods.

Pestilence	Section 9	Financial loss and possible injury, stress and anxiety.	Negative	Ongoing pest control program as part of the operational plan.
Discovery of hazardous waste	Section 9	Possible injury if incorrectly disposed of	Negative	A comprehensive operational plan for the discovery and safe disposal of hazardous waste is required.
Contaminated Land	Section 9	Range of health effects associated with petroleum hydrocarbons if not properly remediated	Negative and positive	Implementation of works as outlined in the Remedial Action Plan to remediate contamination so the site is suitable for the proposed facility and there are no risks to human health on and off the site.
Social aspects of sustainable project	Section 9	Enhanced feelings of wellbeing	Positive for some	None identified.
Feelings of control over life decisions	Section 9	Increased levels of anxiety and stress.	Negative if not managed with effective communications	These health impacts relate to community perceptions and trust. It is therefore important that the positive impacts associated with the project are enhanced within the local community and community consultation is continued and uses a range of techniques that are tailored to the various sub-populations that have particular areas of concern or particular characteristics that make normal methods of communication less effective. It is important that an effective communication/ community consultation program is maintained throughout the construction, commissioning and operational phases of the project.

7.0 Recommendations

7.1 Post-mitigation risk assessment summary

This section summarises all revised risk assessments provided throughout Section 6.0, demonstrating the commitment to impact prevention and mitigation methods.

Table 21: Post mitigation Assessment Strategy

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
Planning and Land status	PL-1	Sterilisation of adjacent land uses	Due to the mixed-use industrial (adjacent) and existing residential areas nearby (approximately 450m away), the proposal has been designed and oriented with the highest level of care to ensure that impacts are contained within the site and/or minimised and dispersed as far as practicable. The technology and design used to mitigate each identified impact reduces the likelihood and/or possible impacts for the identified risks to the surrounding land uses. It is therefore contended that any potential sterilisation of future development being built within or proximate to the Fyshwick industrial area will not be further impacted by the MRF proposal.	Unlikely	Moderate	Low
Traffic and Transport	Traff-1	Increased traffic congestion	Construction of the proposed MRF is not expected to significantly alter local traffic flow. However, appropriate traffic control measures are to be adopted where appropriate. Measures including detours, safety barriers may be utilised to ensure vehicle and pedestrian safety is not compromised during construction.	Possible	Minor	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
	Traff-2	Reduced network efficiency due to increased traffic	Construction of the proposed MRF is not expected to significantly alter local traffic flow. However, appropriate traffic control measures are to be adopted where appropriate. Measures including detours, safety barriers may be utilised to ensure vehicle and pedestrian safety is not compromised during construction.	Possible	Minor	Low
	Traff-3	Reduced road safety	The neighbouring TCCS-owned public land (Block 11 Section 8 Fyshwick) is to be acquired during the planning phase of the project. With access to Lithgow Street, the acquisition of Block 11 will allow all traffic to enter and leave the site in a forward direction. Rigid trucks from the north will arrive and turn left into the site from Ipswich Street. This will limit the traffic in Wiluna Street. Trucks arriving from the south will utilise the signalised intersection at Wiluna and Ipswich Streets to then enter the site from Lithgow Street. All trucks will then exit to the left or right onto Ipswich Street using a new set of traffic lights. These traffic lights will be installed to allow vehicles to egress the site in both directions safely. Formal pedestrian arrangements will also be part of this intersection design to maximise safety. Vehicle route alterations ensure the direction of travel for the vehicle arrivals are in the opposite direction of the high demand's areas during peak times. Additionally, heavy vehicle movements are expected to mainly fall outside of the road network peaks.	Unlikely	Moderate	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
	Traff-4	Increased Rail Movements	The RFT is a separate activity and is subject to a separate DA process. It will operate independently from the MRF and will be used for the unloading and loading of shipping containers and general freight. The inclusion of MRF residues and recyclable materials for transport will fill additional containers on the same scheduled train transporting general freight. This is therefore not expected to increase the total number of rail movements along the dedicated rail line as there have been freight services in the past and they have been paused due to lack of loading facilities.	Likely	Minimal	Low
Utilities	Util-1	Impacts on existing infrastructure	The development proposes to utilise existing utility connection on-site where appropriate. Existing utility infrastructure is expected to possess ample supply to service the proposed development. Therefore, the impact on infrastructure and supply to neighbouring premises is not considered to be significant.	Unlikely	Moderate	Low
	Util-2	Contaminated storm and waste water egressing from the site during extreme weather	All waste processing is located inside the MRF building, which is bunded to keep leachate inside the building and stormwater outside. To effectively manage leachate, a 20,000-litre leachate tank will be installed to capture all leachate from the tipping floor, around the compactors and any wash-down water. Collected leachate would be systematically injected into the sealed waste containers when almost full. This will be absorbed into the waste residues and will assist in the beneficial decomposition of waste at the WBL facility. At the maximum 300,000 Tpa It is	Unlikely	Moderate	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
			expected that some 28 shipping containers per day could dispose of approximately 5,600L of leachate per day with some 200 litres being injected into the waste residue to assist decomposition the landfill. Pumping out the leachate tank for liquid waste disposal will also be possible and emergency trade waste arrangements may be applied for if the leachate properties meet the appropriate criteria for Icon Water.			
Materials and Waste	MW-1	Increased waste to landfill during construction	All materials and waste related risks have been considered during the design and planning stage of the proposal and appropriate elements have been incorporated accordingly such that the least amount of waste material leaves the site during construction and all possible materials are recycled and/or reused.	Possible	Minimal	Very Low
	MW-2	Spread of waste to other sites	The spread of waste to adjoining properties will not occur as the waste activities are inside the MRF building and the external yard will be regularly cleaned and maintained to remove any litter.	Remote	Minor	Negligible

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
	MW-3	Excess stockpiling during operation and cleanup when operation ceases	The Proponent does not intend to stockpile any waste. Waste will be tipped inside the building and immediately sorted. Upon finalisation of sorting, waste will be packed into water tight containers for export. Containers will not remain on site for lengthy periods. Given waste will be tipped inside the building, the Proponent needs to ensure expedited processing to ensure operations can continue. There is not adequate space within the building to stockpile excess waste.	Remote	Moderate	Very Low
	MW-4	Waste Spread during transport	All waste is to be separated, treated within the MRF and containerised expeditiously. The containers will then be stored for transport via rail as soon as practical. There are many contingencies built into the processing to ensure continuous flow of material which will ensure stockpiling and the spread of waste is negated. Transport of waste to the site will be with dedicated waste trucks already in operation within the Canberra area. The EPA already regulates the safe transport of loads. Trucks will be covered and unloaded in the dedicated building. Upon loading the shipping containers, the seal around the door will be washed to ensure that the seal is clean and unobstructed before the container door is closed. The seals on the containers, like any other equipment, require visual inspection on each use and will be replaced annually or sooner if required.	Unlikely	Minor	Low
Landscape, Visual and Lighting	LV-1	Visual impacts on the surrounding areas such as building bulk	The current visual impact is negligible and generally consistent with the character of the surrounding industrial precinct.	Unlikely	Minor	Very Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
		and scale, stockpiling and lighting the facility				
	LV-2	Visual impact of the facility on the surrounding streetscape	No waste is to be stored on the subject site outside the MRF building or in waterproof shipping containers. The expeditious treatment of waste and the storage of only as much waste/recyclables required to fill a shipping container or truck for transport ensures stockpiling is minimised. Additionally, all recycling sorting and management practices are to be conducted indoor and out of view from the street and adjacent blocks. The site must facilitate safe night time use, as such, an appropriate amount of lighting must be incorporated to achieve relevant Australian Standards. And, as above, given the site's locality in a designated industrial area, the pre-mitigation impact associated with facility lighting is minor. Therefore, no major mitigation methods have been adopted.	Unlikely	Minor	Very Low
Soils and Geology	Geo-1	Potential existing contamination	Implementation of a vapour barrier and passive ventilation under the MRF building is a key mitigation method to sufficiently minimise on-site vapour risk associated with the residual petroleum hydrocarbon contamination in the soil and groundwater at the site. All existing potentially contaminating infrastructure is to be removed (e.g. all ASTs and USTs).	Likely	Minimal	Low
	Geo-2	Potential spills contaminating soils	A Construction Environmental Management Plan (CEMP) will be prepared prior to commencing any remediation works. The proposed MRF process is to be located entirely indoors and	Unlikely	Moderate	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
			waste residues are to be expeditiously containerised for its transport via rail. The controlled environment will ensure any spills can be contained and treated appropriately while also preventing further soil contamination			
Water quality and hydrology	Hyd-1	Contaminated stormwater or wastewater impacting on receiving land and water	With all waste treatment activities to be located inside the MRF building the external surfaces of the site are to be mechanically swept regularly and kept tidy. To effectively manage leachate, a 20,000-litre leachate tank will be installed below the transfer terminal building to capture all leachate from the tipping floor, around the compactors and from machinery wash-down water. Leachate would be injected into waste containers to assist in the beneficial decomposition of waste at WBL facility. There will also be the option to pump out to a licensed liquid waste processer and ideally apply for a trade waste connection for emergencies, should the leachate match the Icon Water criteria. The maximum daily transport capacity in 28 containers would dispose of approximately 5,600L of leachate per day.	Unlikely	Moderate	Low
	Hyd-2	Risk to Jerrabomberra Creek and Wetlands	The management of separated storm and waste water systems on site will ensure there is no negative impact posed to the wetlands and creek	Remote	Major	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
Air Quality and Climate Change	CCAQ-1	Dust from construction activities	Redevelopment of the site will likely result in the increased density of dust particles in the air. The following practices will be implemented during construction to reduce or prevent the surface and air transport of dust: Applying appropriate volumes of dust supressing water. The ground will be dampened during earthworks and when dust is being raised. The volume of water applied will depend on the climatic conditions to ensure excess water does not create polluted run-off. Ensuring vehicles only leave via an established and stabilised site access point and pass through a temporary wheel bath. Ensuring relevant equipment have dust suppressors fitted	Likely	Minimal	Low
	CCAQ-2	Odour from transport and processing of waste	As a waste treatment facility, odour from transport and processing is generally a likely occurrence. However, numerous mitigation measures have been implemented which will mitigate fugitive odours and severely reduce odours omitted from the MRF: Waste residues are not to be stockpiled in the MRF building. All waste from trucks is to be processed expeditiously and residues containerised for transport via rail as soon as practical. A negative low-pressure environment, using extraction fans and with minimal doors and openings Fast-opening vinyl doors. The fast opening doors will minimise fugitive odour as trucks enter and leave the site	Unlikely	Moderate	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
	CCAQ-3	Impacts on climate change	Further reductions in organics and other recovered resources will assist in the further reduction of methane at landfill and requirement for other natural resources through the re-use of recycled and recovered resources at the MRF With the inclusion of the mitigation measures proposed, the contingencies to be put in place in the OEMP to ensure consistent function, the cumulative impact on air quality will be minimal. Regular monitoring will be utilised to ensure this is the case	Remote	Major	Low
	CCAQ-4	Cumulative impacts of the development on air quality in the locality		Unlikely	Moderate	Low
	CCAQ-5	Hazardous emissions from the plant including cumulative impacts with other developments in the air shed	The impact of dust and vehicle emissions is not considered to be more than that currently occurs from existing businesses which are well within the dust levels and ACT background levels. This can be verified with initial operational stack testing and then annual stack emissions to validate emissions rates and daily visual monitoring by staff. Appropriate safeguards will be in place to ensure the likelihood of ventilation failure is reduced where practicable. This includes regular maintenance of ventilation equipment and having replacement ventilation equipment on hand. The odour unit has nominated that there will be two variable speed fans operating at 75% capacity so there will be opportunity to conduct regular and emergency maintenance activities while the other fan remains in operation. Key spare parts will be onsite to minimise shut down risks	Possible	Minor	Low
	CCAQ-6	Poor quality waste or dangerous	There will be detailed management plans, procedures and inductions. These Management Plans will be prepared by the	Possible	Minor	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
		contaminants in waste material impacting on operations	Proponent or other appropriately qualified consultant and approved by the relevant Authority. There will always be someone that will inadvertently put the wrong material in their waste bin. This will not be a significant volume. Given our customer base will be limited then the repercussions on persons who do the wrong thing will be heavy. CRS has no interest in dealing with hazardous materials as it is counterproductive to their hour by hour recycling mission. Vigilance of load inspections is the front line and customer training is part of that process. CRS will have facility licence obligations that will need to be continuously complied with.			
Socio-economic and health	SEH-1	Facilities and materials storage providing harbour to vermin and pest animals which impact on health and amenity	The MRF facility is to be located indoors within a controlled, negative-pressure environment. The inclusion of fast-opening vinyl doors ensures such an environment is maintained. Additionally, all waste treatment will occur immediately upon its arrival. These practices will minimise the amount of waste stored on site and will therefore limit the attraction to pest animals. The indoor controlled environment will ensure any pest problems can be addressed locally without any major impacts to surrounding industrial and residential areas.	Possible	Minor	Low
	SEH-2	Discovery and disposal of hazardous waste that poses a risk to the	The proposed MRF is targeted at municipal solid waste (MSW) and commercial and industrial waste (C & I). CRS will ensure only appropriate wastes are accepted at the facility. This will be a function of education and induction of customers who will all have to be inducted and understand the types of waste	Possible	Minor	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
		environment or human health	materials that will be accepted. Inappropriate waste that is discovered hidden in a load upon inspection will be isolated, contained and then disposed of according to the facilities written operating procedures. Additionally, the immediate treatment and containerisation of waste will limit the possibility of any physical contact and inhalation.			
Noise, vibration and lighting	NVL-1	Noise during construction	Construction of the proposed MRF is not expected to generate s noise and vibration that will significantly impact noise sensitive areas. However, appropriate construction noise mitigation measures will be implemented: Limiting the use of particularly noisy practices to daytime hours. Locating noisy equipment so its impact to neighbouring premises is minimised, for example by maximising distance or by using physical structures as barriers. Ensuring noise reduction devices including mufflers and suppressors are fitted properly. The above mitigation measures are expected to maintain noise generation within acceptable levels.	Likely	Minimal	Low
	NVL-2	Noise from the operation of the facility and vehicle movements	For the noise mitigation of machinery utilised during normal operations, feasible options include enclosures, acoustic attenuators and/or localised noise barriers. Selection of machinery which generates minimal and compliant noise emissions is also available.	Possible	Minor	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
			Most fixed plant noise sources are to be located within buildings. Those buildings are to be fitted with fast opening/closing vinyl doors. These controls are expected to appropriately limit noise associated with the MRF operations. Noise impacts generated from waste truck movement (particularly along the southern boundary) and increased traffic congestion are to be alleviated through fixed noise barriers and route alterations. Waste truck routes accessing via Lithgow Street will minimise vehicle queuing and therefore reduce the time and intensity of noise and vibration emissions (see transport impacts for details). Further, the ingress from Lithgow Street means that the waste delivery trucks will be arrived and pass through the natural fall of the site, unload and leave at the lowest point so that the engine noise will be minimised, while onsite, as the trucks do not have to climb loaded.			
Hazard and Risk	HR-1	Plant based or spontaneous combustion fire impacting on the facility and surrounding land uses	A series of mitigation measures are to be implemented to alleviate the risk associated with spontaneous combustion and fire occurring within the mixed waste stream and baled recyclables: Load acceptance protocols where the waste is initially spread and inspected for fire. Loads that are problematic or generate fire risk would not be accepted Wastes will be processed expeditiously. This will eliminate the time necessary to create spontaneous combustion as the material will be sorted. Fixed automated infra -red firefighting systems installed	Possible	Minor	Low
	HR-2	Risk of bushfire or fire on neighbouring premises impacting the proposed facility		Remote	Minor	Negligible

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
			Camera systems, including thermal so that the office and weighbridges can monitor			
	HR-3	Insufficient water supply from tanks and mains for fire suppression in the event of an emergency	The utilities assessment prepared by Cardno indicates that there is currently a DN 150 watermain with a fire hydrant system present. While development on the site will require some infrastructure reconfiguration, water pressure will be boosted to meet Australia Standards.	Remote	Moderate	Very Low
	HR-4	Hazard aircraft operations from stack emissions and flaring	Information provided by the Civil Aviation Safety Authority indicates that the proposal in its current state poses negligible risk to overhead aircraft.	Remote	Moderate	Very low
	HR-5	Critical infrastructure failure	A range of hazard related infrastructure and equipment is to be included on site to alleviate is risk of such events. Infrastructure and equipment to be installed includes: Fire vehicle access can be achieved from both Lithgow and Ipswich Streets. There is already existing and significant firefighting infrastructure, that is a legacy of the fuel and storage facility. Automated thermal fire alarm and firefighting systems within the MRF building Thermal cameras (portable and fixed to monitor stockpile and bale temperatures Fire warning systems and fire exits as part of the fire response management plan Fixed fire hose, water and foam sprinkler locations with employee induction training	Unlikely	Moderate	Low

				Post-Mitigation Risk Assessment		
Aspect	ID	Risk Scenario	Discussion	Likelihood	Consequence	Risk Rating
			Fixed zoned water cannon system in roof over the MSW and C&I stockpiles and bale storage areas. Machinery based sprinklers where appropriate Duplicated machinery and equipment Maintenance agreements and machinery and vehicle replacement at short notice			
	HR-6	Safety of Workers	Creation of CMP and OEMP (includes EMP and WHS practices) written plans Induction requirements for staff and customers	Unlikely	Minor	Very Low

7.2 Summary of Draft Environmental Management Commitments

This section summarises the environmental management commitments CRS will adopt during the planning and design, construction and operation phases of the proposed MRF project. The major impacts as highlight in Section 6.0 have formed the basis of discussion.

Table 22: Summary of Development Commitments

Objective	Commitment	Timing
Traffic and Transport		
Minimise traffic impact during construction	Prior to construction, a construction traffic plan will be prepared, and approved by TCCS, to ensure: • Implementation of appropriate signs, hoardings, fencing, detours, safety barriers and access arrangements (via adjoining properties where necessary) to ensure vehicle and pedestrian safety is not compromised during construction. • Ensure traffic controllers are utilised to manage all deliveries and removals from site to ensure the disruption of traffic on Ipswich Street is minimised • Establish temporary onsite parking for construction vehicles and employees	During construction and operations
Road efficiency and safety during facility operation	Included in the OEMP, minimise road usage by CRS controlled vehicles during peak traffic periods as a function of employee training Prior to construction, design the vehicle activated traffic signal intersection at the site's entry/exits to Ipswich Street for TCCS approval to ensure: • Design new entry/exit intersection, signage and line marking to permit vehicles to leave the site northbound and southbound on exiting. • Only southbound rigid vehicles are to be able to turn left into the site from Ipswich Street. • Synchronisation of the new lights with Wiluna Street lights. • Construct new kerb crossings and connection to footpath on Ipswich Street	During operation During DA Stage During construction

Objective	Commitment	Timing
Review of SIDRA modelling by TCCS	SIDRA modelling will be provided to TCCS for assessment as part of the Design and Siting DA. A Post development SIDRA will be provided to TCCS for assessment after three months of operations for assessment to ensure impacts are as specified.	During operations
Minimise traffic impact in Wiluna Street	The OEMP for the site will ensure that the facility customers are aware that: • rigid trucks only, arriving from the north on Ipswich Street, should turn left into the site at the new signalised intersection. • All articulated trucks from the north, and all trucks arriving from the south, must turn at the Wiluna Street intersection and access the facility via the Lithgow Street entrance	During operation (OEMP)
Utilities		
Avoid any contaminated storm and waste water egressing from the site	In the Development Application show the design detail for the leachate drainage and collection tanks inside the building including a complete 150mm bund around the inside edge of the building In the OEMP incorporate procedures to effectively manage and collect leachate within the MRF building and ensure all hardstand areas are regularly cleaned and mechanically swept.	DA detail Licensing stage
Utility connections	In the Development Application utilise existing telephone, electrical substation, sewer, 150mm watermain and where possible utilise existing stormwater arrangements on Block 9 Section 8.	Design and construction stages

Objective	Commitment	Timing
Materials and Waste		
Management Plans	Prior to construction, prepare a Construction Management Plan for the approval of EPSDD and TCCS to ensure: • management of construction traffic • stormwater and sediment control • stockpile locations, protection and testing Prior to operation, prepare an Operating and Environmental Management Plan, for the approval of EPSDD and ACT NoWaste, for the facility licencing stage to ensure: • Compliance with the requirements of the Waste Management and Resource Recovery Act (2016) and Regulations (2017) with respect to waste transport and facilities requirements • The safe and correct management of the site. • Proposed site monitoring conditions • Compliance with conditions of Development Consent • Site and internal building operational procedures • Management of inadvertent hazardous waste identification, separation and disposal • Staff training and safety procedures • Customer induction processes and requirements • Key documentation. The Management Plan will be prepared by the Proponent or other appropriately qualified consultant and approved by the relevant Authority prior to construction and operation.	Facility licence stage
Records of waste transporters	Incorporate in the OEMP the requirement to provide quarterly summaries of waste receival transactions to ACT NoWaste	Facility Licence Stage and then during operation

Objective	Commitment	Timing
Minimise the stockpiling and accumulation of waste on site	Incorporate in the OEMP the following for consideration by EPSDD: • Ensure all waste is contained within the MRF facility and it is processed expeditiously and then containerised or baled within the building for transport as soon as possible. • Ensure the external yard surfaces are regularly cleaned and swept and landscaping maintained. • Ensure that the site is properly fenced, secured and the gates locked when closed • Ensure there is regular maintenance programs for equipment to minimise breakdowns • Include a list of duplicate critical equipment in operation phase (4 x weighbridges, 2 x waste compactors, 2 x variable speed extraction fans, 2 x mobile equipment or exchange equipment from local hire company Install by-pass arrangements for the sorting processing to isolate equipment for breakdown but not stop processing ability	OEMP procedure Design stage
Ensure no spread of waste during transit	In the OEMP include: • All customers will be reminded of their obligations as transporters to cover their loads. This will be part of the customer induction • Upon loading the shipping containers, the seal around the door will be washed to ensure that the seal is clean and unobstructed before the container door is closed. • The seals on the containers will require visual inspection on each use and will be replaced annually or sooner if required.	OEMP requirement

Objective	Commitment	Timing
Removal of leachate from the site	Design options in the building that will allow for leachate to be removed from site, subject to ACT EPA consent: • 1.Transferred to Woodlawn by shipping container • 2. Be pumped out by a licensed liquid waste transporter and, • 3. When operational, apply to Icon Water for a trade waste connection for leachate removal (emergency) subject to operational chemical testing	DA, Facility licence and construction stages Operation stage only
Landscape and Visual		
Negate the visual impact of stockpiling waste	All waste unloading, loading and storage will take place within the MRF building. There will be no waste stored outside the MRF building. The only storage outside the MRF building will be sealed or empty shipping containers.	During operations (OEMP)
Ensure the bulk and scale of the development is consistent with the character of the suburb	The final building design and finishes to be approved by EPSDD at the development application stage and will be a single-story warehouse style development with associated hardstand entirely consistent with the Fyshwick precinct in scale.	DA design detail
Soils and Geology		
Implementation of the Remedial Action Plan (RAP)	Incorporate and update the recommendations of WSP contained in Chapter 7 of their RAP report. The RAP should be submitted for consideration by EPSDD and the EPA in the final DA design stage for sign off and the appropriate elements included in the OEMP, CEMP. The following details will be confirmed in the final RAP for sign-off: • Prior to commencement of remedial works, consultation with and endorsement of the RAP by: Site Auditor WorkSafe ACT ACT EPA EPSDD (provide to) • Safe work method statement and equipment to be included in the CEMP for the specific removal of contaminated equipment and soils	Incorporate in the OEMP for the licensing stage Prior to construction

Objective	Commitment	Timing
	• Induction of construction staff • Compliance with Section 7.3 of the RAP which includes details of: - Codes, practices and standards applicable - Petroleum storage removal and validation - Remedial methodology for other fuel infrastructure - Management of excavated soils - Reinstatement of the excavations including reusing excavated soil - Soil validation criteria - Waste disposal criteria • Quality Assurance/Quality control for procedures and validation works (Section 7.5 of the RAP) • Validation reporting at the completion of the site works in accordance with Sheet 1 and 2 ACT Government Contaminated Sites and NEPM 2013	
Potential Existing Contamination	Include in the Development Application, for consideration by ACT EPA, the details of the vapour barrier technical details (if required), the design and installation to Australian Standards as recommended in 7.4 of the WSP Remedial Action Plan. This barrier under the MRF building slab is to prevent any risk from contaminated soils affecting the health of the MRF occupants. Details considered and provided as per Chapter 7.4 included: • Soil Preparation – under the slab vapour barrier • Vapour barrier materials selection and installation • Vapour barrier protection during slab construction (include in CEMP) • Validation of gas protection membranes • Contingency for other measures if required	DA Stage

Objective	Commitment	Timing
Remediation Phase Management	The CEMP should be developed for site remediation works to ensure that the on-site and off-site environment is not adversely affected. This will include measures for consideration by EPSDD and ACT EPA that are included in the RAP: • Management of contaminated soil and water • Vehicle and traffic control • Odour, ground gas and vapour • Dust • Excavated soil and stockpile management • Plant and machinery • Noise • Water and sediment management • Equipment and cleaning operations • Health and Safety Plan • Site Access and security • Working hours • Contact information and signage • Unexpected finds protocols • Contingency management Incident response	Prior to construction

Objective	Commitment	Timing
Post Remediation Site Management	Preparation of an ongoing Environmental Management Plan (EMP) (see Chapter 9 of the WSP RAP) to be included as part of the OEMP for the site operations. This EMP will be submitted for consideration by the ACT EPA at the licensing stage and will include details of: • Detailed description soil and groundwater hydrocarbon, PAH and contamination remaining on site and any future monitoring required • Details of the vapour protection system • Requirements and training for staff in relation to contamination and the vapour barrier system • Procedure for reporting impacts to the barrier or exposure of contaminated soil or groundwater • Procedures for worker health and safety for dealing with contaminated soils • Requirements for ongoing vapour monitoring within the MRF • Unexpected finds protocol for any future discovery of unknown contamination • Ongoing monitoring of natural attenuation of groundwater wells and LNAPL both on and off-site • Details of the Monitored Natural Attenuation (MNA) plan including regularity, data quality, performance monitoring and other contingencies • Any future trenching and excavation to follow EMP protocols The Management Plans will be prepared by the Proponent and/or other appropriately qualified consultants and approved by the relevant Authority prior to construction and operation.	Operational
Prevent any spillage of potential contaminants	Spill kits will be supplied in the MRF building for localised inadvertent spillages	OEMP procedure

Objective	Commitment	Timing
Water Quality and Hydrology		
Construction Stormwater	The CEMP should include procedures for: • Covering exposed contaminated soil stockpiles (if any) during construction • Procedures for containing potentially contaminated soil stormwater for testing before releasing to stormwater system • Disposal procedures or treatment for the stormwater if it is not suitable for the stormwater system • A program of stormwater and sediment management be implemented as part of the construction management plan • Monitor existing water sample wells during construction to ensure there is no elevated level leaving the site The Management Plans will be prepared by the Proponent and/or other appropriately qualified consultants and approved by the relevant Authority prior to construction and operation.	CEMP procedure and monitoring
Waterways water sensitive urban design	The Development Application include detailed water quality model using the MUSIC modelling program	Development Application stage
Avoid contamination of watercourses and groundwater during operations	The OEMP should include procedures to: • Ensure all wash-down activities are done within the MRF building • Ensure washdown water is contained and managed within the MRF facility • Ensure any equipment/containers/truck wash-down occurs on-site inside the designated areas in the building • Ensure all leachate is captured and stored within the nominated leachate storage tank • Ensure that the leachate tank is emptied as required in accordance with the site license arrangement	OEMP procedure

Objective	Commitment	Timing
Air Quality and Climate Change		
Air Quality Monitoring program to be implemented	Provide to the ACT EPA: • An annual report prepared to comprehensively summarise and review all the monitoring results and an air quality complaint register kept reviewing performance and analyse measure taken to address the complaint • Within the first two months of operation conduct a field odour survey at locations on-site and off-site to validate the effectiveness of the proposed ventilation outlet and other mitigation measures. Ongoing at a frequency to be determined by an appropriate risk assessment and confirmed with the ACT EPA, • Establish a procedure in the OEMP for the monitoring of indoor air quality that satisfies the provisions of ACT Work Health and Safety ACT 2011 Regular daily visual monitoring of dust generated by site activity, conducted by staff, to be included in the site OEMP	During operations (OEMP)
Design Criteria for odour management	To be included in the Development Application for consideration by EPSDD the following detail recommend by The Odour Unit in their assessment in relation to building design and operations to achieve correct odour levels of 2 ou (99%, 1 s): • Full enclosure of the MRF tipping area and the building under negative pressure • Air extracted to the discharge stack and the exchange of air of at least 5 ac/h • A design airflow of 410,000m3/h • Single stack discharge vent located 21m above ground level and discharge velocity of 20m/s • Install two variable speed extraction fans to ensure continuous operation and routine maintenance • Use of fast action doorways	

Objective	Commitment	Timing
	• Maximum of 211 tonnes of MSW waste present in the MRF building at any one time • Maximum of 953 tonnes of C&I waste present the MRF building at any one time • Maximum of 462tonnes of combined wastes present in the MRF building at any one time	
Minimise dust from construction activities	To be included in the CEMP for consideration by EPSDD and ACT EPA: • Measures to modify or suspend dust-generating activities during periods of high wind speeds or whenever dust plumes from the works are visible. • Utilise wet suppression during earthworks to minimise dust. The water applied would be managed to no create potentially polluted run-off • Vehicles only leave the site via established and stabilised access points • Equipment to be fitted with relevant dust suppressors • Install a temporary wheel wash for the construction period	During construction
Reduce odour from transport and recycling processing	Include in the OEMP that: • The site will accept only appropriate cleaned and maintained waste delivery trucks who correctly cover their loads. • Manage rotation of MRF air and waste stockpiles to ensure predicted levels of odour are not exceeded Include in the Development Application design detail which includes a negative-pressure environment within the MRF building such that the extraction and ventilation system (2 x variable speed extraction fans) within the MRF (and rapid opening vinyl doors) ensure fugitive odours are minimized to predicted levels	OEMP Induction requirement DA Stage

Objective	Commitment	Timing
Dust misting inside building	Install dust suppression misting over the tipping and stockpile areas	DA stage
Truck air quality impacts	Include in the OEMP that trucks and machinery be switched off when not in use for extended periods	OEMP procedure
Socio-Economic and Health		
Maintain a clean, vermin and pest free facility	Implement procedures in the OEMP (to be approved by ESPDD and ACT EPA) to: • Establish a regular pest and vermin control program with a local authorised operator • Prevent stockpiling within the MRF building with staff presence 7 days per week. • Ensure the building is secured and locked outside operating hours	OEMP procedure
Minimise the occurrence and therefore disposal of hazardous waste	Implement procedures in the OEMP (to be approved by EPSDD and ACT NoWaste) to: • Ensure only appropriate wastes are accepted at the facility. This will be a function of education and induction of customers who will all be inducted and understand the types of waste materials that will be accepted. • Inappropriate and inadvertent waste that is discovered hidden in a load on inspection will be isolated, contained and disposed of according to the facilities written operating procedures	
Economic Environment	Actively employ local community members to allow connection to the facility and its operations	Construction and Operations stages

Objective	Commitment	Timing
Noise and Vibration		
Minimise noise impacts during construction	To be included in the CEMP for EPSDD consideration: • All potentially noisy construction practices will be limited to daytime hours • Potentially noisy construction equipment will be located appropriately to minimise impact to neighbouring premises during the construction period • Ensure noise reduction devices including mufflers and suppressors are fitted properly during construction	Before construction
Reduce noise from operation of the facility and vehicle movements	To be included in the site design detail for EPSDD consideration: • Utilise acoustic attenuators for external working container forklifts to meet required noise level. • All fixed plant (noise sources) are to be located within MRF building which is to be fitted with fast opening/closing vinyl doors. • Installation of a 2.7m noise proof fence barrier along the Southern boundary to prevent noise to southern neighbours from the internal truck route	Before operations
Offsite noise confirmation	To be included in the OEMP and provided to EPSDD and ACT EPA after six months of operations: Monitored noise levels to ensure the modelled levels are not being exceeded and the effectiveness of the mitigation measures	OEMP procedure during operation
Hazard and Risk		
Complaints register	Include in the OEMP a procedure for keeping a register for collecting information or complaints (and their remedies) from the public to ensure that any operational issues are addressed in a timely manner. This register will be made available to EPSDD, ACT EPA and ACT NoWaste as required	OEMP procedure during operation

Objective	Commitment	Timing
Minimise potential for spontaneous combustion and fire	Include in the OEMP the following procedures to minimise the risk of spontaneous combustion: • Ensure strict load tipping inspection protocols for problematic wastes and heat sources • Develop a comprehensive plan for on-site management of fire risk and fire management which includes work place firefighting equipment awareness and use for facility staff.	OEMP during operation
Ensure enough water supply from tanks and mains for fire suppression	Establish a connection to the water main for firefighting purposes subject to approval of ACT Emergency Services. Maintain this connection to the local water main to ensure water pressure is enough in the case of a fire emergency In the Development Application locate and design the use of rainwater collection tanks from roof collected water for internal building operations including fire risk, dust suppression and cleaning activities	Prior to construction and during construction During construction and operations
Ensure appropriate hazard and fire infrastructure/ equipment is fitted	To the satisfaction of ACT Emergency Services and the ACT EPA, show in the DA design: • The proposed location of portable firefighting equipment, including fire blankets, extinguishers and water hose reels • The detailed design and operational parameters for the OEMP, for the fixed, automatic heat sensor activated fire suppressing equipment. This will incorporate infra-red thermal cameras to continuously identify heat sources and temperatures within the waste stockpiles. The Development Application should include the following bushfire protection recommendations for consideration by ACT Emergency Services: • The construction standard AS 3959 for bushfire protection should be utilized in the building design • An Asset Protection zone should be established and maintained to the site boundaries from buildings • Fire hydrant spacing, sizing and pressures should comply with AS 2419.1 2005 Fire hydrant Installations. Fire hydrants should not be in any roadway	DA and Licensing prior to operations

Objective	Commitment	Timing
	• Roads design to ensure safe operational access for emergency services • An emergency management plan be developed and then incorporated in the OEMP The Management Plans will be prepared by the Proponent and/or other appropriately qualified consultants and approved by the relevant Authority prior to construction and operation.	
Dust management during operations	Include in the OEMP: • Ensure external surfaces are mechanical swept as part of the OEMP • Ensure worker safety protocols for dust are included in the inductions and CEMP and OEMP's In the Development Application show the installation of the dust suppression misting over the waste tipping floor and stockpile area inside the building to control any dust spreading when loads are tipped The Management Plans will be prepared by the Proponent and/or other appropriately qualified consultants and approved by the relevant Authority prior to construction and operation	OEMP procedure during operations OEMP procedures
Ensure that OEMP and inductions are approved and in place before operations commence	Create a site-specific facility OEMP and induction program. Include in the OEMP waste identification and handling procedures for sorting of recyclables and the separation and safe handling of any inadvertent and incidental hazardous waste Induct workers regarding leachate management and control measures	Facility licence stage Facility licence stage Operational stage
OEMP to include emergency solutions	Ensure that there is an emergency management plan and that it is part of the site OEMP and are kept regularly updated. The Management Plans will be prepared by the Proponent and/or other appropriately qualified consultants and approved by the relevant Authority prior to construction and operation.	Facility licence stage

Objective	Commitment	Timing
Ensure minimal operational business interruption	In the OEMP provide the following to ensure continuous operations: • List of duplicated equipment and appropriate spares kept onsite to ensure minimal operational interruption • Maintenance agreements in place for fixed and mobile equipment • Replacement arrangements with local hire companies including portable generators and mobile equipment • Details of emergency contacts for business interruption scenarios The OEMP will be prepared by the Proponent and/or other appropriately qualified consultants and approved by the relevant Authority prior to construction and operation	OEMP procedure during operations
Diesel and LPG storage	In the Development Application include the following detail: • 30,000ltr diesel storage meets Australian Standard 1904:2004 • 7,500ltr LPG storage meets Australian Standard 1596:2008 • Incorporate a storage room for the safe storage of oils and lubricants	Detailed design stage
Future Community and Stakeholder Engagement		
Commitments to ongoing community and stakeholder consultation	If approved, a community stakeholder plan be developed to the satisfaction of EPSDD and would include the following: • Notification of construction works and hours • Notification of any changed traffic circumstances through the construction phase • A site contact number for community information and an email address • Community information days or education open days as required • Website updates including performance data • Advertising in local and regional media when/as required • Local job advertising for new employees	Construction and Operations

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