ADVANCED WASTE MANAGEMENT FOR THE ACT

CAPITAL RECYCLING SOLUTIONS P/L

SCOPING APPLICATION

MAY 2017

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1.0 INTRODUCTION

1 PURPOSE

Capital Recycling Solutions Pty Ltd (CRS) has prepared this Scoping Application in accordance with the requirements of the ACT Planning and Environment ACT, 2007.

CRS are committed to implementing a fully funded, world's best practice waste management system to receive, sort, separate and leverage the ACT's waste that is currently going to landfill. CRS intends to process these waste streams (MSW, C&I, Light residues from C&D and other wastes totalling potentially in excess of 400,000 Tonnes) to achieve a greater than 90% landfill diversion rate for the ACT as well as significantly reducing Greenhouse Gas (GHG) emissions. The proposed system will utilise advanced sorting and recycling systems to generate commercially reusable products for export as well as combining with proven Waste to Energy (WtE) technologies to create clean, sustainable, base-load electricity from non-recyclable residues all of which are currently landfilled. This will be a sophisticated one stop solution that will achieve the objectives of the ACT Government in controlling its own waste solutions as well as provide a significant opportunity to generate "home grown" renewable electricity within the ACT region (96% is currently imported).

From a broader ACT Government Policy and community perspective, the development of this proposal will also benefit the ACT Government across a range of policy objectives including:

- Rejuvenating the ACT rail infrastructure and reducing traffic congestion on ACT roads given the close proximity of the proposed CRS site to the ACT railway corridor;
- Providing cross border solutions for waste management benefiting the wider Capital Region and surrounding regional areas, 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 innovative waste management hub with advanced energy generation, emission, odour control and other environmental technologies;
- Provide embedded renewable baseload generation that provides grid support and reduces associated transmission and distribution losses within the electricity network as confirmed by ActewAGL Distribution (AAD);
- Reduces future associated transmission network augmentation capital expenditure with avoidance of associated cost increases for electricity network customers as confirmed by AAD; and
- Provide a positive impact on the ACT economy by diversifying the economic base and creating 60 fulltime jobs, and other part time jobs, through the development of a new, innovative and growing industry.

CRS believes that all of these above-mentioned benefits can only be crystallised in the ACT through the CRS contributed Fyshwick site, for which the planning is well progressed, and that CRS has the capability and experience to deliver the higher standards of waste management the ACT Government seeks.

1.2 CAPITAL RECYCLING SOLUTIONS PTY LTD (THE PROPONENT)

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 in excess of $180 million.

CRS will partner with ActewAGL Retail (AAR) to deliver the WtE component of the Project (refer attached letter of support at Appendix 3). Given that the WtE solution will provide a local, sustainable, reliable and a cost effective energy supply for the ACT, AAR is proposing to take a 50% ownership stake in the WtE component of the project.

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. To find out more on Benedict, please go to www.benedict.com.au.

Access Recycling

Access Recycling is a leading supplier of metal recycling services to mining, rail and other heavy industries for 30 years. The company is well established in the eastern states of Australia, including NSW, ACT and South Australia; processing and exporting in excess of 100,000 Tonnes of metal per annum. To find out more on Access Recycling, please go to www.accessrecycling.com.au.

ActewAGL Retail

ActewAGL Retail is the leading electricity and natural gas retailer in the ACT and parts of south-east NSW (including Queanbeyan, Goulburn, Yass, Young, Nowra, Batemans Bay and Bega) and has built a reputation for reliability over the past 100 years in the ACT. The company provides electricity to over 180,000 mass market and large customers across the ACT and NSW. ActewAGL is a local company and one of the largest employers in the ACT with over 800 employees. To find out more on ActewAGL Retail, please go to www.actewagl.com.au.

2.0 BACKGROUND

The ACT Government has recognised waste management as an integral part of delivering a more sustainable ACT. 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 to the way the ACT manages waste.

2.1 ACT WASTE MANAGEMENT STRATEGY

The ACT Government has recently implemented the ACT Waste Management Strategy 2011-2025 (Strategy). The Strategy sets the management direction of waste in the ACT towards 2025 and 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 (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 problem that the ACT is now encountering is high levels of waste production per capita, growing by 2% per annum, as well as levels of recycling not matching this growing creation of waste. This not a new phenomenon. 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 (above), the solution will need to involve a sophisticated and proven level of recycling and waste processing technologies that will work in combination to achieve the Strategy 2025 outcome of 90% waste diversion from Landfill. Included in section 9 of our response is an outline of how our proposal addresses each of these four Strategy Outcomes.

2.2 ACT WASTE FEASIBILITY STUDY

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. The ACT Government, reportedly, will consider the ACT Waste Feasibility Study's recommendations in early 2017.

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.

Our project has been developed with this Study's recommendations being central to the outcome.

2.3 ACT GOVERNMENT'S MARKET SOUNDING

On 20 February 2017 the ACT Government released a Market Sounding.

The objective of the Market Sounding is to enable the Territory to set higher standards for resource management and continue to remain as a leader in resource recycling and recovery. 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:

a) Collection;

b) Processing;

c) Excavated Material; and

d) Advisory Services;

With suppliers invited to respond to any or all of them. CRS has already 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.

2.4 MUGGA LANE RESOURCE MANAGEMENT CENTRE

The Mugga Lane Resource Management Centre at Hume currently receives virtually all of Canberra's landfilled waste. Data also suggests as much as 30,000 Tonnes of ACT's waste is being tipped across the border in NSW. The future of the Mugga Lane site will be problematic for the ACT as it has a very limited life, is expensive to operate, provides little in the way of recycling opportunities and is commonly the subject of complaints from the community regarding odours and litter management. The 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 landfilling rate (in excess of 309,000 Tonnes per annum) the estimated life of the Mugga Lane facility is no more than a few years. Expansion of this facility would require significant capital and technological investment and is not an efficient waste management solution. Expanding the landfill facility will not help facilitate the achievement of the Strategy's outcomes nor encourage an innovative solution to waste management in the ACT. Notwithstanding this, there will always be a requirement for landfill for complicated wastes such as medical incinerator residues and asbestos. The benefit to the ACT of our proposal is that Mugga Lane can remain open as a facility with significant longevity to deal with the small amounts of the aforementioned wastes that require this disposal outcome.

2.5 CANBERRA SEWERAGE STRATEGY

It is also 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. CRS is confident that its proposal would assist in solving this strategic issue and discussions have already taken place with Icon Water regarding some of their waste issues going forward (refer attached letter of support at Appendix 4).

3.0 THE PROPOSAL

CRS are committed to implementing a fully funded, world's-best-practice waste management system to receive, sort, separate and leverage the ACT's waste that is not currently being recycled to achieve a greater than 90% landfill diversion rate as well as significantly reducing GHG emissions. The proposed system will utilise advanced sorting and recycling systems to generate commercially reusable products for export as well as combining with proven WtE technologies to create clean, sustainable, base-load electricity from non-recyclable residues all of which are currently landfilled. This will be a sophisticated one stop solution that will achieve the objectives of the ACT Government in controlling its own waste solutions as well as provide a significant opportunity to change the dynamic of importing the majority of electricity from outside the ACT region (over 96% is currently imported).

The proposal is a comprehensive solution for waste management. CRS contends that greater outcomes can be achieved by adopting a holistic approach to household waste management, with the key pieces of infrastructure on a single site.

The CRS proposal includes one of the best located sites for this type of project in the Territory. Importantly, CRS has already purchased the land and reached agreements to lease the adjacent rail siding. The development of the Facility is in accordance with the currently land use zoning for the Site with no planning/zoning exemptions required.

3.1 EXISTING WASTE ECOSYSTEM

Under the CRS proposal there is no significant change in infrastructure or commercial waste handling arrangements required. It is a simple matter of redirecting the waste collection trucks that are commercially contracted to the ACT Government away from the Mugga Lane landfill and, instead, to the proposed CRS recycling facility in Fyshwick.

The CRS facility will have a positive and convenient impact on the existing waste operators and initial discussions with them have been encouraging. The existing operators are predominately collectors and transporters, an activity that CRS will not be undertaking. Instead, CRS sees this section of the waste industry as potential customers.

Importantly, the CRS proposal does not impose a change to the way households and businesses dispose of their waste. CRS contends that imposing further burdens on the users of the waste disposal system opens the system up to error. An example stated previously is the addition of kitchen waste to the green bin trial. As seen in the European example, errors can result in compost which is unsuitable for its intended use. CRS believes that the better option is to sort this waste using the highly efficient Advanced Material Recovery Facility (MRF) rather than relying on all individuals to use a new system correctly.

CRS is not proposing to challenge or participate in the existing yellow bin recycling process other than to seek the residues from the existing yellow bin recycling process, that are currently landfilled at Mugga Lane.

3.2 REGIONAL SOLUTION

The CRS proposal has been entirely developed with a regional focus. By ensuring that the processing capability of the MRF is some 400,000 Tonnes per annum, CRS is offering a long term regional MSW and C&I waste solution. CRS's capacity to export recyclables and import waste or RDF is significantly enhanced by the site's rail freight capability. Large volumes of material can be moved in and out of the site without adding to road congestion. As all rail freight is on a user-pays system for track access, CRS is supporting vital infrastructure while not adversely impacting the Territory's roads.

We have commenced discussions with Queanbeyan-Palerang Regional Council (QPRC) (refer attached letter of support at Appendix 5) and are about to commence discussions with other Councils in the Capital region to investigate opportunities for regional councils to participate in the waste management process that the WtE facility would offer. Bringing this proven recycling and WtE technology to the ACT would diversify the economic base and create some 60 fulltime jobs and other part time jobs. The proposal will also promote innovation, research and development activities in the ACT with local business and education bodies.

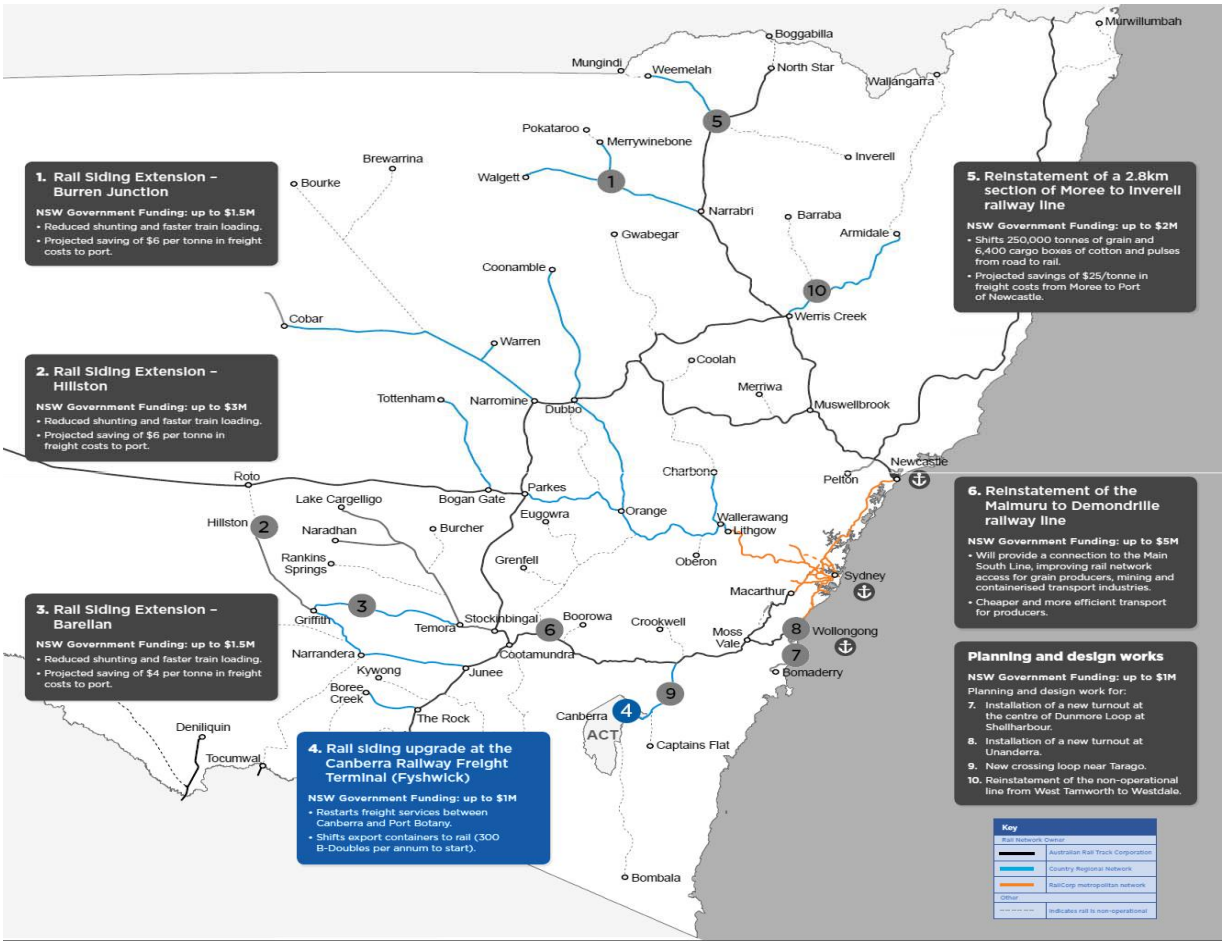
3.3 RAILWAY FREIGHT

The proximity of the subject site to the ACT railway corridor is a key component of the CRS proposal. A 2,800m long siding called the 'south shunt' runs parallel to the main railway line and connects to the subject site. CRS proposes to upgrade and rebuild the siding and utilise the railway to export recycled materials from the site. A development application has already been approved for these works and block consolidation and purchase is due for completion in June 2017.

CRS is also proposing to use the rail access for the purpose of receiving waste residues and exporting recycled products from the recycling process via rail containers as an efficient and predictable method to find markets for the recycled products. Once sorted, if there is no market, we resolve it remains as rubbish so CRS will seek local, regional and international markets as required. These activities can be readily scheduled with no disruption to the existing commuter train services.

The location of this facility at our Fyshwick site, with the adjacent rail access, provides an opportunity to rejuvenate the ACT rail infrastructure and reduce traffic on ACT roads, a benefit that is exclusive to this location. A further benefit is to provide cross border solutions for waste management that benefits regional areas by using this rail infrastructure.

Figure 1 - NSW Government Grants for improvements to Regional Rail Freight



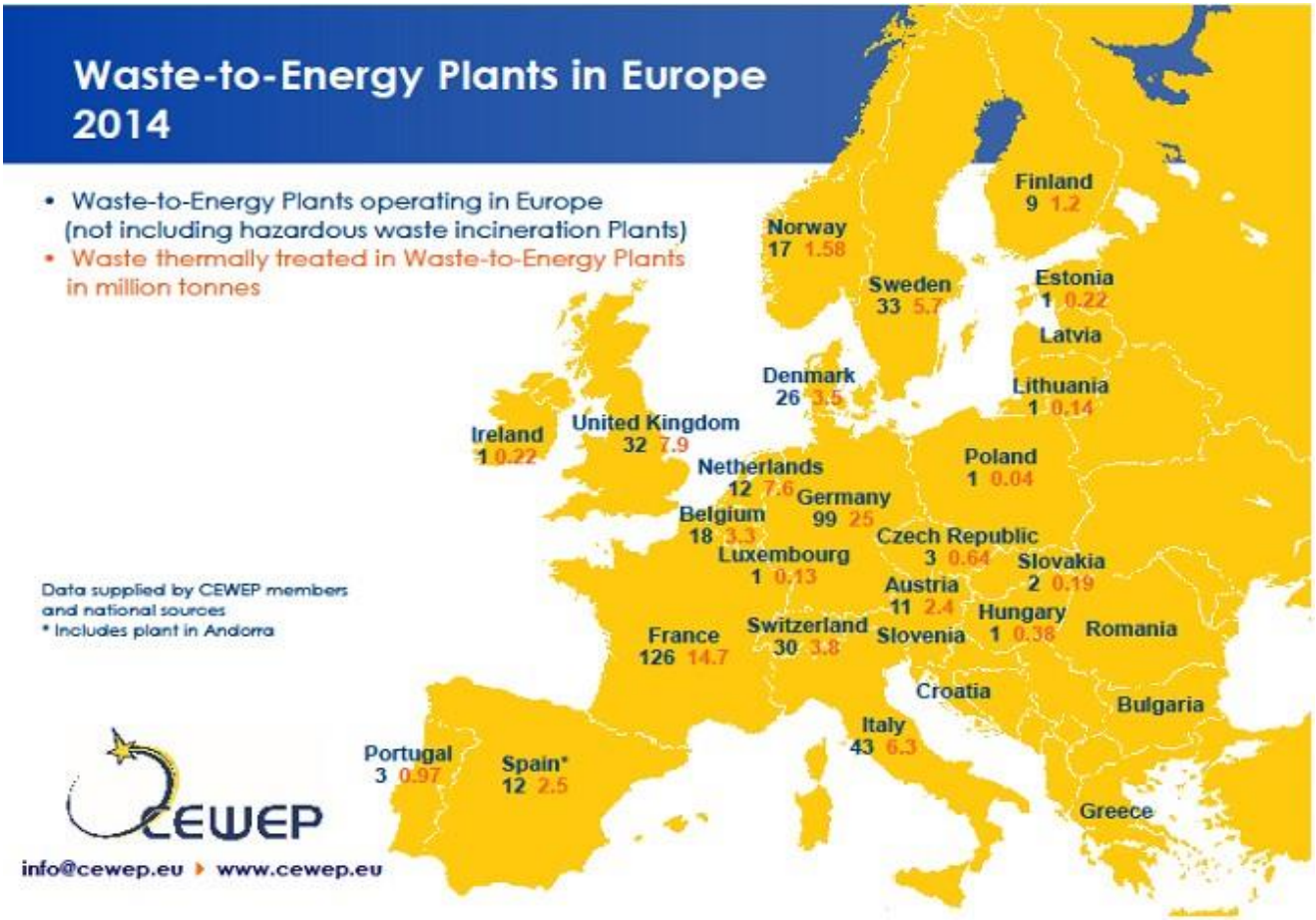
An essential component of establishing a viable railway freight service is to have viable volumes of continuous freight. The proposal does this with the export of recyclable items and import of additional waste and recycling streams. CRS will also establish a commercial scale intermodal freight terminal and provide a regular, competitively priced, railway freight service to and from the Eastern Seaboard ports. This will allow importers and exporters to move containerised goods in and out of Canberra, more efficiently and at lower costs, with obvious economic benefits. CRS has already had several parties express interest in the commercialisation of the intermodal facility.

CRS (through Access Recycling) has received a $1 million grant from the NSW State Government to reinstate the South Shunt that runs alongside the (see Figure 1). The reinstated line will bring modern rail freight capabilities to the ACT.

3.4 WASTE TO ENERGY

CRS considers that an essential component necessary to achieve all four outcomes of the Waste Management Strategy and the "full resource recovery" target of at least 90% diverting from landfill, is the inclusion of WtE technology in the waste management system. CRS can demonstrate the potential of the WtE technology through existing solutions currently operating throughout Europe (see Figure 2), Asia and North America. There are now many hundreds of WtE facilities worldwide that operate in specific waste environments and waste streams assisting in landfill avoidance and power generation. A recent report issued by the Clean Energy Finance Corporation (CEFC) in November 2016 identified up to $3.3 billion of potential investment in Australia in urban energy from waste to 2020 that could generate significant base-load electricity.

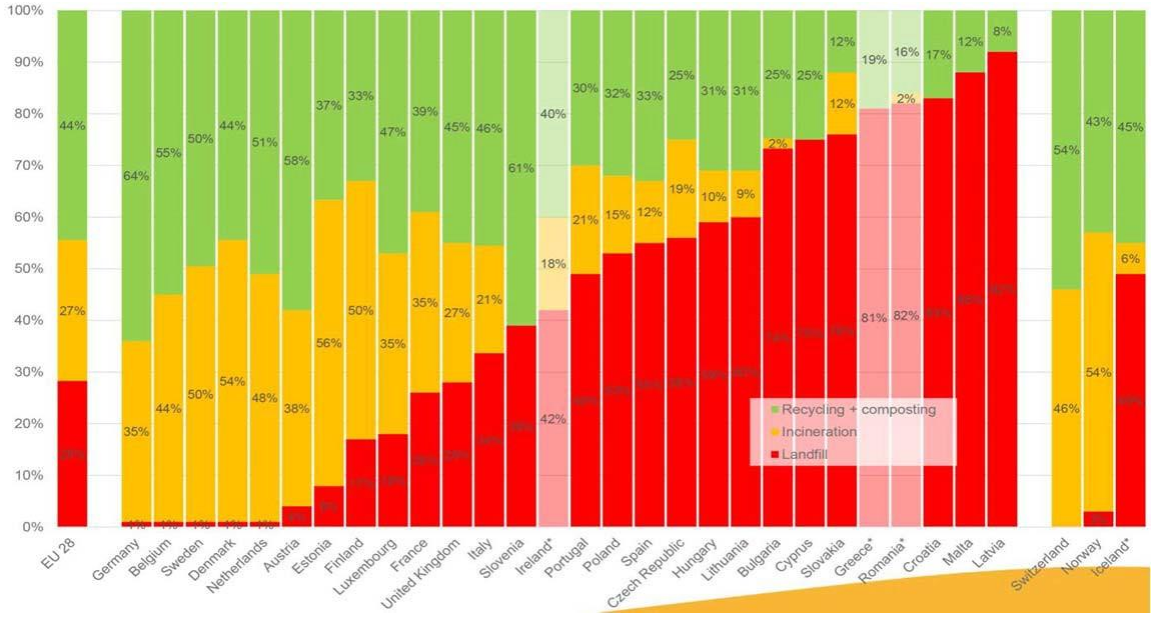
Figure 2 - Waste to Energy Plants in Europe 2014



The necessary relationship between Recycling and WtE has for some time been proven in the European waste solution practices. Landfill avoidance for the purpose of reducing GHG is critical and alternate methods have already been acknowledged in 2007 by the Intergovernmental Panel on Climate Change (IPCC),[1] stating "**GHG generation can be largely avoided through controlled aerobic composting and thermal processes such as incineration for waste-to-energy".**

After recycling, the remaining waste produces energy which contributes to climate protection and security of energy supply through replacement of fossil fuels that would otherwise be used to generate power, and by breaking down refuse in a thermally controlled manner which would otherwise produce methane in landfill. The IPCC states further that "compared to landfilling, waste incineration and other thermal processes avoid most GHG generation, resulting only in minor emissions of CO_2". The IPCC stated further that **"GHG emissions from waste incineration are less than one tenth of landfill CH4 (methane) emissions".**

Figure 3 - Municipal waste treatment in 2014 (EU)[2]



It is very clear from Figure 3, above, that the ratio of recycling (green) to incineration (orange) to landfill (red) in Europe proves that:

- Countries achieving close to zero landfill have very high proportions of recycling **and** incineration; and
- Generally, the countries with the highest recycling **also** have the highest use of incineration.

CRS, understanding this nexus between Recycling, WtE and GHG, is proposing to utilise this range of proven processing technologies and target the currently un-recycled portion of ACT's waste stream and process this for recyclables and use the remainder for the creation of over 21 MW of exportable renewable energy for the local ACT power grid. This would allow the stated 2025 waste target to be implemented as well as allowing the ACT Government to take responsibility for some of its own power generation which currently is mostly imported from outside the Territory (some 96% is imported).

[1] IPCC. http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter10.pdf
[2] Eurostat (2016)

Each of the two proposed WtE plants will have nameplate capacity to process in excess of 135,000 Tonnes of shredded RDF per annum depending upon the calorific value of the fuel. The WtE process will require a consistent feedstock to be a reliable contributor to the renewable energy market. For this we will be seeking additional feedstock for the WtE plant, bought in via rail so that the facility can run optimally and contribute significant reliable energy**.** CRS proposes that some 150,000 Tonnes of waste could be transported to the site, by rail, for extraction of recyclables and generation of electricity. It also allows the facility to be a true 'base load' electricity generator. Furthermore, additional C&I streams from a wider region can be sources of feedstock for the WtE plants should MSW volumes diminish.

This proposal will be a non-intermittent energy supply which makes it different to solar and wind. It will also bring a direct community benefit as it will be able to offer competitive a "feed in tariff" negotiated for embedded generation. If ACT waste production rises by the predicted 2% per annum, this will allow capacity in construction and operation of the facility so that greater Canberra's future needs can be met. In our proposed Fyshwick facility, waste that is currently being landfilled at Mugga Lane could power over 22,000 ACT homes and business activities.

3.5 COMMUNITY ENGAGEMENT

The CRS proposal will include the implementation of a strong community engagement and consultation program. CRS believes that our residential and business neighbours within the immediate vicinity should be involved early in the EIS process and be engaged on an ongoing basis. CRS has already created a project specific website that will allow people to understand more about CRS and its proposal. The website also allows for interested people and parties to interact with us by using the "Contact CRS" button contained at www.capitalrecyclingsolutions.com.au. It is believed that this 'community first' approach will increase understanding of the proposed system, and promote support from the broader community. CRS has already commenced this consultation process. CRS has already commenced determining levels of community perspective and understanding, by way of some focus group feedback. Extracts from the Executive Summary are contained in section 8.0

Community engagement should not end with development of the plant. If approved CRS will be committed to continued engagement with the community throughout the operation of the facility. This will be achieved on several fronts, including an online portal which will give live and continuous emission data. There will be a research and visitor's centre as well as establishing a monitoring committee with local community representatives to monitor the plant's continuous performance and success as a neighbour.

3.6 INVESTMENT AND WORKFORCE

The total investment will approach $200 million of private equity investment.

There are significant employment opportunities under the CRS proposal. More than 60 fulltime jobs, and at least 10 part time jobs, will be created in the two MRFs, container and rail handling, WtE plant, facility management, the research and education centre and associated activities (cleaners, gardeners etc.). Much of this is new employment, not a displacement of jobs from the current landfilling activities. A diverse range of skills will be required, with training programs offered to fill technology positions not currently available within the Territory. CRS are willing to commit to several real employment positions for disadvantaged community members and social enterprise as a key part of the proposal.

4.0 REQUIREMENT FOR AN EIS

The ACT Planning and Development Act 2007 (PDA) and ACT Planning and Development Regulations 2008 (PDR) provide the statutory framework for the preparation of an Environmental Impact Statement (EIS) in the Act. CRS has determined that by virtue of the following references contained in Part 4 of the PDA that an EIS will be required for its proposal.

Part 4.2 of the PDA

Provision	Relevance
Schedule 4. Part 4.2 item 2 *proposal that involves—* *(c) an electricity generating station (other than a coal electricity generating station) including gas, wind, hydroelectric, geothermal, bio-material, solar power or co-generation— (i) that is capable of supplying— (A) the amount of electrical power prescribed by regulation; or (B) if no amount is prescribed—4MW or more of electrical power; or (ii) in a location or of a kind or nature prescribed by regulation;*	CRS propose to construct an electricity generation station (other than a coal electricity generating station) producing between 24 – 30 MWe
Schedule 4, Part 4.2 item 9 *proposal for the construction of a waste management facility that is—* *(a) an incineration facility for the destruction by thermal oxidation of waste including biological, veterinary, medical, clinical, dental, quarantine and municipal waste; or* *(b) for the sterilisation of clinical waste; or* *(c) for the storage, treatment, disposal, processing, recycling, recovery, use or reuse of regulated waste*	CRS propose to construct a waste management facility that can properly recycle and then convert unwanted municipal, light construction & demolition and commercial waste residues using proven Waste to Energy technologies.
Schedule 4, Part 4.2 item 10 *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*	CRS propose to construct a recycling facility which will transfer recyclable materials. The facility will have design capacity for some 400,000 Tonnes of waste per annum. The facility is within 1km of residential blocks. The proposal is not a small-scale waste management facility.

5.0 PROPOSED FACILITY

5.1 GENERAL DESCRIPTION

CRS propose a 'European type' solution using advanced recycling systems that would significantly contribute to achieving the goals set out in the Strategy. The proposal includes the following features:

- A centrally located facility for the receipt of most MSW and C&I waste generated in the ACT, plus wastes from other regions;
- Facility design-capacity to process 400,000 tonnes per annum
- An advanced MRF for processing separately MSW and C&I wastes;
- Capacity for the packaging and export of commercially recyclable materials;
- A WtE building containing one or two plants utilising proven technologies that would export to market between 21-27 MW/hr of continuous base-load electricity depending on the final configuration. To find out more about how a WtE plant works go to: www.cewep.com/film/Start.swf; and
- Separate road entry via Ipswich Street and a new egress point at the end of Lithgow Street.

Figure 4 - Proposed Site Layout with indicative vehicle access and paths of motion

CRS proposes to give significant attention to aesthetics and community amenity in the exterior design of the facility. Consistent with many new constructions 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. Please take the time to preview a fly around of our proposed facility at our new website www.capitalrecyclingsolutions.com.au.

CRS proposes buildings of this scale and appearance to house the receival, recycling, fuel storage as well as the WtE plant. The two 2.4 metre diameter stacks that are 32 metres high would be located as shown onsite (see Figure 4) and would extend some 8 metres above the tallest roofline.

It should be noted that all the activities and doors have been designed to be internally located thereby screening them acoustically and visually from surrounding premises as much as possible. CRS will also be installing fast closing doors on all its sheds and creating a negative pressure environment within the buildings to ensure that odour is not an issue.

The WtE plant itself is towards the rear of the site and therefore the view from street level is only of the shed and office structures which are entirely consistent with the industrial commercial environment surrounding it.

Concept Perspective - Birdseye view from the North

5.2 CONSTRUCTION & COMMISSIONING REQUIREMENTS/TIMELINES

As shown in Figure 4 - several new structures are required. These include:

➢ Weighbridges and Weighbridge Offices	➢ Waste receivable building
➢ Fuel Preparation Plant Building	➢ Fuel storage building
➢ WtE plant building	➢ One or two exhaust stacks to a height of 32m
➢ Air cooled condenser structures	➢ Intermodal loading facilities

Administration will be housed in an existing building facing adjacent the site entry off Ipswich Street. On-site light vehicle parking will be provided. A "fly-around" perspective of the proposed facility is available at www.capitalrecyclingsolutions.com.au. The facility is expected to take some two years to construct and commission following receipt of all necessary planning approvals and no planning/zoning exemptions are required for the Facility.

CRS has a deep understanding of and commitment to the ACT waste market having actively explored opportunities since early 2015, been in discussions with the ACT Government about their waste problems and possible solutions and participated in the ACT waste forums and discussion groups.

To give the ACT Government comfort in relation to the planning process as at May 2017, CRS had completed or commenced the following planning related activities:

- Created a Joint Venture between Access Recycling (local ACT business) and Benedict Industries;
- Purchased 2 ha of land at Fyshwick (former Shell storage and handling site);

- Entered into a licence arrangement with Rail Corp (John Holland as agents) for railway siding access;
- Gained development approval in mid-April 2017 for the consolidation of land and the creation and upgrade of the "South Shunt" railway siding for the purpose of container handling and intermodal activities which has been supported by the NSW Government through a $1 million development grant for rail corridor works;
- Established a MOU with AAR to develop the WtE component of the proposed waste facility and market the energy created as confirmed by the letter of support from ActewAGL (see Appendix 3), while facilitating discussions with AAD to connect the facility to the ACT power grid;
- Developed an EIS Scoping Application as this activity is listed in Schedule 4, Part 4.2 of the Planning and Development Act 2007 (P&D Act) as requiring an EIS;
- Remediation of the Fyshwick site has been commenced and substantially undertaken;
- In addition to the proposed site there is the potential for further processing on the adjacent Access Recycling site in the future;
- Undertaken some independent preliminary research on Canberra's community sentiment towards waste management in the ACT and WtE technology (See Section 8.0). This will form a broader community consultation process to be conducted at the most appropriate time. This research included focus groups that contained both local ACT residents and businesses. A strategic communications and stakeholder engagement firm has been engaged to advise on the most effective community consultation strategy;

Concept Perspective - Birdseye view from North West above Ipswich St

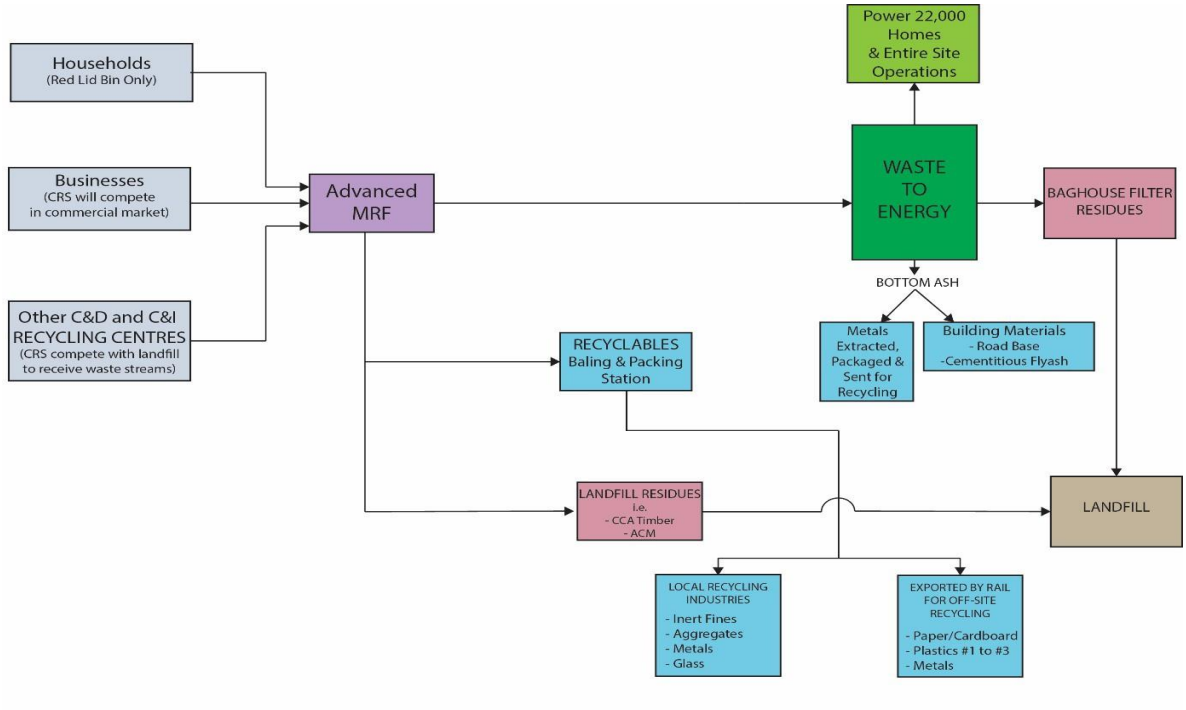
- Commenced discussions with Icon Water regarding other potential sources of waste that may be suitable for inclusion in the waste management process for the facility as confirmed by the letter of support provided by Icon Water (see Appendix 4);
- Commenced discussions with regional councils in the broader Capital Region regarding cross border waste management solutions that this proposal would provide utilising existing rail infrastructure. In particular, (QPRC) have provided a letter of support (see Appendix 5) indicating their desire to continue to investigate with CRS and AAR any potential opportunities that may exist to participate in the waste management process that the MRF and WtE facility would offer, including the use of the existing rail infrastructure. This theme is consistent with the Letter of Intent between QPRC and the ACT Government to collaborate on policy and planning opportunities on waste management on a regional scale;
- Commenced discussions with AAD regarding the logistics of a local grid connection;

- Commenced discussions with the CEFC regarding their potential support for this project including as a source of funding for this type of initiative; and
- Opened dialogue with local university and Commonwealth Government research and development bodies to support the proposed waste management solution.

5.3 CRS WASTE PROCESSING CONCEPT

The proposed facility will provide many waste management processes for a variety of waste types. The CRS Waste Management Process is shown in Figures 5 and 6.

Figure 5 - CRS Waste Management Process Chart



Note: Existing yellow lid recyclables bin will not be impacted by the CRS proposal

5.3.1 Receival Station and Advanced MRF

The facility will provide a processing capacity in excess of 400,000 Tonnes per annum of unrecycled material and residues from recyclables. This capacity will provide for future capacity and a regional solution for MSW and C&I (including C&D "lights") waste by providing a total diversion from landfill of more than 90% of these materials.

Wastes will be delivered via a security controlled gateway from Ipswich Street. Vehicles will be weighed upon entry and then proceed into an odour controlled building. Vehicles will unload and pass through a wheel wash after exiting the building and leave the site via Lithgow Street spreading truck traffic and minimising flow conflicts. All waste will be immediately fed into the Advanced MRF after receival.

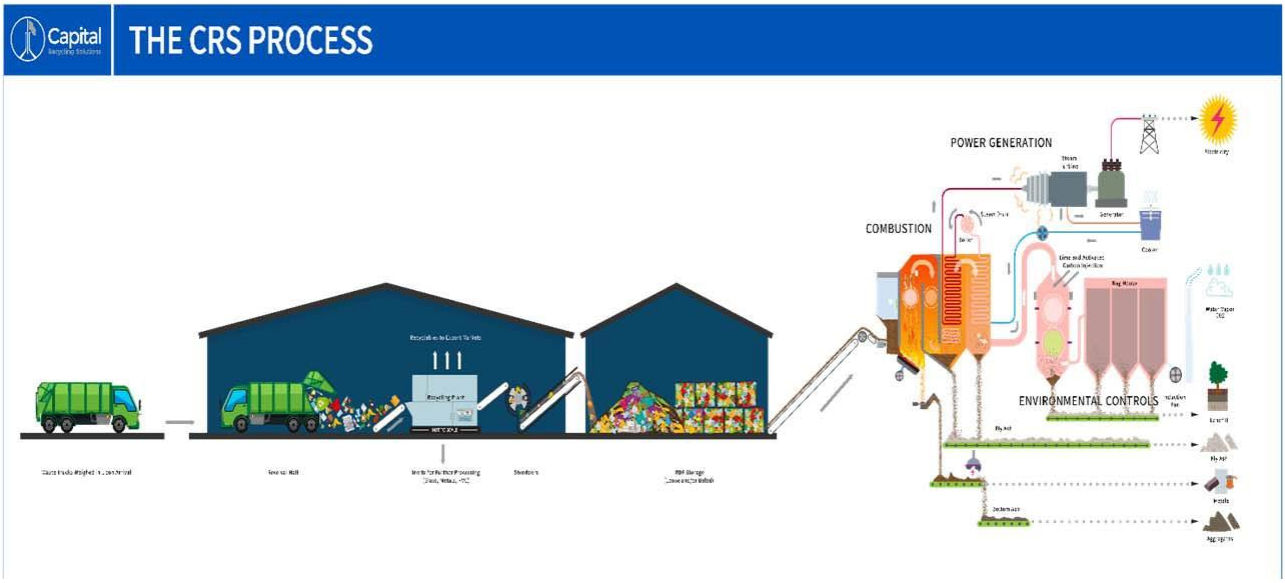
The Advanced MRF's separates and removes commercially recyclable materials such as paper, cardboard, certain plastics and metals. Inert and non-combustible materials such as glass, soil, aggregates are also separated out and exported from site. Plastics #1 (HDPE), #2 (PET) and #3 (PVC), metals, clean paper and other extracted recyclables will be baled, containerised and then shipped via rail from the site for sale in the appropriate recycling commodities

market. For more information about Advanced MRF's please see www.w-stadler.de or their video at www.youtube.com/watch?v=YxevVBAeN4s.

Inert, non-combustibles will be conveyed to bins where they will then be transported by site truck to the existing Access site adjacent to the facility. All remaining materials will be shredded to form a homogenous RDF and this will be stored as fuel into the fuel storage building ready for the site's WtE plants for conversion to electricity.

Bailing and packaging into containers of recyclable materials will be done onsite and will utilise the adjacent railway siding and train line to transport some of these materials interstate (see Figure 1).

Figure 6 - The CRS Process



5.3.2 Waste to Energy Utilising Conventional Thermal Combustion

WtE replaces the need for fossil fuels traditionally required to fuel conventional power plants. As such, the proposed WtE plants are consistent with ACT Government's focus on renewable energy, carbon-neutrality and an innovative waste management future.

The proposed WtE plants will utilise thermal combustion to generate electricity. Thermal combustion involves passing the RDF feedstock over grates, which allows air to be blown both through and over the top of the fuel. This then allows very efficient, high-temperature combustion. The organic component of the waste is oxidised into carbon dioxide and water. The ash and metals are cooled in water and recovered as a recycled resource as mentioned previously. Flue gas contains water, combustion gases, oxygen and nitrogen. During the combustion process, hot flue gases are released in the furnace and their heat is transferred to water inside the boiler tubes which produces steam that, in turn, spins a turbine driving an electric generator making electricity. The steam then exits the turbine and is condensed back into water and goes back to the boiler and so on.

After heating the boiler the gases then enter the flue gas cleaning system, and are cleaned in a number of stages:

1. Dust is caught and separated
2. Heavy metals are extracted

3. Sulphur is removed
4. Acid components of the flue gases are removed
5. Organic pollutants, such as dioxin are destroyed

The emissions are very closely monitored in the WtE plant's centralised control room which in turn, controls the emissions control equipment. Several plants even have this information live on their web-site so that neighbours living close to the plant can see that the emissions are compliant and as low as possible. CRS proposes to use this live monitoring for the benefit of the ACT community.

The CRS proposal has the capacity of some 165,000 MWhrs per year of base-load electricity produced in the ACT, an approximate 161% increase in ACT based renewable energy generation (currently at 102,000 MWhrs per year) which is equivalent to supplying some 22,000 homes in the ACT with renewable energy.

Concept Perspective - from South West above Ipswich St

5.3.3 Emission and Odour Controls

Odour control technologies will be employed in the MRF and fuel storage buildings. By keeping the receival, processing, and fuel storage buildings under "negative air pressure" and using rapid opening and closing doorways CRS will be ensuring that this will not be an operating concern for our neighbours.

A significant proportion of the capital cost of the WtE plant is directed towards emissions control. CRS proposes to install Luehr air emission control technology (www.luehr.com.au/Waste-to-Energy). Luehr, a European based company, has offices in Asia, North America, South America and Australia and is considered one of the world's leading providers of emission control technology services.

The technology proposed is readily compliant with European Industrial Emissions Directive 2010/75/EU; the standard considered "world's best practice". The technology uses a series of filters as well as lime and activated carbon injection to capture particles rather than releasing them through the exhaust stack. The technology has been able to demonstrate that emissions are consistently much lower than stringent statutory limits in European jurisdictions.

Todoroski Air Sciences have already conducted air quality impact modelling studies for the proposed site (see Appendix 6). Their study is based on the initial concept design and assumed air pollutants based on burning similar wastes. Exact site specific air dispersion modelling was applied to predict the ground-level concentrations of air pollutants and the sites' impacts were assessed against the relevant impact assessment criteria outlined in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.* The studies concluded that the initial project design and its related air emissions will have no discernible air quality constraints or local impacts (see Figure 8).

Concept Perspective - from South East above Lithgow St

5.3.4 Ash and Inert Residues

Some ash residues will be created during the WtE combustion process. Typically contained in the bottom ash will be metals and inert materials such as ceramics and glass. As mentioned previously in 2014 European WtE plants produced circa 18 million Tonnes of bottom ash:

- Composition of the bottom ash:
  - Mineral fraction: 80- 85%
  - Metals: 10-12% (steel and non-ferrous metals)
  - Non-ferrous metals: 2-5% (of which 2/3 is aluminium)
- GHG savings due to metal recycling: 2,000 kg of CO2 eq. per Tonne recycled metal and in total circa 3.2 million Tonnes of CO2 equivalent;
- Recovered 1.4 million Tonnes of iron;
- 20,000 and 17,000 Tonnes of aluminium were recovered from bottom ash in the Netherlands and in France. This metal was mainly used in castings for the automotive industry (engine blocks, etc.); and
- Use of the remaining ash, after metal recycling, for construction material.[3]

As much as possible these materials will be processed and supplied to the recycling market or used elsewhere (for example, bottom ash can be recycled into road base). Remaining residues (usually, only the ash residues from the actual emissions control unit) will be deposited in landfill.

5.3.5 Traffic Generation

Traffic generation has already been considered in the initial design phase. The site intentionally has two separate road entry and exit points, at opposite ends of the site, for the waste and a one-way heavy vehicle movement flow. This is

[3] CEWEP Bottom Ash Fact Sheet

another attractive feature of the site's location and layout and has the benefit of spreading vehicle movements across the local road network rather than focusing all movements to a single access/exit point. It will also allow for the further development of tailored disposal facilities specific to different waste streams.

The EIS process will include a comprehensive traffic study. It should be noted that in its former life as a fuel storage and distribution facility, the site handled multiple heavy truck movements and by virtue of its size, zoning and proximity to the rail line dealing with numerous truck movements would always be the case.

Concept Perspective - from South East above Lithgow St

5.3.6 Hours of Operation

The facility will operate 24 hours a day / 7 day per week - Waste deliveries to the facility (by road) will be predominately during daylight hours.

Concept Perspective - Railway siding from the North

6.0 SITE CHARACTERISTICS

6.1 LOCATION

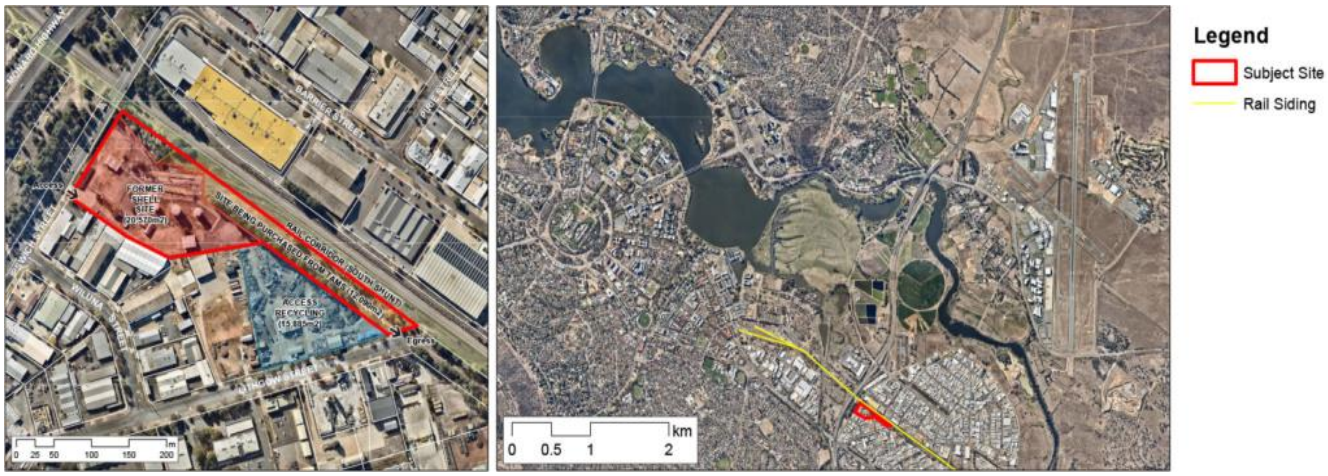
The proposed facility will be situated on the site of the former Shell Company petroleum wholesaling facility (Former Shell Site) at 16 Ipswich Street, Fyshwick. The subject site is divided over two blocks covering approximately 3.26ha. The block areas are as follows:

Shell Site	Block 9 Section 8 (20,572m²)	Owned by CRS
Lithgow St Access Site	Part Block 11 Section 8 (12,090m²)	Being acquired by CRS (due for completion 2nd quarter of 2017)

The site is located approximately 6km south-east of Canberra CBD, and 7km north of the Mugga Lane facility. Currently 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.

Rail access is also provided through the 'south shunt' which connects directly to the site along the northern border (see Figure 7). The 'south shunt' is asset managed by John Holland Rail on behalf of the NSW Government, the owner of the shunt and John Holland Rail has agreed to lease the entire 'south shunt' to CRS.

Figure 7 - Ariel view and Site overview



6.2 LAND USE AND SITE CONDITIONS

The subject site has been unused since 2010 when the Shell Co 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.

6.3 PLANNING CONTEXT

6.3.1 National Capital Plan

The National Capital Plan is the strategy and blueprint giving effect to the Commonwealth's interests and intentions for planning, designing and developing Canberra and the Territory. The subject site is located outside of the areas that require specific consideration under the National Capital Plan, however there are references in the Statement of Planning Principles and Land Use Controls Policies within the plan that have some relevance to this proposal:-

2.2.1 Objective one – Infrastructure and employment

Ensure that infrastructure supports the development of Canberra's National Capital functions.

2.2.2 Principles for Objective one – Infrastructure and employment

a. Infrastructure must support the effective functioning of Canberra with proper consideration of the environmental and visual impact and be integrated with land use decisions.

b. Infrastructure must be planned and provided in an integrated and timely manner to facilitate the development of Canberra and the Territory and ensure safety and security of supply and operation.

c. Energy and water supply and security issues will be given due consideration in the planning and development of any new infrastructure.

d. The infrastructure of Canberra and the Territory must be planned and provided to:

» ensure that public utilities infrastructure is available and maintained for Commonwealth and ACT Government needs and activities.

» minimise the visual impact of electricity and telecommunication facilities, particularly along major vistas, corridors and major open space.

» give due consideration to energy and water, supply and security issues.

» ensure safety and security of supply and operation.

The proposed site is in a dedicated industrial area of the ACT/Canberra. CRS proposes to give significant attention to aesthetics and community amenity in the exterior design of the facility. Consistent with many new constructions 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.

2.2.3 Objective two – Infrastructure and employment

Ensure that the location of employment supports the local economy and Canberra's National Capital role.

2.2.4 Principles for Objective two – Infrastructure and employment

a. The location of employment in Canberra and the Territory should enhance rather than detract from the city's role as the National Capital.

b. Major employment generating land uses will be located within Defined Activity Centres. Major employment location proposals must be determined with regard to their transportation and environmental impacts

There are significant employment opportunities with this proposal. More than 60 fulltime jobs, and at least 10 part time jobs, will be created in the two MRFs, container and rail handling, WtE plant, facility management, the research and education centre and associated activities (cleaners, gardeners etc.). Much of this is new employment, not a displacement of jobs from the current Mugga Lane landfilling activities. A diverse range of skills will be required, with training programs offered to fill technology positions not currently available within the Territory.

Further Section 3.3 Urban Areas makes a number of statements in relation to design and landuse considerations

"Canberra's secondary and service industries have been accommodated in industrial estates at Fyshwick, Mitchell, Hume and Bruce and in the area immediately west of Oaks Estate. The location of industry within estates, the placement of these estates where they contribute to overall transport efficiency, and the avoidance of haphazard industrial location throughout the Urban Areas, have contributed to the structure and character of Canberra's development. The National Capital Authority

supports the development of further industrial estates as a means of increasing the industrial base of Canberra's economy, and in doing so provide a greater diversity of employment opportunities"

3.5.3 Policies for employment location

a. Major employment generating land use should be located with the Defined Activity Centres as indicated… and listed below:

- *» Barton and Forrest*
- *» Belconnen Town Centre*
- *» Bruce*
- *» City*
- *» Canberra International Airport*
- *» **Fyshwick industrial area***
- *» Gungahlin Town Centre*
- *» Hume industrial area*
- *» Mitchell industrial area*
- *» Parkes*
- *» Russell*
- *» Tuggeranong Town Centre*
- *» West Deakin*
- *» Woden Town Centre.*

b. Any new major employment generating land uses should consider the transportation and environmental impacts of the location…

d. Industrial development should be located in the main industrial areas of Fyshwick, Mitchell and Hume and in the Fern Hill Technology Park at Bruce. The National Capital Authority will co-operate with the Territory planning authority to investigate and define appropriate areas for new industrial development.

6.3.2 Territory Plan

6.3.2.1 Land Use:

The subject site is zoned IZ2 Industrial Mixed Use under the Territory Plan. The immediate vicinity of the subject site is also zoned IZ2 except for the railway easement, which is zoned TSZ2 Transport and Services – Services. The table below shows the type of waste processing activities proposed for the subject site are considered appropriate in this zoning subject to a development application.

IZ2 – Industrial Mixed Use Zone Development Table

EXEMPT DEVELOPMENT Development approval is not required. Building approval may be required. On leased land, development must be authorised by a lease.
Development identified in the Planning and Development Act 2007 as exempt (see sections 133 and 134 of the Act and section 20 and schedule 1 of the Planning and Development Regulation 2008)
ASSESSABLE DEVELOPMENT Development application required. On leased land, development must be authorised by a lease.
MINIMUM ASSESSMENT TRACK **CODE** Development listed below requires a development application and is assessed in the code track
Development
Varying a lease to do one or more of the following: 1. express or change the number of approved or lawfully erected units 2. remove, relocate or change easements.

MINIMUM ASSESSMENT TRACK MERIT Development listed below requires a development application and is assessed in the merit track, unless specified in schedule 4 of the Planning and Development Act 2007 (as impact track) or specified as prohibited development in a precinct map.	
Development	
ancillary use	minor road
bulk landscape supplies	minor use
bulky goods retailing	municipal depot
car park	NON RETAIL COMMERCIAL USE
caretaker's residence	outdoor recreation facility
club	parkland
communications facility	pedestrian plaza
COMMUNITY 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 of a type identified in a precinct map as additional merit track development	scientific research establishment
drink establishment	service station
emergency services facility	SHOP
freight transport facility	sign
funeral parlour	store
general industry	subdivision
indoor entertainment facility	temporary use
indoor recreation facility	transport depot
industrial trades	varying a 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	**waste transfer station**

6.3.2.2 Fyshwick Precinct Code:

The subject site is located within RC2 of the Fyshwick Precinct Code. This code provides additional rules and criteria limiting SHOP floor area in the industrial mixed use zone. There are no provisions under the Fyshwick Precinct Code relevant to the subject site.

6.3.2.3 Industrial Zones Development Code:

The Industrial Zones Development Code applies to the subject site. There are several applicable rules and design criteria that will need to be addressed during the Development Application phase of the proposal.

6.3.3 EPA Act 1997

The proposed thermal oxidation of waste is identified in Schedule 1as a Class A activity in the EPA Act 1997 and therefore is subject to the provisions of Part 8 and will be subject to an Environmental Authorisation by the EPA

6.4 EXISTING CONDITIONS

6.4.1 Natural Conservation Value

The site is in a dedicated industrial area of the ACT/Canberra. This part of Fyshwick is unlikely to be important in maintaining existing processes or natural systems of the ACT; does not exhibit 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.

There are several mature non-native trees within the subject site; particularly along the railway. A small number of native trees and shrubs also appear to be located within the extent of the proposed facility. The rail siding is overgrown with weeds and grasses. The natural environment is considered highly modified and degraded.

As this site is already completely sealed and disturbed it is highly unlikely that there will be any accessible aboriginal relics.

6.4.2 Topography

The subject site is predominately flat. There is a slight slope of approximately 4m from the east to the west of the site. The slope of the site has largely been mitigated with the concrete coverage of the site. A man-made drainage lines runs parallel to the railway line.

6.4.3 Contamination

The publicly-available ACT Contaminated Sites Register currently does not list the subject site as contaminated. Given the previous use of the site as a petroleum facility CRS have already commenced minor remediation activities under the supervision of a Site Auditor.

6.5 NEIGHBOURS

Adjacent neighbours include a variety of retail stores, timber recycling yard and Access Recycling's scrap metal facility on Lithgow Street.

The subject site is adjoined by a scrap metal management facility operated by Access Recycling (1.58ha). It is intended to use part of the Access site for ancillary recycling activities in conjunction with the proposal. This would be for the further processing of, fines, metals, aggregates and glass wastes. The Access site has several retailers and other light industry neighbours adjoining to and in the precinct. The Access site is amidst a Mixed Industrial Z2 classification and the proposal is permissible subject to consent.

The nearest residential suburbs of Narrabundah and North Symonston are to the south of the subject site and their proximity has been considered in the emission modelling study (see Appendix 6). In terms of lineal distance the distance from the chimney stack to the nearest residence at the Canberra South Motor Park in North Symonston is approximately 560 metres. The nearest house in the suburb of Narrabundah is in Matina Street, approximately 820 metres from the chimney stack. As outlined earlier, a significant proportion of the capital cost of the WtE plant is directed to emissions control. In addition odour control technology will be installed in the facility to eliminate odours escaping from the buildings to ensure this will not be a concern for neighbours.

7.0 PRELIMINARY RISK ASSESSMENTS

The potential impact on the environment from this proposal is considered in two key phases, Construction and Operation. CRS has tabulated and assessed the environmental risks in the tables below for the purpose of EIS development.

CRS has predicted the risk analysis of any potential environmental impacts assessments and included some indications of mitigation measures to be included in our EIS detail.

It should be noted that in assessing the proposal, CRS has considered its former use as an old petroleum and distribution site (Shell) which would have had its own environmental risks, hazards and traffic generation capacity. The site has required some remediation which has already commenced. The proposed industrial activity is to be located in an established industrial precinct that is zoned specifically for these types' of activities. There is existing hardstand, kerb and gutter and sealed roads to and from the site. The railway sidings associated with this proposal have already been the subject of separate development application approval (DA No.201630668), on 7 April 2017, such that the environmental aspect of the intermodal aspect of the proposal has already been considered and determined.

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
1	Increase waste to landfill	Construction	Waste from construction and demolition of the old fuel facility structures. Environmental hazards associated with the disposal of some hazardous or contaminated materials	Likely	1ha	Minor	Previously disturbed area	Minimal	Low	The site is not registered as contaminated by the ACT Contaminated sites register. Some remedial work has already been undertaken – extent of remaining issues and methodology to be included in the EIS as there are remaining fuel handling structures to be demolished.
2	Construction Noise, Dust, Traffic and stormwater runoff	Construction	Noise, Construction traffic and stormwater management parameters and procedures	Almost certain	2ha	Minor	N/A	Minor	Medium	Construction planning, traffic management and hours of construction noise permissible will be agreed and enforced
3	Odour from the waste delivered and processed on site	Operational	Odours emanating from vehicles delivering waste to site and from recycling, processing and conversion to energy activities	Possible	Minor	Minor	N/A	Moderate	Medium	Onsite fugitive odours will be captured as all tipping and processing activities taking place **inside** new building. Use of rapid opening and closing doors and a negative air pressure environment inside new buildings. The smell of arriving vehicles from kerbside collections is the greatest risk

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
4	Hazardous Emissions emanating from the WtE Plant	Operational	The proposed WtE facility will utilise thermal combustion of non-recyclable residues to produce electricity. The fuel is oxidised into carbon dioxide and water and the gases are processed. Flue gas contains water, combustion gasses, oxygen and nitrogen. Emissions are controlled and managed by sophisticated emission control equipment that cleans and monitors emissions	Possible	Moderate	Specific event only	Moderate	Moderate	Medium	Utilisation of worlds-best-practice emissions control equipment. Auto shut down if there was failure of the Pollution control equipment Incorporate continuous live emission monitoring open for public review. If emission parameters fail outside specifications, plant shutdown effected immediately removing ongoing risk Emission standards will meet the strictest world standards Critical design and performance focus Refer Todoroski Emission modelling in Appendix 6
5	Untreated storm and waste water egressing from the site	Operational	In the event of a major weather disturbance would there be a chance that egress of stormwater to the environment occur.	Possible	Minor	Minor	N/A	Minor	Low	Site waste & stormwater Management system installed and hardstand designed to contain runoff. Water treatment plant, including first flush system, also installed. Waste materials stored and processed inside buildings not affected by weather. Wheel wash all vehicles before leaving site and capture residues

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
6	Plant based or spontaneous combustion fire impacting on surrounding land uses	Operational	Possibility of some type of fire at the proposed facility that could affect or spread to neighbouring properties	Possible	Minor	Minor	Low	Moderate	Medium	Design to incorporate details including:- - Site has some latent fire related infrastructure from the previous fuel facility use. - Automated fire deluge systems - Active human involvement systems - Fire extinguishers and hoses strategically located - Plant fire procedures in place - Emergency shutdown procedures in place - Fire services liaison and rail operator procedures - Building locations are as far as possible from adjoining buildings, large deluge tanks incorporated in the design. Site buffered to the East by recycling yards and to the North by the railway easement.
7	Noise from the operation of the facility and vehicle movements	Operational	Noise emanating from vehicles delivering waste and the operation of fixed and mobile plant	Possible	Minor	Minor	Minimal	Minor	Low	Waste arriving to site by truck predominantly between 7.00am and 5.00pm. Unloading and processing activities are within enclosed buildings and structures. Industrial zoned activities are neighbours – nearest residence is some 560m away screened by neighbouring industrial structures Analysis of any possible noise generating sources will be the subject of EIS analysis

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
8	Increased traffic from waste deliveries	Operational	Cars and trucks coming and going from the site will add to the local and regional traffic volume	Almost certain	Moderate	Major	N/A	High	High	Detailed traffic analysis to be done. The site was a former fuel distribution facility and has had significant truck movement activities in the past. Design incorporates separate access and egress point to distribute street loads and reduce conflict points.
9	Visual Impact of the facility on the surrounding streetscape	Operational	Unscreened facility may create eyesore if not designed with architectural merits considered	Unlikely	Low	Minor	N/A	Minimal	Low	Significant interest in the urban streetscape setting and the use of architects in the design process has already occurred. Integration is a critical part of the design with tallest structure to the centre and rear of the site. Objective to make it a showpiece. There is an elliptical electronic billboard at the top of the chimney to allow community messaging. A 'Fly-Around" video is available at our website
10	Generation of processed waste	Operational	Processed waste may pose a risk to the environment or human health if not managed correctly	Possible	Minor	Minor	Minimal	Minor	Low	Waste processing methodology will be part of the EIS. The method and time frames for storage and removal of materials from the site will be outlined. The use of the WtE thermal conversion will contribute significantly to the reduction of risk by volume management on site. Only small fraction of ash residues will require landfilling – significantly reduced volume and tonnage

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
11	Vermin and Pest control	Operational	Storage of feedstock would have the potential to attract vermin and pest animals if not managed	Possible	Minor	Minor	N/A	Minor	Low	Fully contained building with doors will assist in the management. Other processes will also be considered as part of ongoing management
12	WtE plant is hazardous to aircraft	Operational	Potential for stack/emissions to impact on aircraft	Remote	Moderate	Specific Event only	N/A	Minor	Very Low	Emission plumes and stack heights and their relationship with the operating envelopes for aircraft are subject to specific application to CASA and verified by survey. This application has been made although preliminary investigations and modelling are that there are no issues. This will be confirmed in the EIS. Stack height will be considered in the design and all necessary warning lights and beacons incorporated. Stacks are designed so that they have an elliptical electronic billboard for the purpose of appropriate and relevant community messaging. This feature will be further detailed in the EIS
13	Risk from Bushfire	Operational	Potential to be impacted by bushfire event	Remote	Minimal	Specific Event only	No bush and significant buffers	Minor	Negligible	Urban Industrial location with other buildings surrounding and no significant bush environment

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
14	Risk to Jerrabomberra Creek and Wetlands	Construction and Operation	Construction and Operation activities having any impact on the Jerrabomberra water systems	Remote	Minimal	Minimal	Minimal	Minimal	Negligible	Existing Industrial site with hardstand and stormwater and sewer connections. Site is buffered from the wetlands by the rail easement, Ipswich Street and the Monaro Highway which are both elevated above the site. Any emissions from the site will be established in the EIS and their relationship, if any, on the wetlands See appendix 6

8.0 PRELIMINARY COMMUNITY FEEDBACK SUMMARY

Newgate Communications has been employed by CRS and ActewAGL as communications consultants to this project. Their first task was to construct and then conduct independent Focus Group research into the community understanding of firstly, the waste environment in Canberra and secondly, the understanding of Waste to Energy as a potential solution for the some of the waste management issues for the ACT. We have included an extract of the Executive Summary from that preliminary Newgate research and have been using the findings in the assembly and shaping of our documentation since February 2017.

8.1 RESEARCH OBJECTIVES

This research was conducted to understand the ACT community's sentiment about a Waste to Energy (WtE) solution located in the ACT, and particularly for residents in suburbs close to a potential site in Fyshwick. The findings will be used to inform a public relations campaign and facility proposal to the ACT Government.

8.2 RESEARCH METHODOLOGY

Four focus groups were conducted in the ACT between Monday 27th February and Tuesday 28th February 2017, with 34 participants in total.

Three residential groups were conducted, segmented by location and including a good mix of participants by gender, age and life stage. One group was conducted with owners and managers of small and medium sized enterprises, this included a mix of sizes, locations and industries. The table below provides the segmentation details.

GROUP NO.	SEGMENT	SUBURBS INCLUDED	NO. OF PARTICIPANTS
Group 1	North of the lake	Residents in suburbs	9 north of Parkes Way
Group 2	South of the lake	Residents in suburbs	9 south of Parkes Way
Group 3	Local residents	Narrabundah, Griffith,	8 Kingston, Pialligo
Group 4	Businesses	Mix of industries across	8 Canberra
TOTAL			**34**

8.3 NEWGATE EXECUTIVE SUMMARY AND RECOMMENDATIONS

Perceptions of Waste Management in Canberra

Finding: Waste management is not a 'top of mind' issue and was not mentioned by any participant as an unprompted issue of concern. Canberrans see themselves as environmentally-minded and many were surprised to learn the ACT's record on waste generation and landfill does not reflect this self-perception. There is no awareness of Government waste management policy. All groups were at least somewhat concerned with Canberra's waste generation and management, and there was a consistent view that Canberra has insufficient emphasis on recycling and resources for recycling, and Government could do more to encourage or force better behaviour.

Recommendations: Latent concern about waste management practices could be leveraged to create acceptance and advocacy for more innovative solutions. Government could be more active in this process.

Attitudes to Waste to Energy in the ACT

Finding: Most participants had very little baseline knowledge about WtE. They were generally positive about WtE in theory, and some were quite excited by the technology. Most, though, felt they needed much more information about emissions in particular in order to feel comfortable with the technology, alongside a desire for more information regarding smells, environmental impact, and the cost to consumers and ACT taxpayers

Images and examples of facilities in other cities provided the most reassurance to participants around the safety and acceptability of the technology. The appearance of European facilities as 'landmark' buildings with architectural value represented a secondary attractor for some participants.

Recommendations: There is a strong appetite for information about emissions, pollution and human health risk. Responses to the WtE factsheet highlighted the need to ensure a strong level of detail around emissions and balanced communications about both the benefits and drawbacks of building a WtE facility in Canberra. The design and appearance of the WtE facility may be a useful factor in building positive perceptions. Further, there would need to be clarity around how regulation will work and how standards would be applied.

Preferred Location for WtE in the ACT

Finding: Mugga Lane was the preferred choice for most participants, largely owing to its current association with the tip and waste, and its distance from residential areas. The residents from Canberra's southern suburbs were the most opposed to the idea of a WtE at Ipswich Street near Canberra Avenue as it was felt to be too close to homes; none of them selected the Fyshwick sites for WtE. Other reasons advanced against Fyshwick in general included proximity to food production and sales points, the Lake and the Molonglo River. Trucks were also mentioned as a factor. Several of the business participants and residents from Canberra's northern suburbs selected the site at Ipswich Street near Canberra Avenue, however, because of its easy access to rail and its potential to promote Canberra as an 'innovation hub'. Some participants saw Hume as feasible, while Mitchell was seen as being too busy and close to people

Recommendations: Any project proceeding at the preferred Fyshwick location is likely to encounter significant local concern and will require an extensive community engagement program to manage reactions and the dissemination of factual information.

Most Compelling Messaging

Finding: The most compelling messages were: the WtE facility turns waste that would otherwise be buried in landfill into energy; the technology is used to produce electricity at around 400 sites in 22 European countries; and it would reduce both methane emissions from landfill and carbon emissions from coal-based electricity generation – thereby reducing the ACT's impact on global warming. The message least likely to make participants respond more positively was that the facility would help reduce traffic on ACT roads by shifting transport from the roads to existing rail infrastructure, followed by the messages that the WtE would reduce the ACT's dependence on interstate electricity supply and provide an opportunity to rejuvenate the ACT's rail links.

Recommendations: The community appears to be most open to WtE being framed as an environmental and energy solution, including the reduction of methane emissions, maximising space and preventing health issues from landfill. Successful case studies from international cities are likely to be effective in supporting WtE's claims to being a safe and efficient energy source.

Bringing in Waste from NSW

Finding: Importation of NSW waste was not in itself considered an issue - i.e. people were not concerned about being a 'waste dump' for other jurisdictions. Concern about bringing in waste focused on the use of heavy trucks to move waste and whether the need to transport waste would offset the gain in energy produced. Importation also raised some questions as to the relevance and longevity of the technology as a solution, if the ACT's own waste stream could not support the WtE facility's full operational capacity.

Recommendations: Costs and benefits of energy use / production and waste reduction will be important to understanding the case for a WtE plant in Canberra. The concern about heavy trucks is also one of the stronger arguments in favour of the proposed site with its rail access.

Awareness and Perception of Consortiums and Competitors

Finding: There was brand name recognition of several companies in this sector without participants knowing much about the companies' capability to set up WtE operations in the ACT. Some felt that the project could only be built with 'overseas expertise'. Others wanted to see some ACT involvement in ongoing operations. There was a general perception that Government would have to play some role in building, operating or regulating the facility

Recommendations: CRS is an appropriate brand name to lead communication on behalf of the project.

Sources of Information and Communications Preferences

Finding: Participants overall felt that academic and scientific sources of factual and technical information would be the most believable. They were mixed views as to whether governmental sources were believable, but on balance most felt they weren't. The private builders of a WtE facility were not generally seen as credible. CSIRO was among the organisations nominated as credible in all four focus groups. Preferences relating to communication channels depended mostly on participants' own usage, with the most frequent mentions for online and social media, television, radio and local newspapers.

Recommendations: CSIRO or other third-party scientific experts would be credible references for Information about WtE.

9.0 PROPOSAL OUTCOMES

9.1 OUTCOME 1: "Less Waste Generated"

Education is the key to achieving this. CRS will house an onsite education centre/classroom with a full-time coordinator. The coordinator's role will be to take neighbours, interested parties, schools and community groups for tours through the MRFs and WtE plants. 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 generation emission, odour and 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 and so, educating the young will truly bring about positive change.

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

9.2 OUTCOME 2: "Full Resource Recovery"

The CRS proposal will accelerate the diversion rate from landfill to over 90%.

A significant element of the project will be to build the C&I and MSW MRFs and associated infrastructure. It should be noted that the processed recycling of MSW waste is not widely done in Australia; this material is usually sent directly to Landfill. CRS is proposing to process and sort this waste stream and this is a unique effort to maximise the recycling and reuse effort as well as improve the efficiency of the energy production by removing inert and non- combustibles such as metals and glass. The sophisticated sorting equipment available today will utilise the latest in optical 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 participate in or influence that market, which is already functioning well in Canberra. It should be noted that 25,000 Tonnes of contaminated timber currently goes to the Mugga Lane landfill. Some of this material may have benefit in the production of energy at CRS and a discussion on diverting some of this waste to CRS needs to be had when the composition of this waste stream is understood better by CRS.

There are currently very high levels of source separation in Europe but regardless of their effectiveness, large quantities of metals are still not captured at the source or in recycling systems alone. A properly operated, modern WtE plant will capture these metals. For example, in 2014 European WtE plants produced circa 18 million Tonnes of bottom ash. The bottom ash contained approximately 15% ferrous and non-ferrous metals. There was enough iron recovered to build 26 cruise ships (1.4 million Tonnes of iron).[4]

CRS will be endeavouring to capture these types of products **before** they go into the WtE plant. It's worth understanding that even after the combustion process there are significant clean and sterilised recyclable products as outlined above plus ashes suited for asphalt production and roads.

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

A key factor in determining whether a particular commodity is commercially recyclable is cost. CRS will achieve economies of scale with the proposed MRF systems. Supporting this will be onsite baling and packing 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 Port Botany will be used (see further information below).

[4] CEWEP Bottom Ash Fact Sheet

Presently most of the low-value plastics #4-plastics #6 that are discarded in the ACT are sent to landfill. CRS believes that this material would be better utilised in the production of energy rather than in landfill.

9.3 OUTCOME 3: "A Clean Environment"

CRS's proposed technology is low risk, simple and proven with a zero-harm approach to environmental management. The vast majority of the 400+ WtE plants in Europe are built on the same technology platform as the CRS proposal. The proposed MRF systems can already be seen in Australia and the advanced versions that CRS proposes are being operated throughout Europe.

A significant proportion of the total WtE plant capital cost is directed towards emissions control as this is usually the subject of initial community concern. The CRS proposed plants will be compliant with European Industrial Emissions Directive 2010/75/EU for WtE plants, the strictest standards in the world. **Just like most European plants, a live-feed website will display emissions data in continuous real time for the community to observe and monitor**. Regular community open-days will be held, in addition to the permanently opened visitor's centre and CRS will also establish a community monitoring committee with local residents and Government as stakeholders. CRS has already commissioned a report on potential plant emissions based on twin 32m high chimney stacks. Figure 8 shows the projected emissions by the proposed technology as compared to existing Australian and the toughest European standards. **The CRS proposal readily meets all accepted standards.**

Figure 8 – Two Stack Emission Concentrations (mg/m3)[5]

Pollutant	Modelled stack emission concentration	NSW POEO Limit(1)	EU WID Limit (2)	EU IED Limit (3)	Proposed US CFR (4)	Proposal complies with strictest standard
CO	20.9	125	50	50	196	Yes
NOX	185.8	500	200	200	729	Yes
SOX	5.6	-	50 (SO2)	50 (SO2)	52	Yes
Hg	0.0015	0.2	0.05	0.05	0.5	Yes
Dioxins & Furans	4.0x10-10	1.0x10-7	1.0 x 10-7	1.0x10-7	4.1x10-7	Yes
HCL	5.8	100	10	10	92	Yes
HF	0.05	50	1	1	-	Yes
PM10	2.6	50	10	10	18	Yes

(1) Protection of the Environment Operations (Clean Air) Regulation 2010 – Group 6 [POEO]

(2) European Union Waste Incineration Directive 2000/76/EC – Air Emission Limit Values

(3) European Union Industrial Emissions Directive 2010/75/EU – Air Emission Daily Limit Values

(4) Proposed new rules, January 2017, United States Environmental Protection Agency 40 CFR Part 62 (2017)

It should be noted that the European emission standards are the most stringent in the world and this proposal will adopt those standards. These WtE processing facilities are successfully operating in high density urban environments across Europe and these modern plants, built to EU standards, are widely accepted to be clean and safe to live alongside. For example Figure 9 shows the inner city proximity of three WtE facilities in Paris all of which are at least twice the size than the plant CRS is proposing. Each of these plants are within 5 km of the centre of Paris and some 3-4 km from some of its historic landmarks (Eiffel Tower, Sacre Coeur and the Bastille).

[5] Todoroski Air Sciences Jan 2017

Figure 9 - WtE Plants in the middle of Paris

9.4 OUTCOME 4: "Carbon Neutral Waste Sector"

The reduction of GHG is a central benefit of the CRS proposal. It is already accepted that thermal treatment of wastes can have a greater than 25 times reduction in the volume of GHG as compared to Landfill GHG emissions. The proposed recycling and WtE treatment process is targeting the unrecycled proportion of ACT's waste stream that goes directly to landfill. WtE is an already accepted and proven part of the waste solution AND reduces directly the volume of GHG by diverting waste away from landfill and its fugitive methane production. This will leave landfill in the ACT only for inert or a small % of hazardous/dangerous materials that have no thermal capacity. The second direct benefit is the reduction in heavy truck transport on the road by use of rail. Thirdly the energy produced by the WtE facility will decrease the reliance on fossil fuel created energy which currently constitutes some 80% of the ACT's current imported power usage.

On average, the U.S. EPA has determined that WtE facilities reduce GHG emissions by one ton of CO2 equivalents (CO2e) for every ton of MSW diverted from landfill and processed.[6]

CRS and AAR are currently 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, as well as how there two renewable sources can best work together at the facility.

If desired by the community CRS is prepared to incorporate an innovative laser billboard on its chimney stacks to be able deliver to the community specific messaging but also to record and display to the public every time a Tonne of GHG has been avoided by not going to landfill.

9.5 IMPROVED SOCIAL OUTCOMES

The facility will create direct employment for more than 60 fulltime jobs and at least 10 part time jobs with a commitment by CRS to provide several positions to disadvantaged community members.

The establishment of the WtE component will provide network support and result in relatively lower network charges to the residents of the ACT.

The increased use of rail for freight purposes minimises road congestion and the associated GHG emissions.

9.6 VALUE FOR MONEY

As an entirely privately funded project, the proposal represents strong value for money; the only commitment, apart from some regulatory changes by the ACT Government, would be for waste collection trucks to be redirected to the proposed site at Fyshwick rather than the Mugga Lane landfill.

Of the proposal's approximate construction value of some $200 million, a significant portion will flow into the local economy during the construction period, while the operations of the facility will provide ongoing employment opportunities. In addition, the Proposal establishes a commercial rail freight terminal, enabling waste management opportunities beyond the ACT borders and creates a platform for waste innovation.

To support the WtE component of the Proposal, CRS would be seeking a feed-in-tariff from the ACT Government in the range of the previously awarded large-scale renewable auctions and as outlined in the Market Sounding, $79-$186/MWhr.

[6] Energy Recovery Council, 2016 Directory of Waste to Energy facilities, p8.

10.0 UNIQUE OPPORTUNITIES FOR THE ACT GOVERNMENT

10.1 INDEPENDENTLY OWNED, WELL LOCATED SITE

The site CRS has selected is centrally located and ideal for the proposal. Fyshwick is the only potential site that can integrate rail and waste management as well as provide a regional solution without increasing traffic on the greater road network. **CRS does not require the ACT Government to give up land to facilitate a solution** as CRS is already the owner of this land.

10.2 LOCALLY SUPPORTED

CRS are currently in advanced discussions with AAR regarding an equity partnership and Infrastructure support. The attached letter of support (See Appendix 3) shows that AAR is keenly interested in becoming a joint venture equity partner in the WtE plants. Discussions thus far have been centred on AAR acquiring a 50% share in the proposed WtE component of the project and marketing the renewable energy outputs; while facilitating discussions with AAD to connect the facility to the power grid. CRS and AAR have entered into a MOU to formalise these arrangements.

The Proposal has also received support from Icon Water and the QPRC (see Appendices 4 and 5).

10.3 REJUVNATION OF RAILWAY FREIGHT

Access Recycling operates Canberra's largest metal recycling facility, adjacent to the CRS site.

Running along one side of both sites is the disused 'south shunt' railway siding. In November 2014 Access signed a license agreement with John Holland Rail and Transport for NSW to lease the Kingston Rail Terminal (Canberra's only railway freight terminal) for a two-year period. In March 2015 Access began operating a weekly rail 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 removed six B-Double trucks from the roads. The rail service continued every week, carrying between 50 and 60 shipping containers of recycled metal to Port Botany, from where it was exported to steel mills in South East Asia. In March this year the service was suspended, due to ongoing problems with the condition of the hardstand at the Kingston Terminal.

It was not originally constructed for this purpose and could not support the weight of the large container-handling forklifts. Ahead of suspending the service, work began to relocate the freight terminal to Fyshwick and resume the weekly rail service. An application was made through the Direct-Sale of Land process to purchase a disused parcel of land between the Access Recycling depot and the rail corridor. The application recently received Ministerial Approval to proceed, subject as it was to a development application which has since been approved. It is expected that Access Recycling/CRS will again have an operational rail terminal and then the Port Botany rail service will resume by the end of 2017.

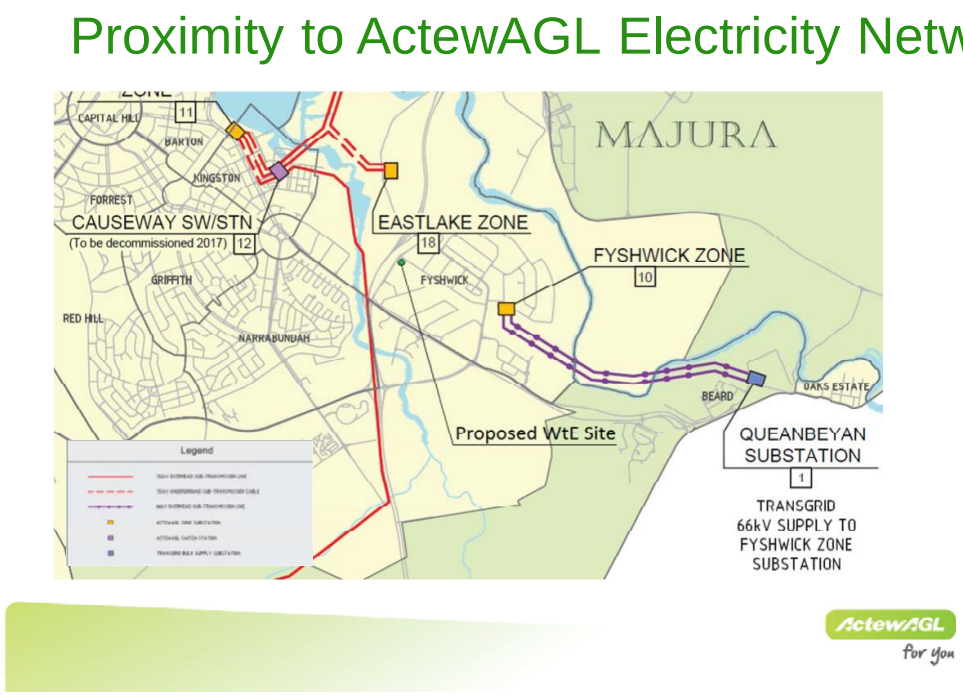
10.4 FURTHER REDUCED LANDFILL DEPENDANCE

Finally, should the mooted waste levy in combination with a recycling landfill ban be enacted, it will no doubt have a significant impact on Canberra's resource recovery rates of C&I waste (currently at 27%). However, it is important to note that even in regions where landfill/levy costs are the highest (for example, in Sydney), that virtually all C&I residues are still deposited to landfill. This is because less than 30% of C&I waste is commercially recyclable and the remainder is suitable only for RDF or landfill. Since WtE is not yet being conducted in NSW all of these resources are still being sent to landfill (ironically much of it to Queensland landfills). CRS will be able to receive residues from other Canberra C&I MRF operators for further resource recovery and then ultimately for conversion of the non-recyclable residues into sustainable base-load electricity for the Territory.

10.5 INCREASED LOCALISED ELECTRICITY GENERATION

We are currently in discussions with AAD regarding the logistics of a local grid connection. As confirmed by AAD, the facility is well located within AAD's electricity network given its close proximity to both the Eastlake and Fyshwick zone substation as illustrated at Figure 10. AAD have confirmed that this will reduce future associated transmission network augmentation capital expenditure with avoidance of associated cost increases for their network customers. The production of reliable, non-intermittent and network embedded generation will also reduce associated transmission losses within the electricity network. A reduction of distribution losses will also occur on the Fyshwick zone network which will reduce the average system distribution loss factor that AAD applies to its network charges over time as confirmed by AAD.

Figure 10 - Proximity to ActewAGL Electricity Network



10.6 COMMITTED COMMUNITY PARTNER

CRS have undertaken some independent preliminary research on Canberra community sentiment about waste management in the ACT and WtE technology that will form a broader community consultation process to be conducted at the most appropriate time. This research included focus groups that contained both local ACT residents and businesses. Newgate Communications, a strategic communications and stakeholder engagement firm, has been engaged to advise on the most effective community consultation.

CRS propose to conduct ongoing meetings, site tours and information sessions to explain to the surrounding community and other relevant groups, the benefits and advanced technology proposed.

CRS has now developed an information website that describes the project and has a "fly around" view of the proposed facility. The website is also a portal for community feedback on an ongoing basis and allows anyone to communicate directly with representatives of CRS. See us at: www.capitalrecyclingsolutions.com.au.

As already mentioned, once commissioned, the project will have continuous real time target emissions monitoring available to the public to give confidence that the ongoing operations meets the strictest of emission targets.

A detailed consultation plan will be developed as part of the EIS process, and will utilise several mediums to engage the community and interest groups.

11.0 CONCLUSION

Through adherence to the guiding principles of the ACT Waste Feasibility Study, and by meeting the strategic objectives set out in the ACT Waste Management Strategy 2011-2025 CRS contends that its proposal is in the public interest. The investment in the project will ultimately exceed some $200 million dollars and provide some 60 new fulltime jobs and 10-part time jobs at the facility. Furthermore, the CRS proposal will contribute to the diversification of the ACT's economic base and increase the ACT's self-reliance for waste management and energy generation. This proposal will have a sustained, positive impact on the Canberra Community, the environment and the economy, as well as neighbouring regional areas through providing the potential for cross border solutions to waste management practices utilising the rail infrastructure.

We have identified a number of technical areas in our preliminary environmental risk which we will address fully in our EIS document. These and the primary focus group feedback has already given us direction to further develop our thinking and the detail of our EIS response.

The CRS proposal removes the need for ongoing capital expenditure by the ACT Government to provide for MSW and C&I disposal, and will not entail additional costs to that already committed under the current waste management regime. The development of the facility will be privately funded and use of this private capital expenditure will ameliorate financial risk for the Territory. Given the above benefits to the ACT community, the environment and achievement of the ACT Waste Management Strategy 2011-2025 targets, with no additional cost to that already committed by the ACT Government for waste management, it is contended that the CRS proposal represents value for money to the Territory.

The facility is well located within AAD's electricity network given close proximity to both the Fyshwick and Eastlake zone substations which will reduce future associated transmission network augmentation capital expenditure with avoidance of associated cost increases for their network customers. The production of reliable, non-intermittent and network imbedded generation will also reduce associated transmission and distribution losses within the electricity network as confirmed by AAD.

CRS offers this Scoping application as the first step in the EIS process. We consider this proposal to be an integral and well considered solution to a number of the environmental (waste and energy) opportunities the ACT has identified.

APPENDIX 1 – FREQUENTLY ASKED QUESTIONS - WtE

There are numerous examples of these types of WtE facilities throughout the world and have been operating for more than 30 years at various scales. There are many questions about the technology and processes involved within the industry, by virtue of its vast experience, there are many websites that answer in plain English many of the common concern questions are abbreviated and para-phrased below. We would encourage you to visit www.cewep.eu which contains many answers to WtE questions :-

WHAT IS WASTE-TO-ENERGY?

Waste-to-Energy plants burn household and similar waste that remains after waste prevention and recycling. From this waste the plants generate energy. This can be in the form of steam, electricity or hot water. The electricity is fed into the grid and distributed to the end-users, the hot water, depending on local infrastructure can be sent to a nearby district heating (or cooling) network to heat (or cool) homes, hospitals, offices etc., and the steam can be used by the nearby industry in their production processes.

Waste-to-Energy is a hygienic method of treating waste, reducing its volume by about 90%. In a Waste-to-Energy plant apart from the waste itself no additional fuel is needed to maintain the combustion process. Additional fuel is only used for the start-up and shut down phases.

Modern Waste-to-Energy plants are clean and safe, meeting the most strict emission limit values placed on any industry set out in the European Waste Incineration Directive.

WHAT IS THE ROLE OF WASTE-TO-ENERGY?

Waste-to-Energy fulfils several different yet important roles:

Firstly, it helps reach the targets set in the EU Landfill Directive that aims to reduce the amount of biodegradable waste being landfilled. The deadline for reducing landfilling by 50% was in July 2009[7] and European Member States that miss these targets face hefty fines.

By treating household and similar waste that remains after waste prevention and recycling Waste-to-Energy plants help avoid the methane, a very potent greenhouse gas (GHG), which would have been created if the waste was landfilled.

Waste-to-Energy and Recycling are complementary waste treatment methods. Household and similar waste should be sorted at source and the clean materials should be sent to high quality recycling. The remaining waste, that cannot be recycled in a technically or economically viable way, should be used to generate energy. In order to divert waste from landfill both Recycling and Waste-to-Energy should be part of a "joined up thinking" approach to sustainable waste management.

The energy produced in Waste-to-Energy plants also contributes to climate protection and security of energy supply, by replacing fossil fuels that would have been used to produce this energy in conventional power plants.

A significant part of the waste treated in Waste-to-Energy plants is biogenic – biomass – which means that about half of the energy produced by Waste-to-Energy plants is renewable energy. This is also the case when bio-waste is separated at source, as there is still a significant amount of biogenic waste which is too polluted for high quality composting.

[7] Member States who landfilled more than 80% of their municipal waste in 1995 could apply for derogation on the application of the Landfill Directive by up to 4 years: Bulgaria, Czech Republic, Estonia, Ireland Latvia, Lithuania, Poland, Romania, Slovakia and the United Kingdom. For these Member States the deadlines are 50% by 2013 and 65% by 2020.

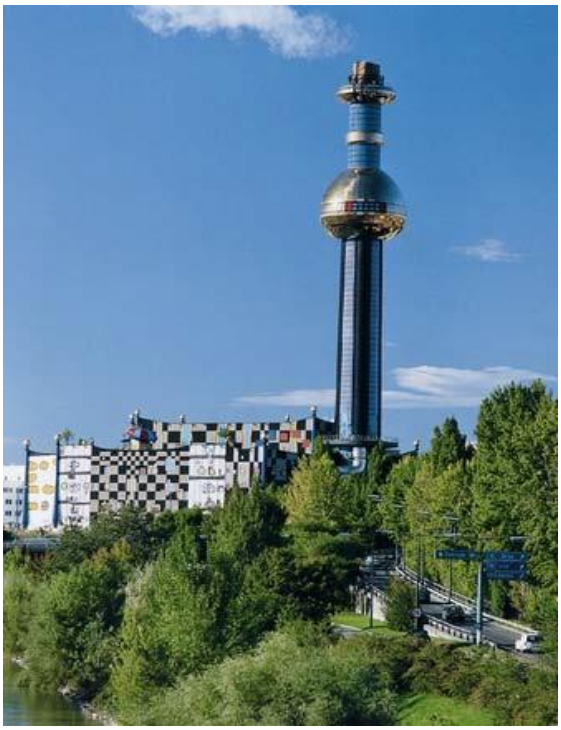
WHAT ABOUT THE HEALTH OF PEOPLE LIVING NEAR THESE PLANTS?

The Waste-to-Energy industry has made huge strides over the last 20 years to reduce emissions. This progress has been further driven by the introduction of the European Waste Incineration Directive (WID) in 2000 and its latest version in 2010 which sets the stringent emission limit values that plants now achieve. It is worth noting that these emission limits are the strictest placed on any industry.

We would like to put peoples' minds at rest that it has been proven to be safe to live near modern Waste-to-Energy plants, please see www.cewep.eu/information/publicationsandstudies/studies/healthandenvironment/index.htm for a list of studies by eminent scientists and national environment agencies and ministries from across Europe. They all confirm that it is safe to live near a modern, well run Waste-to-Energy plant operating Best Available Techniques eippcb.jrc.ec.europa.eu/reference/wi.html.

One famous example of a Waste-to-Energy plant is in the centre of Vienna – called Spittelau. This plant is so well known as a landmark in the city that it attracts tourists from around the world in its own right. The Spittelau plant (see Figure 11) provides the nearby hospital with heating and cooling.

Figure 11 - Spittelau, Vienna



HOW DO PLANTS PREVENT EMISSIONS?

Municipal waste – household and similar waste, such as office waste – is made up of many different substances, which often contains pollutants. When these materials are burnt in Waste-to-Energy plants they are released from the waste in a controlled way.

The flue-gas cleaning system is one of the most important parts of a Waste-to-Energy plant, as it enables the plant to guarantee the very low emissions that are achieved today. It is a complex set of chemical reactions which aim to neutralise and minimise the emissions.

The residues from the flue gas cleaning system are captured using advanced and proven technology, and different Waste-to-Energy plants have different designs to clean the flue-gases.

During the combustion process, hot flue gases are released in the furnace and their heat is transferred to water inside the boiler tubes which produces steam for energy generation.

The gases then enter the flue gas cleaning system, and are cleaned in a number of stages:

- Dust is caught and separated
- Heavy metals are extracted
- Sulphur is removed
- Acid components of the flue gases are removed
- Organic pollutants, such as dioxin are destroyed

Please follow this link to an animation on how a Waste-to-Energy plant works www.cewep.eu/information/whatiswastetoenergy/wtefaq/index.html.

The flue gas cleaning system represents a significant part of a plant and it accounts for up to 50% of the construction costs of a Waste-to-Energy plant.

The emissions are very closely monitored in every Waste-to-Energy plant and centralised in the control room. Several plants even have this information live on their web-site so that neighbours living close to the plant can see that the emissions are as low as possible. For an example of a live monitoring see www.isvag.be/meetkamer.

WHAT HAPPENS TO THE ASHES? WHERE DO THEY GO?

The residual waste treated in Waste-to-Energy plants is burned under controlled conditions, reducing the volume of the waste by about 90% and producing certain ashes.

In a plant the bottom ash is collected at the end of the furnace's grate. It consists of non-combustible materials, and is the residual part from the incineration of waste. Even if the waste was sorted beforehand, there are metals found in it both ferrous and non-ferrous and they can be taken out of the bottom ash and recycled. After taking the metals out, the rest is ashes which are like gravely sand. This is stockpiled before being used in road construction or as a covering layer on landfill sites in certain jurisdictions.

The ash residues from the flue gas cleaning system amount only to 3-4% of the mass of the waste entering the plant. These residues are collected after the filtration process and are carefully stored to ensure no escape of the material into the local environment. The material is then transported in sealed containers to landfill sites.

WHAT ABOUT CLIMATE PROTECTION?

By thermally treating household and similar waste that remains after waste prevention and recycling in an efficient Waste-to-Energy plant, they reduce both methane emissions (a potent greenhouse gas 25 times more significant in mass to global warming than carbon dioxide CO2) from landfilling and CO2 emissions that would have been produced if the amount of energy was generated in conventional power plants.

The Intergovernmental Panel on Climate Change (IPCC) says that "GHG generation can be largely avoided through controlled aerobic composting and thermal processes such as incineration for waste-to-energy." And "Compared to landfilling, waste incineration and other thermal processes avoid most GHG generation, resulting only in minor emissions of CO2 from fossil C sources."

Considering the benefits of the avoided GHG emissions from landfills and conventional power plants, and taking into account the credits for metal recycling from bottom ash, from a Life Cycle perspective WtE is a solution that provides protects the climate.

WHAT ABOUT THE ENERGY PRODUCED IN WASTE-TO-ENERGY PLANTS – IS IT RENEWABLE?

Waste-to-Energy technology is one of the most robust and effective alternative energy options to reduce CO2 emissions and to save limited fossil fuel resources used by traditional power plants.

Currently, **Waste-to-Energy Plants in Europe can supply 17 million inhabitants with electricity and 15 million inhabitants with heat. This is based on 88 million Tonnes of remaining household and similar waste that was treated in 2014 in Europe.**

Depending on the fuel you replace – gas, oil, hard coal or lignite – between 9 – 48 million Tonnes of fossil fuels emitting 24 – 48 million Tonnes of CO2, would not need to be used by conventional power plants to produce this amount of energy.

Per EU legislation the biodegradable fraction of municipal and industrial waste is considered biomass, thus a renewable energy source. The energy output from Waste-to-Energy plants is about 50% renewable.

Waste-to-Energy plants in Europe supply a considerable amount of renewable energy, some 38 billion kilowatt-hours in 2006, and by 2020 this amount will grow to at least 67 billion kilowatt-hours, but potentially reach 98 billion kilowatt-hours. This will be, in the latter case, enough to supply 22.9 million inhabitants with renewable electricity and 12.1 million inhabitants with renewable heat. However, to achieve the latter, a more ambitious waste policy must be delivered in Europe, i.e**. replacing landfilling through a combination of recycling (60%) and Waste-to-Energy (40%),** as well as increasing energy efficiency through improved infrastructure for heating and cooling, and better grid access for energy from Waste-to-Energy plants.

If non pre-treated waste is not landfilled anymore and recycled, and efficient energy recovery (Waste-to-Energy) is increased, then around 114 million Tonnes CO2 equivalents could be avoided by 2020 in EU-27.[8] This calculation is based on household and similar waste, but if commercial waste is considered then the amount of avoided CO2 equivalents would be even higher.

WHAT ABOUT RECYCLING?

Waste-to-Energy has a positive influence on recycling rates. It is well known that the European Member States that have the highest rates of recycling also include Waste-to-Energy as an integral part of their waste management systems, and have lower rates of landfilling. Consequently, Member States with lower rates of recycling tend to have less Waste-to-Energy treatment and higher rates of landfilling. (Refer Figure 3)

As much waste as possible should be recycled. However, the quality of the sorted waste going to recycling should be such so that no dirty or polluted waste re-enters the new recycled material. The remaining waste which cannot be recycled in an environmentally or economically feasible way should be sent to Waste-to-Energy plants where its energy content can be used.

Even the most progressive European countries cannot recycle all their waste. Austria, Germany and Belgium are among those who recycle the most – more than 55% of their municipal waste – and they send their residual waste to Waste-to-Energy plants. Only a small fraction of their waste is landfilled.

It is worth bearing in mind that residues from recycling processes often also need to be thermally treated.

For extended answers and additional FAQ's go to www.cewep.eu/information/whatiswastetoenergy.

[8] Study by ifeu/Öko-Institut on behalf of UBA/BMU/BDE, „Klimaschutzpotentiale der Abfallwirtschaft", January 2010

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APPENDIX 2 – ABBREVIATIONS

ActewAGL Distribution	AAD
ActewAGL Retail	AAR
Act Planning & Development Act 2007	PDA
ACT Planning & Development Regulations 2008	PRD
Capital Recycling Solutions Pty Ltd	CRS
Clean Energy Finance Corporation	CEFC
Confederation of European Waste-to-Energy Plants	CEWEP
Construction & Demolition Waste	C&D
Commercial and Industrial Waste	C&I
Environmental Impact Study	EIS
Greenhouse Gas	GHG
Intergovernmental Panel on Climate Change	IPCC
Material Recovery Facility	MRF
Medical and Clinical Waste	M&C
Municipal Solid Waste	MSW
Queanbeyan-Palerang Regional Council	QPRC
Refuse Derived Fuel	RDF
Transport Canberra and City Services	TCCS
Waste to Energy	WtE
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

APPENDIX 3 – LETTER OF SUPPORT ActewAGL

ActewAGL for you

Mr Ernest Dupere
Director
Capital Recycling Solutions Pty Ltd
16 Ipswich Street
Fyshwick ACT 2609

11 April 2017

Dear Ernest

Canberra Waste to Energy Project

This letter is to demonstrate ActewAGL's support of Capital Recycling Solutions Pty Ltd (CRS) in their response to the ACT Government Market Sounding on Waste No. 38532-01 and their proposal to establish a Waste to Energy (WtE) Facility at their Fyshwick site in Canberra.

The proposed WtE solution would deliver a number of mutually beneficial outcomes for both CRS and ActewAGL. From ActewAGL's perspective, the provision of a local, sustainable, reliable and a cost effective energy supply for the ACT closely aligns with ActewAGL's key objective of providing municipal and community utility solutions as well as broader energy related customer solutions to the people of the ACT as well as the ACT Government. Specifically these benefits may include but are not limited to:

- Provide embedded renewable baseload generation that provides grid support and reduces associated transmission and distribution losses within the electricity network;
- Reduced transmission network augmentation capital expenditure with avoidance of associated cost increases for our network customers as the facility is well located within our electricity network given its close proximity to the Fyshwick and Eastlake zone substations; and
- In the absence of any feed-in-tariff entitlements from the ACT Government, ActewAGL Retail (AAR) is well placed to facilitate a commercially viable power purchase agreement for the renewable energy output.

Importantly, ActewAGL believes the facility assists the ACT Government in achieving their Waste Management Strategy which has the goal of innovation to achieve full resource recovery and a carbon-neutral waste sector as well as their commitment to 100 per cent renewable energy by 2020.

AAR have developed a Memorandum of Understanding (MoU) with CRS to develop the WtE component of the proposed waste facility which AAR is proposing to take a 50% ownership interest in.

We look forward to continuing our discussions with CRS as their proposal for a WtE facility in the ACT progresses.

Yours sincerely

Michael Costello

Chief Executive Officer

ActewAGL

ActewAGL House 40 Bunda Street Canberra ACT 2600 I GPO Box 366 Canberra ACT 2601
t 13 14 93 I e assist@actewagl.com.au I actewagl.com.au

APPENDIX 4 – LETTER OF SUPPORT Icon Water

icon WATER

10 April 2017

Mr Michael Costello
Chief Executive Officer
ActewAGL
40 Bunda Street
Canberra ACT 2600

Dear Michael

Canberra Waste to Energy Project

This letter is to convey Icon Water's support of the ActewAGL Retail (AAR), and its partner Capital Recycling Solutions (CRS), proposal to develop an advanced waste management facility in the Australian Capital Territory (ACT) as outlined in their response to the ACT Government Market Sounding on Waste No. 38532-01.

Icon Water has had the opportunity to meet with AAR to discuss the proposed waste management solution and understand the key components including the generation of energy from the non-recyclable residues, bringing Waste to Energy (WtE) technology to the ACT.

We are interested in exploring ways to improve the sustainable management of waste streams produced by our operations. This includes both biosolids and alum sludge produced by our two water treatment plants (WTP) and three sewerage treatment plants (STP), and the opportunities to divert these waste streams from landfill.

We look forward to continuing our discussions with AAR with respect to their proposal for a WtE facility in the ACT to determine how Icon Water may best participate in this proposed solution.

Yours sincerely

John Knox
Managing Director

Level 5, 40 Bunda Street, Canberra ACT 2600
GPO Box 366 Canberra ACT 2601
iconwater.com.au

Icon Water Limited
ABN 86 069 381 960

APPENDIX 5 – LETTER OF SUPPORT Queanbeyan-Palerang Regional Council

QPRC
Queanbeyan-Palerang Regional Council

SF080250
C1750135

10 April 2017

Mr Michael Costello
Chief Executive Officer
ActewAGL
40 Bunda Street
CANBERRA ACT 2600

Dear Michael

Canberra Waste to Energy Project

This letter is to demonstrate Queanbeyan-Palerang Regional Council's (QPRC) support of ActewAGL Retail (AAR) and its partner Capital Recycling Solutions (CRS) in their response to the ACT Government Market Sounding on Waste No. 38532-01 and their proposal to develop an advanced waste management facility in the ACT.

The ACT Government and QPRC have recently signed a Letter of Intent to optimise "Best of Region" outcomes across a number of key priority areas which includes collaboration on policy and planning opportunities on waste management on a regional scale. This Letter of Intent formalises a relationship underpinned by the NSW / ACT Memorandum of Understanding (MOU) for regional collaboration whereby both governments have committed to strengthen collaboration between the two jurisdictions to improve service delivery and resource management, while also promoting economic development across borders.

To date, QPRC have held high level discussions with both AAR and CRS to understand the key components of the proposed waste management solution being put forward in their response; which includes the generation of energy from non-recyclable residues (Waste to Energy or WtE). We note the potential cross border waste management solutions that the proposal would provide, in particular utilising the existing rail infrastructure which may provide an opportunity to reduce waste transportation costs for QPRC.

General Manager's Office 253 Crawford St, Queanbeyan, PO Box 90 Queanbeyan NSW 2620, Tel. 02 6285 6223,
Email council@qprc.nsw.gov.au Internet www.qprc.nsw.gov.au

QPR
Queanbeyart-Palerang RegionalCouncil

2.

The QPRC sewerage treatment plant (STP) is approximately 80 years old and operating at full capacity with approximately 16,500 m3 of bio solids on site, with an aooual production of around 992 tonnes of dry waste. Bio soids are handled on site and converted into dry waste which could be a potential waste stream for the WIE facility being proposed; and potentially reduce current operating costs for the SW. Importantly, QPRC and Icon Water are now jointly investigating a "Best of Region" sewerage management solution for the Queanbeyao-Palerang and ACT Govenvnent areas.

We look forward to continuing our discussions with both *AA:R* and CRS as their proposal for a WIE facility in the ACT progresses to determine how QPRC may best participate in this proposed solution.

Yours sincerely

Peter Tegart
General Manager
Queanbeyan-Palerang Regional Council

General MaNger$ 0ll'JCll! 2S3 CDwltlnl St, Olleanbe)Qn. PO BoX 90 Olleanbepn NSW 2620, Tel. .02628562:23,
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APPENDIX 6 – EMISSIONS MODELLING REPORT Todoroski Air Sciences

TODOROSKI AIR SCIENCES
Suite 2B, 14 Glen Street
Eastwood NSW 2122
Phone: (02) 9874 2123
Fax: (02) 9874 2125
Email: info@airsciences.com.au
Web: www.airsciences.com.au
ACN: 151 202 765 | ABN: 74 955 076 914

11 April 2017

Ernest Dupere
Director
Benedict Industries
Via email: ernest@benedict.com.au

RE: Preliminary Air Quality Study – Capital Recycling Solutions

Dear Ernest,
Todoroski Air Sciences have investigated the potential for air quality impacts associated with the proposed Capital Recycling Solutions facility located at 16 Ipswich Street, Fyshwick Australian Capital Territory (ACT) (hereafter referred to as the Project).

This study has been based on the initial concept design of the Project and assumed air pollutants based on the information provided. It applies air dispersion modelling to predict the ground-level concentrations of the air pollutants and is assessed against the relevant impact assessment criteria as outlined in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**New South Wales (NSW) Environment Protection Authority (EPA), 2017**).

Project setting and background
Capital Recycling Solutions are proposing to construct and operate a waste-to-energy facility at 16 Ipswich Street, Fyshwick ACT (see **Figure 1**). The site is located in an existing industrial precinct with the Monaro Highway nearby to the northwest. The nearest identified sensitive receptor zones to the Project site are located approximately 0.5 kilometres (km) to the south and 0.7km to the southwest.

The proposed activity at the site would essentially involve receiving waste materials for processing and sorting. Suitable materials received at the facility would be converted to energy via thermal means with the process likely to generate combustion air pollutants which would be treated and exhausted to the atmosphere via two separate stacks.

The exhaust stacks would be positioned approximately 5 metres (m) apart and extend to a height of up to 32m to provide for clearance above the buildings on site. The approximate location of the exhaust stacks are shown in **Figure 1**. The air pollutants emitted via these exhaust stacks are the focus of this study. The final stack configuration would be dependent on the final Project design.

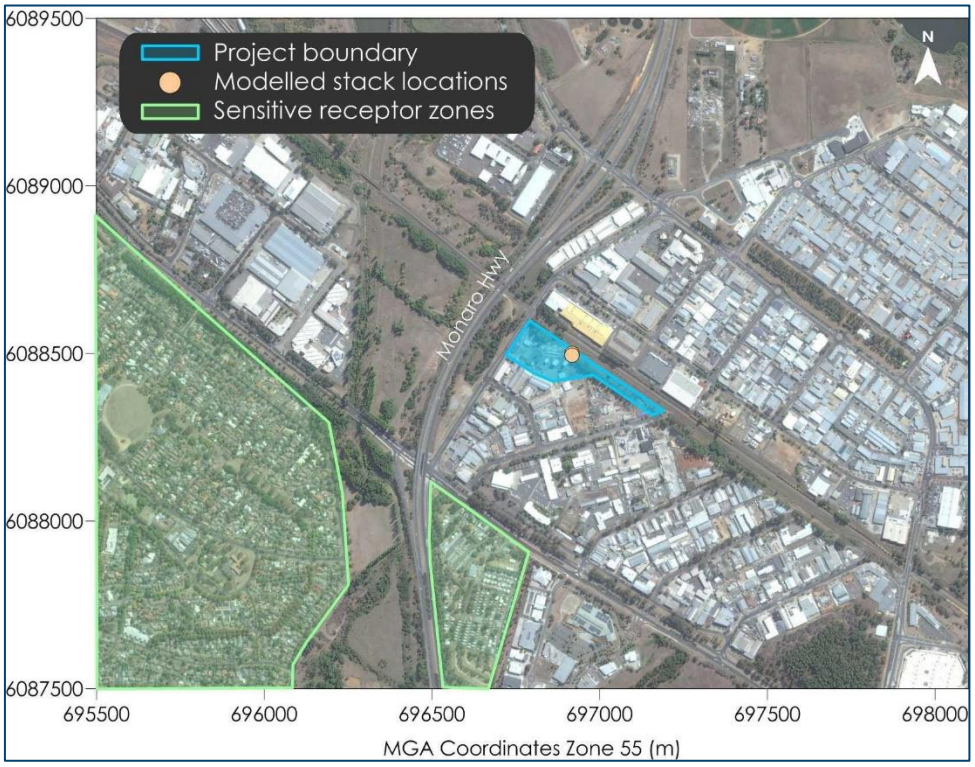

Figure 1: Project setting

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 Modeling System for Inclusion into the 'Approved Methods for the Modeling and Assessments of Air Pollutants in NSW, Australia'* (**TRC Environmental Corporation**, **2011**).

Based on the initial concept design for the Project and the resultant air emissions provided by the proponent, the stack parameters and air emissions for the concept design were derived, as outlined in **Table 1** and **Table 2** below.

Table 1 sets out the stack parameters and modelled emission rates. **Table 2** outlines the stack emission concentrations for the Project. The Project emission concentrations are below the most stringent air emissions limits of the *Protection of the Environment Operations (Clean Air) Regulation 2010* and identified air emissions limits for other jurisdictions around the world.

Table 1: Modelled stack parameters and emission rates

Parameter / Pollutant	Value
Stack height	32 m
Stack diameter	2.4 m
Exit velocity	15 m/s
Exit temperature	120 °C
Flow rate	47 Nm^3/s
	68 Am^3/s
CO	1.0 g/s
NO_X	8.8 g/s
SO_X	0.3 g/s
Hg	7.1×10^{-5} g/s
Dioxins & Furans	1.9×10^{-11} g/s
HCL	0.3 g/s
HF	2.4×10^{-3} g/s
PM_{10}	0.1 g/s

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Table 2: Stack emission concentration (mg/m^3)

Pollutant	Modelled stack emission concentration	NSW POEO Limit[1]	EU WID Limit [2]	EU IED Limit[3]	Proposed US CFR [4]	Taiwan[5]	Singapore[6]	Japan[7]	Complies with most stringent limit
CO	20.9	125	50	50	196	288	100	-	Yes
NO_X	185.8	500	200	200	729	338 (NO_2)	400	282 (NO_2)	Yes
SO_X	5.6	-	50 (SO_2)	50 (SO_2)	52	210 (SO_2)	200 (SO_2)	79 (SO_2)	Yes
Hg	0.0015	0.2	0.05	0.05	0.5	0.05	0.05	0.08	Yes
Dioxins & Furans	$4.0x10^{-10}$	$1.0x10^{-7}$	1.0×10^{-7}	$1.0x10^{-7}$	$4.1x10^{-7}$	-	$1.0x10^{-7}$	$1.3x10^{-5}$	Yes
HCL	5.8	100	10	10	92	60	60	37	Yes
HF	0.05	50	1	1	-	-	5	-	Yes
PM_{10}	2.6	50	10	10	18	63	50	24	Yes

[1] Protection of the Environment Operations (Clean Air) Regulation 2010 – Group 6 [POEO]

[2] European Union Waste Incineration Directive 2000/76/EC – Air Emission Limit Values

[3] European Union Industrial Emissions Directive 2010/75/EU – Air Emission Daily Limit Values

[4] Proposed new rules, January 2017, United States Environmental Protection Agency 40 CFR Part 62 (2017)

[5] Taiwan Environmental Protection Administration (2006)

[6] Singapore Guidelines for a Special Waste Incinerator (2017)

[7] Japan Environmental Governing Standards (2012)

Dispersion modelling predictions

Figure 2 to **Figure 9** present the predicted pollutant concentration isopleths showing the spatial distribution of the predicted incremental impacts associated with the operation of the Project (alone) over the modelling domain for the following:

- Maximum 1-hour average CO, SO_X, Dioxin & Furan, Hg, HCL and NO_2 concentrations; and,
- Maximum 24-hour average HF and PM_{10} concentrations.

The results indicate that for the assessed pollutants, the predicted incremental effects at the identified sensitive receptor zones in **Figure 1** would be below the relevant impact assessment criteria. Based on the low levels of predicted incremental impacts, it is expected that the potential for adverse cumulative impacts would be unlikely.

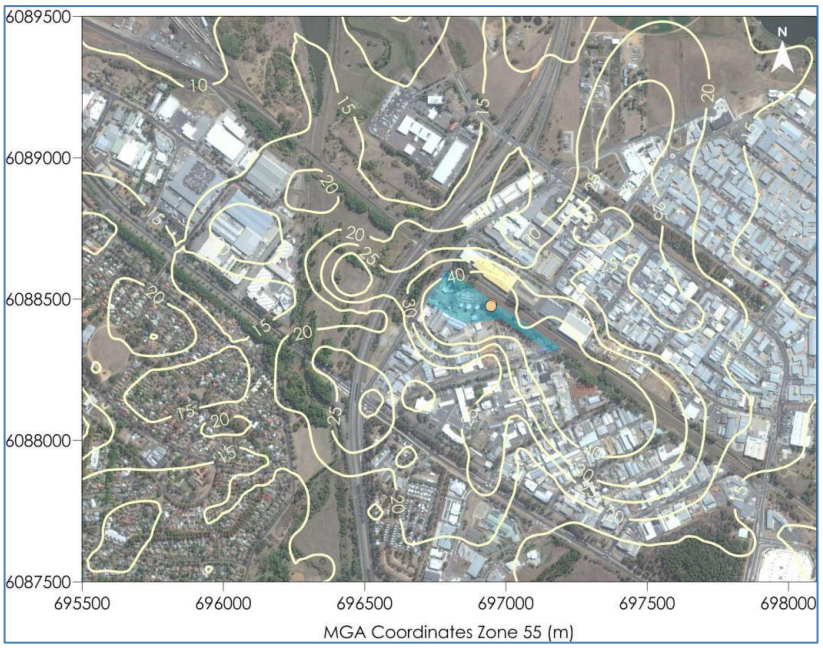

Figure 2: Predicted maximum 1-hour average CO concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 30,000µg/m^3

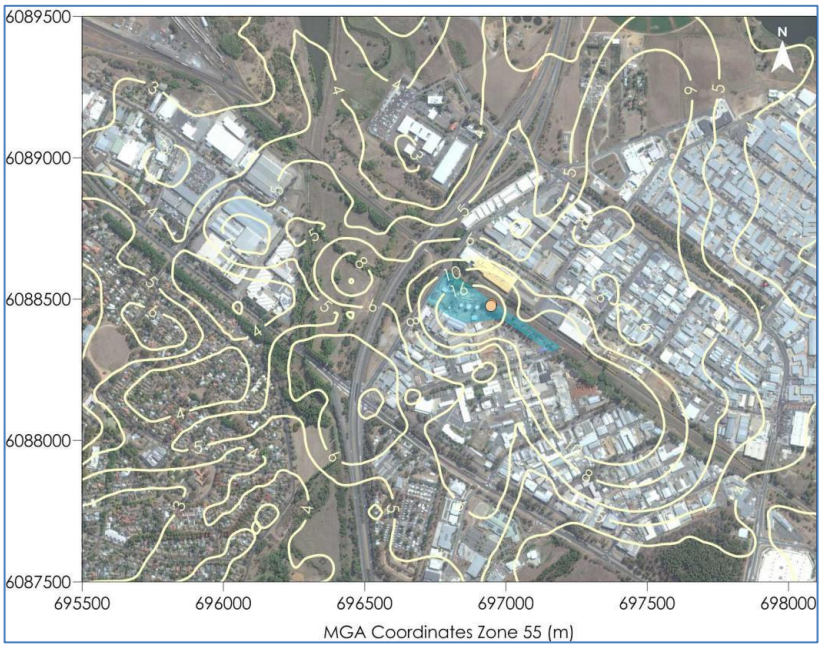

Figure 3: Predicted maximum 1-hour average SO_X concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 570µg/m^3

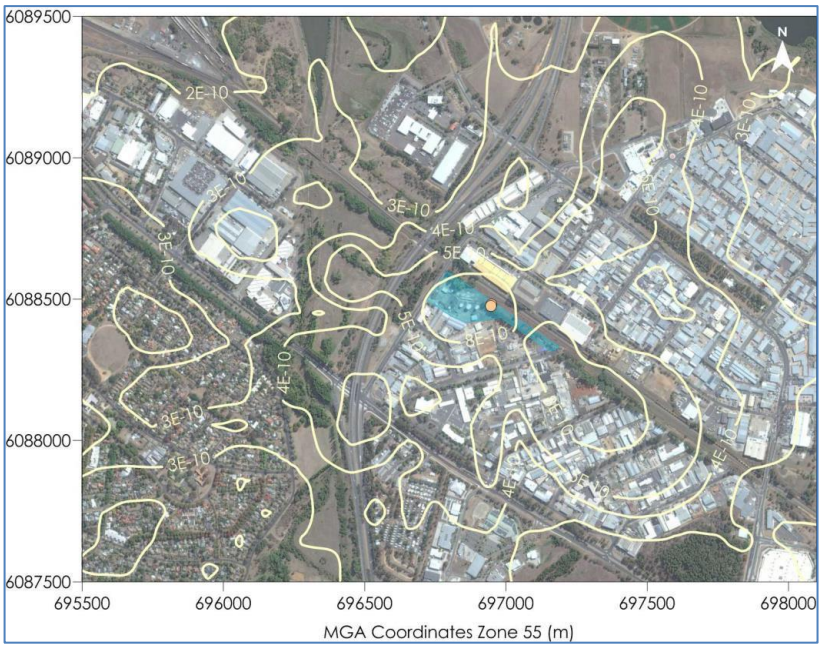

Figure 4: Predicted maximum 1-hour average Dioxin & Furans concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 2E-6 µg/m^3

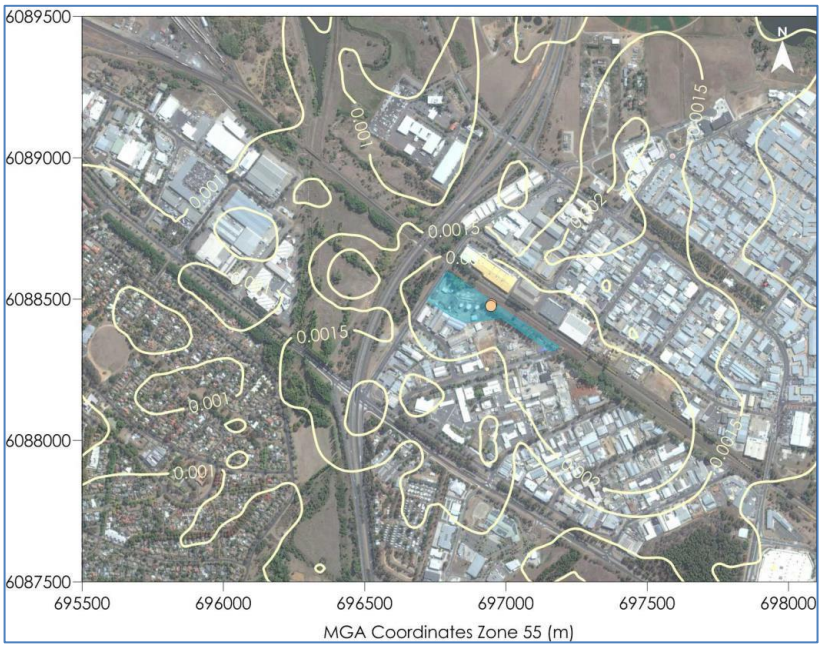

Figure 5: Predicted maximum 1-hour average Hg concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 0.18µg/m^3

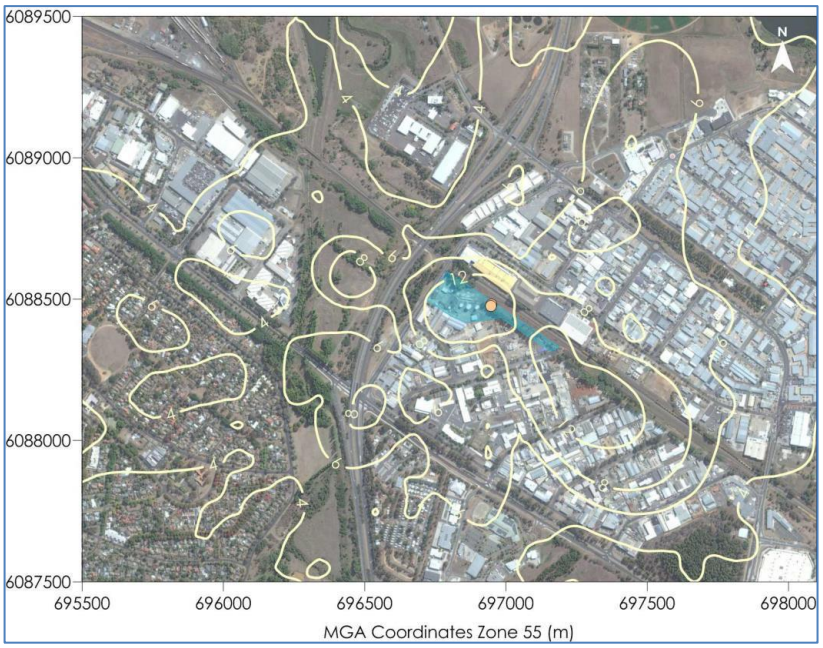

Figure 6: Predicted maximum 1-hour average HCL concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 140µg/m^3

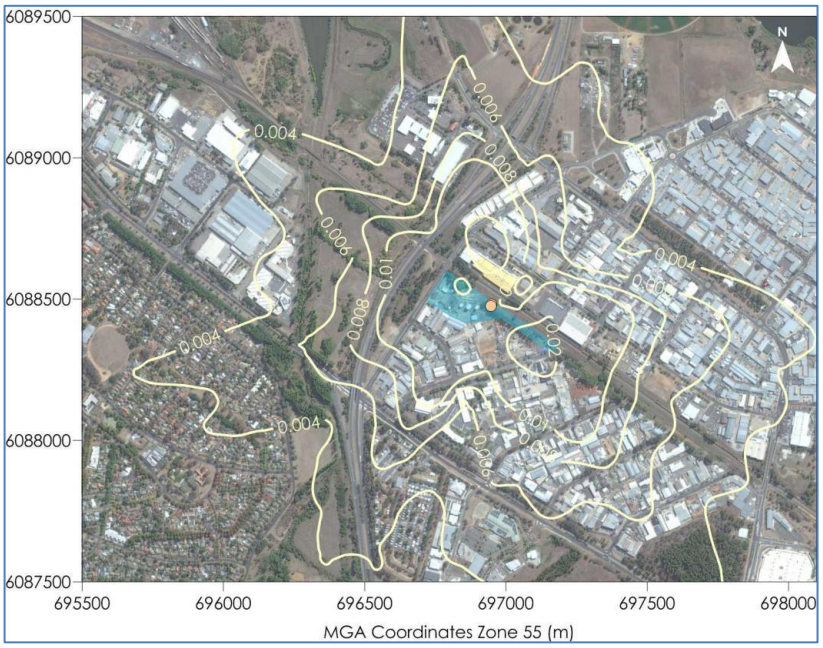

Figure 7: Predicted maximum 24-hour average HF concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 1.5µg/m^3

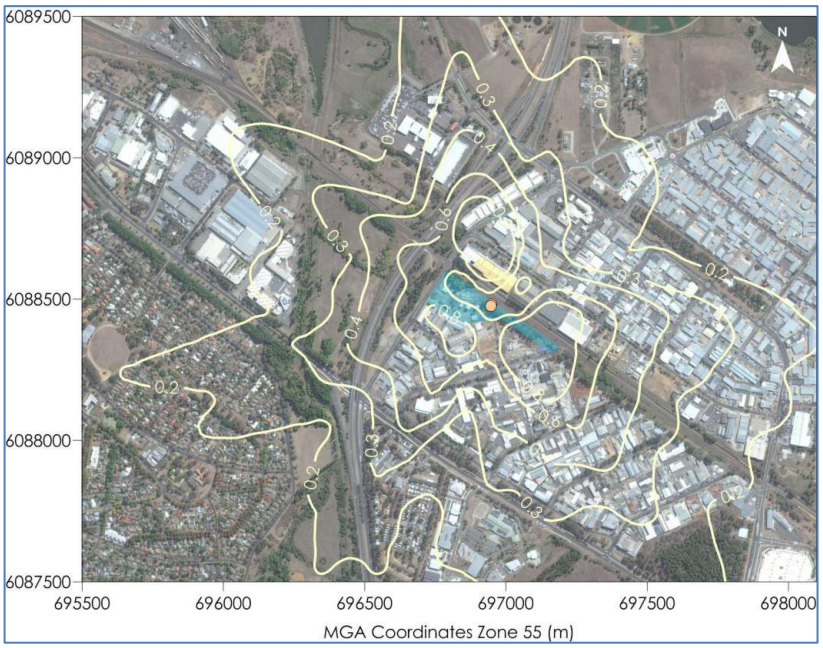

Figure 8: Predicted maximum 24-hour average PM_{10} concentrations (µg/m^3) – Impact assessment criterion (allowable limit) 50µg/m^3

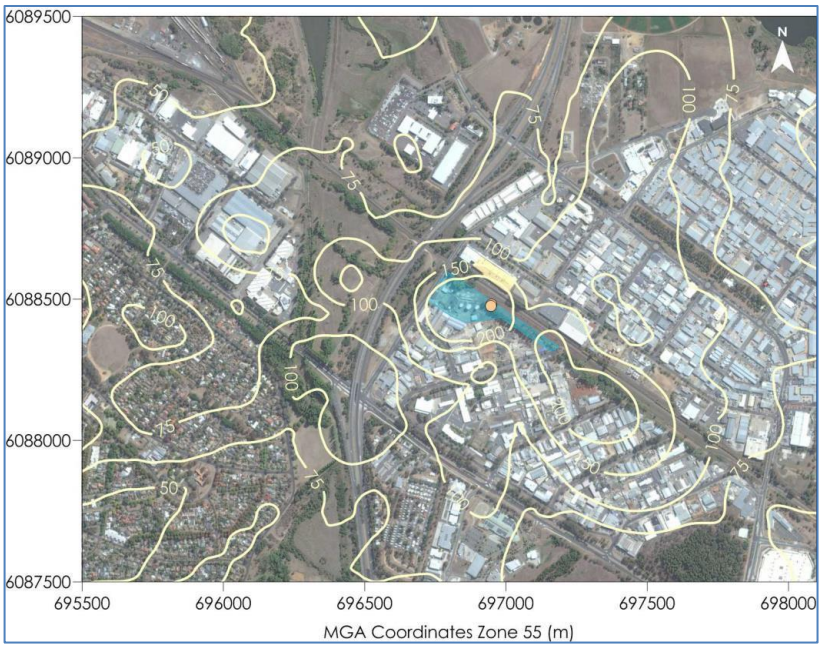

Figure 9: Predicted maximum 1-hour average NO_2 concentrations (µg/m^3) for 50% NOx to NO_2 conversion – Impact assessment criterion (allowable limit) 246µg/m^3

Discussion and conclusions

This study has examined the likely air quality effects resulting from the initial concept design of the Project.

The predicted results indicate that based on the initial Project design and air emissions, there are no significant air quality constraints associated with the Project at this location.

The results show a large margin of compliance with the criteria, and whilst the final results would be dependent on the final project design, there appears to be ample scope for any final changes to be made, without any significant risk of these changes impacting the surrounding environment. For example, if there is a need to reduce the stack heights in the final design for reasons of say visual amenity, this would not appear likely to affect compliance with air quality goals in any significant way.

Therefore it is concluded that there are no significant impediments in regard to air quality associated with the Project, and that a viable project design can be developed at this location.

Please feel free to contact us if you need to discuss (or require clarification on) any aspect of this study.

Yours faithfully,

Todoroski Air Sciences

Aleks Todoroski

Philip Henschke

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