

Materials Recovery Facility - Fyshwick

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This is a submission in three parts in opposition to the Materials Recovery Facility and Rail terminal on Blocks 9 and 11 section 8 Fyshwick.

PART 1.LEGISLATIVE FRAMEWORK , SOCIAL AND ECONOMIC IMPACTS
 PART 2 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND MITIGATION
 PART 3 RISKS AND HAZARDS

PART 1 LEGISLATIVE FRAMEWORK , SOCIAL AND ECONOMIC IMPACTS

INTRODUCTION

It is the Minister's responsibility to ensure that the Planning and Development legislation is adhered to in all relevant matters pertaining to the assessment of an Environmental Impact Statement.

This Draft EIS must be rejected because under the law it fails to adequately address all of the matters required by law and described in the Scoping Document.

Section 216 states:

(1) This section applies if the planning and land authority gives the proponent of a development proposal a scoping document for the proposal.

(2) The proponent must, by the end of the period stated in the scoping document for the development proposal—

(a) prepare a document that addresses each matter raised in the scoping document (a draft EIS).

Section 222.2 also states that

The planning and land authority must

(a) accept the EIS if satisfied that the EIS sufficiently—

(i) addresses each matter raised in the scoping document for the proposal;

The Draft EIS does not sufficiently cover all matters as required by the Scoping Document.

This EIS must also be rejected for its lack of scientific rigour and technical details necessary for an informed and meaningful environmental assessment. It should also be rejected for the quality of its production and its poor organisation.

The Planning and Development legislation section 129 says *"In deciding a development application for a development proposal in the impact track, the decision-maker must consider the following: (g) the probable impact of the proposed development including the nature, extent and significance of probable environmental impacts."*

This submission sets out the matters which were not addressed in the Draft EIS or were not adequately covered.

LEGISLATIVE FRAMEWORK , SOCIAL AND ECONOMIC IMPACTS

THE OBJECTIVES OF THE PROPOSAL

According to the Scoping Application November 2017 the objectives of this proposal were to establish a WtE facility on Block 9 section 8 Fyshwick as stage 2 of a complex development.

“Capital Recycling Solutions Pty Ltd (CRS) has prepared this Scoping Application in accordance with the requirements of the ACT Planning and Environment ACT, 2007 and is associated to the previous Application number 201700023 – Materials recovery facility and waste to energy (WtE) thermal conversion and emission control equipment. This request for a separate EIS scoping document comes after extensive community consultation as part of the process for application number 201700023, which has influenced our approach to split the original proposal into its key components.

1. The Materials Recovery Facility and Rail Freight Terminal (MRF)

2. The Waste to Energy facility (WtE). We consider the WtE facility ancillary to the overall solution in that it is dealing with residues from the MRF and does not impact on its effectiveness or viability. As such, we are proposing to proceed with an EIS process for the MRF only, with a separate EIS process to be undertaken for the WtE component at a later date.”

“However the EIS is not transparent about this intention. At no place in any of its 1500 pages is the WtE mentioned. It seeks to fool opponents of the incineration component of the proposal into believing that it is off the agenda so that many of them will not bother to comment on the EIS and hence be deprived of their legal rights to appeal any approval decisions. This is contrary to the law which makes the Scoping Application inform the Scoping Document each of whose requirements must be met. Requirement 5 demands a truthful description of both stages of the proposal. It is noteworthy that a complete copy of the Scoping Application was denied to the community and could only be accessed through FOI.

Segmenting the proposal does not release the proponent from his obligations to provide an environmental assessment. All known phases of a project should be considered in the determination of significance. If later phases are uncertain as to design or timing, their environmental significance should be examined as part of the whole action by considering the potential effects of total development. Since there is a common purpose for each segment of this proposal and a common geographical site involved; since the WtE component is functionally dependent on the current proposal and since the two segments share common impacts on health, air quality, traffic, noise, then if the activities are not reviewed as one project, potentially significant adverse impacts will not be described or mitigation measures considered.

SOCIAL LICENCE TO OPERATE - WOODLAWN

It is not socially acceptable nor economically necessary to send ACT rubbish across Territory borders into another state. The ACT has an obligation to be responsible for its own waste. The

ABC 4 Corners program and the public response to it demonstrated that the community opposes the cross border transport of waste whether by road or rail. This goes against the principle of producer responsibility. There is no present waste crisis in Canberra and the Waste Feasibility Study is yet to be considered.

The Environmental Impact Statement Assessment Report for the Proposed Mugga Landfill Expansion – Stage 5 at 9 December 2013 states the following:

“The proponent assessed two broad options for managing the ACT’s municipal waste, a new landfill facility located in the ACT or NSW, or an expansion of the existing MLRMC. The proponent has concluded that an expansion of the current facility is considered to represent a significant capital saving and is subject to fewer constraints.

Other scenarios were also considered such as transporting the ACT’s waste to other landfill facilities in NSW, such as the Woodlawn Bio-reactor located near Tarago. Transporting waste to the Woodlawn Bio-reactor would not be financially prudent, as the ACT would have to pay the NSW landfill levy of \$58.80 per tonne, due to the facility accepting Sydney’s waste and impacts from transporting waste to the facility would be high”

Thus I submit the CRS arrangement for sending RDF to Woodlawn would have the added costs to households, compared with the Mugga Lane option, of Rail freight costs from Fyshwick to Woodlawn, road costs from Tarago to Woodlawn plus the NSW landfill levy. The ACT would be at the mercy of what Access Rail Services and John Holland Rail are going to charge, being a monopoly, as well as at the mercy of what the NSW government decides on its landfill levy. The cost of keeping Mugga Lane open at the same time should also be factored in.

Veolia would need to consider if accepting the ACT’s waste is a practical business decision. Deliberation is vital regarding the impact of additional waste on the lifespan of the mine. At the current rate, the site can support waste disposal for more than 50 years. This lifespan would reduce to approximately 38 years, given a situation where Woodlawn accepts 300,000tpa of ACT waste. However, Veolia state that they were granted approval in 2012 to increase annual waste input from Sydney, planning to accept close to 20% of Sydney’s total landfill in future. This, coupled with the total landfill from the ACT, would reduce the mine’s lifespan to a mere 20 years. Veolia needs to consider if this partnership with the ACT is detrimental to the longevity of their facility. The ACT Government must demand that CRS provide evidence of a contract with Veolia to accept the waste before approval is granted.

The Woodlawn ‘solution’ therefore is for the ACT no more than a temporary solution.

PLANNING AND LAND STATUS

The issue of the likely future use of the land surrounding the development must be considered. Particular issues to consider are: any intensification of cumulative risk; the likelihood of land sterilisation; the suitability of adjoining land zonings; the likely future use of adjoining land and the erosion of land values in the vicinity of the proposal.

The MAPi viewer indicates that the scrap metal yard on Cessnock St is planned for a small industry/retail sub-division which will put even more traffic into Ipswich street and make the Newcastle Street intersection even more difficult to negotiate.

In addition TCCS has custodian responsibilities for some 5.8 hectares of land on Lithgow St and Canberra Ave destined for future sale. I submit that the value of this land will be reduced by the presence of a waste transfer station 50 to 100 m away with its accompanying traffic, air and noise issues.

Recently publicised Molonglo Group's commercial and residential development of the Dairy Road precinct should have been considered in the EIS for adverse impact. A review of the East Lake Urban Renewal area from 2007 shows a potential mixed-use zone across the Monaro Highway approximately 300m from the proposed facility. The ACT EPA released a Draft Separation Distance Guidelines for Air Emissions in November 2014. In this draft, it outlines that the separation distances from sensitive receptors should be a minimum of 300m for "Materials Recovery Facilities" and "Waste Transfer stations". The East Lake Urban Renewal project was dismissed by the proponent because it was "Mixed use" development and because the elevated highway was a natural attenuation for noise and ground based activities. There were no technical studies to prove this. The technical studies for noise and odour modelled at ground level and did not take into consideration that multi-storeyed developments were part of the East lake renewal project. The 21m high ventilation shaft would be in direct line with these buildings and they would be within the 300m EPA Separation Distance Guideline.

A conclusion is reached in the EIS p.63, that there is a low risk rating for these developments with no evidence of the process of how this conclusion was reached.

The claims of "no impact" on surrounding uses by similar projects in Australia and around the world were not demonstrated. Indeed there is much evidence in Australia of amenity issues and breaches of consent conditions leading to heavy fines on the operators in Australia and some very recently. NSW EPA would provide that evidence.

Scoping Application November 2017 makes it clear that this is stage 1 in a larger development plan. Stage 2 is clearly a future development. That it was not considered in the EIS in relation to this development for adequacy of site selection and for adverse environmental, economic and social impacts is a significant weakness. The EIS should be sent back for this requirement to be completed. For the purposes of assessment of this EIS the future of the second stage development is highly relevant.

Local residents, some 240 in August and 90 in mid-December 2017 did not want this waste development at that site. The transfer of waste including putrescible waste into Fyshwick will devalue not only residential and commercial properties but also adversely impact on the future sale of government land.

SUMMARY OF PLANNING APPROVAL PATHWAY

"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 MRF and Rail Freight Facility is in accordance with the Territory Plan land use zoning for the Site with no planning/zoning exemptions required." CRS Dec 2017 Scoping Application. This is not true.

The proponent does not own the land Block 11 section 8 Fyshwick on which approval for this enterprise depends and the offer of sale has lapsed. The EIS dances around this very significant constraint on the development. As a consequence the approval for the hardstand for removal of

waste by rail to Woodlawn cannot be implemented. The EIS misrepresents the railway component of the development by implying that it will be wholly undertaken on Block 11 section 47 in spite of public and written evidence of previous intention to use block 11 section 8 for this purpose.

Before approval of this development these matters must be resolved in a manner which satisfies the community expectations for transparency and accountability. The Unleased Territory Land Block 11 section 8 Fyshwick must be purchased. Statutory requirements must be met for a legal Direct Sale. Section .50 of the P&D Act require all provisions of the Territory Plan to be met. The Territory Plan Development Tables for IZ2 Mixed Industrial land prohibit railway use on this block of land. The next step would therefore be an application for a Territory Plan Variation which would require public notification and comment. At that point another Direct Sale Eligibility Application can be submitted followed by a new offer of sale meeting criteria, accepted, paid for and a lease issued. Without a successful TP Variation that lease would still prohibit railway use under the Territory Plan Development Tables. A combination of leases for block 9 and 11 would also be contrary to the Territory Plan Development tables which prohibit the alteration of a lease to permit a development which was prohibited under those tables. The only step would therefore have to be an application for a Territory Plan Variation which would require public notification and comment. The land in question Block 9 needs to be cleared with large structures demolished. This is subject to another DA which should precede this EIS. The demolition and associated construction works will trigger ACT EPA 'EPP Contaminated Land' and active site remediation for both blocks 9 and 11 will need to occur. Following the active remediation the site must be certified by an EPA Certified Auditor that it is fit for the new purpose and no longer poses an adverse risk to the environment and human health.

If all these steps are successfully concluded a new DA then could be submitted in the Impact Track for the railway use on Block 11. The EISs process for that development should begin. When completed and if successful then the approval process for the Waste Transfer Station on Block 9 would be allowed to proceed. It cannot proceed unless the applicant owns the land and has approval for railway use on block 11. Subsequent to these steps an additional DA for the expansion of the hardstand onto Block 11 section 47 would be required. The zoning for this block also prohibits railway use so this DA should also be preceded by a Territory Plan Variation which should be done before step 12 the subject of this EIS.

OTHER LEGISLATIVE AND POLICY ISSUES

NSW P&D Act Conditions of Consent Woodlawn

There are a number of regulatory and legislative provisions incompatible with this development. The Woodlawn landfill in NSW is not currently approved to take ACT waste. Its conditions of consent state

L3.3 The licensee must not exceed the maximum annual landfill input rates outlined below.

- Putrescible waste received by rail from Sydney 900,00 tonnes per annum
- Putrescible regional waste received by road 50,000 tonnes per annum.

ACT Territory Plan Development Tables

Railway activity is a prohibited activity in the Mixed use Industrial Zone IZ2 according to the Territory Plan Development Tables.

Stage 2 Incinerator called WtE is still part of this development and is also a prohibited development on Block 9 and 11 and has a 500m Separation Distance guideline. The legislative basis to allow the contravention of an ACT statutory law has not been explained.

ACT Planning and Development Act 2007

s. 247 Use of land for leased purpose says “(1)Territory land, or a building or structure on the land, in relation to which a lease has been granted, whether before or after the commencement of this part, must not be used for a purpose other than a purpose authorised by the lease.” The purpose clause for Block 9 disallows “noxious trade” on this land. Any business, process or manufacture causing, offensive odours, or discharging dust, foul liquid, or any trade that unless preventative measures are adopted, may become a nuisance to the amenity or health of the inhabitants of the district; can be considered noxious. In NSW State Planning Policy 33 would regard this development as a Potentially Hazardous or Offensive industry and assess it according to the provisions of that policy.

I submit that the lease Purpose Clause makes this development an unauthorised activity on that site. Part III of the Environment Protection Act 1997 also requires a person to take “*such steps as are practicable and reasonable to prevent or minimise environmental harm or environmental nuisance caused, or likely to be caused, by an activity conducted by that person.*” The level of noxious nuisance to be caused by this development, on this site, has not been convincingly demonstrated in this EIS as having been adequately minimised.

The ACT Territory Plan Zone Objectives

The development is also incompatible with the following Territory Plan Zone Objectives applying specifically to West Fyshwick. A Waste Transfer Station is not compatible with the adjacent West Fyshwick (ie market area) zone objectives. which are to;

- i) Encourage Canberra’s regional role for food processing, wholesaling, distribution and marketing
- ii) Cluster uses which are compatible with and complementary to existing facilities, particularly with regard to food processing and warehousing and the markets, including some small scale food retailing
- iii) Protect the safety and amenity of food related enterprises

Transfer Stations are Noxious Trade and prohibited by the Purpose clause of the Commonwealth Lease granted on the land. I submit that this proposal for a transfer station or material recycling facility that sorts, consolidates or temporarily stores solid waste (including municipal waste) for transfer to another site for disposal, storage or preprocessing that is within 2 km of a residential zone, and taking into consideration the topography and local weather conditions, is likely to significantly affect the amenity of the neighbourhood because of noise, odour, dust, vermin, and traffic impacts and should not be approved. I submit that the lease for the land Block 9 Section 8 Fyshwick IZ2 Zone does not allow it. The purpose clause states

“To use the premises only for the purpose of an industry or industries (other than a noxious trade) and for any purpose subsidiary to such industry or industries provided that no more than one residence shall be erected on the land.”

I submit it would be considered by any reasonable person a Transfer station of all of Canberra’s household waste was a “Noxious trade” in this location. According to town planning terminology ‘noxious Industry’ means any industry that is classified as a noxious industry due to the production of or discharge of noxious substances, gasses, smells, noise, dust, smoke, etc and consequently is excluded from conventional Industrial zones. And I maintain that Fyshwick is a

perfect example of a light industrial zone with no existing heavy polluting industries. This development would be better sited in IZ1 zones.

Under the P&D Act in deciding a development application for a development proposal in the Impact Track, the decision maker must consider the suitability of the land where the development is proposed to take place for a development of the kind proposed and the probable impact of the proposed development, including the nature, extent and significance of probable environmental impacts.

ACT Environment Protection Act, 1997

Particular objectives of the Environment Protection Act 1997 with respect to this project are:

- *to protect and enhance the quality of the environment; and*
- *to require people engaging in polluting activities to make progressive environmental improvements, including reductions of pollution at the source*

Disturbing the polluted Shell site will be an additional polluting activity potentially harmful to human and environmental health. Since no extensive remediation is proposed no positive environmental improvement will be achieved.

ACT Air Environment Protection Policy

The Air EPP states that regulatory limits should minimise environmental harm to local and ambient air quality while enabling necessary or socially acceptable activities to take place, subject to appropriate controls. This development is neither socially acceptable on this site nor is likely to meet air quality goals for odour, noise and emissions when considered cumulatively.

There was no comprehensive Air Quality Study done for the development contrary to the requirement in the Scoping Document.

EPA Draft Separation Distances Guideline

The EIS has failed to apply the Environment Protection Authority (EPA) Separation Distance Guidelines for Air Emissions and noise (ACT Environment Protection Authority November 2014).

Adequate separation distances reduce the potential for conflict between industrial and sensitive land uses, and support the fact that industrial activities cannot be undertaken with optimum emission control conditions all the time. The guidelines are intended to assist informed decisions that address potential conflicts caused by close proximity between residential and other sensitive land uses and industry due to the impact of odour, polluting air emissions, waste water or noise that may result from accident, power failure, equipment failure, unusual meteorological conditions or human error, as well as normal operation.

It was a serious failing of the Scoping Document that the proponent was not requested to apply this Guideline. It was not in the public interest that this was ignored and appears to provide a commercial bias toward the proponent in that these guidelines were required for the FOY and the Hume developments. There was no explanation of why they were not applied in this case.

Waste Transfer Stations must be sited in appropriate current or future industrial zoned areas with adequate buffer distances to sensitive receptors. Buffer integrity should be maintained over the

life of the plant. There is inadequate buffer zone between the facility and the very close retail hub of Barrier Street with the very popular Harvey Norman store on its back doorstep and the caravan park less than 500 m away. The future High Rise component of the East Lakes Urban Renewal development is 265m away. There are several preschools and day care centres, a caravan park and sensitive wetlands and a retail food precinct nearby.

The EPA Draft Separation Distance Guidelines for Air Emissions ACT Environment Protection Authority November 2014 allows that if a proposed development has the potential to have a significantly larger impact, the recommended separation distances may not be sufficient and can be adjusted - in this case 300m for a materials recovery centre. This DA needs to be assessed against this Guideline. The recommended distances should then be estimated for adequacy. An Air Quality Study would have assisted in this evaluation.

I further submit that the site of this DA is in proximity to a number of 'sensitive land uses' including a Caravan park, the future East Lake Residential/commercial development, The busy Fyshwick commercial and retail hub should be considered as a public place in the same way as a park or garden. Both are populated by people coming and going at different times and have regular public use. The area should be considered as a sensitive receptor. Even if the time spent there is brief the proximity to the Facility can still create significant adverse amenity impacts for the visitors through visual impact, odour, noise from the trains and trucks and the operation of the machinery inside the building.

I submit that a commercial precinct such as this must be considered in the same manner for example as the parklands and recreational areas of reserves whose public use is similar in duration and frequency and for which the 300m limit applies. The proposed development has the potential to have a significant adverse amenity impact so according to the Guidelines, the recommended distances may not be sufficient.

National Airports Safeguarding Framework Guideline C Bird Strike

New Waste Facilities are prohibited under Airspace Safety Regulation C.Bird Strike if they are to be located within 3km of an airport. The "National Airports Safeguarding Framework Guideline C Managing the risk of Wildlife strikes in the vicinity of airports" provides guidelines to State/ Territory and local government decision makers to manage the risk of collisions between wildlife and aircraft at or near airports where that risk may be increased by the presence of wildlife-attracting land uses. Attachment 1 to this Guideline identifies Food/Organic waste facilities and Putrescible waste facility transfer stations as designated as having High Wild life Attraction Risk. For proposed (New) Developments within a 3 km radius they are designated "Incompatible" Block 9 section 8 Fyshwick is within the 3km limits. This is another constraint on its approval at this location. Other legislation applies. Australian Civil Aviation Safety legislation includes provisions to meet Australia's international obligations. Part 139 of the Civil Aviation Safety Regulations 1998 (the Regulations) imposes an obligation on airports to reduce the risks of wildlife strikes. These regulations are administered by the Civil Aviation Safety Authority (CASA). Under the Regulations, CASA can address the risk of waste foodstuffs being dumped near airports that may pose a risk to aviation safety by attracting wildlife.

By failing to adequately address the risks to air Safety from bird strike directly related to this proposal the development would be in breach of the law and inconsistent with Amendment 30 (September 2000) to the National Capital Plan which states: "*Protected airspace provisions in*

relation to Canberra International Airport apply to development independently of the National Capital Plan. To satisfy a requirement of the Airports (Protection of Airspace) Regulations 1996, Canberra International Airport Pty Ltd has prepared a diagram prescribing protected airspace. The diagram is incorporated in the Airport Master Plan prepared under the Airports Act.”

SOCIAL AND ECONOMIC IMPACTS

Site Suitability The Land Area is too Small

Locating a site of sufficient size is critical to operating efficiencies and minimising impacts on the surrounding community. Sufficient space for onsite roadways, queuing and parking, manoeuvring of large and long vehicles is necessary at a transfer station.

The area required for specific transfer stations varies significantly, depending on the volume of each waste type to be transferred; For 300,000 tpa of waste there needs to be a calculation of the space needed and a full appraisal provided for the adequacy of Blocks 9 and 11 for all the possible necessary ancillary facilities required for a safe and efficient operation of a business such as this.

The size of the building (7275 square Meters) is significantly larger than buildings used for similar operations. This constrains the site and the other activities to be undertaken on it. The size requires explanation. It is assumed that the extra size is to accommodate stage 2 future WtE. If so the EIS should have honestly said so.

The EIS fails to describe in sufficient detail the location of storage tanks for rainwater run-off contaminated with leachate or for contaminated water arising from spillages or fire-fighting operations. There are no bunds or sumps shown for the capture of these nor location of necessary water tanks for holding contaminated water or foam. The liquid waste storage capacity should be adequate to ensure that such waters can be tested and treated before discharge where necessary. The site should be bunded so that no non-domestic waste water runoff enters the sewerage system.

Provision is made onsite for the loading and unloading of vehicles, in addition to minimum parking requirements with adequate manoeuvring space so that vehicles can enter and leave the site travelling in a forward direction. Loading/unloading and associated manoeuvring areas are inadequate. Provision for associated loading and unloading of goods should comply with all of the following:

- a) demonstration of the adequate justification for the proposed arrangements when not entering and exiting in a forward direction
- b) demonstrating that the design does not unreasonably compromise the safety of pedestrian and traffic movement and operation of any adjoining facilities such as road, cycleway or pedestrian pathway, and on-street and off-street parking
- c) provision of adequate space for the manoeuvring of vehicles
- d) demonstration of the use of the particular site without the need to restructure when expansion is required.

The EIS fails to demonstrate how the waste vehicles and metal recycling vehicles will both safely access the site and show how the movement of containers by fork lift or crane will interact with those vehicles.

I further claim that there is insufficient space for onsite roadways, queuing, and parking of trucks broken down or waiting an new driver. Transfer stations typically have onsite roadways to move vehicles around various parts of the transfer site. These vehicles need wide roadways with gradual slopes and curves to manoeuvre efficiently and safely with no sharp right or left hand corners. Also, the site will need space for parking transfer vehicles and to allow incoming and outgoing traffic to form lines without backing up onto public roads.

The EIS site plan shows how limited the room is and highlights the potential for vehicle accidents on site. During periods of queueing and driver frustration the narrow left hand turn from the Lithgow Street passage followed by a quick right hand turn to access the recycling building has the potential for collision between trucks.

It is unacceptably dangerous that visitor vehicles accessing the office parking area will access the site from Ipswich Street against the flow of the waste trucks entering and leaving. It is more dangerous that when they leave from the visitor parking area they will have to cross the path of incoming traffic to merge with the trucks leaving the site. The potential for on site vehicle accidents should be assessed in the Risk Assessment

There is no Justifiable Demand or Public Benefit

Claims that this proposal is of benefit to the ACT community are vague and unsupported and must be demonstrated. There is nothing innovative nor advanced in this proposal. Its concept, construction and management controls are no different from other MRFs and Waste Transfer Stations. It claims to have proven odour control but provided no proof by way of details, specifications or performance testing for evaluation. It also boasts best practice in environmental safety systems without reference to any Best Practice Waste Transfer Stations and Materials Recovery Facilities Guidelines when there are many available in Australia and worldwide.

Apart from the rail hub which may have a limited benefit (yet to be demonstrated) for a few rail freight users this proposal fails the public benefit test. It is true it restarts the freight service between Canberra and Port Botany. But the 300 B Doubles per annum shifted from road to rail have not been accounted for. There is no net reduction of trucks on the road as a result of the rail terminal. Instead there will be additional trucks bringing waste to the MRF and metals to Access Recycling on Lithgow Street.

There has been no forward planning for the road network to adjust to increased growth in truck movements to and from the Hub to separate the heavy vehicles from the residential and commercial areas of Canberra and Fyshwick or for future plans to widen Ipswich Street. The EIS also fails to assess the costs to the ratepayer of further road degradation from the heavier use of Ipswich street.

The benefits of this proposal are neither significant nor widespread to the entire Canberra community. The site is not ideal. It is severely contaminated with BTEX chemicals and needs active and significant remediation. The need is not urgent and there are other alternate, possible uses for the land.

It does not fit the ACT Policy Frameworks Building an Integrated Transport Network FREIGHT 2016. It failed to adequately consider the alternative of Hume where heavy industry is permissible and where blocks are larger providing more setback and greater manoeuvrability. The site fails to provide capacity for future growth nor any logistical or warehousing facilities for larger freight exporting or importing businesses. Approval of this proposal would seriously impede the

development of a larger more viable rail freight intermodal hub elsewhere with adequate logistics to better service Canberra's needs and which ties in with the airport freight development strategy.

Responsibility for on-going monitoring and or rehabilitation of the site after the life of the facility is ignored. The ACT Government could be responsible for the cost of years of on-going monitoring after CRS leaves town. There is no discussion of or reference to a bond guaranteeing higher performance. The long term responsibility for the whole site needs to be covered by financial assurances. There are no details about site closure arrangements following the completion of the operations. There are no details about the responsibility for failure of safeguards resulting in a significant adverse environmental impact. The owner's existing obligations with respect to the rehabilitation of the site are not explained in the EIS. This throws additional doubt about the benefits of the proposal. In the interest of accountability these details must be made known. All this needed to be clarified prior to submitting a Development Application.

The EIS is deficient too, in any contingency plan for the proposed operation ceasing in the near future. This is particularly relevant when one examines the proponent's sources of waste and considers he has no firm contracts.

Mugga Lane Landfill

The proponent has underestimated the adequacy of the Mugga Lane landfill and its capacity to deal with ACT waste on a long term basis. His claims of a benefit to the Canberra people must be rejected as without basis. The EIS contains errors of fact regarding Mugga Lane asserting *"it has very limited cell life"*; *"the estimated life of the current cell of the ML facility is not more than a few years"* and *"expansion would require significant capital and technical investigation as well as significant land and bush clearing"*. Vol 1 p.4

DA Approval for Mugga Lane landfill extension 18/3/2014 (NI 2014-1530) for cells 4 and 5 predicts the opening of 10 additional cells over a 20 year period giving the landfill life for another 30 years. Mugga Lane according to ACT NoWaste 2015 Audithas a future till 2060 in staged expansion adopting improved compaction and reduced daily cover as a way of extending and maximising its life. There is therefore no urgency for the ACT waste solution, before all proper alternatives have been comprehensively examined and until there has been widespread community consultation about Fyshwick as a suitable site for a large Waste Transfer Station and until a full cost benefit analysis has been done on this proposal taking into account the social and environmental costs.

Further the ACT 2017 State of the Environment Report reveals that since 1990-99 increased volumes of waste generated have been subsumed entirely through resource recovery and been recycled through resource recovery centres rather than sent to landfill. The relative proportion of recycled waste has been growing constantly, increasing by almost 95% between 2000-01 and 2015-16. In 2015-6 67% of waste generated in the ACT was recycled. The Report states Canberra's recycling rate is high compared with cites such as Perth, Brisbane, Melbourne and Sydney.

The EIS for Mugga Lane stage 5 expansion considered the alternative of transporting waste to Woodlawn and rejected it. *"Other scenarios were also considered such as transporting the ACT's waste to other landfill facilities in NSW, such as the Woodlawn Bio-reactor located near Tarago. Transporting waste to the Woodlawn Bio-reactor would not be financially prudent, as the ACT would have to pay the NSW landfill levy of \$58.80 per tonne, due to the facility accepting Sydney's waste and impacts from transporting waste to the facility would be high."* p.iv

In addition the proponent's claims about GHG reduction cannot be supported. Moving the ACT waste to Woodlawn would merely transfer the methane to Tarago and there would be no demonstrable savings or reduction. Mugga Lane currently captures 70% of its methane for energy production a comparable rate to most modern landfills.

The 2014-5 ACT NOWaste Domestic Waste Audit Report made the following recommendations about ACT waste disposal needs. That additional diversion is not possible without substantial policy changes to address the organics fraction, which is now almost half of the general waste bin contents. Organics should be separated from the waste stream through targeted community education and a clear plan to separately process them. Alternatives to the plan need to be considered. The CRS proposal makes no consideration of composting. This must be addressed.

The Waste Feasibility Study contains *"Further benefits arise from the impact that diversion of waste from landfill would have on the lifespan of the Mugga Lane facility's existing cells and future cells from around the year 2022. The lifespan of a landfill is dependent on several variables, including the rate of 'settling' over time and other engineering factors such as 'overtopping' which can extend the life of a cell. In any case, the landfill is a significant asset for the Territory and the prolonging of the useful life of this resource is a key benefit of higher resource recovery."* p.34

The success of the resource recovery of this project has not been demonstrated. Giving control of all of ACT waste to CRS will undermine the successes already achieved in resource recovery in the ACT and make the progress to total destruction of the waste resources in an eventual incinerator inevitable. It is highly unlikely that the MRF will achieve the 20% recycling which is the fundamental principle of this development. The Leeds (UK) MRF (Veolia) has failed to meet its 10% target struggling to achieve a 2.5% recovery rate.

Greenhouse Gas Considerations

The proponent's claims that the Mugga Lane landfill gas capture is inferior to Woodlawn and that therefore *"In terms of climate change the proposal will have a clear beneficial outcome for climate change objectives, through the reduction of greenhouse gas emissions"* will not stand up to scrutiny.

Close comparison of effects on climate change requires knowledge of the total production of methane per tonne of waste till full decomposition which may take many decades and the average long-term capture rate of methane over the lifespan of the waste till full decomposition. The data supplied by the EIS is unreliable. The Pathway Report waste sector emissions ACT 2050 June 2017 reports that currently the methane recapture rate is between 60-70% (ACT Government 2016) and there is potential for improvement and that the best way to reduce waste sector emissions is to install additional landfill gas capture infrastructure at Mugga Lane landfill with the aim to achieve a carbon neutral waste section.

Landfills often accept waste over a 20- to 30-year period, so waste in a landfill may be undergoing several phases of decomposition at once. This means that older waste in one area might be in a different phase of decomposition than more recently buried waste in another area. Because most waste to Woodlawn comes in plastic bags and with landfill temperatures of 60 to 70 degrees Celsius under the surface the bags will take hundreds of years to break down. So the Woodlawn landfill will be producing methane for at least 50-to 100 years after it is full. If the Woodlawn bioreactor is running at a higher temperature than the Mugga Lane landfill then it would release more methane on a short time frame and may therefore generate more electricity in that time

frame. However over a long time frame, Mugga Lane could generate more methane in the tail end. What needs to be compared is the total volume of methane captured over the lifetime of both landfills per equal volume of waste of comparable composition and also how much electricity is generated per equal volume of methane by the generators at both landfills. The claim that the Woodlawn landfill generates up to 16 times more electricity per tonne/waste than Muggla Lane and that the Mugga Lane capture system is ineffective, must be challenged.

Canberra has two landfills which generate methane Mugga and Belconnen. The rate of capture of ACT waste must take both into consideration. There is no evidence in the EIS this has been considered in the GHG argument..

Any fair comparison needs to be a life-cycle assessment otherwise the data and statistics can be twisted as desired.

Consideration of Alternatives

The Scoping Document required details of any alternatives considered in developing the proposal. These alternatives should have been considered.

- 1 alternative locations for the development
- 2 alternative siting within the land to which the proposal relates
3. alternative beneficial uses of the waste
- 4 alternative uses of the land to which the proposal relates
- 5 alternative designs, methods of construction, materials and sources of materials
6. alternative leachate management
7. alternative vapour barrier protection

None of these were addressed in the EIS and should have been.

In the TCCS Market Sounding No. 38532-01 Call to Industry, dated 20 Feb 2017 can read *“The Hume Waste Precinct is immediately southeast of the ACT landfill and, aside from its proximity to the transfer station, recycling collection and green waste processing that occurs, is adjacent to a major arterial road that connects to the interstate highway. Rail and air links are nearby, as is the NSW boundary. The area is zoned industrial and it is an excellent site for a waste precinct and is one that will eventually grow into a nationally recognised waste centre of excellence.”* This is an alternative site that surely should have been discussed. The EIS describes its proposal/solution as “innovative”. There is nothing innovative in it. It involves merely relocating the Mugga Lane landfill to Fyshwick and Tarrago. The EIS should have assessed relocating the recycling facility to Mugga Lane and reducing by 20% the waste to landfill there.

The extent to which other options should be considered depends on factors such as the feasibility of the alternatives and the level of impact involved with the preferred alternative. Consent authorities should ensure there is some locational justification of the preferred alternative. There is nothing about a site in the middle of Fyshwick which could offer a local justification.

For municipal waste, possible alternatives after applying the waste hierarchy are:

Extended Producer Responsibility – sending problematic waste back to the producer sets the right market signals and puts the waste back where it belongs, rather than being offloaded to the consumer and government purse which often results in environmental harm.

Kerbside Recycling - China no longer willing to take our plastics since they are contaminated in our yellow bins. A solution must be found and separation at the source is one. This is part of the ACT Greens policy on waste. They suggest that kerbside recycling will provide for better separation of waste at the source, leading to reduced residual waste;

Composting. -There is potential to increase composting to the industrial scale where waste from households (including apartments), restaurants and resorts is managed centrally and later sold (depending on quality) as compost or soil improver. Controlled and well-managed composting can provide a sustainable option for the recycling of a wide range of organic materials including food organics and convert them into valuable soil additives that enhance the chemical, biological and physical properties of soil. The use of recycled organic products improves health and structure of soils and can lead to moisture conservation, improved nutrient utilisation and reduced pesticide and synthetic fertiliser use. Details of the relative amounts of organic and non-organic components in the waste streamiest should have been provided so that a serious consideration of composting as an alternative can be considered.

The diversion of organic materials from landfill into such beneficial uses also has a positive impact on the greenhouse effect. Diverting organics from landfill is also key to the Government achieving its goal of a carbon neutral waste sector by 2020 and a carbon neutral city by 2060. The Pathway Report - waste sector emissions ACT 2050 June 2017 includes waste separation and a separate green bin for food waste as an contribution for reducing GHG emissions from the waste sector. Once we take FOGO out of the red bin into a third green lid bin service and remove FOGO from all commercial bins/hoppers from hospitals, government offices, restaurants, catering services, aged care facilities, shopping centres etc that reduces waste going to landfill by all least 40-50% in the ACT. Other states report up to 70% reduction. Once the FOGO is out of landfill that reduces methane at Mugga Lane considerably

The ACT Greens Waste Policy Principle 9. states *“Ensure that the ACT’s waste management contracts do not require or depend on long-term high levels of waste generation to ensure they are financially viable.”* The cost and size of this facility is such that it could not remain viable if the waste stream were affected by improvements in recycling and legislation affecting packaging and waste generation. The EIS should have also considered this.

The EIS describes rail to Hume as “redundant” and gives unsupported reasons, none of which, if applicable, could not be overcome. Hume would provide opportunity for appropriate warehousing facilities and sidings onto private land while the single track would not be a hindrance since the freight trains would be the only ones using it.

Kingston was rejected because of subsidence issues but no assessment has been done on whether the same issues would occur at Fyshwick. Additionally for Kingston it claims that *“The current preference for a large residential suburb would possibly constrain access and operating hours.”* but fails to acknowledge that the East Lake Urban Renewal could pose similar constraints. It is not true that Ipswich street is *“the only site in the ACT”* available. There are many Broadacre sites along the railway track north siding that could be available for railway freight development; most more suitable than this one whose only genuine recommendation is that it is close to the developer’s own metals recycling business.

Block 11 section 8 and block 11 section 47 are too small and inappropriately sited for a Rail Freight solution envisaged in Canberra's Freight Strategy Building an Integrated Transport Network-Freight 2016. This EIS fails completely to consider the need for an integrated approach.

The destination of the 75% recyclables to be moved by rail is not clear. It is not clear what destinations are available in NSW for rail freight out of the ACT and how the NSW network would accommodate it. This is information which should have been supplied in an EIS for a railway proposal.

The ACT Railway Masterplan - Rail Freight Alternatives

Building an Integrated Transport Network FREIGHT 2016 concluded that *"Should a multi-modal terminal be required in the future, feasibility of alternative locations along the rail corridor would need to be investigated."* There appears to have been no investigation of those alternatives.

The use of railway for freight is broadly acknowledged as important, especially given climate change and road safety considerations. *The Railway Masterplan Report 2009* suggests that an intermodal freight terminal and distribution centre could be established adjacent to the rail corridor and close to the industrial areas of Fyshwick or Hume.

The EIS failed adequately to demonstrate how the *ACT Railway Masterplan* and the identified opportunities to capture national growth in freight by making greater use of rail assets in the ACT fits in with his proposal. The proponent must identify interested users, their needs, the likely tonnage/freight projections and frequency of use, the impact on the existing road use within Fyshwick and the connection to local trunk road networks for ease of freight distribution so that the total suitability of his land can be assessed for this proposal.

In spite of the assurances given in the 2016 ACT Freight Strategy there has been poor planning for this development and no publicised stakeholder consultation to identify and confirm preferred terminal sites. The EIS is inadequate in the way it failed to consult with stakeholders on the most suitable site for an multimodal freight terminal. No sites at Hume or Beard were examined as a feasible alternative. Planning for the East Lake precinct was also not considered.

The capacity of the terminal at Fyshwick to handle over 300,000t of waste a year and provide opportunities for other freight users is doubtful. Road access is a serious constraint. The public benefit has not been adequately considered because the site at Hume was not analysed in the DA 201730668 for the terminal. The proposed rail hub is impractical for high volume rail customers. It is not located well to accommodate increased air freight into Canberra airport. The Government must work with industry to ensure that, where practical, adequate associated land, zoned for freight and logistics activities, is available to allow high volume freight customers to locate adjacent to intermodal terminals. In this way the cost and amenity impacts of local pick up/delivery movements on the public road system will be significantly reduced.

For freight supply chains to work efficiently and effectively, it is necessary to ensure the provision of adequate intermodal capacity and to optimise the efficiency of these operations linked by efficient network connections and well planned road access. There is inadequate set back from existing developments and no room for future expansion, logistics or warehousing.

The EIS fails to consider the expansion of the air freight into Canberra airport and the location of any rail freight terminal to meet their needs. This is a serious omission of an important planning issue which must be investigated further to fully justify the future of the location at Fyshwick . In its Master Plan, Canberra Airport states its intention to increase freight throughput at the airport. With an intended expansion of freight services, the airport expects two to three jet freighter aircraft will be operating from the airport within two to three years, eventually growing to five aircraft in total. *“Expanding dedicated freight services would allow currently unmet demand for the movement of larger and heavier parcels by air to be met and delivered within the region.*“(Building an Integrated Transport Network)

I submit that the plans outlined in the EIS describe a network that will be inadequate and inefficient. It will suit the purpose of transporting direct to Port Botany the metal recycled at the developer’s adjacent metals Recycling facility Block 13 and the remnant waste from red bins and C&I collected locally. It will not meet the needs of the wider Canberra community or be consistent with the Freight Plan for the ACT.

Cost Benefit Analysis

The proponent does not have any contracts for waste and may not get any. On this basis the development must not be approved till he can demonstrate with signed contracts that there is a waste stream available to him. He must also be asked to demonstrate how this Development will be economically feasible to build and operate during the first years till an adequate volume of waste becomes available to justify its size.

Since the development gives CRS a monopoly on Canberra’s waste it is the responsibility of the government to ensure that the people of the Act are protected from financial loss or failed waste service. It is important to the ACT residents that its waste disposal has guaranteed security. The developer should prepare a Business case for his proposal. The Business case supporting this proposal must be robustly scrutinised by Government before putting the future of Canberra’s waste disposal at risk. The Business case should be available for public comment.

CRS stated that the recycling treatment centre would be profitable on its own right, but no cost benefit analysis was provided. It is hard to see how this development will be viable given that the cost of taking the remnant waste to Woodlawn even by rail with the tipping fees have to be factored in. The potential to increase waste disposal costs to the Canberra household has not been provided. The EIS must address this.

There are additional costs to this development, direct and indirect, which should be included in any cost benefit analysis. These are the costs of remediation and ongoing monitoring of the contaminated site; the costs of redirecting the storm water channels, the cost of leachate management, the costs of the geo=membrane vapour barrier and its installation costs and the costs to the ACT health system of increased fine particle emissions as a result of the dust and emission from the extra trucks in the Fyshwick area where there are more receptors than at Mugga Lane.

The developer claims to be able to remove 20% of recyclables from the Red bin waste. This figure is unconvincingly high. The new similar facility at Leeds in the UK is struggling to obtain 2.5%. Considering the cost of construction and operation of the centre and given the costs of transporting the remnant waste to Woodlawn and the gate fees to be paid the profitability of the enterprise must be questioned.

It is essential to ascertain proper costing for the transfer of waste to Woodlawn Landfill as this proposal was previously costed in the NI2014-153, Mugga extension and found to be too costly. This must be addressed.

BITRE estimates that for general or mixed commodity freight, unit costs for rail freight exceed those for road freight at distances less than 1,500 kilometres. This has to be addressed.

The container deposit scheme when operational in the ACT will further reduce the volume of waste available to CRS for recycling.

The recent refusal of China to take any more of Australian recyclables has to be included in the Business Case for the impact on the viability of this enterprise.

PART 2 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND MITIGATION

TRAFFIC IMPACTS

A number key of issues have been identified pertaining to traffic impacts from this development which require additional assessment have ben identified.

Details of the key transport routes, vehicle types proposed to access the site, the traffic volumes likely to be generated and the likely arrival and departure times of traffic generated by the Proposal during the construction and operational phases of the Proposal.

The cumulative impact of traffic generated by other existing and proposed developments must be thoroughly assessed.

Increased traffic volumes and frequency, including heavy vehicles, placing pressure on intersection and road capacities within the vicinity of the site

General delay in travel times as a result of increased number of heavy vehicles placing an additional economic cost on commercial road users

Reduction in road safety as a result of increased number of heavy vehicles operating on the road networks around the site.

Accidents occurring on-site as a result of light and heavy vehicles, trains, container handlers and machinery operating within close proximity of each other.

An assessment of predicted impacts on road safety and the capacity of the road network to accommodate the Proposal, including identification of potential road congestion and parking implications was omitted.

More exact figures for numbers of trucks bringing waste to the site. Waste received is expected to occur between 10 am and 4 pm so the one truck every 4 minutes average does not apply to those hours.

The average number of trucks entering/existing the facility (one vehicle every 4 minutes or 15 per hour) is not representative of real world operations. Trucks will be entering and existing the facility when they have completed their load pickups. Garbage trucks in the ACT operate from 7 am to 5 pm (SEUZ).

An explanation is necessary for how the peak periods of 8-9am and 4.15 - 5.15 pm were arrived at. The busy commercial precinct of Fyshwick has peak periods during the middle of the day. At the site visit on 21st January the group assembled could not hear the speakers for the traffic noise on Ipswich street and conversation repeatedly stopped to wait for traffic noise to abate.

Proposed and approved developments within the vicinity of the proposal were required to be assessed by the Scoping Document to identify the future traffic volumes and intersection performance within the local road network. This must include the future East Lakes development and the Molonglo Group proposal for Dairy Road which would create extra traffic at the Newcastle street intersection with both the Monaro Highway and Ipswich street. An additional 9000 residents are proposed for East Lakes and an extra 10000 visitors per week for the Dairy Road development. The impact of increased traffic on the intersection of Newcastle Ipswich street and the Monaro Highway needs more detailed investigation for congestion, expected time of delays due to the additional vehicles, the potential for accidents and the increase in diesel emissions.

This particularly significant when the EIS states *“Most trucks will operate outside of peak times to avoid impact on surrounding activities and traffic. It should be noted that the nearby Bunnings and its associated car intensive movements will be moving to the airport precinct thereby reducing traffic volumes in the precinct”* p.67 Two points need to be made. 1. Bunnings is not relocating, rather there will be a new store at the airport vicinity and 2. There is no guarantee and no figures to support that trucks will not be arriving in the 8-9 am and 4.15-5.15 pm periods.

There was no consideration in the Traffic study of the fact that additional truck movements do not equate to car movement. For example it would take a truck two or three times as long to pass through traffic lights or to make a right or left hand turn. Thus there will be delays for other road users. The general level of comfort and convenience of other road users would be adversely affected by the additional trucks on the road. Their ability to select a desired speed and manoeuvre within traffic is made more difficult. Drivers would feel restricted and generally notice the change in traffic flow.

“The highest impact will be on Wiluna Street and Lithgow Street, which will have the highest volumes of additional waste vehicle movements – 15 vph in 2020/21 or 1 vehicle every 4 minutes.” App E p.19 No separate assessment of the impact on Wiluna Street and Lithgow street has been included in this study and it should have been. The social and economic costs to business on Wiluna and Lithgow streets should have been considered. The significant growth in truck traffic on these streets could deter customers who will find entry and exit from parking bays or shopfronts difficult. Traffic safety issues and potential for accidents on these streets should also have been addressed. The fact that Wiluna street is on a Bus route has been ignored - a serious omission.

The EIS claims additional vehicles represent approximately 5% of vehicle movements throughout the road network. Without the raw data we are unable to check the accuracy of this. However that this increase is negligible is false. To a scientist a 5% increase in anything would ring alarm bells and is not statistically negligible. It is precisely because of the volume of trucks on the Fyshwick road system that an additional 5% is an unacceptable increase.

“It should be noted that the tube count on the Canberra Avenue service road shows an additional peak period midday (12:00 to 13:00) in excess of the AM and PM peaks.” In spite of the fact that the volumes on the service road are very low in comparison to Ipswich Street and Canberra

Avenue this should be considered as significant as it supports this submission's claim that the morning and evening peak hours are not the only ones to be considered. Commercial traffic including small delivery trucks and utilities frequent the Fyshwick streets outside of commuter peak periods. p3 App. E. An additional peak period was identified on the Canberra Avenue service road should suggest that a thorough traffic study would test whether that same peak period occurred on other streets nearby. What is the peak period for example on Newest street near the Monaro highway exit.

Generally there are a number of peak periods experienced by transfer stations and/or resource recovery facilities. Waste collection vehicles (either domestic or commercial) create peak periods following the completion of kerbside waste and recycling collections close to the middle of the day. However at Fyshwick the peak period of traffic movement is likely to be in the middle of the day when general delivery vehicles for the Fyshwick commercial and light industrial businesses reach the destination for pick up or set down. Lithgow street already has a number of truck dependent operating sites whose peak periods was not investigated. This was not adequately addressed. The Traffic Impact Assessment should be done again.

Whatever the statistics the conclusion must be challenged. That the effect of total increase would have *"no noticeable effect to the existing level of service of the surrounding road network."* Even if statistically the increase seems insignificant, in reality for a driver sitting in a stationary or slow moving line of traffic the extra trucks might add minutes to the journey and cause frustration, stress or even road rage.

Figure 25 "Comparison of generated heavy vehicles to existing movements" p.70 shows am peak traffic flows and the number of additional trucks. Since the bulk of the 3000 vehicle movements in that period would be commuters going to work then the graphs should be resubmitted showing the number of vehicle movements during each hour of the day and the number of additional trucks as a percentage of those figures. There would be substantially fewer cars on the road and more small and larger tucks delivering and picking up from the hundreds of small businesses. The comparison graphs would give a more reliable picture of the impacts on the road of the additional garbage trucks in this area.

During CC meeting the proponents said that they want to establish a freight rail facility that would "...capture a large amount of container traffic"; and that other people want to use the train for other non-waste related uses. A participant pointed out, and the proponents admitted, that their traffic study only considers traffic related to waste processing, and it does not include any road traffic that would be generated by the proponents' plan to establish a freight rail facility. This is not good enough. Without this information and the details omitted as indicated above, the Traffic Study must be rejected as inadequate.

The EIS discusses increased rail movements and the number of addition containers at the RFT but fails to calculate the number of additional truck movements bringing freight to the terminal. CRS should have provided the number of trucks bringing scrap metal to the Access site for rail transport and in particular their origin. If from Sydney, Wagga or Adelaide the traffic issues involved must be addressed. As reported in the Canberra Times when interviewed on 29/08/2016 the CRS spokesperson said; *"We bring in metal from as far as Cobar, Wagga Wagga, Orange, Bathurst, Griffith, Goulburn, Tumut and everywhere in between. We bring it to Canberra, we compress it and pack it into containers."*

"The site will generate freight vehicles to deliver reusable material to the rail freight terminal (RFT) located at the proposed site. The estimated generation from the known sources likely to use the

RFT is 55 vehicles per week. 25 of these vehicles are from the adjacent Access Recycling services site. The development will arrange for an internal access link to be able to transfer to the RFT without the need to use the existing road network. This reduces the freight vehicles using the road network to 30 vehicles per 6 day week or 5 vehicles per day.” App E p.11 It is not clear what the internal access link road refers to. This needs further explanation.

“The freight vehicles are likely to originate from within Fyshwick.” APP E p 11 This is unlikely and must be demonstrated. Freight vehicles bringing waste metal to Access already come from outside the ACT.

“The majority of waste metal on site will be handled by the adjacent Access Recycling Service and will not add additional vehicles to the road network. “ p.18 How this recycled metal will be transported across block 9 and across the paths of garbage trucks to the Access site is not explained and should be.

It is not clear how the delivery trucks bringing goods to the hardstand for rail freight would manoeuvre the site. It appears that the weigh bridges are located only for trucks bringing waste to the shed. The other freight would not be captured by their location. This needs explanation.

“Occasional semi-trailers will also service the site for some general freight deliveries and removal of recyclables.” p 7 App E The “other non Government vehicles” page 8 must be quantified and qualified for their exact nature and function. Table 2 page 9 does not include fuel deliveries, leachate removal, maintenance vehicles etc. This must be addressed further with details of the number of all vehicles and vehicle movements; the number of other incidental vehicles coming to the site with the types and size of these vehicles and the routes expected to be taken by all of these vehicles coming to Lithgow street

“Even though there is no warrant the development, for the safety of all road users, proposes to signalise the exit from the site. This will improve safety for the opposed turn with southbound traffic on Ipswich Street.” APP E p. 16 This has not been demonstrated. There should be additional information as to the working of the vehicle activated traffic lights at the Ipswich street exit to demonstrate how there will be no congestion issue on site and in the street and why backed up traffic at those lights will not increase the risk of a collision when traffic comes over the rise and unexpectedly confronts traffic lined up at the lights. With lights holding up traffic near the crest of a hill limiting view and stopping time, the potential for a rear end accident must be addressed. A more rigorous analysis of the impact of these lights on traffic flow and congestion is required particularly the associated traffic risk that might be involved because of the hill to the north, the proximity of the Wiluna lights to the south and the propensity of impatient drivers to attempt to run yellow and red lights. Safety concerns are raised by these lights which must be allayed.

The bike lane on the south bound side of Ipswich street has also not be considered nor the number of likely bike riders at various time of day. This should also be addressed.

If it is demonstrated that the roads will not be able to handle the additional traffic roadworks may be necessary to improve the situation at an unwelcome cost to the ratepayer.

It is not clear whether the cost of these lights will be born by the ratepayers or the developer. The expected increase in trucks on the single lane roads of some 460 truck movements per day on Ipswich St and the 230 additional trucks using Wiluna and Lithgow Streets is untenable for other road users and will impact air emissions. This was not addressed and should have been an important part of the Air Quality Impact Assessment.

The Noise Impact Assessment Appendix J says "The likely number of vehicle deliveries during the morning shoulder period is approximately one truck every 10 minutes." p.21 This minimises the noise impacts in the 6-7am shoulder period but alters the average number of truck movement on site to more than the predicted 1 every 4 minutes thus increasing impacts associated with traffic queuing and the potential for odour release with more frequent opening and closing of the doors in the middle of the day.

Construction traffic

Construction traffic generation is inadequately assessed. *"There will be some increased vehicle volumes, from delivery trucks and workers vehicle's which may result in the intensification of traffic congestion along Fyshwick's collector roads at times".* p. 68 An attempt should have been made to quantify this. This is far too general and unconvincing.

The Banksmeadow EIS estimated 60 trucks a day for a none month construction period. Removal of contaminated soil, bringing in clean fill and the fact that the building is more than twice the size of banks meadow would suggest more trucks and a longer construction period. The number of trucks during the construction period must be addressed.

"Increased traffic density theoretically could pose a nuisance for drivers during construction hours and in the local area and possibly pose safety concerns for pedestrians." p 68 Cyclists have been ignored. The traffic lights will not have been installed at this stage therefore the entrance and exit for construction vehicles into Ipswich street more dangerous.

"There will be an increased volume of heavy vehicles for day-time users of Ipswich and Lithgow Streets." The conclusion must be challenged that *"the impact of diverted vehicle movement is considered to be minor given the site's connectivity to the wider street network, including arterial roads in Canberra Avenue and Monaro Highway."* since it is precisely that connectivity which intensifies the congestion in those two roads and creates dangers to pedestrians and cyclists and increases the potential for increased traffic. The claim that the two separate entrances will prevent disruption to local traffic must also be challenged as there will only be one entrance and exit during the construction phase since part of that phase is the construction of the second Lithgow street entrance. One assumes that all construction vehicles will enter and exit through the Ipswich street site without lights to assist.

Construction traffic impact analysis is also deficient in detail in that it failed to accurately account for the number of truck movements, the type of trucks or the length or period of their presence on the site, during;

- the Site preparation
- Demolition
- Clearing and grubbing
- Contamination removal
- Earthworks, drainage and utilities
- Bulk earthworks
- Installation of Stormwater drainage and utilities

- Building the slab
- Pavement and terminal building construction
- Rail construction and the construction of the terminal hardstand

Most of these construction items would not occur simultaneously so the overlap must be included.

The time scale for the construction stage must be included.

Traffic Hazards

I am opposed to Fyshwick Materials Recovery Facility proposal from a traffic hazard perspective. Anyone who travels to or works at or lives near Fyshwick or who regularly shop or does business there should oppose the the development of a MRF and rail terminal on traffic safety grounds because 230 extra trucks per day (Minimum) going in and out of that location in Fyshwick will create significant traffic problems.

Fyshwick is a busy commercial district. At certain times of the day streets are particularly congested. The intersections between the Monaro Highway and Newcastle Street and Ipswich street and Canberra Avenue are particularly congested. Even without the extra waste trucks the traffic builds up and motorists can wait for several light changes to be able to turn. If this increases as a result of this development there is the potential for traffic to back up to or on the Highway itself or be unable to exit the highway creating dangerous situations for the extra traffic wanting to exit but unable to do so. The exit ramp into Ipswich street from Canberra Avenue is a left hand turn only. This traffic may also be blocked at times causing unnecessary public inconvenience.

A new development on that site should not be allowed to have access or egress of heavy vehicles every four minutes onto a street that is on a hill where oncoming traffic might not be able to see in time to stop safely if the trucks stalled or were halted by a traffic delay further down the street.

Additional Concerns

Looking for a local market for recyclables as claimed will also involve more trucks to disperse materials locally from the site.

The more freight moved by rail the more trucks must be introduced for deliveries and pick up at the hub.

Unwanted hazardous or contaminated waste to be removed from the site must be addressed in a traffic study so that its safe transport can be assured

CRS fails to mention what waste will be brought in to process if 300,000t of waste cannot be sourced locally. If regional waste is to come by rail then the train movements and noise assessment is inadequate and should be done again. If they come by road the distances and route through Canberra and Fyshwick street need to be explained and assessed for impact.

It is important to understand which routes these dump trucks will be taking through Canberra to reach the recycling facility, including those coming from NSW. Will, for instance, residents along

Sturt and Jerrabomberra Avenues and Canberra Ave see a significant increase in traffic and what will be the impact on the Barton Highway for waste coming by road from the west.

In addition to the traffic generated by CRS there will be expected traffic growth in the Fyshwick area. In the EIS CRS states that the facility would see approximately 230 waste trucks per day enter the facility (460 truck movements). But that data in isolation of a current (and forecast future) vehicular growth doesn't paint the whole picture of the impact of the facility on traffic levels over time. This must be addressed

There appears to be no allowances for maintenance vehicles, removal by road of 80% of the remnant waste unable to be recycled, removal of contaminated water and unwanted hazardous materials nor for delivery of fuels or oils. Nor is it clear whether these figures include the trucks bringing waste metal to the recycling yard on Block 13 for onward rail transport. Nor is it clear whether the 230 trucks include those coming from beyond Canberra as part of the "regional solution". This must be clarified.

There is no provision for heavy vehicle parking on site should that be necessary because of driver fatigue or maintenance issues. The location of the nearest truck lay-bys should be identified.

Queuing on the site and stockpiling of waste in the shed could result if the railway schedules cannot be met. This must be addressed. Idling vehicles in a queue have the potential to exacerbate noise levels and diesel emissions. This was not addressed in the Noise Impact Assessment, Air Quality or Health Studies.

The proponent acknowledges the receipt of a \$1m grant from NSW under its Improving Rail Program to "Restart freight services between Canberra and Port Botany" and "to shift export containers to rail 300 B Doubles per annum to start." equivalent to approximately 1 B Double per day. These additional trucks were not identified in the traffic entering Lithgow street and since were not delivering waste to the MRF then the direction of their exit needs to be considered. They will leave Block 13 into Lithgow street across the path of the waste vehicles coming up Lithgow street. increasing the potential for accidents to occur and traffic delays. Any such accident in this street then has the potential to disrupt the flow of the waste being delivered and the turn around times for the waste picks up.

How the scrap metal would move from Block 13 to the rail terminal with a constant stream of waste trucks using the roadway from Lithgow street is unexplained. Will rail container trucks or fork lifts cross the path of incoming waste vehicles causing additional risks or will the rail containers be craned overhead to the hardstand and what the risks for the drivers below would be. This must also be addressed.

Future Roadworks

Intersection upgrades might be required as a result of the CRS project. Cumulative impact must be considered considering future potential truck movements from all sources. A Pavement Impact Assessment (PIA) should be conducted to assess the impact of heavy vehicles on local road surfaces from the proposal. Should the results of the PIA demonstrate an increase in heavy vehicle movements of 5% or more the Department should require the proponent to contribute to the maintenance of the road surface for the life of the project. I submit that the project should not contribute to increased tax payer cost of road maintenance and that the proponent be required to have a set remuneration agreement with the Department regarding road maintenance and repair within the region.

Consideration should have been given to the disruption that would be caused if or when Ipswich street needs to be widened. Delays caused by stop go men, reduced speed, will affect the ability of vehicles to turn in and out of Ipswich street facility and cause queuing of vehicles on the site and on the road waiting for an opportunity to enter via Wiluna Street.

Traffic Hazard Risk Analysis / Truck Safety Crash Analysis and Trends

The Traffic Impact Assessment Appendix E is unsatisfactory in that it did not include as part of its consideration a Road Safety Assessment.

The safety of heavy vehicles has attracted considerable attention from government agencies and the general public. Heavy vehicles have many unique operating characteristics, such as poor acceleration and stopping capabilities, high rigidity, greater mass and longer length. These characteristics partly contribute to their over-representation in traffic fatality rates. The Commonwealth Department of Infrastructure and Regional Development undertook an examination of heavy truck safety crash analysis and trends July 2016, identifying a number of facts relevant to this proposal.

- Heavy trucks are disproportionately involved in casualty crashes.
- Approximately 16 per cent of road crash fatalities and 4 per cent of injuries involve these vehicles.
- In general, involvement of a heavy truck is associated with more severe injury outcomes.
- Rates of annual fatal crashes per kilometre travelled or per registered vehicles are higher for heavy truck-involved crashes than for passenger car-involved crashes. Approximately 60 per cent of persons killed in heavy truck crashes are light vehicle occupants. Another 20 per cent are vulnerable road users (motor cyclists, pedal cyclists or pedestrians).
- Approximately 80 percent of fatal crashes involving heavy trucks are multi vehicle crashes, although available Australia evidence suggest that in multiple-vehicle crashes involving heavy trucks fault is not assigned to the heavy truck.
- The three most common contributing factors to truck crashes are driver error, environmental factors (roadway condition or weather) and vehicle failure. However lack of room for merging and rear end collisions were common causes.
- Crashes at intersections are more likely to be associated with turning vehicle movements .

The EIS has seriously underestimated the risk of accident as a result of the increased truck movements in these streets. The contributing causes of truck accidents (lack of room for merging and rear end collisions) can be identified as potential occurrences around and near the proposal site.

To improve heavy-vehicle safety it was recommended that transport authorities, road safety professionals and fleet managers and occupational safety officers in the trucking industry should consider auditing intersections to ensure adequate turning radii for large trucks. Before approving this development ACT Planning should require the proponent to undertake an full intersection investigation for the Fyshwick intersections likely to carry the extra 230 trucks at Fyshwick. this should include the entrance to the facility.

I submit that by rejecting the proposal and thereby removing the trucks from potentially crowded and therefore dangerous situations is necessary to avoid any avoidable crashes, injuries and fatalities on the roads of Fyshwick. The Precautionary Principle of Sustainable Development demands it.

MATERIALS AND WASTE

The volume of waste

The EIS should be rejected for adequacy. The EIS assumes that a volume of waste will be available but does not have contracts in place for that volume. This should be clarified by the proponent and the EIS should be updated to reflect the correct volumes of waste available for the development. The ACT Government should sight all necessary contracts before any consents are given. There is no contract with Veolia at Woodlawn to take the waste. No approval should be given until this hurdle is overcome.

The EIS and Arcadis Report does not supply detailed information on potential quantities, location and sources of waste. It is not clear what the “external sources” p.5 Arcadis means. Does “*source segregated waste*” mean waste is coming from other recycling facilities for dispatch to Woodlawn? This must be clarified.

CRS has been less than convincing about the volume of waste to be received at Fyshwick. In two Scoping Applications, this EIS, and at public meeting the figures have constantly changed. Figures and assumptions about available waste and recycling rates require clarification and verification before they are relied on by the Consent Authority. The Minister must request each waste operator to disclose the amount, and category of waste being disposed of at the facility. Quality data is critical to making informed decisions and this was a crucial aspect of the Waste Feasibility Study’s work in establishing baseline data. The Study has highlighted the need for good data collection and ACT NoWaste has recently commissioned updated audits.

It is unclear how a registered vehicle list maintained by the operator would prevent entry of unauthorised waste vehicles. Nor is it clear how illegal dumping would be prevented especially at the gate in Lithgow street where the cull de sac is quiet and private and not overlooked by passing vehicles or street lights.

There should be a minimum authorised amount or quantity of waste permitted on the site at any one time. This should reflect the upper limit that the site can reasonably and safely hold. Previous investigations have uncovered that recycling facilities have been stockpiling large amounts of waste on site for long periods of time, often with no intention of removing the material. Access Recycling on block 13 illustrate an example of this practice. the mound of glass has been there for almost two years. The risk of environmental harm is significantly increased by such practices. CRS must have conditions imposed so that they manage their stock and move the material out of the facility for lawful reuse.

Records must be kept and reported regularly of the total waste received and removed from the site, the waste streams and waste types, where the waste came from and went to and the waste processed on site. The records should show time in and out, vehicle registration number, gross weight tare with net weight, customer or supplier and product description or waste type and docket or transaction number. Methods of recording and reporting must be fully explained.

If this Transfer station is approved and CRS controls all ACT's Red Bin and C&I waste then no other Waste To Energy provider would be able to submit a DA because remnant waste would need to be transferred from Fyshwick to another site in the ACT. It is unacceptable that any one company should have a monopoly over Canberra's waste disposal.

Double handling of the waste is unacceptable for reasons concerning traffic generation, from house to Fyshwick, from Fyshwick to Tarago by rail, from Tarago to Woodlawn by truck, and the added diesel emission created and GHG implications. The results of the cumulative impact assessment must demonstrate that noise, odour, air quality, health and traffic impacts the key issues of concern for community members would be within acceptable and tolerable levels as a result of unnecessary double handling.

Unless the ACT EPA, EPSDD or TCCS is capable of auditing the transfer of waste on a regular and unannounced basis, for composition, weight and levy payable on the waste, a facility like the CRS MRF is open to rorting. There should be video surveillance to ensure what the driver said was in the truck could be confirmed by video, both at the weigh bridge and on the shed floor.

Weigh bridges

An Auditor General report July 2004 "Data Reliability for Reporting on the ACT 'No Waste By 2010' Strategy" referred to a potential for conflict of interest arising when the same company operates the weigh bridges and disposes of the waste. *"Potential exists for the weighbridge operator at the two landfills in the Territory (Mugga Lane and Parkwood Road) to manipulate the data recorded by the weighbridge database and for the operator to incorrectly use the coding system on the weighbridge database. In addition, a conflict of interest exists for the business that has the contract for managing both the operation of the weighbridge and the Mugga Lane landfill."* The potential arises that the figures could be lowered or raised to their financial advantage to avoid waste levies. There are insufficient controls to ensure against the manipulation of data recorded in the weighbridge system by the operator. Potential exists for a conflict of interest for the Waste Transfer Station operator if it is the same operator of the weighbridge.

There may be opportunities for making money out of differences between the states and territories in their levies for waste-to-landfill and for recyclables. For instance, waste from Sydney may fill the empty scrap metal, waste-to-landfill, and recyclables containers returning to Canberra. This waste may have collected the waste levy from the suppliers. By rerouting it through the ACT back to Woodlawn as ACT waste and paying NSW the levy for ACT waste, which may well be less than collected for the Sydney waste, profits can be made. If there is rorting in transfer of waste from NSW to Queensland driven by their different waste levies, then there will be comparable opportunities for rorting in NSW to Canberra and Canberra to NSW waste transport if state/territory levies are not exactly matched.

A method of both checking that the return containers are empty and that the weighbridge operators are independent from the operators of the waste processors must be included in the EIS.

The size of the weigh bridge must be demonstrated as fitting all trucks that might enter the facility small and large so that proper accounting can be made of all waste received

The EIS must demonstrate how the system of two weigh bridges will work for the southbound trucks coming into the site through the Ipswich street entrance as now advised will happen. All

vehicle entries to, and exits from, the waste depot are to pass through the vicinity of the weighbridge. This is important and cannot be assessed on available information.

A report prepared by the NSW Independent Commission Against Corruption (ICAC) in 1999 on "Weighing the Waste: An Investigation into Conduct at Local Council Waste Depot Weighbridges at St Peters and Elsewhere". recommended weighbridge operations and its procedures should minimise the risk of unethical conduct. The EIS must address best practices for managing, recording and reporting of the received waste and develop a quality assurance framework document to manage the recycled data also.

The Commission stated appropriate procedures and equipment should ensure compliance with the following standards:

- The weighbridge boom gates are to control all vehicle access to the waste depot.
- All vehicle entries to, and exits from, the waste depot are to be controlled and recorded.
- Correct weights are to be recorded on entry and exit.
- Vehicles are to leave the waste depot only with the material they are authorised to remove.
- Drivers of all vehicles are to be issued with some form of documentation authorising each entry.
- Records are to be kept in a form that is routinely reconciled and auditable such that operations can be monitored and abnormalities detected.
- Video images of all vehicles are to be monitored within the weighbridge office and remotely.
- Video recording and manual entry of all vehicle registration numbers are to occur.
- Operators as well as remote monitors are to see if all wheels are on the weighbridge.
- Operators as well as remote monitors are to see the contents of open topped trucks.
- Video records of weighbridge operations and duplicate transaction records are to be stored long term at government premises.

Recycling businesses must estimate the total volume (tonnage) for each type of material that these businesses have recovered from the Territory through recycling activities. There must be a written quality assurance framework to ensure the recycle data collected and recorded is of the type and quality sought by the Territory government and that the data provided is reliable and verifiable. Records must be complete, adequate, accurate, authentic, useable and inviolate. The EIS must include a written quality assurance framework to manage the collection, recording and reporting of recycle data.

Delivery and Reception of Hazardous waste

All transfer stations need to be equipped to handle the occasional occurrence of hazardous waste, real or suspected, mixed with other wastes. Potentially hazardous materials such as pesticides, bleach and solvents, batteries and radionuclides have been found in municipal waste streams.

The EIS claimed p.97 that these materials "*can be safely extracted and diverted for appropriate disposal*". The only method for identification mentioned is visual sorting. Visual sorting depends on the vigilance of the workers and is open to human error and negligence. The Identification of mercury containing waste is particularly difficult. This method is unreliable and impractical for such large volumes of waste needing to be handled "*expeditiously*". There is a conflict between the need to deal with the waste quickly and the need for careful screening for hazardous materials. The Proponent should provide additional assurance that the conflict can be overcome and the methods he will employ. The EIS must also address the percentage of hazardous waste found in waste streams and the percentage that he claims can be identified and removed.

Secure areas with containment barriers near the main tipping area where suspect wastes can be placed pending evaluation and analysis must be identified. No plan or diagram specified these sites. Best Practice Guidelines for operation of MFRs and Waste Transfer Stations should have been cited. Adoption of strict waste acceptance guidelines must be assured. Methods in other waste handling facilities around the world should have been described for the identification, separation, containment and disposal of any inadvertently received hazardous waste .

The Traffic Study Appendix E states p.18 *"The current proposal is for any hazardous or contaminated material to be handled and be retained permanently on site. All hazardous or contaminated material on site will need an action plan to be developed and approved by the relevant authorities."* Retaining hazardous materials permanently on site or for any period presents a higher level of risk than the discovery of the material itself. Explosives for example or radioactive material must be dealt with immediately. So too asbestos products or highly toxic chemicals. They simply cannot be stored on site. All hazardous material should have a detailed action plan approved by the relevant authorities and the action plan must be in place before the operation begins.

I submit that it is not best practice to hold such material on site for any length of time. There are obvious dangers to site workers. There is the potential for material to mix and increase in toxicity or danger. The facility must not store or transport together chemicals or fuels including LPG which could react dangerously when combined. Who on site will have the expertise to check the compatibility of materials stored? There is the added danger that some might be misplaced or stolen or find their way into the general community and environment where they could be misused or fall into the hands of children.

The EIS should have included the transfer station's operating plan which detailed procedures to identify, handle, manage and dispose of these kinds of wastes. More detail should be supplied. Special measures to identify and manage radioactive materials must be included in the EMP.

The EIS is not clear on how material such as smoke alarms, medications, batteries, light bulbs, paints, solvents, flammable liquids, toxic chemicals, asbestos, and treated timbers will be kept separate. Volume 1 page 46 indicates they will be stored on site in purpose built containers in an enclosed storeroom in the MRF building. But the location, size, materials and other details of this building and containers are not provided. Nor is it shown on any diagram or sketch of the facility. Therefore no assessment of the risks associated with locating hazardous materials in the MRF and the dangers created if a fire occurs inside the building can be undertaken. Likewise the 30,000L diesel storage tank kept in a bonded and roofed storage container is not identified in the drawings and cannot be assessed for environmental impact.

Other materials that may pose a risk to the environment, such as waste oil containers should be stored in bunded areas so that any leaks and spills will be contained. Where possible site staff should be responsible for decanting of any waste oils into the waste oil collection tank (if provided). Containers of oil that are too large to decant into the oil collection tank should be stored in a bunded area or on spill trays as per EPA guidelines. The EIS has failed to detail how they will handle this.

Dangers to the workforce, if dangerous items have been wrongly disposed of eg syringes, radioactive wastes from cancer sufferers, poisons, explosives etc. must be fully explained. For the workforce personal protective equipment such as goggles, gloves, body suits, and respirators should be on hand and easily accessible to employees. Because staff or customers might

inadvertently come in contact with a hazardous substance, it is also good practice, and often required by code, to have special eye-wash and shower units in the operating areas.

Waste management, recyclers, and electronics manufacturers are reminding consumers that it is a bad idea to throw out devices that contain lithium-ion batteries. California was compelled to start an awareness campaign after numerous fires at waste facilities, while incidents in New York ranged from batteries blowing up in garbage trucks to five-alarm fires that resulted in railroads being shut down. Last year, 65% of waste facilities fires in California began with lithium-ion batteries. If there are multiple batteries in the truck there is the potential to have not just a fire but explosions.

It is unacceptable that the Site Operating Plan is not included in the EIS for assessment of these issues. Hazardous wastes are a serious issue and of primary concern to the Consent Authorities in NSW assessing the proposed incinerator. Unexpected and undetected wastes in a waste stream are dangerous to human health, the environment and to property.

Scrap Metal Waste separating and handling

The proponent is a Metals Recycler. In public presentations he presented his aims as to remove the inappropriately discarded metals, such as toasters, in our red bin waste. There are no details of any aspect of the recycling component of this development. They need to be provided.

Minimum environmental standards for any site that stores, stockpiles, collects and processes scrap metal must be applied. These should include all surfaces to be hard and sealed; areas to drain to a collection system and not to stormwater and other areas on site; clean and dry water areas to be separated and include bunding; all dirty water to be contained and treated on site or taken to a registered liquid waste disposal facility. Metals recycling should be undercover at all times. Nothing should be exposed.

Metal separation can be achieved by using: over-band magnets for large ferrous materials e.g. shredded drums; drum magnets for small and heavy ferrous items such as batteries, nails, coins, etc., eddy current separators for non-ferrous metals – mainly copper and aluminium used for packaging and electrical components. The EIS contains no details of the methods proposed and the machinery necessary for its safe operation are supplied so that another gas bottle for example, will not accidentally go through a shredder as occurred on 13th December 2016 at Access Recycling.

Stockpiling

It must be proven that there will be no stockpiling of waste or recyclables anywhere on site. The following scenarios should have been assessed for the risk of stockpiling.

- road accidents delaying the arrival of garbage trucks;
- the arrival of several trucks at once and the subsequent queuing that will occur and the impact of this on the road networks surrounding the site;
- delays in the rail network scheduling
- machinery breakdowns inside the sorting shed and

- routine or non routine maintenance.

The proponent must provide an environmental management plan for this operation which details the areas of storage for each waste type, the method of transport off site and the length of time between each delivery. Excess stockpiling was identified by the community as an area of concern but described by the proponent as a moderate risk. This cannot be supported and is contradicted by the recent events at Hume. The Waste transfer Stations at Clyde and Banksmeadow also were recently fined by the NSW EPA for stockpiling waste - a practice that was never going to happen. Just like here.

Stockpiling of recycled waste is inevitable since there is such a variety of these waste types which have to be kept separated and for as long as is necessary to fill a truck or container whichever applicable, and for a suitable available market to be sourced. A full truck load is required to minimize truck movements. I submit that this is the likely reason there are so many fines for stockpiling and why waste fires are so common. That there will be no stockpiling will need to be strictly enforced.

The contingency plan that if the daily waste cannot be dealt with then it could be diverted to Mugga Lane needs clarification as to how this would be possible with trucks already scheduled to Fyshwick.

The EIS claims “*some*” “*capacity to store containerised waste*” on the hardstand if there is a problem with the rail network. This needs clarification. No information has been provided as to:

- the number of total available containers
- the number of containers needed on a daily basis and
- the number of remaining containers for contingencies as outlined above

This contingency should have been included in the modelling for Odour assessment if containerised waste is to be stored.

THE SITE IS A CONTAMINATED SITE

Site Suitability

Block 9 the subject land of this EIS is contaminated land having previously been used as a bulk petroleum depot. Block 11 is similarly contaminated. Contaminated land is land (including buildings and structures on land and surface and underground water) on and/or in which a substance is present at a concentration which exceeds the background level and the presence of which presents, or would be likely to present a risk of harm to human health and/or a risk of environmental harm. Petroleum products spilled, or leaked from underground fuel storage tanks have caused contamination of the surrounding soils and groundwater and this contamination has migrated through the soils and groundwater off site to block 11 and beyond..

To ensure that the site would not present, or would not be likely to present, a significant risk of harm to human health or a significant risk of material or serious environmental harm measures must be taken to contain and remediate the contamination and to monitor it into the future for as long as necessary. This EIS makes vague commitments to ongoing remediation and monitoring.

The history of the site reveals continuing reluctance of the previous owners to decommission the site thus assuming their obligation to remediate its contaminated condition. The present owners took on this obligation but have done little to progress the need to remediate and reveal an attempt to have it declared “fit for purpose” other than as a fuel depot.

The site is not “fit for purpose.”

Other than for recommissioning as a fuel depot this site, because of its contamination, cannot be used for any other purpose until complete remediation is achieved and a monitoring regime in place. Demolition work and construction has the potential to release harmful vapours from the hydrocarbons and any additional buildings on the site without the remediation having been achieved, could contain those vapours and affect the health and well being of the workforce inside. This was confirmed by an independent auditor in July 2017.

A site Audit Statement July 2017 has assessed that the site is suitable for the use(s) permitted by its zoning '1Z2- Mixed use industrial zone based only on the existing configuration of buildings and infrastructure on the site. The auditor states further assessment in relation to exposure to the hydrocarbons in soil and/or groundwater will be necessary before changes to site conditions are considered.

THE HEALTH IMPACT ASSESSMENT (HIA) APPENDIX L

There are two health risks assessment done for this site; one for Shell in 2011 (HHERA) and the one submitted for this EIS (HIA). This submission will consider both on the grounds that the latest one is inadequate. The earlier one, though dated and not considering the specifics of this proposal, uses credible methodology and approach including;

- a) Data collection and evaluation of the chemical condition of the Site, including: a review of previous investigations, identification of chemicals of potential concern (COPC), identification of data gaps and preparation of a conceptual site model (CSM).
- b) Exposure assessment for the population on or near the Site, including: the identification of receptors, pathways and exposure concentrations/intakes.
- c) Toxicity assessment of the contaminants, including: the analysis of quantitative and qualitative toxicity information, toxicity values and dose-response relationships.
- d) Risk characterisation, including: an assessment of the potential risk for adverse health effects to occur in identified receptors and for this HHERA, a fate and transport assessment to consider the potential for identified COPC to be transported off-Site.

The Health Risk Assessment Appendix L does none of the above. It was little more than a paraphrase of other reports in the EIS and neglected assessment of easily identified significant risks. The proponent must explain why his HIA did not similarly reference the earlier HERA specific to the site and its existing condition. The technical studies that the HIA accessed were either irrelevant or not technical and did not include the crucial site Audit report. As a desk top study I would have expected to see accessible references to other works on similar waste facilities with comparisons and monitoring results.

The comprehensive glossary as part of the introduction to Appendix L defines ‘dose’, ‘pathways’, ‘toxicity’, ‘exposure pathways’ terms necessary to any HIA but were rarely used in the body the report. This is inexplicable. As a consequence of the poor standard of the report the following risks were not adequately considered.

- airborne emissions associated with the site that may impact the local environment and raise potential health concerns, such as asthma and allergies, in the local community.
- risks to indoor workers the site. It considered impacts to the health of offsite community only. p.1.
- the diesel particulates from general traffic and the additional trucks on the site . Vehicle exhaust fumes consisting of lead, carbon monoxide, hydrocarbons and nitrogen oxide from increased traffic to and from the transfer terminal are known health risks.
- particulate emissions from the dust generated by demolition and construction and continuing operation of the facility, including dusts resulting from bulk material handling and vehicle/ equipment movements.
- the severely contaminated site and health impacts of the hydrocarbon pollution outdoors and the potential vapour intrusion indoors. The land contaminated with hydrocarbons and PHS and heavy metals has the potential to adversely impact health through direct contact with polluted water and soil and through inhalation of dust on the site and VOC vapours.
- the toxicity of the Chemicals Of Concern
- pathogens from the waste handling and leachate production. Microbial exposure primarily includes moulds, microbial spores and pollen within the waste. Bacteria can be carried in aerosols.
- gases or odours: from the decomposition of putrescible waste mostly comprising methane and carbon dioxide but including other toxics such as hydrogen sulphide and carbon monoxide..
- previous health reports done for the site. The previous reports provide baseline information which could have been used in the HIA.

Appendix L is unable accurately to identify, evaluate or analyse the health risks. A comprehensive desk top study would have identified the above risks and dealt with them.

It should have identified pathways as incidental ingestion, direct dermal contact and particulate/ vapour inhalation from wind blown dust or vapours from soil or groundwater. . It should also have discussed the adverse health effects of exposure to the contaminants of concern by all of these pathways. It did not consider the very worst cast scenario of a site worker exposed in a multiple way over a short or long term time frame. Long term exposure for permanent site workers, such as forklift drivers, weigh bridge operators was not considered. It should also have considered acute short term exposure.

Prior to the evaluation of chronic health risks from long-term exposure to low-level contamination, it should be determined whether or not immediate actions are required. Exposure to vapours can cause acute health effects such as nausea, headaches and respiratory irritation. The accumulation of contaminant vapours may pose a fire and explosion hazard. Such acute effects can usually be identified because they occur at concentrations that are orders of magnitude higher than corresponding odour thresholds. Should the potential for acute effects be established, buildings may need to be evacuated and emergency services contacted.

When assessing the acceptability of the levels of chemicals identified, exposure to chemicals causing threshold effects (this includes the measured concentration plus background concentration) should be less than the threshold dose. The lifetime incremental cancer risk of all genotoxic carcinogens should be assessed.

For some non-threshold substances such as benzene the background exposure can be high compared to the guideline value due to variations in background levels from sources such as vehicle emissions. Therefore the increased cancer risk from the vapour intrusion may be applied to modelled vapour concentration at the receptor, or to a measurement of indoor ambient air minus the background concentration if a background can be reliably obtained. Health Risk Assessment should measure the indoor concentrations against appropriate guidelines such as WHO or the current NEPM levels. Occupational exposure to toxic vapours should also be measured, monitored and controlled by the employer in accordance with OHS regulations and guidelines.

For non acute exposures In some cases the receptor will only be exposed for part of the day. As it is chronic rather than acute risk that is being assessed, where partial exposure can be demonstrated the nominated health guideline value may be divided by the fraction of the day that the exposure occurs. This assumes that the receptor is not exposed at other locations. It is difficult to believe that in regard to BTEX vapours that workers won't be exposed at other locations outside work hours.

The HHERA Report of 2011 referred to a PAH mixture reported at the site but failed to discuss the potential carcinogenic effects of the PAHs especially benzene and benzopyrene. Benzene is carcinogenic to humans with no safe level of exposure. The cumulative cancer risk of all chemicals at the site must be assessed. The overall potential adverse health effects posed by simultaneous exposure to a number of chemicals must be assessed. The hazard exposure assumes that multiple sub threshold exposures to several chemicals could result in an adverse health effect assuming only that the target organs were the same. But even if they were not there would be some form of cumulative effect if say the kidneys and liver and/or lungs were impacted at the same time and therefore the exposures are summed over all intake routes. If the sum is less than one the cumulative exposure is unlikely to result in an adverse effect. If the sum is greater than one a more detailed and critical evaluation of the hazards may be required or appropriate risk management measures at the site may need to be implemented. The risk estimates cannot be relied on without this approach in assessing the overall potential for adverse health effects posed by simultaneous exposure to a number of chemicals and poor ambient air quality. A more detailed and critical evaluation of the risk is required.

This HIA is totally inadequate and should be sent back as not having met community expectations and the requirements of the Scoping Document. It is a disappointing study with repetition of general information and nothing of substance on health.

The report dismisses community concerns raised as being for a previous proposal - the incinerator. This is untrue. The questions asked at those CC meetings were about fine particulate emissions, asthma, increased diesel emission from added trucks on the road and effect of air inversions on air quality. These issues still apply to the proposal in its present form and should have been addressed in the HIA.

Appendix L does not critically examine the relied on reports and admits it accepted the assumptions for the modelling made in the Odour Report. The HIA could have attempted some independent assessment to demonstrate the accuracy of the conclusions. The Noise report received a modicum of assessment with additional comments about noise and sleep deprivation,

tinnitus, and effects on mental health and cognitive impairment in children. It recommended additional monitoring at the southern boundary for exceedances.

The conclusion in the HIA regarding fire on site *“Based on the assessments undertaken and where the plant incorporates all the proposed and recommended control measures, there are no predicted significant health impacts for the off-site community that may occur from fire impacting the buildings on the site.”* p.28 must be rejected as inconsistent with historical and recent experiences of such events. Fire in waste facilities have impacted seriously on local communities; the smoke is a health hazard containing fine particulates and sometimes toxic emissions. Fires cause stress because they use valuable resources; block roads and disrupt traffic and close schools. The smoke has often forced people to stay indoors.

The Economic, Transport, Pest and Hazardous Waste assessment in Appendix L must be rejected as an apology for the proposal and as based on incorrect information. The health benefits to the community are exaggerated. The number of jobs would have a negligible impact. The 230 “truck movements” should be 230 trucks or 460 “truck movements. It is clear the assessment lacks rigour especially in view of the lack of consideration of the diesel impacts.

A staged approach to risk assessment is necessary. Risk Assessment begins with a comparison of reported site results for chemicals detected. Data collected in previous investigations must be reviewed and evaluated for the chemical condition of the site. Additional site specific data is necessary to model the movement and concentration of the chemicals of concern. There is inadequate recent data in the EIS while the HIA made little reference to any data of chemical exposure in assessing the health impacts of this development.

Vapour intrusion

The greatest level of concern is the potential for vapour intrusion into the facility buildings. Over 7733 sq. meters of enclosed space will be built on this site. The potential risk to human health from vapour intrusion into these structures should be evaluated. This evaluation is particularly relevant to buildings with a slab-on-ground construction or basements where air flow is reduced and exposure may be a higher risk. Soil or groundwater that is contaminated with chemicals which are volatile, for example, petroleum hydrocarbons, can be a source of vapours which can move into buildings, confined spaces or excavations on a site.

This contaminated site poses a risk exposure to vapours at sufficient concentrations to pose a chronic health risk and demands a full health risk and vapour risk assessment. Volatile chemicals present as contaminants in soils or groundwater have the potential to partition into the air in the soil pore spaces and can move into buildings, ambient air, confined spaces or excavations on a site. The potential risk to human health from this exposure pathway should be evaluated as part of any site assessment where exposure to vapours is considered to be a risk factor. The risk posed by long term exposure to low concentrations of the relevant chemicals must be included in any investigation.

Human exposure to petroleum hydrocarbons can have a range of effects depending on the length of exposure, the types of chemical compounds and the concentrations. Petroleum hydrocarbons can negatively affect the central nervous system, immune system, liver, spleen, kidney, developing foetuses and lungs. Volatile and semi-volatile chemicals, such as petroleum hydrocarbons (benzene) and PAHs, which are present as contaminants in the soil and groundwater on this site, have the potential to partition into the air in the soil pore spaces and can move into buildings, ambient air, confined spaces or excavations on a site. The ASC NEPM recommends soil vapour

measurements for vapour intrusion when the depth to the perched groundwater across the site is less than 2 m.

The groundwater depth across the entire blocks 9 and 11 has not been measured and should be since some measurements have indicated it is shallow in places. Bore testing by Shell in 2009 revealed shallow contaminated water tables 2.3m deep. I submit that soil pore monitoring be done immediately and vapour intrusion monitoring be conducted for the building.

Remediation and development may change the conditions at a site and may therefore change the factors controlling vapour migration, intrusion and exposure. For example, results from sampling a vacant site may not be applicable to a future development. This is another reason that additional sampling and testing should have been done. These would provide a weight of evidence for a site- specific explanation of the potential vapour migration and intrusion pathways and processes.

Factors which influence vapour intrusion should be assessed during the site inspection and include the function of the ventilation system which may affect the air exchange rate; the location and structure of utilities and other potential preferential migration pathways for soil vapours such as sewer and stormwater lines, drains or sumps, underground pipes for leachate management and where the water table is shallow enough that the water touches the foundations of the construction.

It is noted by this submission that there is no ventilation system for any of the buildings other than the MRF. Workers in the office, education centre and weigh bridges could be particularly affected by vapour intrusion.

Because a consideration of this site indicates that it might pose an acute risk then more detailed investigation than has to date been done is warranted. The additional vapour intrusion sampling should be undertaken by appropriately qualified professionals who have received training in vapour sampling. A more detailed investigation should include additional sampling and analysis of soil gas rather than soil, under various weather conditions to generate good quality data that covers the site sufficiently.

Indoor air Monitoring

The sampling of volatile substances in air in buildings should be considered in the following situations where occupied buildings or sensitive receptors are located in proximity to a source of vapour contamination where elevated concentrations of contaminants are identified on the site. However, it may be appropriate to assess indoor vapour concentrations earlier where there had been a past identified spill or where a building is prone to intrusion by shallow contaminated groundwater as in this case.

Indoor air monitoring must be imposed to provide a direct assessment of the potential health risks to occupants or receptors. Where there is the potential for other sources of the chemicals of potential concern such as the benzene, to be located inside a building or to occur as background sources there is an imperative to have a background ambient air level for this chemical. The number of truck movements each day inside the building plus the machinery operating will affect the indoor air quality. Environmental sampling, including ambient air sampling, requires the detection of trace quantities of contaminants above background levels; hence the results of sampling can be difficult to interpret. So ambient outside air monitoring must occur to provide the background levels. Sampling of background (such as outside) ambient air or from a comparable, non-affected location can be useful to provide context to the results and allow better application of guidelines for carcinogenic chemicals. It was disappointing that this information was not

provided in an Air Quality Assessment for this EIS. Prior to any indoor air sampling an inspection of the premises is recommended to identify indoor sources of vapours, and these sources should be removed if possible. It is not possible.

Indoor air sampling should be undertaken using methods that allow comparison of the results with appropriate health-based guidelines. In this case this should cover the 16 hour a day operational period.

The Human Health and Ecological Risk Assessment, AECOM, April 2011 (HHERA)

AECOM reported that *“Soil samples exceeding guidelines concentrations were predominantly located in the rail siding and main carpark areas.”* The Report concluded that these were *“potentially unacceptable non-threshold risks to potential future site users occupying buildings constructed over areas of the most significantly contaminated soil from inhalation of benzene and toluene vapours derived from soil contamination.”* (Executive Summary p.1) For Block 11 It claims *“for receptors in the rail corridor significant risks were only estimated to be possible if a building is constructed over identified areas of soil contamination and as this is unlikely to be the case no unacceptable risks have been estimated in that area.”* AECOM was of course unaware of this proposal hence their conclusion does not apply in this case. The buildings in the MRF will be constructed over the most contaminated areas of the site. Their conclusions coincide with those of the Site Auditor 2017. The proponents should take more note.

The construction of a hardstand in the rail area block 11, puts construction workers at risk. The removal of soil to level the block must be assessed for its impacts on workers. The change of use releases the hydrocarbon contaminants (demolition and construction) and exposes the construction workers to risk of vapour inhalation and dermal contact. If this form of activity (construction) is to be carried out, there should be health and safety processes that include the preparation of health and safety plans and the provision of appropriate personal protective equipment. The 2011 Health Report further noted that exposure via inhalation of volatiles rising from contaminated soils was likely to be underestimated due to soils not being sampled from the tank farm, underground tanks, transfer lines and the above ground tank areas.

The use of the site for a large WTS with its 7275 square metre shed and a 6000+ square metre hardstand is not consistent with the audit advice of 3rd July 2017 which recommended *“Further assessment in relation to exposure to the hydrocarbons in soil /or groundwater will be necessary before changes to site conditions are considered.”*

It is merely lucky but not ideal that no drinking water bores are identified on or near the site. The degree of contamination is extremely significant (benzene has been detected a 25000 times the acceptable level at MW125S) and has the potential to pose a high risk to the environment and human health if any new bores were installed for humans or animal consumption or for irrigation.

The HHERA failed to identify potential receptors. The HIA should have. The HHERA failed to identify future off site workers, future maintenance or construction workers, railway maintenance workers, the Jerrabomberra creek and Wetlands. The wetland bird life whose respiratory impacts is very similar to humans, are particularly adversely affected by PAHs. Given the distance, the Report concluded, that it was unlikely that impacted ground water will reach the Jerrabomberra Creek or wetlands and as such ecological receptors are not considered to be at a significant risk from site based impacts. This was not proven. Given that Jerrabomberra Creek and the Wetlands are already polluted from Fyshwick runoff distance gives not protection. It must be

rejected on the grounds also, that insufficient testing was done off site on the stormwater channel which flows west under the site and drains into the creek along Ipswich street which then drains into the Jerrabomberra Creek.

The WSP Remedial Action Plan p 4 has noticed the east-west creek bed and identified it as part of the Jerrabomberra Creek catchment "An additional channel was identified on the western side of Ipswich Street, which flows across the dirt access road and into a pond. It is believed that this waterway is part of the Jerrabomberra Creek catchment.". This waterway was not tested in any previous study and must now be examined as a potential pathway for hydrocarbon contaminants into Jerrabomberra Creek.

A number of other statements must also be rejected.

1 There are no complete exposure pathways for groundwater contact or ingestion. This cannot be supported because the high aquifer groundwater levels are less than 3 m from the surface so it is highly likely that construction workers would come into contact with hydrocarbon contaminated water.

2. Benzene vapours rise and spread in indeterminate directions.

3 The assumption that excavation would be at a maximum depth of 1.5m must also be rejected because it did not consider the demolition work nor the possible depth of footings for new buildings. This conclusion was reached on the assumption that the purpose for the site was to remain the same hence is false.

4. Excavation or maintenance workers would wear appropriate persons Protection Equipment and clothing and these prevent direct contact with harmful chemicals. This is an invalid assumption. This does not take into account human error and relies on the existence of Site Health and Safety Plans to protect workers and adequate supervision of these procedures. The potential for human error was not considered in the EIS and should have been addressed.

It must also be noted that the 2011 HHERA is out dated because the toxicity assessment and exposure pathways did not take into account the ambient air quality and the pollutants produced by the particulate emissions from the heavy traffic and diesel from railway movement and additional 460 truck movements to and from that site each day. Cumulative health risk for all chemicals at a site plus exposure to chemical particulates in the air must be considered.

The Risk Assessment 2011 involved assumptions based on available information but recognised the inherent uncertainties of the report. It recognised that it is not always possible to predict or describe site conditions and activities for the exposure period of identified risk.

- it is possible that further sampling and analysis may indicate variations in contaminant concentrations.
- Exposure pathways may change. And they have with the introduction of diesel particulates from increased traffic and a working environment of a large enclosed shed containing heavy diesel equipment.
- The chemical concentrations adopted in the assessment modelling may contain some uncertainty. They may not be representative of chemical concentrations across the whole site.

- Should the possibility arise the bore water would be consumed for drinking for any significant period of time in properties adjacent to the site then the potential risks of extended ingestion should be considered.
- There are uncertainties in the toxicological values of certain chemicals for individuals. Some individuals may be more adversely affected than others. Toxic response to a chemical from different people and different animals to the same dose can vary greatly. Dose response evaluations often have uncertainties associated with short term (acute) to lifetime (chronic) exposures and may be influenced by age, general health and mechanism of toxicity among other factors.
- Natural attenuation processes are considered likely to reduce the vapour impacts which may occur at the site. But well construction and soil clearing disturb the chemicals in the soil and release vapours more readily into the atmosphere. Natural attenuation may be affected or negated by rises in the water table and the rebound effect.
- Indoor Air impacts has not been given sufficient attention. Volatile Organic Compounds are up to five times more toxic once they make their way into indoor air. The Inhalation Pathway of vapours derived from soil or groundwater following transport to indoor air needs reassessment. It is not true that since there are no buildings on the railway corridor for air to accumulate indoors therefore this will not be an issue. The 7275 square metre recycling shed must be considered. So too must the possibility of the vapours finding their way into parked vehicles in the staff and visitor carpark.
 - Appendix G The Remedial Action Plan p.34 states *“Furthermore, if concentrations in soil at the Site meet the HSL and HIL criteria then the Site can be determined to be suitable for the intended use. It is noted that these criteria are conservative and should concentrations at the Site exceed the nominated criteria, then further risk based assessment and derivation of Site specific remedial criteria may be required.”* This ignores the vapour intrusions from the contaminated water at the site. Elevated concentrations of TPH and BTEX and LNAPL were identified on site. Soil testing is not the only criteria which should apply. The AECOM HERA 2011 confirmed the risks to current and potential future on-site commercial workers via exposure from incidental ingestion and/or dermal absorption of soil, from inhalation of dust and vapours derived from soil and groundwater following transport to indoor or outdoor air.

In conclusion the 2011 AECOM report concluded that the assessment estimated that there were *“potential unacceptable threshold risks to potential future site users occupying buildings constructed over areas of the most significantly contaminated soil from inhalation of benzene vapours derived from soil contamination.”* This is a very serious health issue which cannot be overlooked.

INADEQUATE SITE ASSESSMENT SITE AUDIT REPORT APPENDIX G

Site excavation

Appendix G outlines the demolition work necessary for surface remediation of the site but provides no time frame for it nor any assessment of the potential health risks to occupants of neighbouring businesses while the activity is progressing.

The EIS neither detailed nor described the configuration of the site and the necessary earth works to ready it for construction. A considerable amount of cut and fill of contaminated soil will be

required. How this is proposed to be managed and where the contaminated soil will be disposed of must be stated in an environmental assessment.

Vol.1 page 77 says *“The construction will effectively follow existing contours (none were provided) and therefore the objective will be to cut and fill where appropriate such that the least amount of material leaves the site to landfill.”* Any cut and fill activity will materially alter the areas of significant impact from COCs which will be redistributed to areas necessarily under the main shed where the work force will spend 8 hours a day. This does not satisfy the recommendations of the site Audit Report.

No contours or levels for the site nor details about excavation cut and fill have been provided to enable the public to assess likely impacts the construction activities on the COCs present in the soil and groundwater as exposure and disturbance might affect human and environmental health.

The author of Appendix H Site Audit Report has further noted that construction of buildings over areas of significant impact will be appropriately controlled by a site or EMP plan. The Consent Authority must note that the auditor was not the author of the SAR. The Site Audit Statement contradicts Cardo’s conclusion that the GHD SAR *“has demonstrated that the site is suitable for continued commercial / industrial land use.”*

WSP Appendix G p13 says *“A Site Audit Report (SAR) and Site Audit Statement (SAS) was prepared for the Site (ACT EPA Ref ACT02- 2126014). The audit was non-statutory and was undertaken to demonstrate the Site is suitable for continued commercial industrial land use. The SAR was undertaken by Andrew Kohlrusch of GHD.”* The author of the SAR does not appear to be Mr Kohlrusch but cites his opinions in the third person to ‘validate’ his opinions. It is totally unacceptable that the original Site Audit Report done by Mr Kohlrusch himself was not included. The RAP (Appendix G) continues *“The validation report was not available for review when preparing this RAP but the EMP was available. The main long term method of contamination risk mitigation put forward by the EMP for ongoing operation of the Site was as follows: “It is proposed that the construction of buildings or enclosed spaces be prohibited at the Site to mitigate the potential for vapour intrusion into buildings constructed over contamination which could result in a vapour inhalation risk to Site occupants.” The Site Auditor has based the sign-off the Site on the assumption that the above restriction on construction of buildings and enclosed spaces is upheld. On the basis of the information reviewed as part of the audit the Site Auditor considered that the Site is suitable for commercial industrial land use provided the position of Site infrastructure does not change and there are no additional buildings constructed.” p.13*

“An independent site audit conducted by GHD has endorsed the site as suitable for commercial/industrial land use as per the existing IZ2 zoning (excluding Child care, Community activity centre, religious activities and educational establishments). The audit endorsed the EMP created by Environmental Consulting Services for the generic use of this site for those purposes subject to any subsequent specific development application detail.” This statement is inaccurate and misrepresent the purpose of the GHD audit in July 2017 which was for the site in its present condition and endorsed its past use as confirmed to me by email from the EDD on 10th March this year which stated *“The site in question is subject to an ongoing planning process, and the report prepared relates to re-using the site in its existing form, not what is proposed in the current planning application. “* The EMP was based on *“its proposed use of the site for all commercial/ industrial use associated with the storage of metals for recycling” not for MSW recycling compacting and transport.* (EMP Appendix H part 2 p 4)

It is clear from the EMP that it endorsed only activities on the site which restricted construction and excavation activities and which used only the current site improvements (EMP APP H p 3). No building allowed. If so then the conclusion followed that remediation would be necessary in accordance with EPA policies.

A "Black tarry substance" "a deep black tarry layer" at 7m below ground level was identified near BH123S in the car park near the two underground tanks but was not further investigated. It was "presumed" to be an off-site source with no justification for the presumption. It was not sampled or tested which would have allowed the identification of the source and preventative measures to be taken if necessary. It is irresponsible to "presume" when the two tanks were previously unknown and their contents also not known.

Sampling locations and distribution needs to be widened to indicate the extent of migration off site since 2009 and the quality of the groundwater. Spatial distribution of bores and wells must target areas further to the west to see if contamination has migrated into the creek on the western side of Ipswich street and to the north west, to test migration towards Jerrabomberra Creek. Jerrabomberra Creek is the closest and most sensitive receptor. Exceedances of triage levels indicate that further assessment and management may be necessary prior to implementing management options.

Sites that were not previously tested because conditions were unsuited to drilling, particularly in and adjacent to creek beds near the three large above ground tanks and between the railway lines and Block 9 boundary need further investigation. An identified east-west fault zone is likely to provide a potential pathway for dispersion of hydrocarbon contaminants from the CRS site toward Jerrabomberra Creek, if not into the creek and from thereon into Lake Burley Griffin. Actual dispersion of hydrocarbons along the fault zone/creek bed needs to be investigated with a detailed bore monitoring program along the east-west creek bed.

Further investigation should be done on the offsite wells where PHS concentrations were higher than on site MW14, MW117D and MW126D.

The AECOM 2010 report claims the accuracy and precision of the data to be "generally acceptable" because the spatial distribution of the bores was to target areas of maximum impact and locations of sensitive receptors. But the areas of maximum impact without widespread sampling cannot be known with certainty. It recognises that "impacts down gradient and adjacent to the three largest tanks and between the railway lines and the pump pit were unknown due to the site conditions being previously unsuitable for drilling and installation of soil bores and monitoring wells." This EIS should have known this and made efforts to rectify the unknown.

Monitoring wells must be examined for their efficacy and if unsuited or not working new ones installed. Only one comprehensive and detailed site assessment has been done to date. This will provide excellent background for the necessary continuing collection of data.

Given the extent of the exceedances more testing is essential and monitoring should be ongoing for example benzene was 25000 times higher than NHMRC drinking water guidelines at MW125S.

- There are too few monitoring wells (3 only) in the area around the rail sidings where spills were most likely to have occurred and where groundwater flow follows the shallow gradient contour is "inferred" to be occurring and where the monitoring wells with the greatest exceedances have been observed.

- The early audits and assessment reveal, alarmingly, that while the testing for on site impacts was apparently thorough, the offsite testing was deficient to the south, south west and west, particularly adjacent to the car park, where, through ground radar survey two additional underground tanks, USTs, were discovered.
- The area covered by the ground radar was small hence offered no confidence that there might not be more than two hidden tanks.
- It would be desirable to use ground radar over the whole site since Shell records lacked detail and potential for additional undiscovered UTS tanks is high. Ground radar would also confirm the underground pipe system.
- The site layout Plan shows no underground pipe system yet the historical review make no reference to it having been removed.
- The two discovered tanks have not been removed for examination if fuel remains and poses a threat from continuing and future leakage.
- It is concerning that it appears CRS has completed some rehabilitation (soil removal) without EPA consultation. This soil needs to be traced for its present location and treatment measures.
- Data based on 2008-9 investigations is sufficient for the purpose of the 2011 HHERA report but not for a 2018 assessment. It must be done again to provide the government and the community the assurances they demand.
- Risks need to be reassessed in view of the intended redevelopment entailing soil disruption, removal of concrete and bitumen surfaces and the fact that in some of the targeted areas for redevelopment soil was not previously sampled.
- Redevelopment could potentially release contaminated air trapped in soil pores releasing harmful vapours.

Groundwater contamination

Contaminated land is land and underground water which has been adversely affected by contaminants. That we cannot see the groundwater or that at the moment it is not used for drinking water or irrigation of crops does not make its pollution any less significant.

in accordance with the ASCNEPM (ScheduleB6), the assessment process for groundwater contamination differs from that of land contamination in that there is greater emphasis on suitability for current and realistic future uses, compared with the emphasis on current and intended or permitted uses for soil assessment.

The detailed site investigation should be comprehensive enough to identify the nature of the groundwater contamination and delineate its lateral and vertical extent to a sufficient degree that human health and environmental risk is prevented and, if necessary, the development of an appropriate remediation or management strategy.

Where management is proposed for residual contamination and not remediation, the proponent should justify the approach and ensure the management measures are enforceable and

appropriate to the current and/or future uses or development of the site. No management measures for groundwater or justification for their omission is included in the EIS.

Exceedances of groundwater criteria for petroleum hydrocarbons and heavy metals (Cr Pb Zn) is sufficient to demand on going monitoring. Validation of groundwater quality requires ongoing monitoring over a pre-determined period of time.

The statement *“Given the distance it is considered unlikely that impacted groundwater will reach the Jerrabomberra Creek or Wetlands and as such ecological receptors are only considered to be of significant risk from site based impacts.”* p14 must be challenged in view of the conclusion that it could take 100 years for the chemicals to disappear. The rate of movement of the groundwater plume flow has not been definitively determined.

The HHERA p.31 indicates that after 100 years of steady state groundwater migration (ie with no degradation of benzene) benzene would not travel further than approximately 50m of the site. The conclusion is implied that there is no potential environmental harm but the creek on the western side of Ipswich street is less than that distance.

There has been no assessment of the underground stormwater channel becoming a pathway for contamination transport. The most recent 1:100,000 geological map of the Canberra region (Abel 1991) shows a not-insignificant east-west fault zone which crosses at, or near, the southern boundary of the CRS block. The fault zone could be related to the east-west creek which connects the stormwater culvert exit at the entrance to the CRS site with Jerrabomberra Creek. The fault zone and creek bed were not evaluated in previous site contamination studies for the Old Shell Depot. Their significance as a potential hydrocarbon dispersal pathway and this ought to be investigated with a detailed bore monitoring program along the east west creek. Interpretation of the Canberra 1:250 000 Geological Series Sheet (1964) suggests the Site is underlain by the Permian aged sandstone and is in close proximity to a south-east to north-west running fault, as well as the mid-Silurian aged sedimentary and volcanic formations and Quaternary sediments.” App. G p.4. The more recent, more detailed, 1:100,000 map of the Canberra region should have been consulted. This map shows an east-west aligned fault crossing through or near to the southern part of the CRS site. This east-west fault is probably related to the east-west creek running from the CRS site entrance toward Jerrabomberra Creek and its significance for hydrocarbon leakage from the site needs to be investigated by a detailed bore monitoring program along the creek bed.

Flood events were not modelled for increased flow rate, recharge and rebound contamination.

Other Uncertainties

According to the HHERA there are uncertainties with the groundwater plume because knowledge is based on the data in previous site investigations. It needs to be validated by input of data from more recent collection. The groundwater plume also needs to be mapped to show its shape and direction. Estimated or inferred paths are inadequate and unacceptable.

The Site Assessment (AECOM 2010) has also revealed a number of other serious concerns and uncertainties surrounding this site. This is a highly degraded and contaminated site with complex issues relevant to its management. It is uncertain if all points of discharge have been discovered, an unacceptable situation from the point of view of human health. Shell has kept poor records and was unable to identify;

- the volumes of spills correlated with dates and site locations
- the precise positions of underground and above ground tanks removed from the site
- those that leaked
- the location of the new drain and diesel tank referred to on page 4 of the AECOM 2011 report
- the position of pipes and exact location of leakages if occurred
- the exact location of the network of bunding and underground drains as noted in the AECOM 2010 report

Groundwater plume behaviour has not been adequately studied and lacks certainty. Unverified assumptions are made.

1. that the lithology of the shallow aquifer is consistent across the site
2. 2. that the future use of the site will not change and therefore that the frequency, duration and extent of potential exposure can be assumed and
3. 3 that future disruption and construction of the site will not occur.

That exposure and contaminant intake can be estimated based on these assumptions is unsustainable. Number 2 and 3 are already proven wrong. All testing and conclusions are based on the existing use of the site. The groundwater impacts are particularly avoided. With regard to groundwater specifically;

- There is insufficient data collected over time for reliable assessment of the concentration and movement of the chemicals of concern. Additional site specific data is necessary.
- The data from the wells is not representative of the whole site and does not adequately take into account
 - the topographical slope NE/SW
 - the depth of the shallow aquifers - less than 3 m
 - that NAPLs do not necessarily follow groundwater gradients
 - that groundwater can recharge and re-contaminate if the soil has not been removed.
- There has been inadequate testing of the creek path to Jerrabomberra Creek and of the stormwater outlet on the west side of Ipswich street and of the receiving pond.
- There were only 3 samples collected from the creeek/stormwater channel to the north. "It was observed to be impacted by an offsite source." but no effort was made to identify this source for the potential for ongoing impacts.
- The exact location of the plume is not defined with any degree of confidence nor is there any consideration of there being multiple plumes. Plumes are found at the origin of the spill or leak and on this site with its history there may be several.

- The car park needs more attention. The new monitoring wells installed in 2008 were for preliminary investigation and yet no further assessment was indicated beyond the preliminary.
- The plume length is noted as 118.10 feet but its shape or width is not described.
- The northerly groundwater flow direction is either “estimated” page 13 or must be “inferred” as “generally” north.. The EIS must verify this important scientific fact as it is a crucial consideration in assessing groundwater pollution and its potential impacts.
- NAPLS can spread laterally and can spread faster than the groundwater mobility. LNAPL migration does not always follow the groundwater gradient, but rather can have a radial gradient caused by the release.

The 2017 SAR reported that the auditor considered that a groundwater monitoring programs GMP of existing wells both on site and off site was a necessary task given the time that had elapsed since 2008-9.

Re-contamination

Larger LNAPL releases may migrate to the water table while leaving residual, immobile LNAPL along the migration path. If not removed, the LNAPL “body” can function as a potentially long-lived source zone for secondary impacts to adjacent soil, soil gas, and groundwater. The water table will rise and fall, creating a ‘smear zone’ of the hydrocarbon product adhered to the soil just above the groundwater level. As the groundwater seasonally rises into the smear zone it becomes re-contaminated. This source of contamination needs to be remediated completely as it is an ongoing source of groundwater contamination,

Secondary sources of contamination are those previously impacted by contamination from primary sources such as already impacted surface soils and subsurface soils; impacted surface water; dissolved groundwater plumes and freephase liquid plumes.

Possible transport mechanisms for secondary impact include the leaching of the soil to the groundwater; wind erosion leaving contaminants present on the surface soils on the site; groundwater flow and vapour migrations where elevated concentrations of volatile contaminants in the groundwater, soil and vapours indicate the potential for vapour intrusion to occur. Natural attenuation may not occur as quickly as assumed. This issue needs more thorough investigation because in three of the four wells sampled and fingerprint tested the amount of the observed PSH actually increased between the 2008 and 2009 sampling.

Natural attenuation due to chemicals biodegrading over time may occur in some circumstances with some contaminants and this may reduce the risk posed by vapour intrusion. Some contaminants may generate daughter compounds that are more toxic than the parent compound. Biodegradation as a mechanism of risk reduction should not be assumed to be occurring and must be demonstrated at sites where it is claimed to be occurring. The rate of natural depletion of the contaminants in the soil needs to be quantified because this can be undone by water table rises through the residual soil contaminants.

An ACT EPA email March 18th 2013 to Shell says *“In order to understand the mobility and extent of the LNAPL i.e. to see if the well is purely acting as a sink for the LNAPL to collect in, it is proposed to carry out some baildown tests on the site over the coming months. The results of these tests should inform us of the transmissivity of the LNAPL and longer term could be used to*

inform if subsequent work is required.” Evidence of these tests should be supplied with the results for evaluation. It has not been.

If practical and reasonable measures cannot be taken to remediate the LNAPLs in the groundwater and remove safely the contaminated soil and water perched in the shallow aquifers then no change of purpose should be approved for the site.

Surface Water

Due to data gaps for the ephemeral stormwater creek on Block 11 we are unable to determine whether the hydrocarbon contaminated groundwater would adversely affect the creek surface water quality.

Three measurements of BTEX PAHs and metals were detected in the creek to the north of the site. Surface water samples from the stormwater channel/creek indicate that Cd, Cu and Zn are present in concentrations exceeding freshwater ecosystems guidelines. TPH was also detected at low levels.

The surface water sample locations are too close to one another to provide, with any degree of certainty, assurances that this creek is not contaminated and that a sub surface flow would not carry heavy metals or hydrocarbons to Jerrabomberra Creek. Monitoring wells should be placed along the whole length of the channel both on site and offsite.

The Jerrabomberra Wetlands already have a heavy metal problem so it was a serious omission that this was not assessed further when these metals were found in the creek on site. No testing was done for the creek to the west after it crosses Ipswich Street. This creek, a potential pathway for dispersal of on-site contaminants, needs to be tested more extensively as it has the potential to drain any contamination directly into Jerrabomberra Creek.. Groundwater bores and monitoring wells should be positioned along its length adjacent to the site and beyond if contamination is detected.

The Site Assessment AECOM 2010 identified Jerrabomberra Creek and the storm waster system running under the site north to west as sensitive receptors. Insufficient investigation and testing was done on these areas,

The SAR APP H reports the auditor agrees there is a lack of surface water data p.20 *“the surface water needs to be adequately delineated to complete the environmental assessment and in the absence of additional data to evaluate the concentration of pSH in the found water on and off site ie using surface waster measurements.”*

“Other nearby ecological receptors identified but not considered significant are the stormwater channel/creek (runs north to west, underground beneath the Site, underground beneath Ipswich Street and drains into Jerrabomberra Creek). Given the distance it is considered unlikely that hydrocarbon impacted groundwater will reach the Jerrabomberra Creek or wetlands and as such ecological receptors are not considered to be at significant risk from Site-based impacts.” Wsp App.G p.18. This conclusion does not stand up to scrutiny as Jerrabomberra Creek and the wetlands are already impacts by pollutants including some heavy metals whose likely source is the Fyshwick area. Distance is not a convincing argument against the migration of the pollutants on this site reaching those valuable waste sources.

REMEDATION WSP REMEDIAL ACTION PLAN APPENDIX G

WSP have undertaken a detailed review of historic contamination assessment and remediation works completed in relation to the Site which revealed among other things the following.

Drilling and laboratory testing indicated exceeding concentrations of light end hydrocarbons and BTEX compounds were present in elevated concentrations within the vicinity of the rail sidings and around the fill gantry in the west of the site. Exceeding concentrations of hydrocarbons were also identified downgradient of the heating oil ASTs in the west of the Site. Elevated concentrations of both TPH and BTEX, and LNAPL were identified in the newly installed wells. The result indicated that the LNAPL comprised a mixture of degraded petroleum and diesel which had been in the environment for between 10 and 25 years.

These are very concerning findings about widespread pollution of dangerous carcinogenic BTEX, chemicals. These findings make it imperative that further studies be completed to determine the contamination in the west of the site, in particular in relation to discharge potential along the east-west creek. The AECOM report 2008 confirmed *“Based on the observations during the drilling of BH123S, there is the potential for a further source of contamination to be present in this south-western portion of the Site.”* p12

Of further concern is additional TPH, BTEX, lead and some PAH compounds detected in elevated concentrations dissolved in the groundwater in a number of monitoring wells exceeding the adopted criteria. Elevated TPH was identified across the entire well network. After a summary of already described contaminants of concern the WSP report mentions the presence of a firefighting foam plant using PFAS whose toxicity problems have been highlighted recently regarding pollution around military airfields *“As noted in table 4.1 below, a firefighting foam plant has been noted at the Site, and thus per- and polyfluorinated alkyl substances (PFAS) are also considered to be a COPC. Based on the available reports, assessment of PFAS has not been conducted at the site, and therefore the assessment and management of PFAS is to be dealt with separately, and is beyond the scope of this RAP.”* p.15 It is unacceptable that proper information on this potentially serious toxicity problem has yet to be gathered and that no remedial action has been proposed by the proponents of this EIS. The Draft EIS should have provided a full environmental assessment of all risks and impacts associated with the development. This needs to be rectified and investigation and assessment of the PFAS risks provided,

Two things are clear.

1. Remediation of this site is necessary.
2. The proponent is seeking to avoid comprehensive remediation and adopt a management strategy instead without fully explaining or justifying the strategy.

As a result, the intent of the remediation works presented in this RAP are to facilitate the redevelopment of the Site (including demolition of existing structures and erection of new infrastructure and enclosed spaces) while mitigating any risk to end users from petroleum hydrocarbon contamination while the bulk of the contaminated soil and groundwater remains in-situ.” WSP AppG p.20

According to Appendix G the remediation works required to achieve the goals will target four specific items on the Site: ...

1. Mitigation of off-site risk associated with existing groundwater contamination (to be managed under the Post Remediation Environmental Management Plan). p 21. This sounds like ad hoc and on the run development of a remediation plan, rather than the presentation of a well thought out and developed plan. The preferred option for managing the off-Site groundwater contamination resulting from dissolved and phase separated hydrocarbons is through ongoing monitoring of natural attenuation because evidence exists of natural attenuation taking place. However the length of time this will require and the monitoring and validation of success criteria was not supplied and should have been. This is a more serious issue than WSP acknowledges.

2. *“Soil contamination identified at depths greater than 11m below ground level. Excavation would result in significant disturbance of Site area and expenditure, and is not considered practicable.”* p 23.

3. *“The construction of an in-building vapour barrier in the form of a sealed geo-membrane or spray-applied barrier system beneath individual building slabs is a technique which has been widely applied with consistent effectiveness for protection of structures from sub-surface vapour and gas both in Australia and internationally. The system rarely affects building design and is effective at improving on and complimenting the protection already afforded by a well constructed concrete slab.”* At no point does WSP offer details about the liner or its Australian and international reputation

4 *“Removal of the top 300mm of soil at the finished level of the Site within the footprint of Site structures will take place to rid the hydrocarbon contamination elevated above site criteria and in order to minimise risk of degradation of the vapour protection systems.”* p.31 This is an admission that the vapour barrier system is susceptible to degradation through chemical diffusion from benzene. Validation testing of the remaining surface soils is a useless exercise since hydrocarbon vapours will rise up back into this top layers of soil and recontaminate it. No scientific reasons were given to justify the 300mm depth. Contamination below that level would still have the potential for the contaminants to be elevated above the acceptable criteria.

The management of this excavated soil is unsatisfactory. Disturbing the site will have an adverse impact and reactivate the pollution and allow toxic vapours to enter the shed where workers spend eight hours a day. This opinion accords with site Auditor whose findings only applied to the site in its present configuration.

Page 6 of the EIS (vol 1) has stated that they have “begun remediation” and page 7 *“the site has been remediated”*, yet nowhere in the rest of the EIS are there any details on this remediation. There is no physical evidence to support these claims. The Shell documents do not claim any remediation had taken place other than removal of underground tanks.

The EPA considers remediation to be necessary. In August 2017 the EPA has advised the Minister in response to questions with notice from E Lee MLA as follows.

1) What site remediation will be required on Fyshwick Block 9, Section 8 and Fyshwick Block 11, Section 8 for the Capital Recycling Solutions and ActewAGL Fyshwick joint venture.

“The site is yet to be fully assessed to ascertain the level of remediation required. The EPA has been notified of impacts to soil and groundwater associated with the former use of the site as a

fuel depot. Remediation of soil and groundwater at the site is expected. The EPA will require through the site's development consent conditions that it be assessed and remediated by a suitably qualified environmental consultant and these works independently audited by an EPA approved contaminated land auditor prior to any change of use. The auditor's findings into the site's suitability from a contamination perspective for its proposed and permitted uses under the Territory Plan must then be reviewed and endorsed by the EPA prior to the site being used for other purposes."

(2) What is the anticipated timeframe for such work.

"The EPA is unable to speculate on the timeframe for remediation of contamination at the site as it is dependent on the level of contamination identified and the timing priorities of the proponent."

The EPA EPP Contaminated Sites is being followed here by insisting that any "Change of use" would demand remediation of the site. The EPA has further advised that it will require an independent audit of the assessment and remediation of this site along with the adjacent rail siding on Block 11. *"LNAPL was detected in wells on the site and in some wells between the site and the rail corridor to the north of the site. When LNAPL is detected it is EPA policy that it must be actively remediated. Future monitoring is necessary to confirm and dictate the requirements for future remediation and further monitoring."*

This site needs some serious remediation in excess of the cursory removal of weeds, cleaning tanks and removing some soil described by the proponent at a meeting on November 13th 2017. Suitable acceptable options for remediation of soils include off site treatment of excavated soils which, depending on the residual levels of contamination in the treated material, is then returned to site, removal to an EPA approved site for beneficial re-use or removal as waste to an EPA approved facility.

Following remediation, it must be proven that remediation goals have been met and remnant contamination does not present an unacceptable risk to human health and/or the environment based on the current or proposed land use, through regular, appropriate sampling of soil, groundwater and/or vapour.

Remediation of Blocks 9 and 11 must include quantifying the amount of soil to be remediated or removed; identifying the licensed premises where it is to be taken and preparing a long-term management plan for dealing with residual contaminants. Evidence does not exist that this has been done.

THE EMP APPENDIX H PART 2

The EMP Appendix H part 2 does not apply to this development but only to the site in its present condition. As such it has little relevance or usefulness. It is an insult and deceitful to the concerned public to offer in support a document which was not written for the specific development under scrutiny.

The EMP presents management measure to mitigate potential risks associated with the existing contamination at the Site not risks associated with a changed use. *"The existing contamination is only considered to represent a risk related to excavation activities or construction. The contamination is not considered to represent a risk to human health or the environment if undisturbed with the current site improvements."* App H p.2

On the basis if this management of the site is proposed rather than complete remediation. The misunderstood proposed use of the site "*limited to storage of materials*" p.6 and "It is proposed to se the site for alternate commercial/industrial use, associated with the storage of metal for recycling." p.5 does not allow accurate evaluation of the mitigation measures since the proposal is for a WTS with a life of more than 30 years employing 40 inside a fully enclosed shed with an unproven air ventilation system.

That active remediation is judged not viable should have been considered as part of the site selection process and the site rejected as unsuitable for purpose and not purchased because the purchase of the site has committed the new owner to remediation. "Management controls including limiting construction of new buildings ,page 4 and minimising and controlling the excavation activities are not serious management controls as they cannot be implemented for this proposal.

"*On-site in situ remediation of contamination is considered as potential method to reduce the impacts on the site.*" I agree. p.4 These "*further impacts*" must be described, demonstrated and quantified. I submit that these issues only raised because the purpose use of the site has changed. The difficulties the EMP reveal about the feasibility and viability of remediation proves that the site is not fit for the purpose of this proposal which should then be rejected,

The main long term method of contamination risk mitigation put forward by the EMP for ongoing operation of the Site was as follows: "It is proposed that the construction of buildings or enclosed spaces be prohibited at the Site to mitigate the potential for vapour intrusion into buildings constructed over contamination which could result in a vapour inhalation risk to Site occupants..The Site Auditor has based the sign-off the Site on the assumption that the above restriction on construction of buildings and enclosed spaces is upheld. On the basis of the information reviewed as part of the audit the Site Auditor considered that the Site is suitable for commercial industrial land use provided the position of Site infrastructure does not change and there are no additional buildings constructed." Appendix G WSP p 13

The WSP report comments on the proposed future site development of the site that the approval by the Site Auditor to allow ongoing commercial/industrial land use on the Site was contingent on the existing orientation of Site infrastructure being maintained and no new enclosed spaces or buildings being constructed. ...New larger infrastructure items proposed as part of the works includes an administration building, a waste receival and MRF processing shed, an educational research centre, two weighbridges and an office, all structures to be constructed on a slab. WSP provides no comments on the wisdom of constructing these building in the light of the auditor's restrictions. It is far from clear whether the vapour barrier will be constructed under each of these buildings.

The protective vapour barrier is not described as being located under the employee and visitor carpark therefore questions should be asked about the potential of intrusion of toxic benzene vapours into parked cars and affecting the health of the drivers of the vehicles. Chronic low dose exposure must be assessed. It is a serious omission that the car park was not included for the potential of benzene vapours to intrude into parked cars. The actual dose/exposure needs to be evaluated since the area inside a vehicle is confined and potentially more toxic.

It is also noted that the vapour barrier to mitigate against risks to the workers inside the side is not discussed in this report A reasonable conclusion is that this report was not written for this development as it is presently notified. As an Environmental Management Plan this report is irrelevant and must be rejected.

As indicated in the report however, Figure 2 Contamination Distribution, is that the proposed construction is directly over four of the five “contamination zones” or hot spots. This is unsatisfactory and should have been avoided by reconfiguration of the site plan or more active remediation.

Monitoring

“Ongoing assessment and tracking of the existing groundwater contamination both on and off-Site will be required into the future as well. With regards to this item, the RAP outlines the preferred approach for long term management, but due to the time period during which this work will be required to take place (i.e. extending into the operational phase of the Site), the details of the approach along with monitoring, evaluation and contingency options will be detailed in full in the ongoing Environmental Management Plan.” App.G p.21 The Environmental Management Plan specific to these issues should be provided before approval is granted. It is necessary to be able to see the location, kind and distribution of monitors. The existing monitors, if possible, should be maintained for continuity of results and protected from damage.

“A long-term EMP needs to be prepared prior to construction completion to detail the ongoing management requirements and maintenance of the vapour protection systems. The CEMP should also include monitoring of natural attenuation of contamination in groundwater and management of WHS risks to workers penetrating Site pavements and slabs and excavating into contaminated soils. The long term EMP must be reviewed and accepted by a Site Auditor prior to occupation of the Site.” App G p 54. Thus the site will need continuing monitoring of effectiveness of vapour barriers and natural attenuation of contaminants in groundwater. The conclusion can be drawn that the authors of Appendix G do not provide an endorsement of the vapour barrier, let alone the construction of an MRF and other buildings on the site.

Monitoring is necessary to demonstrate that remediation is occurring or has been successful. Ongoing management and remediation is required because triggers at several places on this site are above the appropriate levels at several monitoring wells and bores. LNAPL was detected in wells on the site and offsite. The EPA requires that LNAPLs be removed

It is a serious omission in the EIS that it fails to explain what will happen to those Monitoring wells during the demolition and construction phase of the development. The monitoring wells will have to be preserved or new ones drilled. Continuity of data is necessary for a reliable picture to be drawn. Ongoing site management is required in accord with EPA legislation, policy and guidelines.

A contingency plan is often required if the chemical levels identified during monitoring exceed a pre-determined trigger level. Monitoring of the chemistry and concentrations of the contaminants over time would review the risk, until such a point that the contamination plume has been reduced satisfactorily.

After any remediation there needs to be ongoing site management with a detailed and approved Site Management Plan (SMP). A SMP is different from an Environment Management Plan (EMP). An EMP details the measures to be adopted during remedial work. A SMP is required where ongoing monitoring or management of a site is required following remedial works due to remaining contamination on or off site. A post construction monitoring plan should be detailed with details of the number of wells and boreholes, their location, a justification of the number and location, the number of times they will be sampled and how the analysis and results will be reported. A report should be prepared annually and made available.

It would be more satisfactory to the general public and responsible entities to have the Site Management Plan details revealed before approval is given to this complex and controversial development.

THE FLEXIBLE MEMBRANE LINER / VAPOUR BARRIER

Soil vapour transport to indoor air is an important potential exposure pathway at many sites impacted by subsurface VOCs and PAHs. For this reason the absolute necessity exists for an Environmental Impact Assessment to provide all the relevant physical and mechanical properties of the protective barrier.

No details or product descriptions are supplied, The vapour barrier is a critical management method to protect the health of workers on the site from long term exposure to toxic vapours. For this reason it is important that whether its is a sheet membrane, woven membrane, a combination of these or spray applied membrane should be explained. This must be addressed in the Draft EIS for it has a critical significance on the issue of environmental impact on human and environmental health..

The AECOM (2011).site assessment estimated that there were potentially unacceptable non-threshold risks to potential future Site users occupying buildings constructed over areas of the most significantly contaminated soil from inhalation of benzene and toluene vapours derived from soil contamination.(p 12). This is disquieting regarding soil contamination dangerous, carcinogenic, compounds. It is likely that the MRF building, for its outlandish size will be built above some of the most contaminated soil and would therefore collect benzene vapours and other hydrocarbons. It needs to be assessed how effective the vapour barrier will be in containing benzene vapours, where these vapours will go if they cannot go up, whether any benzene that passes the vapour barrier would be adequately disposed off through the five-times-per-hour overturn of the air volume within the MRF building, and whether this overturn would accelerate benzene etc passage past the vapour barrier. This early recommendation for no buildings to be constructed above contaminated areas is reinforced by these doubts.

The report by CRS's auditor of choice is alarming with regard to the wisdom, or lack thereof, of constructing buildings on the site. With the risk of catching and transmitting vapours increasing with the floor size of the building, which is very large, capture of vapours from most of the contaminated hotspots is assured. The location of the hotspots means that they cannot be avoided which would have been a more acceptable way to reduce the vapour risk. Combined with the very real doubt that the vapour barrier would function properly over the life of the facility the risk is compounded.

The product's integrity must also be addressed. Deferring technical issues to the construction phase of a DA when it might be too late, when the integrity of the liner would be crucial is irresponsible and unacceptable.

The GDH SAR Appendix H states that previous assessments did not include appropriate screening criteria for evaluating potential vapour intrusion. *"Further screening using criteria appropriate for the vapour intrusion route of exposure is necessary to confirm the appropriate COPS are included in the risk characterisation."* p.20 the identified weaknesses in previous assessments were:

- Errors in the selection of screening levels need to be corrected. especially for the nominated groundwater HSL for vapour intrusion. The nominated groundwater HSL for vapour intrusion was 3 mg/l yet the relevant HSL should have been 30mg/l p.15
- The risks for both indoor and outdoor inhalation exposure are not the same. The EIS must explain why 10 hours a day for chronic exposure was chosen. If this was too conservative an assumption it could result in risk exposure above the reasonable maximum exposure.
- The toxicity values were two times lower than the accepted values. This needs explanation.

There is another weakness recognised by the consultants WSP Appendix G who claim *“if the vapour barrier system is found to be ineffective at the design and construction phase, in-situ vapour dilution should be considered as a contingency. If the vapour barrier system is found to have not met the remediation objectives following completion of building construction the recommended contingency is to undertake a human health risk assessment on the subject building to assess likely level of risk before selecting a management approach.”* App G p 40. As a contingency method this does not stand up to scrutiny. What good is a health risk assessment after the buildings are erected. Will they be left to stand empty if they do not pass the health risk. The site assessments and the Auditor statement already indicate they will not pass so why proceed without the necessary assurances to begin with. These assurances can only come from rigorous pre installation testing. The conclusion must be drawn that effective operation of the vapour barrier is not a given if it has to be established from testing during operation This is hard to be seen as an endorsement of the vapour barrier.

“The construction of an in-building vapour barrier in the form of a sealed geo-membrane or spray-applied barrier system beneath individual building slabs is a technique which has been widely applied with consistent effectiveness for protection of structures from sub-surface vapour and gas both in Australia and internationally. The system rarely affects building design and is effective at improving on and complimenting the protection already afforded by a well constructed concrete slab. The key issue affecting the effectiveness of this technique is the incorrect application of the barriers by untrained or unqualified contractors, use of unsuitable materials and subsequent poor validation by the Site consultant. This issue can be avoided through use of proprietary materials, engagement of professional specialist contractors and a regimented system of validation by the project consultant. As such, this method is believed to be the most suitable option for vapour protection on the Site.” App.G p.28 It is disappointing that examples of effective barriers have not been cited for verification.

The physical and mechanical properties of the liner must be provided in advance. Its method of installation must be addressed for its efficacy and durability. This can only be done by provision of results of manufacturer’s testing for its

- vapour permeability especially for benzene and toluene
- tensile strength
- stress crack resistance
- resistance to puncture
- resistance to tearing
- extrusion durability
- corrosivity
- water barrier classification
- shrinkage
- edge tear resistance
- temperature resistance

climate resistance - in a cold climate there is the risk condensation will form on the inside face of the liner

The product User Guide must be supplied to enable assessment for suitability, performance and durability over time. The standard sizes and thickness and the methods of application including seaming of joints and tears, adhesion to steel frames and weight bearing characteristics should be supplied. The liner must be guaranteed 100% impermeable, durable,]free from defects and ideally free of seams. These are critical properties.

WSP states *“It should be noted that at the time of preparing this RAP, the construction of building slab is unknown and therefore WSP is unable to make an assessment as to whether the vapour protection barrier will be installed underneath a slab directly on the soil surface, between multiple slabs or above the slab (beneath finished flooring). The RAP has been prepared based on the assumption that the vapour protection barrier will be installed beneath the slab and directly contacting the underlying soil.”* App. G p 38. Such a vapour barrier installation below the concrete slab and directly on top of the subsoil raises question how vapours raised up to the barrier are to be handled. Are they just allowed to escape naturally past the edges of the concrete slab, are they actively removed, or are they just supposed to accumulate and perhaps naturally degrade?

“The information to date indicates that outdoor air flow will be sufficient to facilitate dilution and dispersion of vapours so that there is insignificant risk to on-Site workers in outdoor areas.” App. G.p.27 This needs to be demonstrated by the provision of the scientific data which was relied on.

Installation

Since the spray type barrier has not been confirmed I will assume as the WSP report does also that the liner will be a rolled out geo-membrane or composite layered geo-membrane/geo-textile system.

The consultants WSP have reservations about the validity of the vapour barrier recognising the importance in its effectiveness of the installation methods and expertise of the workers. The laying process for such liners require men experienced in the business so that no accidental but unnoticed holes even pin sized ones are made during the laying process. The method of laying the concrete slab over the vapour liner must also be addressed for its environmental impact as it is difficult to see how this can be achieved without causing damage to the vapour liner caused by the form work and trucks driving across it. The technical specification should take into account aspects including floor slab design, penetrations into the slab such as service entry points and foundations and potential for differential movement between the slab and other building features such as walls. These details must be provided at this stage for a proper environmental assessment of the validity of claims regarding the liner’s effectiveness.

The EIS must reveal the type of barrier from a high number of polyethylene and geo-membranes barriers available all of which behave differently under different conditions. The selected product must be evaluated through contaminant transport modelling for performance as a diffusive barrier to vapour intrusions. Substantial differences in performance are reported by the manufacturers and by scientific studies.. For example High Density HDPE in laboratory testing showed significant diffusive resistance to BTEX.

Research from the University of Wisconsin provides confirmation that even dilute solutions will readily pass through intact HDPE liners. A study of the permeation of xylene, toluene, trichlorethylene (TCE) and methylene chloride in dilute aqueous solution through HDPE geo-

membrane liner materials, reports that these chemicals penetrate through .76, 1.52 and 2.54 mm HDPE geo-membranes in about one, four and 13 days respectively. They also found that stretching the geo-membrane only increased the rate of permeation. *Of all the geo-synthetics, geo-membranes are the most unforgiving. The smallest leak when placed under hydrostatic pressure will produce alarmingly high flow rates.* A geo-membrane would have to be about 7.3cm (about 3 inches) thick in order to retard organic penetration for a period of 25 years. After that time those organics would pass through even that thickness of liner. WSP p. 39 suggests inexplicably that “Materials should be robust, potentially reinforced and have a thickness from 1,600g (0.4mm) upwards;” In view of the above study .4mm would hardly be robust; it is hardly thicker than cling film.

Serious concerns are aroused that lip service only is being paid to the vapour barrier and that the minimum thickness will be chosen because of the huge expense of a more robust liner system especially one that uses best practice installation and QC & QA supervision. Best Practice quality control over installation could add more than 50% to the cost of the whole liner. Those concerns then expand to the financial capability of CRS with only three share holders to construct a facility necessary and acceptable to the public and government entities. The exact thickness and permeability of the chosen liner of benzene and other individual vapours must be provided and compared with the relevant environmental standards

How much Benzene gets through the liner will also depend on the pressure gradient in the Benzene adjacent to the membrane, as the pressure gradient drives its movement. An estimation of the mass of Benzene getting through will require computer modelling of the gas pressures around the structure.

As with all liners the main issue will be quality of construction. The workers need to ensure there are no rips and tears, and the seals or joins are perfectly formed. This is very difficult to achieve. One small tear or rip or poor connection at a seal or join will basically mean a lot of contaminant can get through, whatever of the type of membrane.

It is also possible that the slight building and ground movements (of only a few mm) which occur during the life of the design may cause a tear or rip. Given that the structures will be based on fill the potential for movement during its lifetime is high. This is extremely difficult to protect against and monitor. The risk on this issue will depend on how the liner, ground and structure are designed to interact. Clay liners are more flexible than synthetic liners and better able to remain impermeable as ground movements occur.

The EIS should provide information on alternative materials or alternative solutions to the vapour barrier problem which includes a comparative assessment of the different types including bentonite or other forms of clay liner.

Chemical diffusion

The chemical compatibility of the components of a lining system must be demonstrated during the EIS stage. Because of the great number of variabilities it is important to test the permeability of the membranes under conditions that simulate as closely as possible the actual environmental conditions in which the membrane will be in service. Testing should be done before choice and installation.

HDPE is only resistant to chemical attack at room temperature. Nor does it require chemicals to be present in high concentrations for its effectiveness to be reduced.

The most common chemicals to make the plastic more brittle and likely to crack are PAHs (benzenes, toluenes, xylene, naphthalenes, chloroform. The EIS's failure to identify the types of liner makes it impossible to assess the diffusive capacity of the liner to resist these chemicals. Studies and research results and case histories on chemical compatibility of the vapour barrier of choice should have been supplied.

The consultants themselves acknowledge this weakness in reporting that *“Vapour resistant membranes need to be installed on relatively uncontaminated surfaces to protect them from increased rates of degradation over time. Soil and water contaminated with large concentrations of petroleum hydrocarbons have the potential to reduce the lifespan and thus the effectiveness of vapour barrier systems. As a result, soil within the footprint of the buildings is required to be validated for the presence of TRH and BTEX to a depth of 300mm of the final design level prior to commencement of installation. The intent of this surface validation is to reduce the risk of future reduced effectiveness in vapour protection and thus the need for retrofitting other remedial systems to buildings.”* p 38. Obviously there are concerns about the long term effectiveness of the vapour barrier. The proponent should produce research to confirm the resistance of his choice of liner to chemical penetration by BTEX vapours.

Additional to the risk of chemical diffusion is the leakage resulting from defects such as cracks, holes and faulty seams.

The technical specification to be prepared by the installation contractor should detail the vapour resistant membranes that are to be employed as well as an assessment of their suitability with regards to the ground conditions and the types of contamination that they will be required to impeded. The membrane should be specified on the basis of its resistance to puncture and tear and the joints. Since choice of liner is not indicated this submission will make observations about various possibilities.

HDPE is manufactured in 2.0, 2.5, 3.0 mm thicknesses. Each of these give varying security and protection. The arguments weighing up the strength, thickness, life and flexibility should have been offered. Modelling for permeation rates must consider the thickness of the layer(s), temperatures and moisture content.

The 1.5 mm HDPE is only guaranteed for a life expectancy of 15 years. Manufacturers recommend that for every additional 5 years of life then an extra 0.5 mm of liner thickness should be employed. HDPE liners are more susceptible to leaks from damage during installation and their long term performance is uncertain. The life of the vapour barrier is very important and should have been addressed. No contingency plans for long term protection are supplied.

WSP identifies key issue affecting the effectiveness of this technique as the incorrect application of the barriers by untrained or unqualified contractors, use of unsuitable materials and subsequent poor validation by the Site consultant. *“This issue can be avoided through use of proprietary materials, engagement of professional specialist contractors and a regimented system of validation by the project consultant. As such, this method is believed to be the most suitable option for vapour protection on the Site.”* App G p 28. Questions arise whether the vapour barrier would outlast the lifespan of MRF building, whether other buildings on site, eg education/research centre will be fitted out equally, and what happens with vapours accumulating beneath the vapour barrier? Are they supposed to stay there, will they establish an escape path, or are they actively removed and “deactivated”?

Flexible Membrane Liners develop defects called "pinholes" during manufacture. These result from bubbles, foreign material or lumps of carbon in the raw molten plastic from which the FML is rolled into sheets. Design flaws, poor construction practice or poor quality assurance would result in larger holes. All plastic liners have some leaks. A general assumption is that *FML can have 3 manufacturer's defects per hectare.*

There is the added difficulty of layering the plastic liner under a concrete slab. There will be difficulty in operating the machinery on top of the liner without damaging the material below. There is also the difficulty of achieving "intimate contact" or "press fit" with the sides. All of these have the potential to cause defects. Furthermore during the welding process the resulting seams often leak. Even with good Quality Assurance an average of one leak per 1000 feet of seam can be expected with reasonably good installation. This issue needs to be investigated more fully.

Temperature Sensitivity

One of the degradation impacts on synthetic liners is temperature. Various properties of polymer geo-membranes are sensitive to changes in temperature. Geo-membranes exposed to heat can be subjected to changes in physical, mechanical and chemical properties. The magnitude and duration of exposure determines the extent of the change. Failure due to heat is defined as a change in appearance weight dimension or other properties that alters the material to a degree that is no longer acceptable for the service in question. The higher the temperatures the greater the rate of degradation causing changes in tensile strength and elongation.

High temperatures cause all polymer degradation mechanisms to occur at an accelerated rate. They have the propensity to expand under high temperatures and contract under cooler temperatures causing dimensional changes. This is particularly dangerous in the field when the liner is anchored at its periphery or bonded to another liner. These may be different - expansion in one direction and contraction in another. The temperature range in Canberra may well affect the liner and is a factor to be checked.

There is no known temperature threshold beyond which these phenomena occur and below which they do not. It is known however that sun generated heat is sufficient to cause significant irreversible shrinkage to most geo-membranes and that after only 15 minutes exposure to temperatures of 100^o C, HDPE will suffer dimensional instability. The exposure period between placing the liner and laying the slab must be estimated. The liners must be laid at the right time of the year to avoid high temperatures and must not be left exposed once laid. So the highest standards of quality assurance in the installation process must be ensured

The EPA and ACTPLA should require more comprehensive analysis of the performance characteristics of the vapour barrier selected for the buildings on this site and for those characteristics under various environmental and operating conditions before the mitigation that this liner is supposed to offer is accepted as validating this site as "fit for purpose".

Quality Control and Quality Assurance.

wsp p.8 recognises *"The potential for significant decision errors are to be minimised by completing a robust QA/QC program and by completing a validation program that has an appropriate sampling and analytical density for the purposes of the assessment and that representative sampling is undertaken."* Installation concerns cannot be denied. *"Proposed acceptable limits on decision errors associated with vapour barrier construction prior to final*

construction of the slab are that the barriers have been installed as per the requirements of this RAP (including using proprietary materials and specially trained contractors), the post installation verification inspections have not identified any tears in the barriers, all joins tested are appropriately sealed and leak testing undertaken by the contractor have either identified leaks for repair or no leaks.”

Construction quality control testing and supervision is crucial to the successful performance of liners. Quality control measures should be designed to verify that materials used are adequate; the methods of construction are acceptable and that the liner is adequately protected during and after construction. Both materials and seams have to be checked according to different tests in order to verify original properties and design performance.

Nothing less than the best measures would be acceptable at Fyshwick. There must be full time supervision of the construction of the landfill by an experienced engineer, not a technician, assigned to the site on a permanent basis for the duration of lining system construction. The minimum recommended qualifications for the Construction Quality Control, CQA and Manufacturing Quality Assurance, MQA, personnel are that they be employed by an organisation that operates separately from the contractor and the owner/ operator and approved by the Consent Authority and the community. They must be a registered professional engineer certified by the Institute of Engineers, Australia. The demand for such a rigorous quality monitoring program is no less than the ACT community deserves when the risks are so great.

The benefits of Quality Assurance, QA, are substantial to all parties involved including the owner of the facility and society at large through an increase protection of workers and the environment against pollution.

Both materials and seams have to be checked according to different tests in order to verify original properties and design performance are maintained. If any damage to the vapour barrier is identified prior to the laying of the slab, the damaged sections will need to be repaired to ensure an adequate seal is in place.

Installation concerns cannot be denied.

Geo-membranes must survive their initial placement if a long predicted lifetime is to be achieved. For any design method to function properly it is necessary that the geo-membrane survives the packaging, transportation, handling and installation demands that are placed on it. Some of the major variables affecting a given situation are the following:

- storage at the manufacturing facility
 - handling at the manufacturing facility
 - transportation from factory to construction site
 - unloading of trucks delivering the geo-membranes to the site
 - handling on site and storage conditions at the site
 - temperature extremes at the site
 - subgrade conditions at the site
 - deployment at the approximation location
 - movement into the final seaming location
 - treatment at the site during seaming
 - exposure at the site after seaming

A QA inspector should review the topography to verify that grades of the site as constructed are consistent with the design and to see that the requirements for weather conditions are met.

Though installation procedures can minimise the number of holes due to punctures and inadequate seaming, analysis of several geo-membrane failures have shown that geo-membranes with apparent integrity at the time of installation have eventually failed as a result of construction techniques that were not identified as inadequate during the implementation construction quality assurance.

Handling and installation stresses are caused by equipment, substrata material (must be smooth, no depressions) and backfill material. Geo-membranes placed on or backfilled with soil containing stones, sticks or other debris are vulnerable to puncture during and after loads are placed on them. Such puncture is an important consideration because it occurs after the geo-membrane is covered and cannot be detected until a leak from the completed system becomes obvious.

Special precautions of a sand cushioning layer along with lightweight construction equipment to avoid installation damage must be taken. The liner should be placed and covered in a timely manner. UV and heat effects can be severe so it is good practice not to leave the material exposed and subjected to accidental damage or contamination of any variety. It should be laid immediately.

Liner failures fall into the following groups; construction related; excessive UV degradation; installation damage; poorly constructed seams.

Seaming or Joining

The installation contractor should ensure that sealing (through taping or welding) is done in accordance with manufacturer specifications. Detailing of joints around structural forms, service entry points and the like should be undertaken to ensure they are gas tight. Risk of differential movement (e.g. between slab and walls) should be accounted for in the design and installation of the barrier. The technical specification should also indicate the contractor's method of verification of the completeness of the seal (e.g. air testing of welded joints or trace gas injection beneath the membrane followed by sweeping of the top surface with a gas detection device). The contractor should then have a plan in place for rectification of any identified breaches of the membrane.

The seaming or joining is difficult. The long term behaviour of welded geo-membranes must be guaranteed. To justify the expense and ensure performance non-destructive seam testing should be done in the field to evaluate the strength of the bond; the continuity of the seams and performed along the entire seam length. Destructive testing done in the field and in the laboratory must also be done to evaluate the ability of seams to withstand tensile stresses.

The joining of geo-membranes rolls and panels results in a seam that can be weaker than the geo-membrane itself.

Overheating or excessive grinding during seaming may weaken the geo-membrane and affect its long term performance or installing the geo-membrane under high ambient temperatures may cause large tensile stresses and cracking of the geo-membrane when the temperature decreases and the geo-membrane contracts.

Seam strength testing is important for two reasons. (1) to measure the quality of the seams, that is, the work of seaming crews and (2) to assess the integrity of the liner to withstand stresses

when the slab is laid. Ideally seams should be as strong as the material itself because the presence of the seam causes disturbance; a seam may over stress or weaken the geo-membrane in the seam vicinity.

As the geo-membrane becomes thicker tear during installation becomes less of an issue.

Falling objects including cover soil can penetrate geo-membrane either causing leaks themselves or acting as initiating points for tear propagation.

Heavy vehicles should never ride directly on geo-synthetics of any type. Even though puncture might not occur the thinning of the material will affect the flow rate calculations.. Once the first geo-synthetic of any type is placed only lightweight vehicles such as all terrain vehicles ATV's can be permitted.

Temperatures

One area that requires constant vigilance is that of UV light susceptibility. Contractors fail to recognise that liners can be literally destroyed by exposing them to prolonged sunlight, especially in southern climates. Strength and elongation properties are drastically reduced. Up to 50% can be lost within a few months. Contractors must keep the liner in its protective cover as long as possible before it is placed in position. It must be placed in a timely manner. Unused portions must be rerolled and suitably protected.

Elevated temperatures can cause dimensional instability in geo-membrane liners. Expansion of the liner at elevated temperatures can cause wrinkling which during construction can impede seaming and sometimes result in openings (fishmouths). That have to be cut and re-seamed. Wrinkles can also be snagged during the construction operations resulting in damage.

In manufacture through extrusion rolling etc the length of the geo-membrane is increased and internal residual tensile stresses are stored in the geo-membrane. When the geo-membrane is heated these stresses are relieved. As a result the geo-membrane contracts and this contraction is irreversible. There is no known temperature threshold beyond which this phenomenon occurs and below which it does not occur. However it is known that sun generated heat is sufficient to cause significant irreversible shrinkage to most geo-membranes.

To minimise the amount of required slack necessary to counteract the possible contraction when the temperatures cool, the geo-membranes should be installed under the coolest possible temperatures compatible with seaming quality. In summer this could be at night.

In the field if the geo-membrane is anchored at its periphery or bonded to to another geo-textile, then the geo-membrane will develop tensile stresses.

Only by rigid specification and QA competent full-time inspection by Q & A personnel and the co-operation of the installation contractor can the geo-membrane survive to the point of beginning to function as designed.

Tear

Geo-membranes are most often vulnerable to tear, puncture and impact while being stored, transported, handled and installed. Such events often come about accidentally due to vandalism or due to poor workmanship. Other typical situations are the dropping of tools on the geo-membranes; the driving of vehicles across; the unprotected liner; high winds getting beneath it

during placement; the awkwardness of moving large sheets of geo-membrane into position and so on. The property most resistant to tear is thickness.

Wind

Geo-membranes when exposed during installation or permanently can be greatly affected by wind. The sheets can be uplifted and pulled out of position in a very random manner. The geo-membrane can easily be torn and severely damaged. Windy conditions must be avoided. Appendix G, the wsp report, should have demonstrated the lifelong durability of the vapour barrier system.

Conclusion

There is no reliable, acceptable contingency plan (other than HIA after the fact) for a situation where the liner might be damaged during construction or found not to have met the remediation objectives. It is unreasonable for CRS to ask the community to accept the vapour barrier as an adequate protection from toxic fumes in the shed with insufficient details or technical reports guaranteeing the liner integrity or its performance. The purpose of such a barrier is to protect the environment and the health of the workers in the facility. This has not been addressed with any demonstrable conviction.

The serious consequence of intrusion of toxic vapours into the shed makes the liner choice critical. If it fails to do the job indicated then the site is not fit for purpose. The effect of chronic exposure to even small amounts of BTEX is unknown and must be avoided. It is socially and environmentally unacceptable the the serious issue of the effects of the contaminated site have not been addressed more comprehensively.

A Site Management Plan

A Site Management Plan and EMP must be prepared before approval. There are too many critical issues which if left to after approval for assessment could be too late for reversal. Detailed and comprehensive plans for the contamination remaining on the site must be implemented to ensure any residual contamination is appropriately managed and does not pose an ongoing and/or unacceptable risk to human health and/or the environment. The Plans should be based on updated assessment in relation to exposure to the hydrocarbons in the soil and groundwater.

Proposed changes to the site must be described and analysed for impact on any management plans. If existing surfaces are disturbed or buildings changed then further assessment to evaluate those changes in relation to exposure to the hydrocarbons in soil and groundwater is necessary.

The proponent gives insufficient attention to groundwater quality. This must also be addressed in the EMP and SMP.

The SMP should include

- details of any changes that have occurred since the last site assessment
- whether further assessment might be required
- a description of the nature and extent of any contamination of the land
- a description of the nature and extent of remediation undertaken

- a detailed description of proposed further remediation
- a recent site audit report that summarises the basis and rationale for the conclusions in the site audit statement.
- the health risk from Contamination during construction and operation of the MRF

The Audit Statement ghd June 2017 claimed that the areas with soil contamination can be appropriately managed provided there is no changes to the site conditions. This submission explains these changes to demonstrate rehabilitation and monitoring is absolutely necessary.

During construction small volumes of fuels and chemicals may be stored on the sites for use by machinery and equipment. There is potential if not managed appropriately, for these substances to spill on to the ground and spread to the surrounding environment during refuelling activities, transport and delivery. Accidental spills or leaks within the site and rail corridor have the potential to result in contaminants being transported into the surrounding environment and groundwater.

During operation this risk is highest in the maintenance area, where the majority of chemicals would be stored, and associated with the operation of the proposed 20,000 L leachate storage tank. Accidental release of leachate from the leachate storage tank also poses a potential source of contaminations.

AIR QUALITY AND CLIMATE CHANGE

There is no separate Air Quality Report in the EIS as required by the Scoping Document.

Other than brief discussion in Volume 1 the EIS fails to undertake a full air quality study with monitoring of ambient air quality, meteorological and topographical details or any cumulative impacts of the development on the local air quality. It fails to address issues of the diesel emissions from the 460 daily truck movements, the dust generated by earth moving and construction, toxic vapours from the hydrocarbon contaminants or the fine particulate emissions through the air ventilation system.

Identifiable air emissions at this transfer stations result from:

asbestos removal

demolition and excavation pre construction phase

dusty wastes delivered to the transfer station,

diesel emissions from waste delivery trucks, B Doubles and other trucks bringing cargo for the rail

exhaust (particularly diesel) from mobile equipment such forklifts and loaders,

diesel emissions from locomotives

particulate emissions from the general vehicular traffic and industrial activities in the area

BTEX, VOC and PAH vapours from the contaminated soil and water

driving on unpaved or dusty surfaces, and

cleanup operations such as street sweeping.

A more comprehensive assessment of the ambient air quality of the region is required by the Scoping document and the likely potential adverse impact on it of the additional 460 truck movements per day must be addressed for diesel emissions. The Health impact of the additional diesel must also be quantified as there are accepted measures for the increased mortality rates for every percentage increase of diesel particulate

The toxic emissions from the adjoining Access Recycling Services scrap metal operation must be included as cumulative effect for air emissions at the site. Deliveries of scrap in B-Doubles, road trains and long semitrailers continue six days per week and at times on Sundays. The metal facility is paramount to the rail freight to Port Botany intended to be weekly. Activities there should be measured for the cumulative impact of air and noise pollution.

Prolonged exposure to air emissions from waste and motorized vehicles operating inside the building provides another potential health threat to facility employees. The EIS should have addressed this. There is no evidence that Work Cover has been consulted in the preparation of this EIS. Transfer station employees exposed to high levels of noise for prolonged periods of time should use earplugs or other protective devices to guard against hearing damage.

Construction Phase

Other air quality issues can be identified in association with site clearing and excavation; remediation, stockpiling and removal of contaminated soil and the removal of hazardous materials. Because of the potential for BTEX vapour to have significant health impacts indoor Air quality must also be addressed. Vapours from exposed surfaces of a contaminated site have the potential to enter buildings and create a health risk for the workers inside. This must be addressed as a cumulative impact.

The L&D CONSULTING Report Appendix H identified asbestos on site to be removed prior to the commencement of demolition works or another works likely to disturb the material. This should be subject to a new DA. Since the demolition of the site is going to require great care and supervision the report also required that air monitoring be required during removal. Existing buildings, pipes and tanks revealed evidence of lead paint and PCBs in light capacitors, which also has to be managed during demolition works.

Discussion of dust from the construction phase p.90 omits the fine particulate emissions and the coarsest fractions from the contaminated soil that will be disturbed. This is a serious omission as it has a direct impact on human health. Page 93 admits the possibility of polluted run off but not the risks of inhalation of polluted particulates of the finer fractions. Disturbance of the contaminated soil has the potential for adverse health impacts to the workers through skin contact or inhalation of toxic vapours. The mitigation measure for dust suppression during construction are an admission of the potential adverse impacts from dust. The EIS must explain how *“Applying appropriate volumes of water based dust suppressant”* would work on high wind days. Is the ground to be kept permanently damp or will the water trucks precede delivery vehicles or after them to suppress the dust already generated. Experience at mine sites show water suppressant to be a poor mitigation measure. Diligent application rarely occurs.

Careful design and operating procedures help minimize air emissions, including:

- Paving all traffic carrying surfaces.

- Keeping paved surfaces and tipping floors clean, and ensuring any street sweeping operations use sufficient water to avoid stirring up dust.
- Installing misting systems to suppress dust inside the building or using a hose to spray dusty wastes as they are unloaded and moved to the receiving vehicles.
- Cleaning truck bodies and tires to reduce tracking of dirt onto streets.
- Maintaining building air ventilation systems so that they perform effectively.
- installing filtration into the air ventilation systems

However mitigation measures are only designed to mitigate against impacts in the immediate area. No assessment was done for the impact of the dust from the polluted soil of the finer fractions across the Fyshwick air shed and its cumulative health effects. Exhaust emissions from operation of construction vehicles and plant would also generate particulate emissions. Every .5% increase in fine particulate emissions has a deleterious impact on human health. An estimation of particulates from diesel emissions from the increased road traffic needs to be included in an the Air Quality Study for a reliable and comprehensive assessment.

Operation Phase

Air impacts associated with operations of the Transfer Station also comprise potential for dust and odour generation. This must be addressed. Other monitoring systems must be used to give an indication of the effectiveness of ventilation systems in controlling airborne contaminants as well as odour. The Odour Impact Assessment Appendix I is an unsatisfactory substitute for an air quality assessment. It is careless to the point of negligence that the Air Ventilation system proposed does not contain filters. it is designed to remove odours only and not dust and other matter.

Dust emissions for Transfer Stations often carry pathogens. The term “Putrescible Waste” is often used synonymously with “domestic waste” however they are not the same. In layman’s terms Putrescible waste rots whereas domestic waste tends to contain many bacteria that survive for a very long time and do not decay for a number of years. The stack plume must be monitored for these pathogens.

Tipping areas often have localized air quality problems (dust and odour) that constitute a safety and health hazard. Dust in particular can be troublesome, especially where dusty, dry commercial loads (e.g., C&I wastes) are tipped.

Vapour intrusion

Without an ambient air measures for benzene in particular the effectiveness of the vapour barrier to prevent intrusion of toxic vapours into the individual buildings on site cannot be evaluated.

For vapour intrusion assessment it is recommended that, where possible, soil gas data is collected and a weight of evidence approach used. Soil data alone is not considered to be sufficiently reliable to make decisions about whether or not a vapour intrusion risk is present.

Rail emissions

Trains like cars and trucks, have the potential to emit airborne pollutants. Diesel Emission from locomotives will add to the already high particulate emissions in the airshed. Railways contribute to pollution impacts. Loading and unloading of rolling stock should be included in any assessment of air and noise emissions.

Idling locomotives could be required to wait due to network restrictions.(often determined through availability of pathing etc). All reasonable measures to minimised environmental impacts while required to wait must be taken.

The Rail Industry Safety and Standards Board (RISSB) is working towards an industry Rail Environment Standard, covering air and noise emissions. Railway emissions should have been included in the Air Quality and Health studies and been calculated and measured against the cumulative air quality impact.

Cumulative Impact

Identified impacts and requirements to be addressed in the EIS were “*Cumulative impacts of the development on air quality in the locality*”. There is no assessment of air pollutants or of the cumulative impacts of the proposal on air quality in relation to toxic diesel emissions from heavy vehicles in the submitted EIS. The cumulative impact for its adverse health impacts of all source diesel emissions, ambient particulate air quality and vapour emissions from the hydrocarbon pollution in the soil should have been assessed. This is a serious omission.

The National Environment Protection (Diesel Vehicle Emissions) Measure 2001 identifies that “*Diesel vehicles make a disproportionately high contribution to NOx and particle air pollution from the transport sector. The diesel vehicle proportion of the transport fleet is increasing and this trend is expected to continue. Emissions from diesel vehicles have the potential to cause adverse health effects and detract from urban amenity.*” (National Environment Protection (Diesel Vehicle Emissions) Measure 2001).These emissions are a constituent of the air quality in the Fyshwick area they must be assessed in the EIS for the proposed project.

The EIS acknowledges “*The environmental impacts of dust are also significant, as the nutrient disposition can lead to the spread of weed species and algal blooms in waterways. It should be noted that there are adjacent and nearby outdoor dust generating activities already including metal recycling, concrete batching plants, firewood sales and a timber mill.*” p 90 but makes no attempt to analyse the cumulative impacts of these on the air shed. This must be addressed.

“*CRS has proposed to fully enclose its future MRF operations in a purpose built negative pressure shed and discharge odour emissions via a stack. The expeditious processing and containerisation will ensure that that there is no exacerbation of odour and the continuous removal of material and avoidance of stockpiles will eliminate any cumulative impact.*” p93 This is a sweeping statement requiring proof and must be rejected. It takes a too simple view of cumulative and sees it simply as an ‘add on’ effect. “Residual risk” is also not accurately understood. It is not just about alleviating perceived impacts but eliminating those which are largely unperceived.

Climate Change

“*This section provides an overview of the work done by consultants, Purdon’s and The Odour Unit (Appendix I), as to any possible air quality and climate change risks posed by the proposal to adjacent lands including possible dust from construction, transport vehicle emissions and odour from processing activities and contaminated run-off.*” p.83 Some of the above were touched on in

this volume and App. L but not climate change. The EIS erroneously associates fugitive odours and dust with climate change to avoid engaging with this issue.

It even goes so far as to state that *“There is a positive impact on climate change by this proposal as outlined above”*, the outline being solely the mitigation measure for odour control. This makes no sense and the conclusion reached by this submission that climate change has not been understood or addressed.

“As outlined the diversion of a further 20% of materials away from landfill and the more efficient capture of methane gases from the fully engineered Woodlawn Bioreactor landfill is a much better outcome for the environment and climate change than what is currently occurring.” p.93 This has been negated in an earlier section of this submission.

There has been inadequate attempt to evaluate the carbon footprint of the total development,

ODOUR IMPACT ASSESSMENT APPENDIX I

It is essential that odour management is adequately planned to ensure that control systems are built into the design of the plant. The EIS’s claim that *“management of odour is well proven”* must be rejected. Odour assessment is particularly difficult and generally one of the most complained about environmental pollution issues.

This difficulty arises because impact on receptors depends not on what is acceptable under guidelines or standards but on what is actually tolerable. One person may be physically ill as a result of an odour that another barely notices. It is an unacceptable, implied conclusion that odour in the surrounding area would not be perceived as *“undesirable”* or offensive because as the EIS claims its impacts are *“moderate”*. This does not follow. The odour modelling was *“designed to minimise the nuisance effect to acceptable levels within the local community.”* App.I p. 10. Defining *“acceptable”* is impossible when it comes to odour. Population receptors have widely differing sensitivities.

If the sorting of the waste in a shed; fast acting doors and ventilation extractors ameliorate against the odour from the material then this would not necessarily apply when the waste leaves the shed to the rail line for transport. How odour issues are managed for the waste while it is loaded onto rolling stock for freighting to Woodlawn is not fully addressed. The ability of the railroad system to collect and transport the waste in a timely manner has to be assessed to provide assurances that the waste will not be left in the containers for a lengthy period at the Fyshwick terminal and create odour problems there or along the route. Containers used to transport putrescible waste by rail should have carbon filters installed within the air vent and rubber seals around the openings to prevent the emission of odour.

Odour issues relating the rail containers is particularly significant since the method of leachate control is to re-inject it back into the containers for transport to Woodlawn. This management method would accelerate decomposition and increase odours. This is a serious omission from the Odour Impact Assessment.

The proponent advises he intends to minimize the number of doors; circulate the air 5 times an hour; use an air extraction treatment vented through a stack; ensure no stockpiling and install rapidly opening and closing doors. As ameliorating techniques these need to be tested and validated.

What happens if all the doors fast opening and closing mechanisms fail at the one time? How long would it take to repair them and how would odour dispersion as modelled be altered? This must be answered. Human error has not been included in the model or the spread of the odour if the doors are deliberately left open by the workers who might prefer fresh air to a diesel and dust filled space.

In The Odour Unit's opinion the mixed use industrial zone would be less sensitive and would almost certainly tolerate higher odour exposure. No justification, based on an evaluation of likely receptors in that zone and a survey of their opinions, was supplied for this opinion. Casual visitors- store customers, for example might react differently from a permanent worker accustomed to the odour and become physically ill inside the store.

For a MRF and a Waste Transfer station the separation distance from sensitive receptors for odour is 300m. Because of the location there must be no odour impacts on neighbouring businesses which have minimal buffer zones. The amelioration techniques must be validated for site specific efficiency.

Odour Modelling

Evidence from odour modelling, must demonstrate that the potential odour impact is less than the EPA odour criteria for normal conditions and other conditions including times of higher emissions because of accident, power failure, equipment failure, unusual meteorological conditions or human error. The modelling assumed a steady discharge rate occurring during all operational hours and each day of the week. This is a doubtful scenario.

The odour contours in the EIS showed acceptable odour predictions at a distance of 400 metres. but there was no validation of these predictions. For other odour generating industries it has been repeatedly shown that odour modelling is unreliable. Odour dispersion depends on the shape of the plume and interaction with prevailing winds. Nearby receptors and what they will smell depends on wind direction and speed and meteorological conditions. A plume study must be carried out with the raw data supplied.

The modelling in this case must be questioned for the following reasons;

- The Modelling was claimed to be based on past measurements taken from a MSW transfer station in Sydney but the exact facility was not named for verification purposes. Details of size, stack height, waste type and volumes, door numbers and operation etc must be comparable. If it was Banksmeadow or Clyde then the results for the Fyshwick MRF must be questioned. There have been odour complaints about both facilities.
- Inappropriate and incorrect parameters have been used in the modelling. Most significant is the temperature setting at 273.15 degrees Kelvin. That is 0 degrees Celsius. Stuff smells a lot more at 40 degrees C. the model should have been run for a number of different scenarios approximating more closely the actual conditions inside the shed. Unless the MRF has a very good air conditioning system, inside temperatures are likely to at least equate outside temperatures and probable exceed those on sunny summer days. The modelling should be done with ambient, exit and fugitive temperatures up to at least 40 degrees Celsius. The 0 degrees Celsius setting in the modelling cast serious doubt to the reality of the findings.
-
- The Calpuff modelling uses USGS elevation data gridded at 200 m. This is likely to miss local topography and with it the effects from the creek, rivers, lake and wetlands on the forming of

inversion layers at night. Geoscience Australia data at 30 m resolution should have been used;

- Its failure to adequately take into consideration geographical and meteorological conditions and how they affect odour transport. The topography of the Fyshwick, Kingston and nearby Narrabundah areas has fairly low differential elevation. Yet the nearby Jerrabomberra Creek and the Jerrabomberra Wetlands with the Molonglo and Queanbeyan Rivers are fertile grounds for nightly inversion layers that will substantially affect dispersion of odours. It is of importance therefore to have local differences in elevation properly be represented in the modelling.
- Table 3.8 shows that air inversions are an issue in Fyshwick. The frequency of these occurrences, their intensity and duration was not part of the modelling so that the impact of odour for residents in the 6-7am shoulder period could not be properly assessed or for residents for the rest of the morning should the air inversions not lift till late morning or early pm. The modelling result for all mixing heights and stability classes should have been provided. Stability Class D occurred 54.2% of the time. Stability classes D, E and F all have the potential to adversely impact odour dispersion.
- The report modelled for three scenarios but did not contain an assessment of the worst case findings, scenario 2, when all waste emissions were released from the MRF if the process was carried out in an unconfined manner e.g. out doors or if the process was carried out with all the mitigation measure failing at once.
- Only two wind roses were displayed. A more reliable assessment would have considered monthly or at least seasonal variations. The prevailing north-north westerly winds would push the odour in scenario 2 when amelioration techniques fail, across south Fyshwick and the Caravan Park on Canberra Avenue.
- The modelling was based on a maximum of 200 tonnes of waste in the shed at any one time. This must be challenged as no input into the model was done for road delays and excessive queuing of waste trucks and stockpiling of waste inside the shed or for timetable delays of trains, machinery breakdown and scheduled or unscheduled maintenance. Any of these factors have the potential to alter the model assumptions of 200 t waste storage at any one time; 84t/hour handling and 11.5 hour processing time.
- The Odour Impact Assessment submitted in EIS does not consider odour impacts from leachate collected in the bunds or stored on site.
- Maintenance work on the ventilation system for its potential to impact the model conclusions was not modelled. There needs to be an estimation of the impact on odour emissions if the extraction/ventilation system fails or needs maintenance.
- The modelled assumed a typical waste profile which needs verification from operational statistics. Waste composition is uncertain and differs from region to region and season to season. Recycling rates are also likely to differ over the life of the project affecting waste composition.
- The height of the ventilation stack relative to the height of the Monaro Highway and to the height of the proposed development east of the facility was not adequately addressed.

- The height of the mixed developments in the East Lakes Renewal Project was not considered. It was assumed they would be single storey. The modelling was done for receptors at ground level and ignored future residents in proposed units six or more storeys tall, 290 meters from the facility.
- The two large doors to the north and north east of the facility were ignored. These doors appear to be twice the size of the others; would probably be for the loading and unloading of the waste containers and have no guarantee that they were fast action opening and closing. More likely they would need to stay open for longer periods to accommodate the movement of the forklifts emitting more fugitive emissions that calculated in the modelling.
- Odour emission contours were provided with no accompanying explanation. Findings were sketched, not scientifically drawn with readable distances, for impacts within the site and within the industrial zone. Contours lacked the detailed variations within each zone so the community and surrounding business are able evaluate the likely effect on their particular staff and customers.

Adequacy of the Ventilation System

No technical information for the ventilation system, including the manufacturer's name, is provided to enable, as required by ACTPLA Scoping Document, sufficient information to understand clearly the nature of the development's impacts and the effectiveness of the measures intended to ameliorate against any adverse impacts. Other than the frequency of the circulation and the height of the stack we are given little information about this crucial component of the management strategy for air quality control. This is unsatisfactory and must be addressed.

The effectiveness of a ventilation system to handle the volume of air in a shed 7275 square metres with a 12m high ceiling, "*eliminating fugitive odours to negligible levels*", Vol. 1 p. 93, must be demonstrated. The EIS states "*It should be noted that the modelling and assumptions utilised have been conservative and a program of operational field testing is appropriate to verify correct odour management.*" Vol 1 p.xii The field testing should be done before installation and operation. If it is not done prior to operation affording the necessary level of assurance, additional mitigation measure such as creating air locks at the entry and exit doors or a taller ventilation stack should be implemented.

The air "refreshment" system of the MRF, 5 times per hour, does little more than pump air out of the stack 24 hours a day. According to the report by the Odour Unit App. I, p 9 the air within the MRF will be refreshed 5 times an hour, meaning 410,000 m³/h will pass through the 21m high stack at an ejection velocity of 72 km/h. That is the velocity of a fresh gale. That fresh gale will be blowing day and night. The EIS does not make it clear what the noise levels generated by this volume/speed of ejected air will be. Will noise remain below 35 dBA at night at the location of the proposed residential/commercial development directly across the Monaro Highway (block 30, section 11, Fyshwick), under normal conditions but more importantly during air inversions.

There should be regular monitoring of the performance of the ventilation system. Air flow measurements and smoke tubes can be effectively used to review performance of ventilation systems to aid in ensuring compliance with odour standards. No monitoring techniques or commitment to implementing a monitoring program is included. Odour monitoring and reporting must be regularly undertaken in accordance with the EPL requirements for the facility to ensure compliance.

Detailed maintenance plans for this ventilation system should have been supplied.

An odour complaint logbook should be maintained on-site. When odour complaints are received, a site investigation would be conducted to identify any unusual odour sources within the site boundary and appropriate action taken as required.

This submission notes that no consideration has been given to the people who work in the office, education centre and weigh bridges for odour protection and that no ventilation system has been proposed for those confined spaces. This must be addressed.

OCCUPATIONAL HEALTH AND SAFETY ISSUES / PARTICULATES AND PATHOGENS

Odour indoors has been ignored. This development has Occupational and Safety implication. There is no evidence that Work Cover has been consulted in the preparation of this EIS. Dust emissions for Transfer Stations often carry pathogens. The term "Putrescible Waste" is often used synonymously with "domestic waste" however they are not the same. In layman's terms Putrescible waste rots whereas domestic waste tends to contain many bacteria that survive for a very long time and do not decay for a number of years.

Other monitoring systems must be used to give an indication of the effectiveness of ventilation systems in controlling airborne contaminants as well as odour.

Tipping areas often have localized air quality problems (dust and odour) that constitute a safety and health hazard. Dust in particular can be troublesome, especially where dusty, dry commercial loads (e.g., C&I wastes) are tipped.

Prolonged exposure to air emissions from waste and motorized vehicles operating inside the building provides another potential health threat to facility employees. The EIS should have addressed this.

Transfer station employees exposed to high levels of noise for prolonged periods of time should use earplugs or other protective devices to guard against hearing damage.

Vapours from exposed surfaces of a contaminated site have the potential to enter buildings and create a health risk for the workers inside. This must be addressed as a cumulative impact.

VECTORS

The EIS admits the development "*has the potential to harbour pest animals such as rats and mice, cockroaches, insects and an array of bird species attracted to these facilities.*" p.97 and the potential to alter the behaviour of surrounding animal species and disrupt environmental functions. Having acknowledged this the EIS then failed to examine this issue further.

Vectors are animals, insects or other organisms that carry pathogens from one host to another. They need to be controlled for public health and aesthetic reasons.

Doors opening every 5 minutes is insufficient to control the intrusion and egress of Vectors such as rats mice, cockroaches and other insects. CRS promises to employ a pest control contractor but does not say how often they will inspect and treat the premises.

The design should allow for appropriate control mechanisms to deal with the prevention and eradication of vectors. Regular removal of waste is required to prevent the establishment of habitat or food supply to these vectors.

While use of pesticides and baits may be required, the preferred methods of vermin control includes covering of waste and good housekeeping. Apart from health considerations control of vermin is important because once established vermin will spread to neighbouring premises adding another adverse impact to those already experienced because of this development.

If pesticides are used, care should be taken to ensure that pesticides do not enter stormwater or leachate or pose an airborne pollution hazard or nuisance.

The operator should also ensure that any stormwater ponds are kept free of mosquito breeding larvae and that water does not pond in any other location that may propagate mosquito breeding.

LITTER

In the normal course of facility operations, stray pieces of waste are likely to become litter in and around the facility. In jurisdictions that do not have or do not enforce regulations to cover customer vehicles, the litter problem is often most prevalent on routes leading to the station. Dry, light materials such as plastic grocery bags can be blown from the backs or tops of vehicles, or from the tipping area to the facility's outside areas.

Design and operation considerations that can reduce the litter problem include:

- All incoming and outgoing loads should be covered
- Roads should be paved and wide enough to avoid sharp turns
- All trucks must be leak proof
- Litter should be collected at least once a day.
- Conducting all waste handling and processing activities in enclosed areas, if possible.
- The main transfer building should be oriented with respect to the predominant wind direction so it is less likely to blow through the building (or tunnel) and carry litter out. Generally the "blank" side of the building should face into the prevailing wind. In this case with doors on two sides of the building for loading and exit purposes the potential for waste to leave the building has increased.
- Wind-breaks can be constructed to deflect wind away from the frequently opening and closing doors
- Doors should be located in areas that are less likely to have potentially litter-producing materials stored near them, regardless of building orientation or speed of closing.
- Waste trucks must be strictly enforced for load covering requirements to reduce litter.
- Uncovered loads must be declined by the operator.
- Bird-scare devices, such as recordings of predatory birds or plastic decoys, can help alleviate scavenging.

- Installation of fencing and netting systems right around the site would keep blown litter from escaping into the general environment.
- Routine litter patrols to collect rubbish on site must be regularly conducted, around the perimeter, on immediately adjacent properties, and on the streets nearby.

Concerns exist about illegal dumping in the Hume area. ACT residents expect that this proposal for a waste facility will not attract illegal dumping at the gates or on nearby boundaries. The proponent must address procedures to prevent or deal with this eventuality.

NOISE IMPACTS - APPENDIX J NOISE MANAGEMENT PLAN

Heavy truck traffic and the operation of heavy-duty facility equipment are the primary sources of noise from a transfer station which could become a nuisance to neighbours. Transfer station structures can experience substantial vibrations from heavy equipment used to compact and load waste into the containers. A MRF is also a high impact and high intensity noise and vibration generating activity. Transporting, tipping processing and storing of recycled materials must be carried out in a controlled and competent manner so noise and vibration are minimised.

The NSW Industrial Noise Policy is based upon extensive research into community reactions to noise and presents two criteria for protecting the community against noise. These are the intrusive and amenity criteria. The INP recommends two criteria, "Intrusiveness" and "Amenity", both of which are relevant for the assessment of noise. The intrusiveness criterion, applied to residential receivers, requires that the LAeq noise level from the source being assessed, when measured over 15 minutes, should not exceed the background noise level (by more than 5 dBA. The aim is to ensure that intrusive noise is limited and amenity is protected.

The Draft EIS fails to quantify the sources and type of noise which impacts the site. The equipment list on page 16 of Appendix J is not guaranteed to be that used on the site; nor were the exact number of the pieces of equipment specified. How many high-powered forklifts were employed for example. Equipment noise includes engines, backup alarms (beepers), hydraulic power units, and equipment buckets and blades banging and scraping on concrete and steel surfaces. The unloading of waste or recyclables (particularly glass) onto a tipping floor, pit, or trailer can also create substantial noise, depending on the type of waste, fall distance, and surface. Stations that use stationary solid waste compactors or engine-driven tamping equipment have additional sources of mechanical equipment noise with which to contend.

Noise levels in materials recovery facilities in the USA often exceeded OSHA action levels for worker protection. Truck unloading, glass crushers, can compactors, paper choppers, grinders, aluminium can vacuum, tub grinder, and other processing equipment contributed to the noise levels, and operators at these equipment stations are required to wear hearing protection. Plant and equipment at the MRF including if used, hammer mills, shredders, crushers, conveyors, balers, plant exhaust or ventilation systems, must be maintained and operated in a proper and efficient conditions so that noise and vibration are minimised.

The Noise Impact Assessment should have considered the difference between intrusive and annoying noise and considered the impacts of the various types of sound on receptors. For example loud bangs or thuds; screeching noise or squealing; continuous hums or buzz and beeps and high pitched squeals or hissing can affect the amenity of the area particularly for nearby businesses and their customers.

The Noise Impact Study failed to consider or test for activities that generate the loudest noise during selected hours, such as the morning or afternoon commute hours when adjoining properties are unoccupied or when offsite background noise is at its highest so that the plant operation can be adjusted accordingly.

Offsite traffic noise in the station's vicinity will be perceived as noise from the station itself. Queueing trucks could add to the traffic noise affecting the local area. Shutting off idling equipment and queuing trucks can minimise noise.

The Noise and Vibration Assessment claims that full compliance is predicted under both neutral and prevailing adverse meteorological conditions. The assessment also concluded that, given the existing background noise levels experienced by the closest residential receivers to the site, operational activities would be expected to be rendered inaudible at these localities. Operational noise would not be expected to result in any material increase in cumulative noise levels experienced by existing residents and predicted noise levels would be expected to be within the sleep disturbance noise limits.

During both the construction and operational phases, road traffic and rail noise levels are predicted to increase by less than 1 dB each, complying with relevant policies. Construction noise is not expected to exceed the Interim Construction Noise Guideline (ICNG) construction noise criteria at any residential location, however there is potential for exceedances at the closest commercial and industrial receivers. This impact is considered to be low and best practice measures would be adopted by the developer to appropriately manage construction noise impacts on surrounding businesses. No vibration impacts or structural damage is anticipated at either residential or commercial/ industrial buildings. Monitoring of vibration impacts on the closest receiver, being Harvey Norman prior to construction is proposed, to determine appropriate mitigation strategies and for visual monitoring of the stockpiles during construction. Without details of the best Practice measures to mitigate construction noise it is impossible to verify the "low impact" claim.

"The MRF building can be constructed to minimise noise emissions to the environment, thus achieving compliance with the ACT Zone Noise Standards at the property boundaries." p 24
Without the details of the construction methods or materials to achieve this it is impossible to verify this claim.

Meteorology

It is unacceptable that the modelling at Matina street was stopped because a person was riding a motorbike nearby. Surely these everyday noises are part of establishing background levels. The NIA also noted p.14 that *"This measurement was seemingly affected by weather enhancement, with a thunderstorm approaching from the north-west."* Noise-reflecting effects of low clouds need to be modelled as they would reduce common attenuation with distance.

Noise monitoring was conducted over a seven day period in November inadequate for monitoring noise impacts in all seasons and all meteorological conditions. Noise levels were modelled under calm conditions and neutral meteorological conditions. *"The noise levels were modelled under the following meteorological conditions: Daytime, 10OC, 70% relative humidity and calm conditions Morning Shoulder, 0OC, 90% relative humidity and calm conditions under neutral meteorological conditions."* p17. *This is inadequate for a noise impact assessment on a major project such as this one is. This must be addressed.*

Sound is convected by the wind that carries the sound with it. If the wind speed increases with height, then sound “rays” at a higher altitude will travel faster than sound “rays” close to the ground. The net result is that the “rays” bend towards the ground. Those rays which would have dispersed into the air and thus would not have been audible are bent towards the ground and amplify the sound traveling along the ground. This enhances the sound level when the wind blows from the source to the receiver. It is unacceptable that monitoring was not undertaken in all weather conditions instead of over seven calm days.

“Molonglo Valley Air Quality Assessment” , AECOM Australia Pty Ltd 16 February 2011 for ACT Planning and Land Authority states “Due to the topography of the development area, temperature inversions that occur on cold, clear nights are likely to trap any pollutants in the air at ground level. If substantial pollution is present, adverse health effects are likely to occur.” In assessing noise impacts, the criteria are expected to apply under weather conditions that would be expected to occur at a particular site for a significant period of time. These include conditions of calm, wind and temperature inversions. As the criteria are expected to apply under weather conditions characteristic of the area, it is important at the start of a noise assessment to assess the potential for such meteorological effects occurring, thus enabling better prediction of potential noise impacts.

The effect of vertical temperature gradient on sound propagation must also be addressed. Sound travels faster in warmer air. If the temperature increases with height (ie. in a temperature inversion), then sound “rays” at a higher altitude will travel faster than sound “rays” close to the ground. The net result is that the “rays” bend towards the ground. In the case of wind, those rays which would have dispersed into the air and thus would not have been audible are bent towards the ground and amplify the sound traveling along the ground. This enhances the sound level when there is a temperature inversion. However, unlike wind, the enhancement occurs in all directions no matter where the receiver is located relative to the source. If the temperature decreases with height (ie. in a temperature lapse), the sound “rays” are convected upwards and hence the sound is attenuated. These meteorological effects typically increase noise levels by 5 to 10 dB, and have been known to increase noise levels by as much as 20 dB in extreme conditions, thereby causing a significant noise impact on residents living in areas prone to these effects. The degree to which the sound is enhanced or attenuated is affected by the vertical temperature gradient. The greater the gradient, the greater the effect. Hence, on sunny days (Class A), sound is generally reduced and on clear nights (Classes E-G) the sound is enhanced. The combined effects on noise of a wind speed gradient and temperature gradient are additive and must also be addressed. The NIA for this EIS lacks rigour.

Temperature inversions

The proponent must demonstrate that the default values for air inversion should not be applied and that actual inversion strength and wind speed values based on on-site measurements be used instead of the default values.

The Report did not adequately determine the significance of temperature inversions. The proponent should do further analyses to confirm whether the occurrence of temperature inversions at the locality is significant. This would involve determining the percentage occurrence of moderate and strong inversions during winter, based on existing meteorological data. The duration of the inversion events must be taken into account as in some areas they can last well into the day. Where inversion conditions are predicted for at least 30% (or approximately 2 nights

per week) of the total night time in winter, then inversion effects are considered to be significant and should be taken into account in the noise assessment.

Assessment of impacts was confined to the night noise assessment period (10 pm to 7 am), as this is the time likely to have the greatest impact—that is, when temperature inversions usually occur and disturbance to sleep is possible. However trends show that there is a substantial increase in the frequency and duration of temperature inversions (10%) for SE Australia and a decrease in the intensity of the temperature inversion for southeast Australia. For this assessment these trends have implications for the shoulder period 6-7am when the noise levels would fall above the acceptable criteria.

Essentially, the assessment involves a staged approach, designed to require an assessment only where initial screening tests show that inversion effects on noise are potentially significant. Where the potential is established, the next step is to analyse existing meteorological data to determine the percentage occurrence of temperature inversions. An occurrence of 30% of the total night-time during winter (June, July and August) has been selected as representing a significant noise impact warranting further assessment. As temperature inversions generally occur during the night-time and early morning periods, this percentage occurrence corresponds to about two nights per week.

Noise Assessment

Background noise levels, including traffic and industrial noise levels, must be recorded to determine the existing environment for the Site to enable the assessment of impacts associated with construction and operation off the proposal in accordance with the relevant EPA noise impact assessment guidelines.

A Site visit should have been undertaken during a night-time period, with suitable meteorological conditions, to undertake attended background noise monitoring. Monitoring for background noise should have been taken all hours of the day and night, all days of the week, in all seasons and in all weather and meteorological conditions. The night-time period for determining inversion frequency is from 1 hour before sunset to 1 hour after sunrise (taken to be 6 pm to 7 am), which is the time period during which inversions are most likely. (This is different from the night noise assessment period over which inversions are to be assessed, which is from 10 pm to 7 am.) Winter is selected as the appropriate season in which to determine whether temperature inversions are significant, as it represents the season with the highest frequency of occurrence of temperature inversions.

Impacts that should have been assessed in this report include construction noise, operational noise impacts and vibration impacts, road traffic noise and site traffic noise, rail noise, and background noise from other nearby industries in Lithgow street especially the metals recycling facility.

Full compliance must be demonstrated under both neutral and prevailing adverse meteorological conditions.

The assessment must also measure the existing background noise levels experienced by the closest residential receivers to the Site. Operational activities must be rendered inaudible at these localities.

Potential sleep disturbance at both night and during the daytime hours must be evaluated . Daytime noise has the potential to adversely impact on babies and shift workers such as nurses, doctors and police .

The NIA did not model complexity of conditions such as meteorology, wind speed, terrain air inversions etc. The terrain surrounding the MRF is undulating and could in fact tunnel noise in a certain direction. This should be addressed.

The EIS must address the cumulative noise levels inside the shed with various scenarios including all the machinery operating at once and combinations of the machinery and air ventilation system.

Outdoor sound can be the most intrusive. On-site operational activities that have potential to generate the highest (maximum) noise levels include train movements/shunting on the rail sidings, container unloading and re-loading of the train, container stacking within the external container storage areas, truck activities (braking, horns and door slamming, reversing alarms). Trucks queuing to enter the site will contribute to outdoor noise experience by locals if they rev their engines while accelerating up Lithgow street.

As the Proposal would operate 16 hours a day, the controlling criterion for residential receivers would be the nominated night-time amenity criterion (37 dBA). For the purpose of the noise impact assessment, compliance with the night-time criterion implies compliance at all other times.

Noise impacts will have a cumulative impact from the MRF, the metals recycling and other businesses Lithgow street, the truck movements and the rail operation loading and unloading and a compounding impact with odour, air and traffic impacts. This has not been adequately addressed in the EIS.

Indoor Noise

No assessment was done on the relationship between adverse noise impacts and human health. This should have been addressed in the EIS either in the NIA or the Health Impact Assessment. This must be addressed. Noise-Induced Injuries was not addressed in the NIA or HIA and should have been. Excessive noise levels can affect hearing loss. But, recent research indicates that occupational noise exposure can also affect blood pressure. In a study at two plants (one with high noise (over 89 dBA) and another with less high noise (below 83 dBA)), involving over 300 male workers at each, clinical examinations and questionnaires showed that cumulative noise exposure was a significant predictor of diastolic blood pressure in high-noise conditions.

Vibration impact assessment

The closest existing commercial buildings, being the Harvey Norman and other retail stores are setback from the WT site by at least 25 m. Any ground vibrations arising due to on-site activities would be substantially reduced by this distance from the source and would be well below the conservative building damage criterion of 20 mm/s adopted for the Proposal. However, the expected level from vibratory rolling has the potential to exceed the human comfort criterion recommended for offices.

Noise Impacts Cumulative impacts

Trucks arriving and leaving the site every 4 minutes is both persistent and intense and will adversely impact the ambient noise levels. Further the ambient noise environment at the site should be relatively quiet and should not be affected by extraneous noise sources such as road traffic, construction, loading and rail noise, machinery operations, noise from reversing machines and trucks, container handling and unloading, and 2 container forklifts, air conditioning noise. In addition the noise from the vibration of the machinery inside the MRF shed and the shaking and magnet noise must be considered. Untreated mixed municipal waste can be roughly shredded by passing delivered waste through either crocodile shears, shredders, mills, rotor shears or crushers. Where the incoming wastes are shredded metals can be removed more easily to allow recycling. This process is noisy.

Rail Noise

Detailed assessments for freight handling facilities must include future hours of operation or traffic growth. This was not addressed for noise impact.

The proposed Fyshwick terminal would result in two additional daily movements on the line (one to and one from Botany). The noise impact assessment must prove that these additional movements would not be expected to materially increase off-site rail noise.

The operation of freight handling facilities does result in substantial levels of noise and vibration emission. The NIA page 17 claims *“Rudds has also assumed that there will be no acoustic shielding due to container transport or storage. In actual fact, the containers will provide shielding to the container handler, so for the majority of the time, Rudds expects noise levels will actually be lower than predicted to the north of the site.”* Without exact dimensions of the containers and their stacked height this is impossible to assess and difficult to believe. The length of the train and the hardstand and the space occupied on it by empty containers is such that any attenuation of the noise there by containers would be minimal. Without the exact noise produced by the containers handler itself it is impossible to verify the above statement.

The NIA also claimed that the *“current adjoining operations mean this area cannot be accessed due to the stockpiles of recycling materials, which in themselves act as a substantial acoustic barrier to operational areas on this site.”* p21. This statement must also be verified for its accuracy. Rather I submit that the Access Recycling yard adjacent to CRS should be modelled for its cumulative effect on the noise impacts of this proposal.

“To achieve compliance at the northern rail corridor boundary, The container handler operational noise level must be reduced from Lw 110 dBA to Lw 102 dBA. This is being investigated with the manufacturer of the equipment, who has indicated that there are equipment silencing kits available for these container handlers.” Without firm assurances that noise dampening methods will be used on this machine and all the other noise generating equipment this proposal should not be approved.

There is insufficient space on the site to provide adequate separation from the additional rail noise and the nearest receptors. Engineered acoustic treatment along the railway corridor boundaries to protect against rail noise at the hardstand is impossible.

Annoying characteristics of rail noise could include; tonality (eg wheel squeal); noise from loading activities especially the scrap metal designated for Port Botany. Under certain meteorological conditions this noise can carry long distances. For example, the noise generated by idling locomotives located near sensitive receivers for considerable periods of time may comply with the criteria but still cause significant annoyance due to its low frequency content.

Reasonable and practicable mitigation measures must be included in the Noise Management Plan for the Facility. It is also critical that rolling stock is selected and maintained to achieve relevant noise and vibration emission standards. Rolling stock should be regularly monitored to ensure that any potential issues are quickly identified and rectified, through replacement or maintenance measures such as wheel turning and grinding. The operation of well-designed railway lines can still have a significant noise and vibration effect on receivers if poorly maintained rolling stock is operated.

“Based upon the noise modelling results, non-compliances were typically achieved due to the close proximity of the equipment to the boundary compliance locations, with morning shoulder (night-time) exceedances of the noise limits up to 22 dBA and daytime exceedances of the noise limits up to 12 dBA.” *“Based upon the implementation of noise barriers, Rudds predicts that compliance can be achieved at 1.5 metres above ground level at the nearest commercial/industrial receiver locations, except for those southern boundary locations beside the weighbridges, where exceedances of the LA10 55 dBA night-time noise limit during the morning shoulder period may occur.”* p.21 *It is unsatisfactory that the 1.5 metres above ground was the only level modelled.* The East Lake Development has proposed high rise apartments immediately across the Highway from the site. The proposed boundary fence on the south side is not described for its acoustic performance and hence does not allow assessment. Other than its height there were no details of its materials or construction methods. This must be addressed. The noise impacts on those residents including the cumulative traffic noise impacts must be addressed.

Construction Noise

Noise during construction is difficult to ameliorate and can be a nuisance to nearby workers, visitors and residents. Equipment which generate lower noise emissions should be selected and assessed for noise impact during the construction stage. The noise and vibration impacts should be monitored on a real time basis during peak construction when piling, excavation and compaction works would be undertaken.

Noise Monitoring

The NIA contains no recommendations regarding future monitoring of the site. Under normal circumstances post-construction monitoring should be conducted at the external facade of noise sensitive receivers nearest to the railway line taking into account weather conditions during the noise monitoring

During operational times the container handling areas would require audible alarms or beepers. These should be assessed. Noise levels of the rail mounted gantries if used should also be predicted or measured. The Noise levels should also be measured during both neutral and adverse conditions; during night times and adverse weather conditions.

Real time noise monitors should be established in Wiluna Street, Barrier street the Caravan park and at Narabundah and the proposed East Lake development when constructed. These monitors

should be calibrated and checked regularly and records kept and sent to the EPA where they can be publicly accessed.

I submit that ground and upper air vibration monitoring should be installed in those streets to monitor vibration and to relate the measure to any reported building damage.

LEACHATE MANAGEMENT

On the issue of Leachate Management this EIS is incapable of being assessed. The collection and disposal systems to be employed are not described clearly so that the ability to keep leachate out of the groundwater and stormwater systems is not demonstrated.

There should be a leachate treatment plant capable of treating up to 200L of leachate each day.. Contingencies should be built into the design of this plant to ensure that the treatment plant is capable of continuously treating the leachate during period of maintenance and repairs. Without this plant the leachate would need to be removed to an off site licensed liquid waste treatment facility.

The Bund

Ponding of water at the depot must be avoided so bunds must be constructed to divert stormwater around the depot, depending on stormwater catchment and rainfall. The whole issue of the bunds lacks clarity. There are two bunds. One 150mm around the shed to keep stormwater out is not shown on any drawings or described in any technical report. The second 2 metres high inside the shed in two separate sections around the two tipping area with separate collection points.

A 150mm bund around the perimeter of the building to ensure leachate remains inside and to keep stormwater outside *“The building will be designed with a 150mm bund around the perimeter to contain any leachate within the building and keep an unusual storm water activity outside the building. The 150mm bund will be a roll over design in the doorways to allow vehicle movements in and out.”* p.74 What exactly will happen to the water collected in this way is not explained. Will it be collected in the 20000L tank and if so how will it be conveyed there. The capacity of the tank to hold this water and all other waste waster manufacturer on site must be demonstrated. How often will it need to be emptied and where? The precise location of the tank is confused in the EIS as being under the floor inside and outside on different pages. The confusion must be explained and further details supplied about the bund including its methods of construction and the impervious materials to be used. Overflows of the bunding and storage systems should be prevented during wet climate conditions. The proponent should provide additional information to demonstrate that the collection system will not overflow during periods of wet weather. These questions must be answered as it makes a significant difference to the capacity and effectiveness of the system.

To effectively manage leachate within the shed a 20kL leachate tank will be installed to capture all leachate from the bunded tipping floor and around the compactors and processing equipment. The fall of the floor of the shed will be such that the MSW waste tipping area and the C&I waste tipping area will have separate collection points. “The base of the waste storage area will slope to a 2000L leachate storage tank.” Vol 1 p.73 The separate collection points are not indicated and the slope of the floor in one direction would push the leachate from the recycling area into the wet waste handling area or beyond where there is no bund to contain it. If the floor slopes to the west

or south west to catch the leachate from the MSW waste stream then leachate from the C&I will flow towards the sorting machinery and will not be captured at all according to the drawn configuration.

There appears to be a difficulty that if the recycling tipping floor is bunded to catch any leachate as it follows the slope of the floor then the trucks accessibility to the tipping area is impeded. It appears that the bund is designed for access not for the best environmental outcome of containing the leachate. The Cardno site drawing shows the bund as 2 metres high; the text does not provide dimensions. The difference between 150mm for the perimeter and the 2m high bund for inside must be justified. The effectiveness of the bund must also be demonstrated after field testing or comparison with similar tested bunds in other facilities. In particular the justification for the 150mm height must be provided. The bund's capacity to hold a projected production rate of 200L per day must be demonstrated. The efficiency of the bund to contain leachate and wash down water must be demonstrated. The collection points and disposal methods must be described. The EIS failed to provide sufficient details.

Leachate volume and Characteristics

Leachate production is certain. The facility will produce 2000L of leachate each day and could contain high values of dissolved solids, chemical, VOCs and heavy metals. If left untreated leachate can cause severe environmental challenges. The EIS does not emphasise the significance of the leachate and seeks the reader to accept a solution for it which is unsustainable. The preferred solution for leachate production is to treat it on site or have it removed to a certified liquid waste treatment facility. Re-injecting into the compressed containers for transport to Woodlawn is not acceptable.

Leachate formation and handling is one of the most critical aspects of this development. Leachate will have to be treated and disposed of on site in an entirely safe manner. There should be no discharge to the environment and to the sewerage or stormwater system. The volume of this pollutant should be calculated so that the adequacy of the treatment and disposal can be evaluated. The same applies to any leachate formed in the containers taking the remnant waste to landfill at Woodlawn.

The capacity of a 20000L tank to hold the leachate must be examined in more detail. Emergency procedures to capture and contain the leachate if the volume exceeds projected amounts ,for example if water is need to extinguish a fire inside the shed, must be assessed. There must be adequate storage of leachate and collected stormwater for the next 40 years of projected operation.

The EIS claims *"An overflow outlet can be designed for the unlikely emergency event of surcharging from the leachate tank to discharge into the ICON sewerage network."* Cardno Advice p.16. The suggested solution that the excess could be disposed of through the sewer system by application to ICON Water for a Trade Waste Approval is not acceptable for the following reasons'

- The general public or builders are not permitted to disposed of unused chemical products down the sewer nor should be this larger private enterprise .
- The leachate is a toxic substance potentially harmful to the the environment and human health.
- The event is not "unlikely".

- The system is open to human error. The outlet tap could be “accidentally” left open.
- It is contrary to best environmental practices for liquid trade waste disposal.
- No assessment or chemical analysis has been done on the leachate composition for its suitability for received into the sewer system.

If the 20000L tank is inadequate in capacity then larger tank should be installed as a supplementary tank for overflow. Then the leachate should be removed from the site to a licensed treatment works.

Stormwater leachate will overflow the collection points or evaporation system on multiple occasions unless water is reused, treated or deliberately transferred to an off site facility.

In spite of ICON Water’s confirmed capacity of the existing sewer network and service tie for an additional combined load of 7.5l/s, CRS must make an application to Icon Water for approval to connect to the existing sewer tie. However the EIS must provide that approval in advance of the EIS for community and Authorities’ assessment of the efficacy of their proposed disposal methods. Icon Water may not approve. The letter 19/10/17 merely acknowledges the capacity not their willingness.

Waste Transfer Stations are classified by Icon Water as High Risk activities. High Risk activities are any activity which exceeds a discharge volume of 20 kL/d, or which are Industrial waste treatment or recycling facilities. These industries are required to provide drainage diagrams and plans of the site which describe the type of process/activity generating the liquid trade waste; provides a list of any chemicals to be used; the quantity and the rate of discharge to the sewer. This must include a description of the likely substances in waste streams intended for discharge to the sewerage system. The EIS is lacking in those details for Icon Water or the concerned public to adequately evaluated the proposal.

If a pretreatment option is to be employed before disposal be Icon Water and there should be, additional details of the proposed pre-treatment equipment including the bunding, the capacity of pre-treatment equipment, the flow rate of pumping equipment and the detention times of tanks/pits and ponds must be supplied. Any plans for future expansion must be included; the sewer capacity may not be available in the future for the intended discharge. Importantly and ideally there should be included details of any recycling program or water reuse system. There should also be a maintenance schedules for pre-treatment equipment, including all pits, tanks, pumps, etc./details of maintenance personnel and the expected waste quality after pre-treatment. The information must be verified by chemical analysis with supporting documentation.

During the long life (40 years) of the operation of the MRF the rates of recycling and the nature of the household and commercial waste will change then the waste stream will change and so too will the waste water quality and volume.

If Icon Water accepts liquid trade waste into its sewerage system it must consider that the quality and content of the waste water is likely to pose, as a consequence of changes in the waste stream, a continuing and potentially greater environmental and public health risk. This must be balanced against the public benefit and justification of a facility which the public argue we do not need and do not want at Fyshwick. The Precautionary Principle should prevail and in the absence of the necessary details in this EIS to allow prediction of those changes then the agency should reject it outright.

Tank Location

The leachate collection tank's exact location also needs clarification. The EIS in several places indicates it will be either inside the shed without an exact position; outside the shed as the plans and drawings seem to suggest or under the floor. Appendix H Vol 2 Arcadis p.8. Cardno Advice on the EIS p.16 describes *"a tank installed below the MRF shed to capture all leachate off the shed floor."* The last location seems to be impractical since there is to be a multilayered membrane to prevent odour ingress. Cardno seems to be unaware of this. The layer's integrity would be breached by an underground tank. *"The base of the waste storage area will slope to a 2000L leachate storage tank."* This seems to suggest the tank is below ground. If not the method of removal from the bund(s) to the tank has not been included. *"All leachate collected will be managed within the shed area or within an appropriate run-off management system."* This is vague and misleading since details of the management system has clearly not been provided by this EIS so its appropriateness cannot be assessed..

If the indicative drawings are correct the leachate tank situated along the south wall of the building would be in an impractical position for re-injecting the leachate into the containers situated on the north side of the operation. More details must be supplied.

"The collected leachate would be periodically injected into the waterproof sealed waste containers, at the time of compaction, to assist in the beneficial decomposition of waste at Woodlawn Bioreactor Landfill. Twenty-six containers per day would dispose of approximately 5,200L of leachate per day if 200 litres were injected into each one. This will be a management function as there will be no cause to create leachate by the operators and the production will be inadvertent and a by-product of the waste itself and any cleaning or firefighting activity." p.74 The re-injection of the leachate into the waste containers must be rejected as a ill-conceived and ad hoc measure with potential adverse consequences. Given the known composition of leachate this must be classified as a hazardous process in its own right that was not addressed in the EIS. *"The collected leachate would be periodically injected into the waterproof sealed waste containers, at the time of compaction, to assist in the beneficial decomposition of waste at Woodlawn Bioreactor Landfill. Twenty-six containers per day would dispose of approximately 5,200L of leachate per day if 200 litres were injected into each one."* (Vol. p 74). These containers could potentially leak toxic leachate onto the hardstand or the railway line. During October, 2016 Veolia received a \$15,000 penalty for failing to maintain shipping containers at the Crisps Creek Intermodal facility leading to waste leakage from the containers travelling from the facility. Broken and worn out rubber seals on the containers had to be replaced.

Leachate reinjection suggests that in addition to the Woodlawn bioreactor, each and every railway container will be primed to act as its own bioreactor. This poses the question of how much fugitive methane will be created during containerisation of the waste, That has not been accounted for. It also poses the question of dangers of methane poisoning, if not spontaneous explosion, when there is a delay in the shipping of the containers.

Daily rail transport of some 26 bioreactors on a single freight train should require special attention by the EPA and a license for the transport of a hazardous material. This must be addressed. The temperature inside a container in full sunlight on a hot summer day must be calculated, given that every 10 degrees rise in temperature tends to accelerate the decomposition process by a factor 2 and with it potentially explosive gas formation. A rise from 20 degrees to 70 degrees would accelerate that process by 2 to the power of 5= 64 times. Transport from Canberra with its higher daily temperatures and lower air pressure, may be more dangerous than transport from Sydney.

Stormwater Management and Water Quality

There are three main types of stormwater generated on a waste transfer station site:

- Clean stormwater runoff from undisturbed areas of the site
- Potentially sediment laden stormwater runoff from disturbed areas of the site and resource recovery operations; and
- Potentially leachate contaminated stormwater runoff from the waste receiveal area.

“Under the existing site arrangements, and consistent with a former large fuel handling facility, significant infrastructure is in place to capture and manage all site runoff. This includes the contouring of the site, interception drains, sumps, and oil skimmers.” p.73 Nothing is said about the impact or risk associated with demolition works and site preparation and the large amount of earth moving necessary, The potential for these works to damage or destroy this infrastructure must be addressed.

“It is anticipated that this infrastructure is superior in design and capability, due to the expected requirements of a multi-million litre fuel storage site, then would be need for the proposed MRF and RFT.” p.73 “Anticipates” must be explained and any capability of retaining existing infrastructure demonstrated. *“Preliminary assessment suggests that some of the existing storm water management system could be refurbished and utilised. The proposal will be profiled to connect with existing storm water arrangements” p.72* This appears to conflict with *“The site currently, post remediation, has no cohesive storm water catchment or management system, so the proposal will be a significant improvement on the existing situation.” p.32*

“Large downpours could result in contaminated storm water and waste water egressing the site. Excessive overland flow due to an unusual weather event could cause some contaminated storm water as it picks up various pollutants including solid material, organic matter and chemicals within the precinct. Contaminated storm water can be associated with various environmental impacts such as algal blooms, erosion, increasing sediment disposition and the disruption aquatic species.” p.73 This needs further assessment. *“The minimisation of any external contaminants and dust etc will also be managed by mechanically sweeping the hardstand surfaces as part of the operating plan. These measures will ensure that any contaminants that could be swept away by an unusual storm water event is minimised.” p 73* Does this mean that the whole site under hardstand will be mechanically swept or just a worker with broom on the loading docks.

Stormwater runoff quality will be adversely affected in the event of rainfall Unusual storm water events are inadequately addressed in this EIS. The EIS claims that enclosed processing activity and closed doors will separate waste from any storm event and negate impact. It also claimed there will be no outside litter or stockpiling. If these claims are sustainable storm events will not be an issues. However the EIS does recognise the potential for pollution in those events. Given that in any storm event the waste trucks will continue to arrive and the doors need to be opening and closing as usual then the likelihood of waste coming into contact with water will continue to impact water quality.

The EIS must address more adequately the likely volume of stormwater in a severe storm event . During the construction phase Arcadis makes the following assessment: -*“There are hydrocarbon*

impacts in the upper metre of soil at the site. Accordingly, it will be important to ensure that any exposed or stockpiled soils are managed to prevent dust generation. Similarly, stormwater collected in excavations or in bunds around stockpiles is likely to be impacted with TRH and BTEX compounds and should not be discharged to stormwater without testing prior to disposal". Vol 1 p.86

Construction excavations frequently "makes water", that is, interferes with sub surface shallow perched water which must then be pumped into a suitable collection system. In this case the water should be tested for Chemicals of Concern and if found, be pumped into tanks for off site removal. No water should be put into the stormwater system . If, as the work continues, the excavations continue to fill, then a system of drainage to another point on the site should be installed temporarily.

Soil stockpiled during excavation works should be suitably contained to prevent run-off of any potentially contaminated water or soil to the surrounding environment, including the stormwater system. The fundamental approach to stormwater management should be to ensure that water falling on the waste areas or any contaminated areas should not leave the site untreated.

All water collected from exposed soil or intercepted perched shallow aquifer water must be either retained on site for assessment prior to disposal; disposed of at a licensed liquid waste treatment works or treated on site before disposal How this water will be collected and stored and where it will be tested and treated must be explained.

CRS seeks to underestimate the risks to water quality. In the same sentence on p.88 these are described as "theoretical risks", "perceived risks" and 'residual risks". The intention is to persuade that the mitigation measures are adequate. The result is unconvincing. Overall the EIS is deficient in its treatment of stormwater and water quality issues particularly those created during the construction phase when its highly contaminated shallow aquifers will be significantly interfered with and when the stockpiled contaminated soil will be exposed to rainfall. The potential for harmful substances egressing the site is high and the mitigation measures empaled to prevent it are difficult to implement, unlikely to be employed or if used unlikely to be successful. *"These measures are considered appropriate in alleviating most risks and decreasing their overall impact to appropriate levels."* p.88 What appropriate levels are is not described and the method of measuring the "appropriateness" not provided. The EIS should have quantified the success of any intended control measures. Mitigation measures should be regularly inspected to ensure that they are in good condition and if necessary upgraded where their performance is deteriorating.

The Drains modelling is "proven to have the capacity to contain a 1 in 100 flood level." However many major rain events are larger than the 1 in 100 event. A range of scenarios should have been modelled for the adequacy of the stormwater system to manage. The risk of flood is low providing stormwater infrastructure upgrade is designed and constructed as part of the development. Given the stormwater system at Fyshwick needs a major upgrade a more thorough investigation of the existing pipes should have been undertaken to include in the modelling. The Site Auditor in his visit to the site 31st March 2017 described the culverts in the creek to the north of the site as probably for stormwater but noted he was unable to find any swales or culverts to direct stormwater to the creek.

Transport Canberra and city services advised that areas where there is a current known flood risk include Fyshwick, Chapman, Duffy, Lyons, Page, Red Hill/Griffith, Weetangera and Barton/Forrest. The 2013 Alluvium Audit found an increased risk that stormwater infrastructure in many

established areas of the city would be *"unable to cope with major rain events"*, because the network had not been augmented to manage higher flows. Canberra Times 21Feb 2018 *"There are no scheduled reviews of the condition of the stormwater infrastructure in established areas. The 2013 Alluvium report said "To ensure that this infrastructure meets future stormwater needs, there needs to be an ongoing program for the review and augmentation of stormwater assets to alleviate flood hazards due to under-capacity of drainage systems."*

IZ Development Code states that all sites of size greater than 2,000m² and subject to redevelopment need to provide evidence of adequate stormwater storage capture; need to ensure that the capacity of the existing pipe (minor) stormwater connection to the site is not exceeded in the 1-in- 10 year storm event and need to ensure that the capacity of the existing overland (major) stormwater system to the site is not exceeded in the 1-in-100 year storm event. There is no evidence offered in the EIS that the stormwater management meets these criteria. Stormwater discharges from open areas must be prevented. The applicant must provide reasons why the area cannot be fully or partially bunded to exclude stormwater runoff.

Ecology and Jerrabomberra Creek

The stormwater runoff from the hardstand areas will be collected and directed to the network. It is inconceivable that the large area of hardstand will divert all runoff into the network and much of the run off in these events will find its way into the local channels and creeks and eventually into Jerrabomberra Creek. The negligible impact on Jerrabomberra creek needs to be further examined. The proximity of the feeder creek parallel to Ipswich creek has been ignored in this EIS.

The Arcadis Hydrology Report assessed the creek solely for impact from the migration off-site of hydrocarbon polluted groundwater and did not consider stormwater run off having contact with polluted soils. Nor did it assess the proximity of the creek/channel adjacent to Ipswich street taking those pollutants into the creek, It merely modelled for the plume movement. Therefore the impact on Jerrabomberra creek needs more assessment.

The Arcadis report acknowledges that groundwater investigation levels for ecological protection were exceeded for BTEX compounds and for metals including Zinc which is recognised as eco-toxic. The conclusion drawn is unsatisfactory that the impacts *"are not likely to adversely affect ecological receptors until such time as the water containing those concentrations is discharged at the receiving body. Thus the exceedances of those criteria at the site indicates the potential for an adverse ecological impact but it is not conclusive without further consideration."* p.3 This is unacceptable as it will be too late then.

PART 3 RISKS AND HAZARDS

The Hazards and risk Assessment fails to identify all of the significant risks associated with this development. Volume one p.55 recognises that Risk Assessment is a subjective and uncertain discipline and that *"In the event that a consequence is hard to categorise their impact may be significantly higher than that foreseeable."* but claims a conservative approach was taken. This is not born out by the short list of risks identified and assessed or by the consistent "low risk" finding for each risk. It also stated that the descriptors do not apply "severe consequences" to

individuals but only to entire communities or groups.” p.56 In view of the nature of the activities involved with this enterprise this cannot be sustained and is not acceptable.

Accidents in MRFs and Freight handling industries are common and this issue should have been addressed as they were for the Waste Transfer Station EIS at Banksmeadow which identifies precise risks to individuals from clear workplace hazards..

The EIS fails to identify any specific risks to workers employed in this facility and how those specific risks will be ameliorated. This must be addressed. It is unacceptable that the details will be provided later. The assessment process is now. The Occupational risk to workers from poor air quality and pathogens was described earlier in this submission as was the risk from contaminated vapour intrusion into the shed. All of these should have been included in a comprehensive risk assessment.

The risks associated with the delivery of unwarranted hazardous waste have been inadequately dealt with as discussed earlier in this Submission. The EIS recognises the potential reception of “accidental” hazardous waste but claims it would only be “incidental”. This must be demonstrated. No figures from other similar plants about the volume and incidence of hazardous waste materials entering the facilities were offered in support. In December 2015 a gas bottle ‘accidentally” went through the shredder at Access Recycling Waste metals plant causing an explosion. Visual inspection for hazardous wastes is flawed and unreliable.

An employer has the duty of care to provide a safe and healthy working environment. The ACT Health and Safety Act describes the duty to ensure health and safety taking into account known relevant matters. These are some of the matters which are known and relevant. Risk through inhalation and possible dermal contact with volatile hydrocarbon contaminants is real. The degree of harm is serious. Benzene and toluene are known carcinogens. The risk can be limited by suitable comprehensive remediation. Removal of the contaminated soil under the shed and original car park area is imperative to protect human health. Demolition and construction workers in carrying out work clearing the site, digging footings and laying concrete are at risk from inhalation and dermal contact with chemically contaminated soil and perched shallow groundwater. This risk must be assessed. If the risk is high then the justification of not doing the work must be assessed against the potential harm to their health. The workers must have the risk clearly explained.

Emergency Situations

Transfer station operators should prepare for emergencies and include emergency procedures in their written operational plans. At minimum, the following emergency events should be anticipated:

1. Power failure. Many larger transfer stations have backup power generators so at least some operations can continue during a power failure. There is no contingency for this in the EIS and the associated risks are not identified.
2. Unavailability of transfer vehicles. An Emergency Plan should address what to do if poor weather, road closures, accidents or strikes prevent trains from arriving at the transfer station. The plan should also address the triggers for the transfer station to stop accepting waste deliveries if the waste cannot be hauled out in a timely manner. Alternative disposal methods should be explained and guaranteed. The risk to the security of ACT residents’ waste disposal was not identified or analysed.

3. Spill containment. Spills can occur from waste materials or from vehicles delivering waste. For example, hydraulic compaction system hoses on garbage trucks can break. Spill containment plans should address spill identification, location of spills, deployment of absorbent materials, and cleanup procedures. For large spills, the Emergency Plan should also address preventing the spill from entering stormwater drains or sewers.

4. Falls. Accidental falls are another concern for facility employees and customers. Facilities with flat tipping areas present the difficulty of standing and walking on floor surfaces that could be slick from recent waste material and being close to station operating equipment. To prevent falls due to slipping, the floor should be cleaned regularly and designed with a skid-resistant surface. There should be sufficient slope in floors and pavements so that they drain readily and eliminate standing water. More details of the slope or materials of the floor are required.

5. Fire response and containment procedures should address fires found in incoming loads, temporary storage at the transfer station, compaction equipment, transfer vehicles, and other locations. Fire procedures must focus on protecting human health and safety.

Fires in Waste Facilities.

Appendix K assesses Bushfire risk but the likelihood and impacts of plant based fires have not been adequately addressed. *“Waste will be examined for any material likely to cause fire and loads turned away if found to be dangerous”*. Visual sorting was never assessed for its efficacy. Mercury and lithium batteries are particularly difficult to detect by visual sorting. The EIS says *“accepted protocols”* have been outlined to ensure every load is checked for any smouldering elements or igniting substances but fails to provide details of those protocols.

There will be fires because stockpiling will occur; because visual sorting is inadequate; because protocols are overlooked by uncommitted workers and because smouldering fires combust before they are detected.

The EIS failed to examine the context of waste fires in MRFs and WTS generally and discuss their environment, social and economic impacts.

The risk of plant fires was evaluated as of moderate consequence and medium risk. This is not born out by the incidences of fires in waste facilities in Australia and worldwide. Both Benedict Industries and Access Recycling have had recent fires in facilities they own causing significant damage and disruption to the community. I presume they used the same mitigation measures in those facilities yet fires occurred.

Waste is potentially flammable when stored. Self-combustion, heat development due to pressure, spontaneous chemical reactions between the disposals, methane gas-building, are potential fire creators. Waste station fires can be hazardous for both operator and environment. The heavily contaminated firefighting water, which hampers the further processing of the waste, has to be disposed of as well. And firefighting does not always reach potential fire spots still dangerously smoldering somewhere in the large and deep station. Stored waste has to be permanently moved, mixed and turned by crane operators to manage fire risk

The vast and varied nature of materials dealt with at transfer stations make it a high-risk facility type when it comes to fire safety. Traditional fire detection methods alone are perhaps not enough to ensure fire safety at these sites. The advent of hot or dangerous materials (such as batteries)

being deposited in inbound loads represents a common cause of fire within this environment. It is difficult to foresee and counteract these risks during daily operations.

As well as this, transfer stations are stockpiling more and more green-waste, with the increase in separation of waste types happening at homes and in businesses. This organic waste can be susceptible to spontaneous combustion in spite of the contrary claims of the proponent, particularly in the hot Australian summer months. These varied hazards represent major difficulties in design, planning and operation.

Waste management, recyclers, and electronics manufacturers are reminding consumers that it is a bad idea to throw out devices that contain lithium-ion batteries. Incidents overseas of numerous fires at waste facilities, batteries blowing up in garbage trucks and a fire that resulted in railways being shut down have prompted campaigns for their safe disposal. When one goes, others can, too. If there are multiple batteries explosions can occur,

The UTS Institute for Sustainable Futures report prepared for the Hazardous Waste section of the Commonwealth Department of the Environment 2016, titled *Waste Fires in Australia Cause for Concern?* reveals some alarming facts about the incidence of waste fires, their causes and costs to the economy and community.

“The direct economic costs incurred by waste fires include: property damage, fire-fighting personnel time, fire-fighting consumables and equipment, waste facility downtime, environmental clean-up costs contaminated water supplies and long- term health effects. Indirect costs include traffic delays, public transport disruption, disruption to daily working schedules and lower real-estate values. Waste fires burn for extended periods, sometimes days and weeks, and can take significant resources to extinguish. Fire fighting personnel who are engaged in extinguishing these fires are then not available to respond to fire emergencies occurring elsewhere. This has the effect of increasing response times and increasing fire risks elsewhere in the region. “ According to the most recent annual reporting of statistics published by fire departments across Australia there were 5,652 rubbish fires in NSW. Interestingly this Report cites the Pialligo Fire in 2015 as one of its case studies. The numbers of fires in recycling a waste facilities as revealed in this report confirms that the Waste Transfer Station at Fyshwick, unnecessary to meet the needs of the ACT, merely adds another potentially dangerous industry to a precinct which should not have to and cannot sustain it.

In addition the Annual Report Hearing Brief of the ACT Fire Brigade Mitchell Fire 31/10/11 also revealed the particular dangers to the community of locating waste depots and facilities in too close a proximity to residential and commercial districts. The Minister in this Briefing acknowledge that *“the incident raised a number of questions in the community over planning policies and regulations as they relate to the location of hazardous industries in relatively close proximity to residential areas”*. However there is still no policy in the ACT regarding the siting criterion for those industries or specifically for Waste Transfer Stations.

Waste fires can be costly and particularly dangerous. On December 14th 2017 thick plumes of smoke were sent over the city of Newcastle from a large fire at Benedict Industries' Waste Transfer centre at Mayfield. Visibility was poor in several surrounding streets. More than 60 firefighters were required at the scene. This was the second fire at Benedict Recycling in this plant in the previous three months. The shed sustained 'extensive damage'. The cause is still being investigated but hot weather was a possibility.

Canberra has had its own share of these dangerous incidents. On the 1st December 2016 Firefighters battled a large waste fire in Pialligo in two years. Fire crews are trying to extinguish a large blaze at a recycling plant in Pialligo. Firefighters and cranes worked to extinguish a large fire at a recycling plant at Piallago. The fire, started in a pile of timber pallets. A total of 19 units attended the fire which burnt for several hours. Smoke from the fire blew towards Queanbeyan. This was the third blaze at recycling businesses near Canberra Airport in two years. In April, a 5,000 square metre fire at the same site burned for 12 days. The year before that a blaze burned for six days before being extinguished at a nearby concrete recycling business. On March 2nd 2018 there was another large fire at Beard close to Fyshwick.

Fire Brigade statistics reveal that Block 13 Lithgow street Access Recycling has had six fires in the past three years requiring the assistance of the Fire Brigade. At one fire a worker was injured because a gas bottle exploded when it went through a shredder. This could also happen in the MRF.

Since the Government is committed to providing a safe and secure environment for the people the Territory the most stringent planning approach needs to be adopted. In view of the expense incurred, the dangers to the fire fighters and other personnel involved, the disruption and the health and safety risks it is clear that this proposal should be rejected on this site. If it were necessary at all, it must be located elsewhere in the ACT.

RISKS TO AIRCRAFT - AIR SAFETY GUIDELINE C

New Waste Facilities are prohibited under Airspace Safety Regulations Guideline C Bird Strike if located within 3km from an airport. This Guideline was not addressed and it should have been.

Wildlife strikes can cause major damage or present a serious danger to aircraft and passenger safety. Land use planning decisions and the way in which existing land use is managed in the vicinity of airports can significantly influence the risk of wildlife hazards. Land uses such as agriculture, wildlife sanctuaries, wetlands, transfer stations and landfill sites can attract a high number of birds which increase the risk of interference with aviation activity. Wildlife attracted to land uses around airports can migrate onto the airport or across flight paths, increasing the risk of strikes. Airports actively reduce wildlife populations and manage the risk of strikes on and near airport land.

It is a serious omission that the Director General's Scoping Document did not request this Development to be assessed under the Air safety Framework Guideline C Bird Strike. It is clear the Director General recognised his responsibilities under the Commonwealth regulations when Guideline B was required to be applied. Assessment of the adverse risk the plan poses to the safe operation of aircraft from bird strike should have been demanded..

ACTPLA needs to understand that they might be liable if this proposal goes ahead and an accident directly connected to it leaves the government and people of the ACT exposed to a significant financial risk. The Jerrabomberra Wetlands agreed to accept their duty of care. CASA informed the wetlands that there was the potential for a coroner enquiry arising from an accident arising from bird strike in which it would seek to investigate a cause. Consequently the Wetlands accepted a duty of care not to increase the risk of aircraft bird strike at Canberra International port. Emphasis was placed on habitat diversity rather than significant increases in general waterbird populations in order to minimise the risk of birdstrike to aircraft using Canberra Airport. Canberra Airport accepted no risk for any development of the Wetlands. All risk to aviation rested with the Wetlands Board. For the ACT Planners a similar Precautionary approach must be taken.

The proximity of a waste transfer station to the Jerrabomberra wetlands makes it more likely that birds who use it as habitat would migrate to Fyshwick attracted by the huge volume garbage being dumped, spilled and moved on the site on a daily basis. This is a RISK that should not be taken and the Minister needs to consider his obligations under the relevant legislation carefully.

The legislation on this matter is clear and unambiguous. The “National Airports Safeguarding Framework Guideline C Managing the risk of Wildlife strikes in the vicinity of airports” provides guidelines to State/Territory and local government decision makers to manage the risk of collisions between wildlife and aircraft at or near airports where that risk may be increased by the presence of wildlife-attracting land uses. Attachment 1 to this Guideline identifies Food/Organic waste facilities and Putrescible waste facility transfer stations as designated as having High Wild life Attraction Risk. In spite of its material recovery aspect, this proposal is a waste transfer station, the stage between the garbage removal and disposal to landfill. For proposed (New) Developments within a 3 km radius they are designated “Incompatible” Block 9 section 8 Fyshwick is within the 3km limits. This is another constraint on its approval at this location.

Guideline C provides advice to help protect against wildlife hazards originating off-airport; proposes distance separation benchmarks (3km, 8km & 13km) between airports and land use practices that attract wildlife species which may be hazardous to aviation; provides examples of land uses that are acceptable and those that require mitigation measures and advises appropriate risk mitigation measures to any risk to aircraft posed by sites that may attract wildlife and these are assessed and reduced to as low as reasonably practicable. Within the 3km limit mitigation and management measures are not acceptable

Guideline C Attachment 1 says for proposed (New) Developments within a 3km radius that these types of development are designated as High Risk and “Incompatible”. Block 9 section 8 Fyshwick is 2.5km from the centre of main runway17/35. This is serious constraint on the DA’s approval at this location. The ICAO document ‘Airport Services Manual- Bird Control and Reduction’ also stipulates that transfer stations and landfills should be not be sited within 3km of airport property.

Australian Civil Aviation Safety legislation includes provisions to meet Australia’s international obligations. Part 139 of the Civil Aviation Safety Regulations 1998 (the Regulations) imposes an obligation on airports to reduce the risks of wildlife strikes. These regulations are administered by the Civil Aviation Safety Authority (CASA). Under the Regulations, CASA can address the risk of waste foodstuffs being dumped near airports that may pose a risk to aviation safety by attracting wildlife.

The Canberra Airport 2014 Master Plan 2014-2034 p.52 advises that currently Canberra Airport has aviation safety concerns arising from a proposal to enhance (by further development) the bird attraction of the Jerrabomberra Wetlands in close proximity to the south of the Airport. This proposal is inconsistent with Guideline C. The ACT Government has since recognised the need for changes to the 2014 Draft Master Plan for Jerrabomberra Wetlands due to bird strike risk. The Plan continues these proposals and others raise an urgent need to achieve rigour in the region’s planning process regarding safeguarding aircraft movements into and out of Canberra Airport in compliance with the Safeguarding Framework. Where to locate solar farms, or other incompatible land uses posing a potential hazard to aircraft safety, is a high priority in the interest of public safety. The outcome of such a process starts with the implementation of all of the Safeguarding Framework and this can bring certainty to the location of development proposals. *“These proposals and others raise an urgent need to achieve rigour in the region’s planning process regarding safeguarding aircraft movements into and out of Canberra Airport in compliance with the*

Safeguarding Framework. Where to locate solar farms, or other incompatible land uses posing a potential hazard to aircraft safety, is a high priority in the interest of public safety. The outcome of such a process starts with the implementation of all of the Safeguarding Framework and this can bring certainty to the location of development proposals.” p.53

The Canberra Airport Operations Manual outlines the policies and procedures required for the ongoing safe operation of Canberra Airport. The Airport Operations Manual contains Canberra Airport’s Bird and Animal Hazard Management Plan, outlining the procedures to manage the risk to aircraft operations caused by the presence of birds or animals on or near the aerodrome. Birds in general are a threat to air safety, particularly if they are present on the Airport and in the vicinity of runways. Precautions are also taken to prevent access by animals onto the movement area where they would pose a serious hazard for aircraft operations. All development on Airport is conducted in such a way as to minimise the risk of bird and animal attraction. Measures to reduce bird attraction include, but are not limited to monitoring off-Airport sites containing wildlife habitats such as Canturf Turf Farm, Duntroon/ADFA irrigated ovals and golf course, Mugga Land Landfill, Pialligo and Majura – Fruit orchards and plant nurseries, Jerrabomberra Wetlands and Molonglo River, Fairbairn Golf Club, Fyshwick Sewage Ponds and Treatment Plant, Lake Burley Griffin and surrounds, Majura Training Area, Commonwealth Park, Concrete Recycling Plant and Brindabella, Majura and Fairbairn Business Park. Few of these are as close as this development.

The risks associated with these sites should have been assessed against the risk posed by this facility. In developing a safety case, the proponent should also be required to give consideration to the cumulative impacts that the controlled activity may have and not consider it in isolation from other bird attracting places and activities in the airport vicinity. The resulting safety case and aviation impact statement should be subject to close scrutiny by CASA, Department Infrastructure and Regional Development and the airport operator. I also submit that no planning consent be given to any development application in the prescribed space of the airport until after approval is granted under the Airspace Protection Regulations not be conditional on or subject to it.

By failing to adequately address the risks to air Safety from bird strike directly related to this proposal the development would be in breach of the law and inconsistent with Amendment 30 (September 2000) to the National Capital Plan which states: *“Protected airspace provisions in relation to Canberra International Airport apply to development independently of the National Capital Plan. To satisfy a requirement of the Airports (Protection of Airspace) Regulations 1996, Canberra International Airport Pty Ltd has prepared a diagram prescribing protected airspace. The diagram is incorporated in the Airport Master Plan prepared under the Airports Act.”* In spite of the MRF building being fully enclosed it will attract bird life. Exterior litter is sufficient to attract predatory scavenging birds to a Waste transfer station site. The fast opening and closing doors are partially designed to keep birds out. In response I suggest that the proponent be required to provide a safety case and an aviation impact statement for assessment. The proponent should be required to ensure that all matters (OLS and PANS-OPS surfaces) are adequately addressed.

I submit that the EIS should have included an aviation impact statement in which the proponent undertook wildlife hazard assessments by qualified ornithologists or biologists; to establish bird population triggers; suitable wildlife deterrent technologies to reduce hazardous bird populations. to identify existing or potential flyways (regular bird flight paths) between separate bird attractant sites and necessary changes to design and/or operating procedures. This risk poses a significant danger to human safety and cannot be mitigated by traps or deterrents because some of the birds potentially to be attracted are endangered migratory birds protected by Commonwealth International Agreements CAMBA JAMBA and RKAMBA.

SEPP 33 CONSIDERATIONS

The assessment Under SEPP 33 is particularly relevant to this development since the Purpose clause of the lease on Block 9 reads:

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

and prohibits offensive or ‘noxious’ industries on this site. Waste Transfer Stations are potentially hazardous and Offensive industries. Certain activities can create an off-site risk or offence to people, property or the environment. Such potentially hazardous or potentially offensive risks can include increased (above background levels) emissions of noise, odour, particulates, toxic contaminants in the air or water.

The proponent must determine with a high degree of confidence the levels of the above risks to people and the environment at the proposed location when controls have been implemented. The Should such risk exceed the criteria of acceptability, the proposal is a ‘potentially offensive industry’ because in the absence of safeguards, the proposal would emit a polluting discharge which would cause a significant level of offence having regard to the sensitivity of the receiving environment.

Odour has the potential to significantly disrupt community comfort and amenity. The odour modelling for this EIS was claimed to be *“based on actual odour emissions from a similar NSW plant”* but does not name the Transfer Station. It is unacceptable the plant is not named to verify the claims. Even with the 5% allowance of odour emissions from fugitive uncontrolled sources such as leakage, adverse odour impacts have been felt at other Waste Transfer Stations by neighbours located further away than the Caravan park on Canberra Ave., Narrabundah or shoppers in Barrier or Wiluna streets. Any waste transfer depot should be designed and operated so that odorous emissions and dust do not cause a nuisance or an offence, and airborne impurities do not pose a risk to human health. The Banksmeadow and Clyde plants have both been the subject of many and recent odour complaints to the local council and EPA. This would cast considerable doubt on the claims of this report.

According to SEPP 33 *potentially offensive industry* means a development for the purposes of an industry which, if the development were to operate without employing any measures to reduce or minimise its impact would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land. The East Lakes Urban Renewal Project just 290m from the facility is an example of another proposal which could suffer offence because of this development..

Unless the proponent can demonstrate that after all the design features and precautions , there will be absolutely no additional noise, odour or harmful particulate, vapour or diesel emissions then this is an offensive industry. The present EIS does not demonstrate this with any acceptable degree of certainty.

ENVIRONMENTAL MANAGEMENT PLAN

“ A Construction Environmental Management Plan (CEMP) will be prepared prior to commencing any remediation works.” Vol 1 p.114 This plan and an Operational Environment Management plan should have been provided in this EIS as is customary in EISs for most major developments.

This would enable the community and authorities to assess comprehensively the necessary measures taken to mitigate against ongoing contamination risks and all others associated with the construction and operations of the proposal. To leave till after the approval stage is itself a major risk and could overlook critical dangers inherent in its plans and prevent assessment of the performance of those measure.

To provide Access Recycling Environmental Management System Appendix O has limited relevance to this development as it was written for a metal recycling business and is not site specific. The addition of the Benedict Industries system would have contributed a little more understanding but even then they do not related to the specific issues aroused by this particular development at this site.

CONCLUSION

The Department is respectfully reminded that the proposed Fyshwick facility is in close proximity to the Fyshwick Food Markets, high density shops and businesses, a caravan park, two preschools and a Proposed urban expansion on the eastern shores of lake Burley Griffin. The department is also reminded of its duty to maintain existing amenity and to protect the community from unacceptable adverse offensive impacts from inappropriate developments.

It is respectfully suggested that the Department would be grossly negligent if it did not undertake an independent cost benefit analysis of the project and do due diligence on the proponent's ability to keep it operating for the next 40 years.

It would appear prudent that the ACT government take steps to safeguard its taxpayers and ensure they will not be left to foot the bill to remediate the site and its surroundings when this proponent or some subsequent owner /operator eventually decommissions the plant or

- if the company begins the development and for whatever reason fails to complete it and walks away as has occurred at Wagga and the Kingston Rail site or
- the facility becomes unviable due to the loss of supply of waste or the scarcity of recyclables in the waste stream or
- due to economic reasons such as an economic downturn or similar competing plants or
- the facility becomes unviable due to the loss of supply of or the scarcity of recyclables in the water or due to economic reasons such as an economic downturn or similar competing plants or
- the facility experiences a catastrophic failure or fire that results in destruction and damage to itself or near neighbouring businesses

I respectfully request that the Minister recommends a financial bond to be collected in advance of consent necessary to safeguard the ACT taxpayers' interests should the proposed facility fail; as well as a range of penalties that will apply should the company fail to deliver on any of its promises.

I also suggest that the ACT Government review its insurance policy to cover loss and to sight CRS's insurance and liability cover to ensure they are fully insured against all forms of accidents and environmental harm.

Finally in view of the size and complexity of the Draft EIS and its failure to comply with the P&D Act by addressing each of the matters, as required by law, in the Scoping Document and providing sufficient detail of critical aspects to allow assessment of the environmental impact and proposed mitigation measure, I request that the Minister appoint a independent Inquiry Panel to rigorously scrutinise the proposal and decide if its merits and public benefits outweigh the negative adverse consequences and risks to the area of Fyshwick and to the wider population.