

**Appendix Q:**  
Air Quality Assessment  
Todoroski Air Sciences



11 September 2018

Ewen McKenzie  
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Benedict  
Via email: [Ewen@benedict.com.au](mailto:Ewen@benedict.com.au)

## **RE: Air Quality Study – Materials Recovery Facility and Rail Freight Terminal**

Dear Ewen,

Todoroski Air Sciences have investigated the potential for air quality (dust) impacts associated with the proposed Materials Recovery Facility and Rail Freight Terminal located at 16 Ipswich Street, Fyshwick Australian Capital Territory (ACT) (hereafter referred to as the Project).

This study uses an advanced air dispersion model of the estimated dust emissions from proposed activity. It applies the model to predict ground-level concentrations of the air pollutants (dust) and assesses the results against the relevant impact assessment criteria outlined in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (New South Wales (NSW) Environment Protection Authority (EPA), 2017)*.

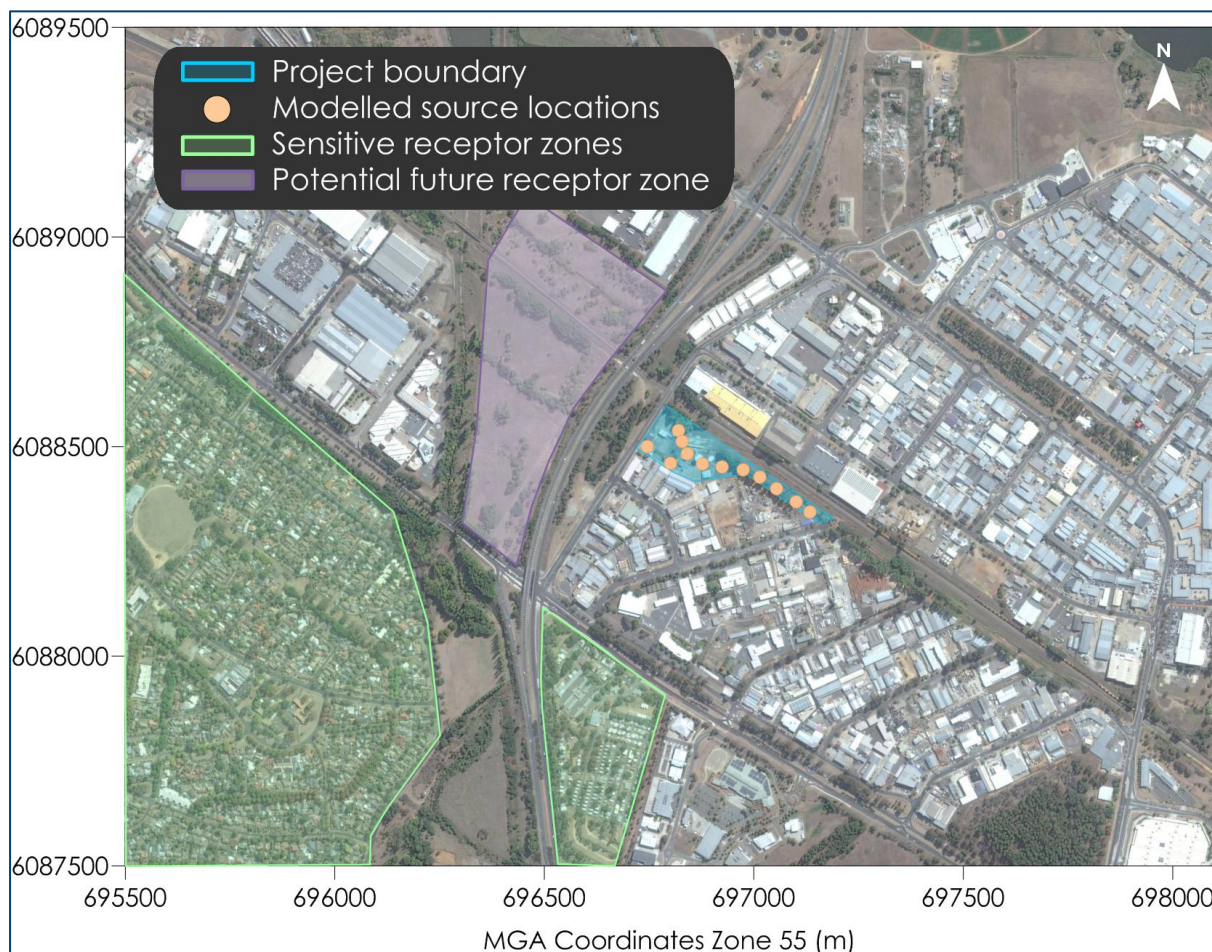
Odour is the key pollutant associated with the Project, and has been assessed by The Odour Unit in a separate assessment, see *Capital Recycling Solutions Material Recovery Facility and Rail Freight Terminal Odour Impact Assessment (The Odour Unit, 2018)*. This study considers particulates, or dust, and has been commissioned in response to concerns raised by the community.

### **Project setting and background**

The Project site is located in an existing industrial precinct southeast of the nearby Monaro Highway. The nearest identified existing sensitive residential receptor zones to the Project site are located approximately 0.5 kilometres (km) to the south and 0.7km to the southwest (see **Figure 1**). The figure also shows a potential future residential area west of the site and Monaro Highway.

The proposed activity at the site would essentially involve receiving waste materials for processing and sorting. Trucks would deliver waste materials onto the site from Lithgow Street and unload within a purpose built building before exiting via Ipswich Street.

All of the processing and sorting of waste materials would occur within the purpose built building. The building is proposed to be under negative pressure, with air extracted at a rate of five air changes an hour, and discharged through a stack.

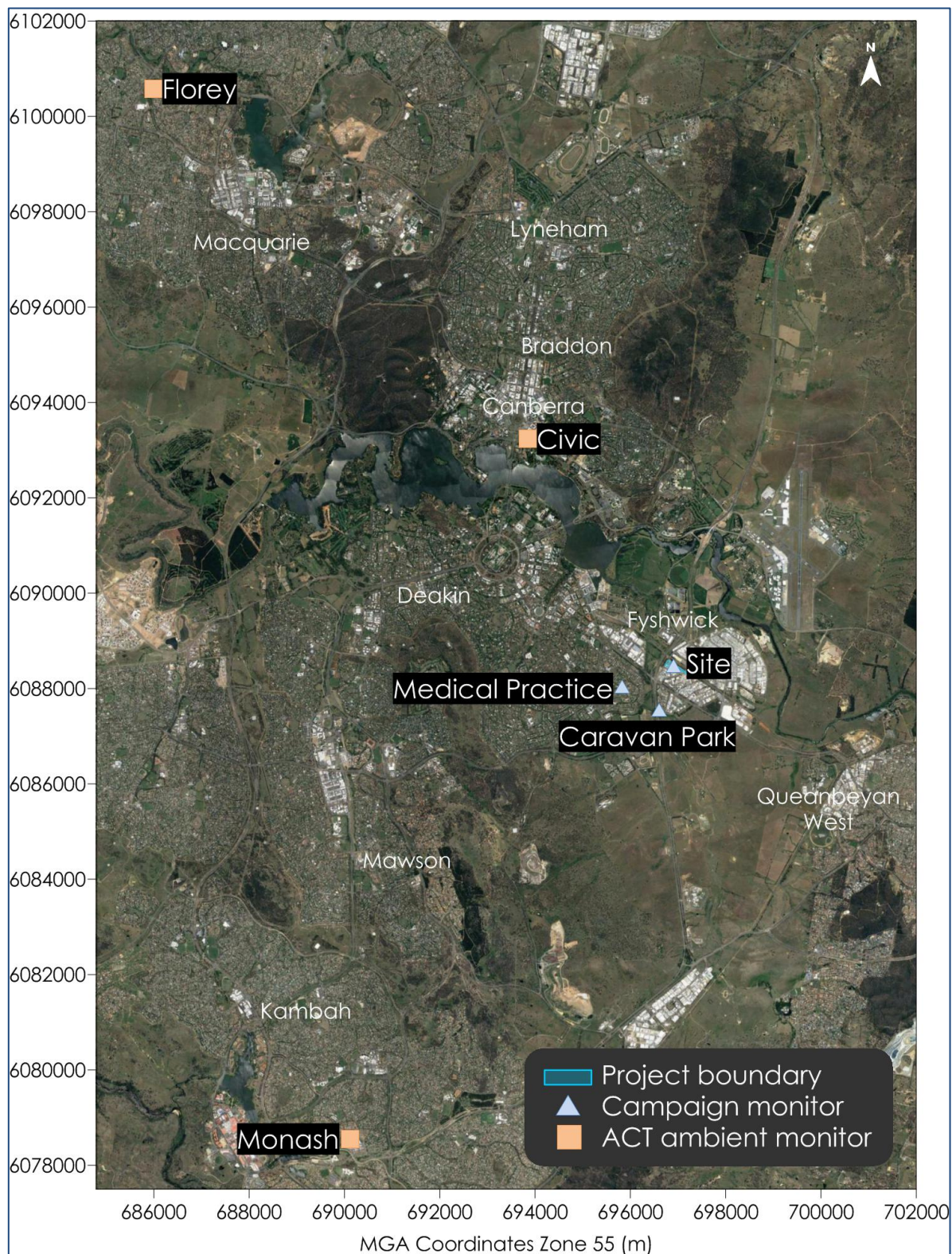


### Existing environment

The main sources of particulate matter in the area surrounding the Project include emissions from local anthropogenic activities such as various commercial or industrial activities, motor vehicle exhaust emissions along roads and domestic wood heaters.

A campaign of ambient air quality monitoring for the area surrounding the Project site was conducted by Todoroski Air Sciences over the period 23 October 2017 to 21 November 2017. The monitoring campaign aimed to characterise the ambient air quality levels in the nearest residential areas and at the Project site, relative to the ambient air quality in other parts of the Australian Capital Territory (ACT).

**Figure 2** presents the location of the ambient air quality monitoring sites for the Project and the monitoring sites operated by ACT Health.

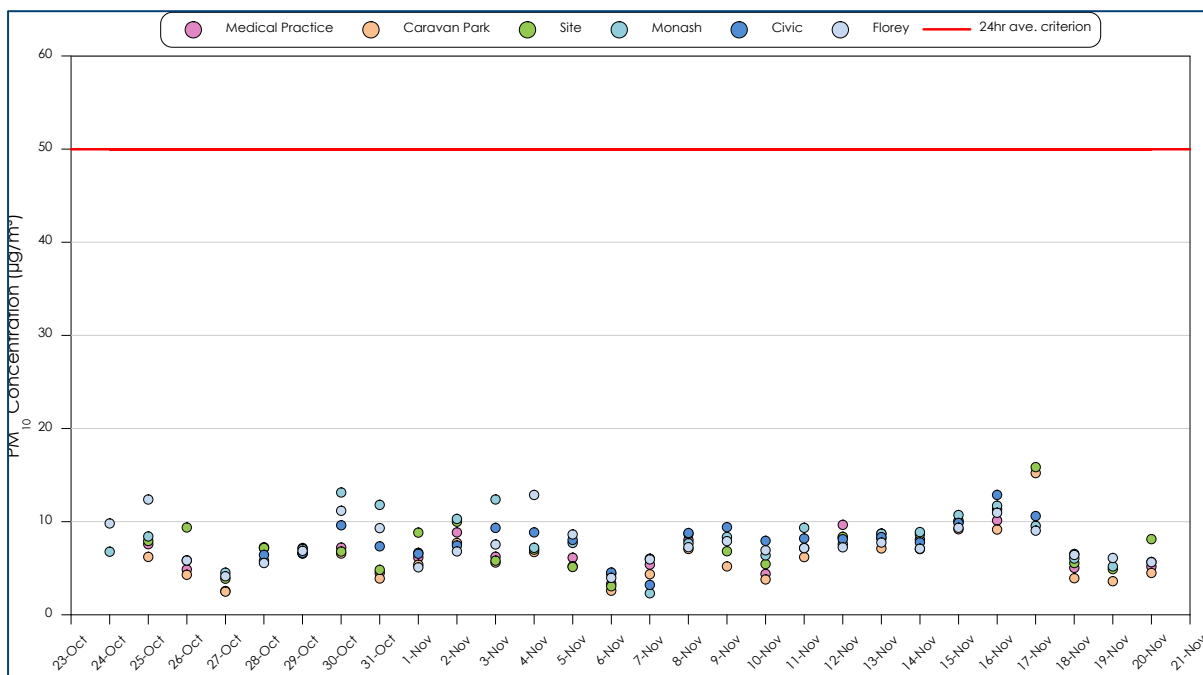


**Figure 2: Ambient air quality monitoring locations**

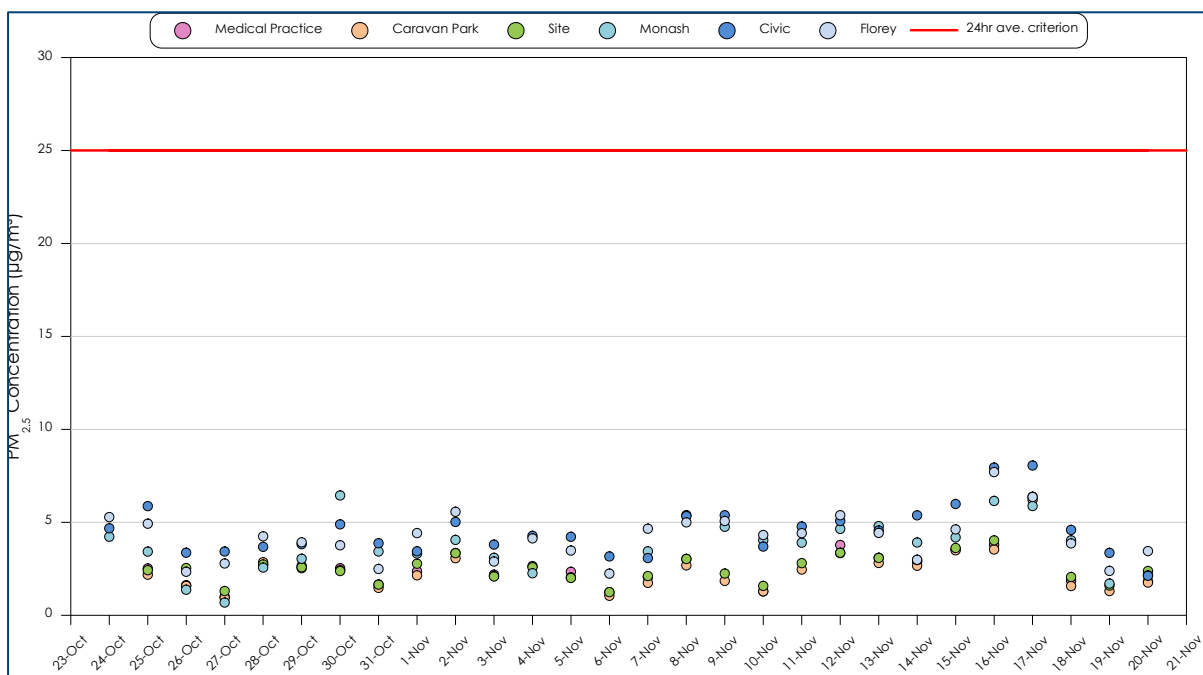
A summary of the recorded  $PM_{10}$  and  $PM_{2.5}$  monitoring results during the monitoring campaign period is presented in **Figure 3** and **Figure 4**. The  $PM_{10}$  and  $PM_{2.5}$  monitoring levels recorded at the ACT Health monitoring sites for the same period are also shown in the figures.

The results in **Figure 3** and **Figure 4** indicate similar trends and slightly lower levels for the Project monitoring stations compared to the ACT Health monitoring stations. The variation between the measured levels is likely due to the different influences from local sources but also differences in the measurement techniques. The 24-hour average PM<sub>10</sub> and PM<sub>2.5</sub> levels recorded in all study locations during the study period were well below the respective 24-hour criteria of 50µg/m<sup>3</sup> and 25µg/m<sup>3</sup>.

Overall, the results of the monitoring campaign indicate the ambient air quality PM<sub>10</sub> and PM<sub>2.5</sub> levels in the vicinity of the Project site have similar trends and generally similar levels to other areas in the ACT, and thus it is considered reasonable to also apply the other long term measured data by ACT Health in the assessment.



**Figure 3: Summary of 24-hour average PM<sub>10</sub> concentrations during monitoring campaign**



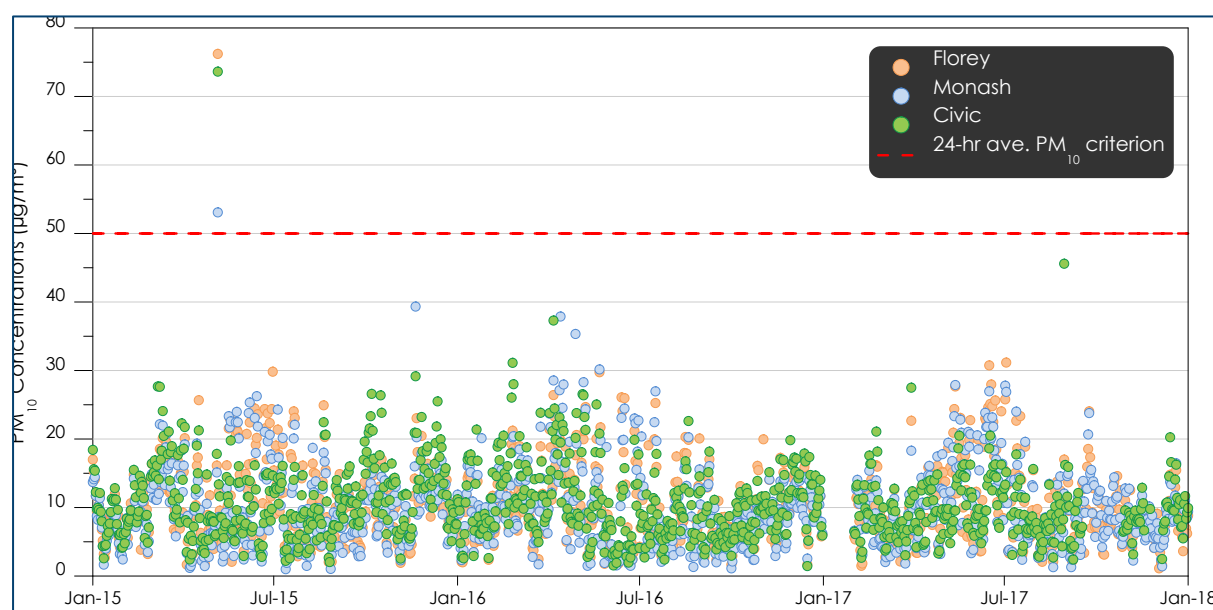
**Figure 4: Summary of 24-hour average PM<sub>2.5</sub> concentrations during monitoring campaign**

A summary of the available PM<sub>10</sub> data for the last three years from the ACT Health monitoring stations is presented in **Table 1**. Recorded 24-hour average PM<sub>10</sub> concentrations are presented in **Figure 5**.

A review of **Table 1** indicates that the annual average PM<sub>10</sub> concentrations for each monitoring station were below the relevant annual average criterion of 25µg/m<sup>3</sup>. The maximum 24-hour average PM<sub>10</sub> concentration recorded at all three stations was above the relevant criterion of 50µg/m<sup>3</sup> on one day in 2015, (likely due to a regional event such as a bushfire or dust storm).

**Table 1: Summary of PM<sub>10</sub> levels from ACT Health monitoring (µg/m<sup>3</sup>)**

Year	Civic	Monash	Florey	Criterion
	Annual average			
2015	11.3	10.0	10.7	25
2016	10.7	9.8	10.0	25
2017	9.5	9.9	9.9	25
Maximum 24-hour average				
2015	<b>73.6</b>	<b>53.1</b>	<b>76.2</b>	50
2016	37.3	37.9	29.8	50
2017	45.6	27.9	31.2	50



**Figure 5: 24-hour average PM<sub>10</sub> concentrations**

A summary of the PM<sub>2.5</sub> readings from the ACT Health monitoring stations for the last three years is presented in **Table 2**. The recorded 24-hour average PM<sub>2.5</sub> concentrations are presented in **Figure 6**.

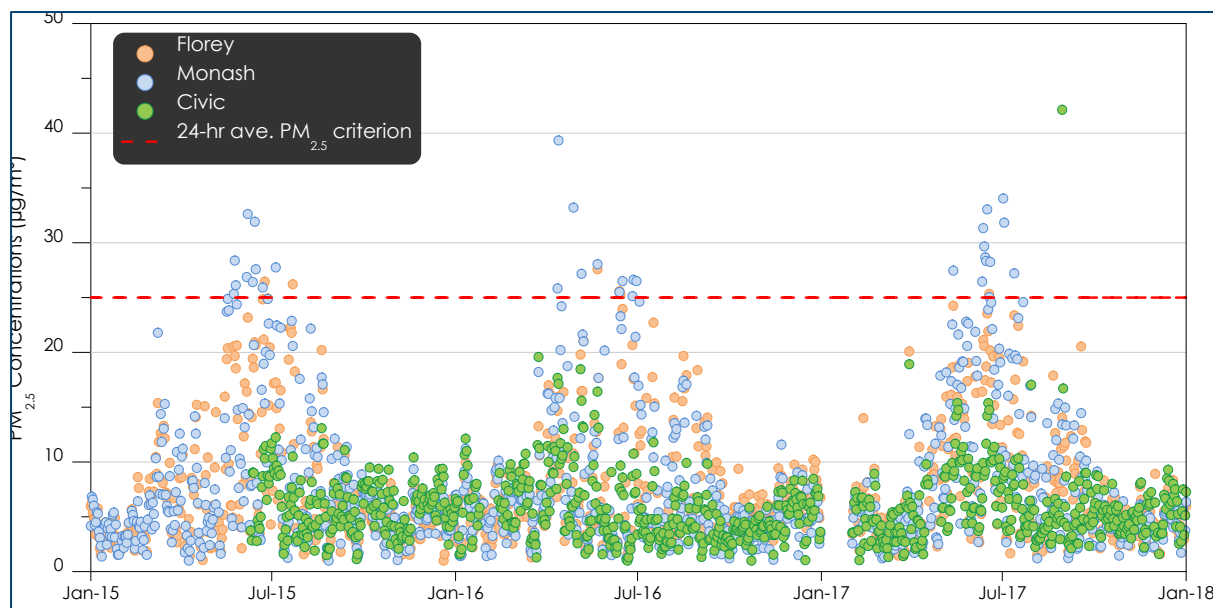
**Table 2** indicates that the annual average PM<sub>2.5</sub> concentration for all periods reviewed were at or below the annual average criterion with the exception of the Monash monitoring station in 2017 which recorded a level 0.2µg/m<sup>3</sup> above the annual average criterion of 8µg/m<sup>3</sup>.

The maximum 24-hour average PM<sub>2.5</sub> concentrations recorded at these stations exceed the relevant criterion of 25µg/m<sup>3</sup> at times during the review period. A seasonal trend in PM<sub>2.5</sub> concentrations can be seen in **Figure 6** with higher levels occurring in the cooler months when PM<sub>2.5</sub> levels would be elevated due to urban wood heater use.

Table 2: Summary of PM<sub>2.5</sub> levels from ACT Health monitoring (µg/m<sup>3</sup>)

Year	Civic*	Monash	Florey	Criterion
	Annual average			
2015	-	7.4	6.9	8
2016	5.6	7.1	7.0	8
2017	5.9	<b>8.2</b>	7.3	8
Maximum 24-hour average				
2015	13.1	<b>32.6</b>	<b>26.5</b>	25
2016	19.6	<b>39.3</b>	<b>27.6</b>	25
2017	<b>42.1</b>	<b>34.0</b>	<b>25.3</b>	25

\*Data available from June 2015

Figure 6: 24-hour average PM<sub>2.5</sub> concentrations

Background air quality levels used in the Project assessment are estimated as the maximum recorded annual average PM<sub>10</sub> and PM<sub>2.5</sub> values from the ACT Health monitoring stations for the 2016 calendar period (see **Table 1** and **Table 2**). For 24-hour average PM<sub>10</sub> and PM<sub>2.5</sub> levels, the maximum 90% percentile value from the ACT Health monitoring stations during the 2016 calendar period is applied.

In the absence of annual average TSP and deposited dust data, estimates of the annual average background TSP and deposited dust concentrations have been determined based on the relative relationship between the PM<sub>10</sub>, TSP and dust deposition criteria, where PM<sub>10</sub> concentrations of 25µg/m<sup>3</sup> are assumed to correspond with a TSP concentration of 90µg/m<sup>3</sup> and a dust deposition value of 4g/m<sup>2</sup>/month. A summary of the annual average background air quality levels applied in this assessment are outlined in **Table 3**.

Table 3: Background air quality levels

Pollutant	Units	Period	Background level	Criterion
PM <sub>10</sub>	µg/m <sup>3</sup>	24-hour	18.0	<b>50</b>
PM <sub>10</sub>	µg/m <sup>3</sup>	Annual	10.7	<b>25</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	24-hour	14.5	<b>25</b>
PM <sub>2.5</sub>	µg/m <sup>3</sup>	Annual	7.1	<b>8</b>
TSP	µg/m <sup>3</sup>	Annual	38.5	<b>90</b>
Deposited dust	g/m <sup>2</sup> /month	Annual	1.7	<b>4</b>

### Assessment of potential air quality impacts

To determine the potential for adverse air quality impacts in the surrounding environment due to the Project, air dispersion modelling using the CALPUFF model has been applied.

The model setup is in general accordance with methods provided in the NSW EPA document *Generic Guidance and Optimum Model Setting for the CALPUFF Modeling System for Inclusion into the 'Approved Methods for the Modeling and Assessments of Air Pollutants in NSW, Australia'* (TRC Environmental Corporation, 2011).

Dust emission estimates for the Project have been calculated by analysing the various types of dust generating activities taking place, the quantities of materials moved and handled and applying suitable emission factors sourced from US EPA developed documentation (US EPA, 1985 and Updates).

The estimated annual Total Suspended Particulates (TSP) dust emissions for the operation of the Project are presented in **Table 4**. The activities highlighted in blue would occur within a purpose built building and the estimated dust emissions would be discharged via the building stack. The modelled stack parameters are the same as those used in the *Capital Recycling Solutions Material Recovery Facility and Rail Freight Terminal Odour Impact Assessment* (The Odour Unit, 2018). Similarly, 10% of the dust emissions generated in the purpose built building were modelled to escape as fugitive emissions via the roller doors.

Emissions from each operational activity of the Project were represented by a series of volume sources or as a point source in the CALPUFF model, with the location of each modelled source shown in **Figure 1**.

**Table 4: Estimated TSP emission rate for the Project (kg/yr)**

Activity	TSP Emissions
Delivering waste material on-site	5,452
Unloading material to stockpile within building	419
Loading material to crusher	419
Primary shredding material	180
Primary sorting/ screening	330
Secondary shredding material	450
Secondary sorting/ screening	540
Unloading material to stockpile	419
Loading product to truck for dispatch	419
Delivering material off-site	3,684
Wind erosion	1,068
Diesel exhaust	58
<b>Total TSP emissions (kg/yr)</b>	<b>13,438</b>

### Dispersion modelling predictions

**Figure 7** to **Figure 12** present the predicted dust concentration isopleths showing the spatial distribution of the predicted incremental impacts associated with the operation of the Project (alone) over the modelling domain for the following:

- ✦ Maximum 24-hour average PM<sub>2.5</sub> and PM<sub>10</sub> concentrations;
- ✦ Annual average PM<sub>2.5</sub> and PM<sub>10</sub> concentrations;

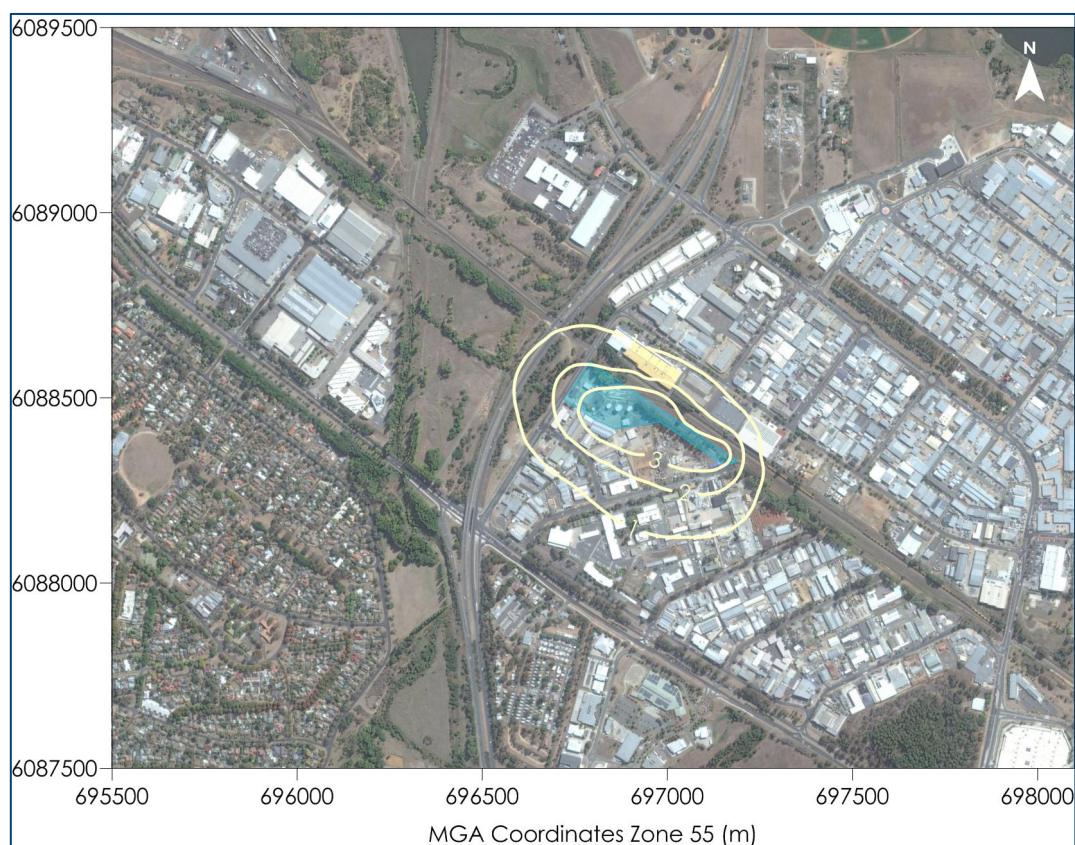
- ✦ Annual average TSP concentrations; and,
- ✦ Annual average dust (insoluble solids) deposition rates.

The results indicate that for the assessed pollutants, the predicted incremental effects at the identified sensitive receptor zones in **Figure 1** are below the relevant impact assessment criteria.

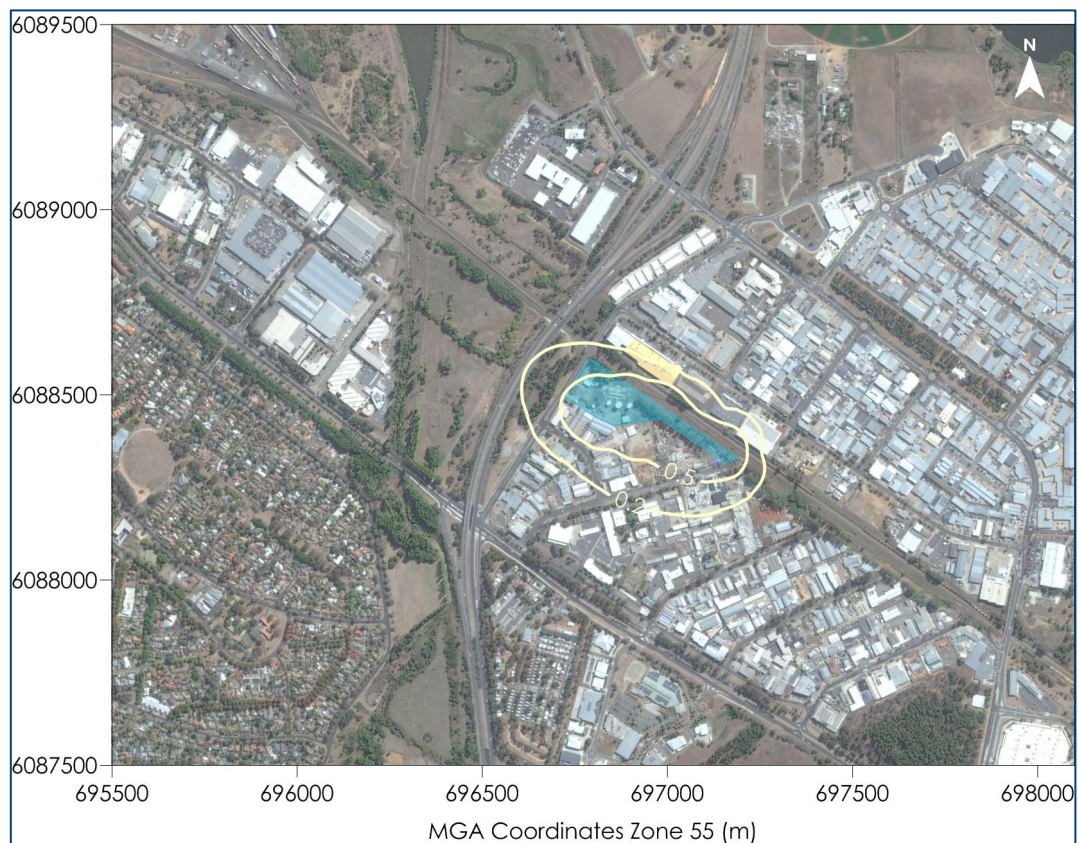
The potential cumulative impacts were assessed based on the maximum levels of predicted incremental impacts at the identified sensitive receptor zones combined with the estimated background levels. This is quantified in **Table 5**, which shows no cumulative particulate (dust) impacts would arise due to the Project.

**Table 5: Background air quality levels**

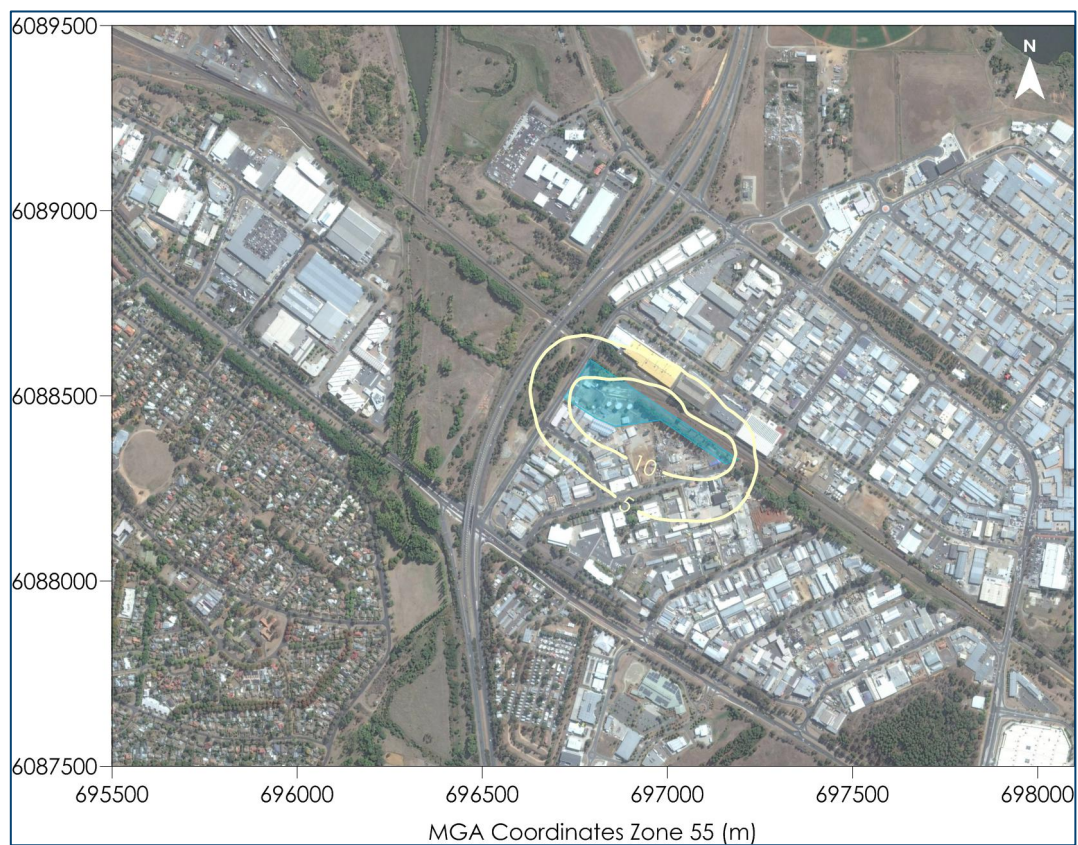
Pollutant	Units	Period	Maximum predicted due to Project	Background level	Cumulative level	Criterion
PM <sub>10</sub>	µg/m <sup>3</sup>	24-hour	4	18.0	22	50
PM <sub>10</sub>	µg/m <sup>3</sup>	Annual	0.7	10.7	11.4	25
PM <sub>2.5</sub>	µg/m <sup>3</sup>	24-hour	0.9	14.5	15.4	25
PM <sub>2.5</sub>	µg/m <sup>3</sup>	Annual	0.15	7.1	7.3	8
TSP	µg/m <sup>3</sup>	Annual	2.3	38.5	40.8	90
Deposited dust	g/m <sup>2</sup> /month	Annual	<0.02	1.7	1.7	4



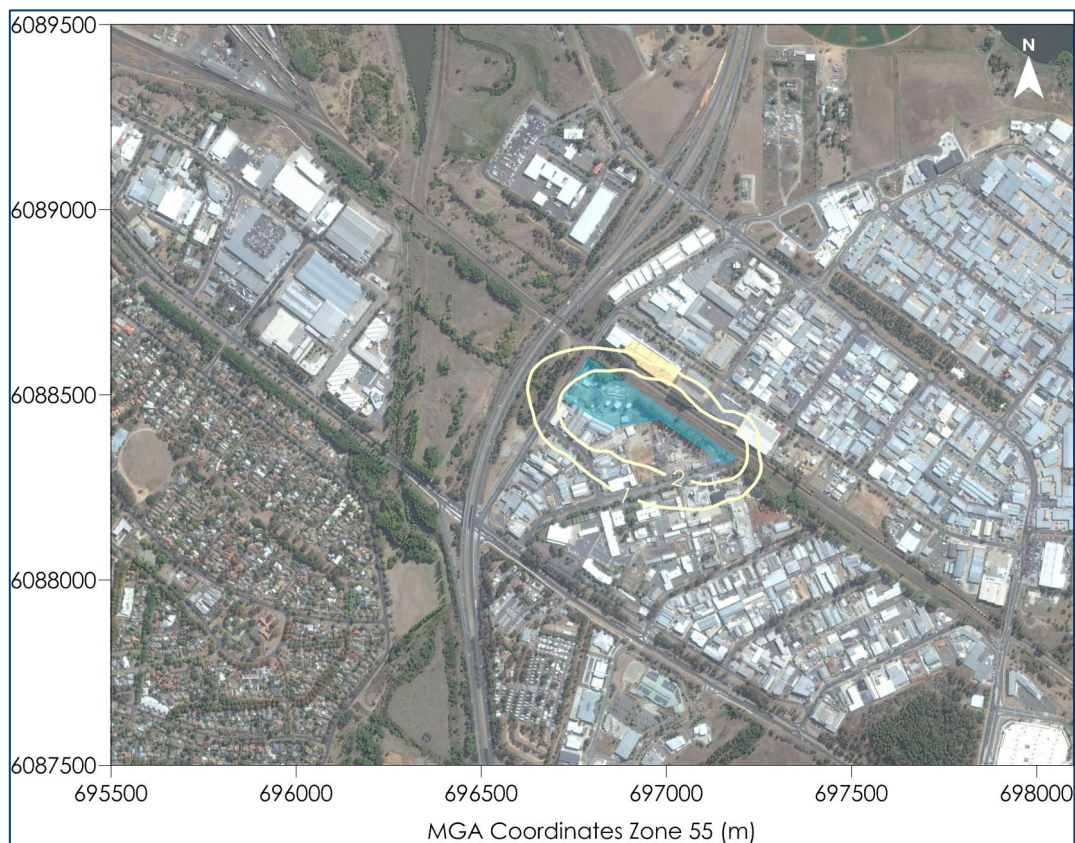
**Figure 7: Predicted incremental maximum 24-hour average PM<sub>2.5</sub> concentrations (µg/m<sup>3</sup>) – Impact assessment criterion (allowable limit) 25µg/m<sup>3</sup>**



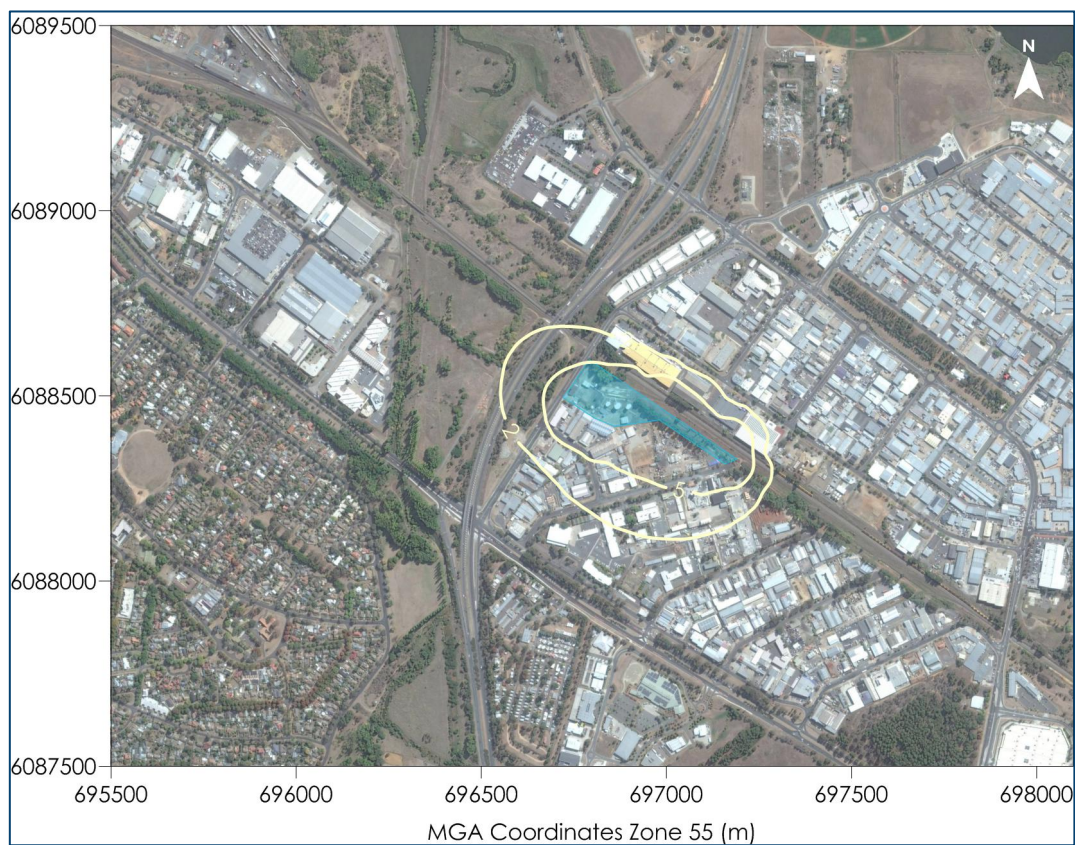
**Figure 8: Predicted incremental annual average  $PM_{2.5}$  concentrations ( $\mu\text{g}/\text{m}^3$ ) – Impact assessment criterion (allowable limit)  $8\mu\text{g}/\text{m}^3$**



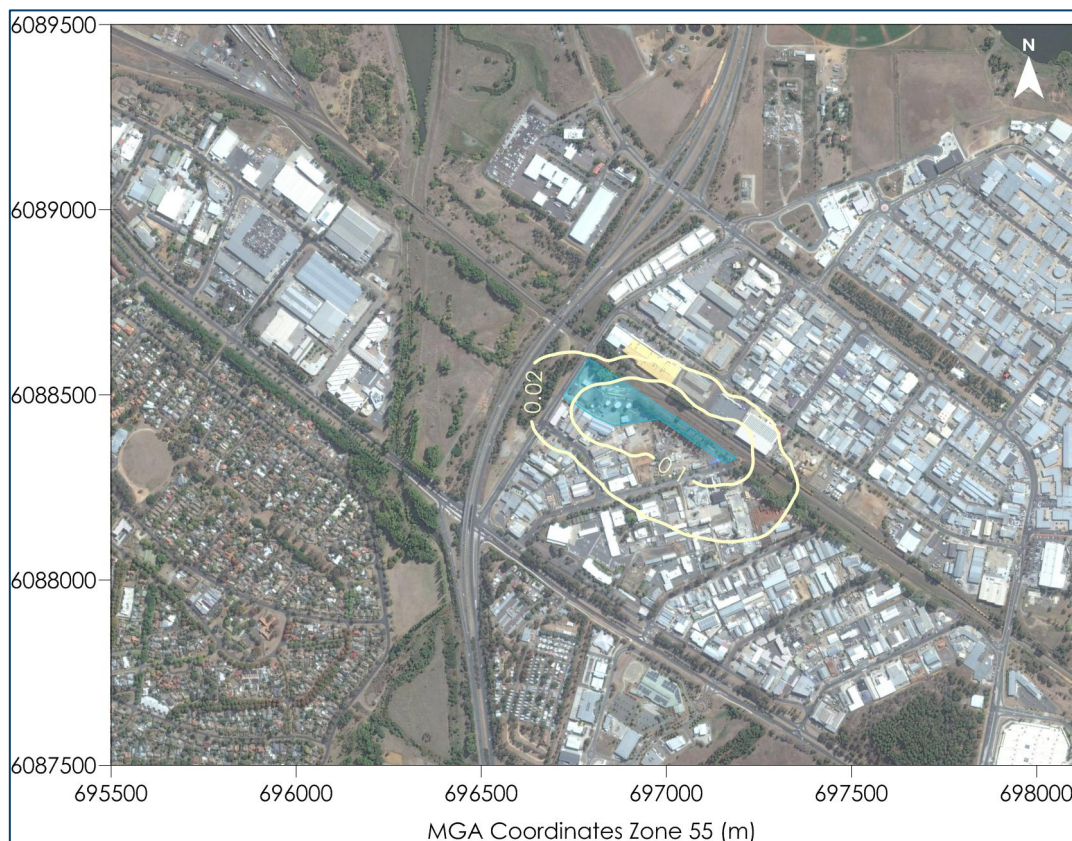
**Figure 9: Predicted incremental maximum 24-hour average  $PM_{10}$  concentrations ( $\mu\text{g}/\text{m}^3$ ) – Impact assessment criterion (allowable limit)  $50\mu\text{g}/\text{m}^3$**



**Figure 10: Predicted incremental annual average  $PM_{10}$  concentrations ( $\mu\text{g}/\text{m}^3$ ) – Impact assessment criterion (allowable limit)  $25\mu\text{g}/\text{m}^3$**



**Figure 11: Predicted incremental annual average TSP concentrations ( $\mu\text{g}/\text{m}^3$ ) – Impact assessment criterion (allowable limit)  $90\mu\text{g}/\text{m}^3$**



**Figure 12: Predicted incremental annual average dust deposition levels ( $\text{g}/\text{m}^2/\text{month}$ ) – Impact assessment criterion (allowable limit)  $4\text{g}/\text{m}^2/\text{month}$**

### Discussion and conclusions

This study has examined the likely air quality (dust) impacts resulting from the operation of the Project. Air dispersion modelling was used to predict the potential for off-site dust impacts in the surrounding area due to the operation the Project.

It is predicted that all the assessed air pollutants generated by the operation of the project would comply with the applicable assessment criteria at the identified sensitive receptor zones and therefore the operation of the Project would not lead to any unacceptable level of environmental harm or impact in the surrounding area.

Overall, the assessment demonstrates that, the Project can operate without causing any significant air quality impact in the surrounding environment.

Please feel free to contact us if you would like to clarify any aspect of this study.

Yours faithfully,

Todoroski Air Sciences

Philip Henschke

## References

NSW EPA (2017)

"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales", NSW EPA, January 2017

The Odour Unit (2018)

"Capital Recycling Solutions Material Recovery Facility and Rail Freight Terminal Odour Impact Assessment", prepared by The Odour Unit for Capital Recycling Solutions, January 2018.

TRC Environmental Corporation (2011)

"Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modeling and Assessments of Air Pollutants in NSW, Australia'", Prepared for the NSW Office of Environment and Heritage by TRC Environmental Corporation.

US EPA (1985 and update)

"Compilation of Air Pollutant Emission Factors", AP-42, Fourth Edition United States Environmental Protection Agency, Office of Air and Radiation Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina 27711.





13 September 2018

Ewen McKenzie  
Project Manager  
Benedict  
Via email: [Ewen@benedict.com.au](mailto:Ewen@benedict.com.au)

**RE: Supplementary Air Quality Report - Capital Recycling Solutions Materials Recovery Facility and Rail Freight Terminal**

Dear Ewen,

The following provides some additional information and clarification to address specific air quality issues raised by the community and government agencies relating to the proposed Capital Recycling Solutions Materials Recovery Facility and Rail Freight Terminal (hereafter referred to as the Project).

Please note that an odour impact assessment was therefore conducted by the Odour Unit: *Capital Recycling Solutions Material Recovery Facility and Rail Freight Terminal Odour Impact Assessment (The Odour Unit, 2018)*. The key air pollutant from the development is considered to be odour. Dust, or particulate matter would also be generated, but is not considered significant as the activity will occur within a building, with only limited scope for fugitive emissions to arise.

This letter aims to address submissions to the Project regarding air quality issues.

The key issues raised in the submissions are set out in grey italics and are addressed below each issue. Agency submissions are identified with the agency acronym in brackets, e.g. Department of Planning (DoP), and

1. *Consideration of particulate matter (dust) emissions for the Project*
  - *21m vent will spread odour/dust across residential areas*
  - *Not properly assessed in EIS (modelling, no assessment of particulates)*
  - *No filter on vent to stop dust (asbestos if missed)*
  - *Vent system is not filtered – will send out dust*
  - *Fine particles No assessment of PM<sub>10</sub>, PM<sub>2.5</sub> or PM<sub>1</sub> no modelling of particulates*
  - *Cumulative dust impacts from other sources in the local area, Cumulative assessment of railway and nearby industrial activities.*

It is acknowledged that only an odour assessment has been completed as part of the EIS. Dust was not considered to be a significant air pollutant for this Project.

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It should be noted that most of the dust generating activities will occur indoors. These activities include loading and unloading material, processing and handling of waste material. The dust producing activity that occurs outside is vehicle movements. These vehicles would be travelling slowly and on sealed roads, thus it would be relatively easy to control any excessive dust by occasional cleaning/sweeping or watering of the surface.

To quantify the potential dust effects, Todoroski Air Sciences was commissioned to conduct a supplementary dust assessment, which is attached. The results show low potential for dust effects to occur.

Please note appropriate measures would be taken to manage dust levels within the working areas and dust emissions generated indoors would be captured and dispersed via the ventilation outlet.

Enclosure of dust generating activity within a building fitted with an elevated ventilation outlet represents best practice mitigation for this type of activity.

- ✦ Ventilation outlets are commonly used in various industrial applications to promote the dispersion of air pollutants into the atmosphere. The proposed ventilation outlet will disperse emissions and reduce the overall impact at ground level (relative to no ventilation outlet); and,
- ✦ Conducting the activity indoors reduces the amount of dust generated as it removes the wind generated dust arising from the material handling and processing, and surface wind erosion. Also having activity indoors slows down moisture loss and makes any misting or watering more effective at controlling the dust.

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

The assessment by Todoroski Air Sciences shows the ground level dust concentrations due to the Project are low and cumulative dust impacts would not arise due to the operation of the Project this location.

Based on the design of the ventilation outlet and the likely small scale of dust effects, filtration is not a justifiable control measure in this case.

#### Existing ambient PM<sub>2.5</sub> levels

Existing PM<sub>2.5</sub> levels are described in the attached dust assessment report by Todoroski Air Sciences. The dust assessment report shows the potential for dust emissions generated by the Project would be low, and when considering the prevailing background dust levels, there is no significant potential for cumulative impacts to arise.

#### Consideration of hazardous emissions from the plant

A comprehensive operational management plan (OMP) will be implemented for the discovery, separation, containment and correct disposal of possible small fractions of hazardous waste found hidden in the incoming waste stream. Hazardous materials would be stored at the site in appropriate containers to minimise the

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generation of potential air emissions before correct disposal. Any potential air emissions associated with the hazardous material at the site would be captured and dispersed via the ventilation outlet.

The hazardous materials would be diverted for appropriate disposal with the appropriate recycler or licensed landfill/facility determined based on the nature of the hazardous material.

Other hazardous waste materials including medical waste, sewerage sludge, contaminated soils, containers with toxic chemical residues, asbestos, quarantine waste, CCA timbers, light bulbs, batteries, paints and flammable liquids are not accepted by the site.

It is anticipated that some residual hazardous waste may accidentally enter the waste stream (e.g. asbestos), in this situation the identified hazardous waste material would be isolated and appropriately encapsulated to ensure potential air emissions are minimised.

#### *Consideration of poor quality waste material or dangerous contaminants in waste material*

All waste loads received at the Project would be subject to screening procedures. Materials identified to be of poor quality or consisting of dangerous contaminants would be rejected and directed immediately to a licensed landfill for disposal.

Waste pathogen risks at the Project would be no different to those encountered in domestic and commercial bins. The building enclosure at the Project would be under negative pressure and with the building air discharged via a ventilation outlet. This represents a practicable and reasonable mitigation measure which should prevent environmental odour nuisance and would also be expected to prevent any potential impact associated with pathogens from the waste material.

#### *Air quality monitoring for the Project*

Recommended air quality monitoring for the Project includes:

- ✦ Annual stack emissions monitoring to measure odour and dust and to ensure no adverse impacts would arise;
- ✦ A field odour survey at locations on-site and off-site to validate the effectiveness of the proposed ventilation outlet and other mitigation measures. Odour surveys are to be conducted within the first two months of commissioning and ongoing at a frequency to be determined by an appropriate risk assessment; and,
- ✦ Regular daily visual monitoring of dust generated by site activity, conducted by staff.

An annual report should be prepared which includes a comprehensive review of the monitoring results as well as the air quality complaints records for the operations over the previous calendar year. The report should include a review of performance measures and details of measures taken to address complaints received.

#### *Consideration of truck air quality impacts*

Truck air quality impacts are considered as part of the Todoroski Air Sciences assessment.

For the vehicles travelling on-site, the proposed measures to minimise dust emissions from this activity include having all trafficked areas hardstand to reduce wheel generated dust emissions and regular cleaning of

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trafficked areas. Exhaust emissions can be minimised through ensuring all vehicles are maintained regularly and engines are switched off when not in use for extended periods.

The Project site will have significant on-site queuing space and dual weighbridges to limit any on-street queuing risk. The types of trucks delivering waste to the site are sealed however there could be some residual odour from some vehicles. This odour source would be transient in nature and would not be expected to remain in one place for any extended period.

We note that the Project would see a redistribution of air emissions associated with trucks along the roadways as they travel towards the Project site instead of a licensed landfill, as would occur without the Project.

#### Consideration if ventilation failure

Appropriate safeguards will be in place to ensure the likelihood of ventilation failure is reduced where practicable. This includes regular maintenance of ventilation equipment and having replacement ventilation equipment on hand. The Odour Unit has nominated that there will be two variable speed fans operating at 50-75% capacity so there will be opportunity to conduct regular and emergency maintenance activities while the other fan remains in operation. Key spare parts will be on-site to minimise shut down risks.

#### Consideration of separation distances

The South Australian Environment Protection Authority (SA EPA) document *Evaluation distances for effective air quality and noise management (SA EPA, 2016)* recommends a separation distance of 300m for resource recovery facilities from sensitive land uses.

The nearest existing sensitive land uses to the Project site are identified as the Canberra South Motor Park located approximately 450m south of the Project and the residential area of Narrabundah located approximately 650m to the southwest of the Project. The Project site is consistent with this guideline.

It is noted that there is also a proposed land release area identified as East Lake, located approximately 200m to the northwest of the Project site. The Project area is physically separated from East Lake by the Monaro Highway, which is a source of air emissions and has a recommended a separation distance of 100m. The separation distance for the Project site to the East Lake area is therefore generally consistent with the guideline.

#### Impact of temperature inversion

The air dispersion modelling for the Project used the CALMET meteorological model which produces three-dimensional gridded wind and temperature fields that simulate the potential effects of temperature inversion.

The modelling predictions for the Project include consideration of these effects.

#### Consideration of train exhaust emissions

The anticipated rail movements associated with the Project would be one train arriving and leaving per day on average. The potential air emissions associated with the train exhaust from one train per day is not considered a major source of any air quality impacts.

For example, we note that train passing loops can operate in close proximity to sensitive receptors (<100m) without impact. In the situation of the Project site, the nearest existing sensitive residential receptors are

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approximately 450m away, hence there would be no potential for impacts from train exhaust emissions associated with the Project.

#### Consideration of air quality impacts from contaminated site

During construction of the Project site, any contaminated materials identified at the site will be appropriately managed through a remediation plan and hence air quality impacts are not expected during construction.

Construction dust mitigation measures that would be employed during the construction of the Project to limit dust emissions include:

- ✦ Wet suppression would be used during earthworks to minimise dust being raised. The volume of water applied would be managed so as not to create potentially polluted run-off;
- ✦ Vehicles will only leave the site via established and stabilised access points;
- ✦ Equipment will be fitted with relevant dust suppressors; and,
- ✦ Temporary wheel bath will be installed for the construction period.

#### Consider dust misting system in the shed

Dust misting sprays would be used with the enclosed building to manage dust levels within this space and would reduce the amount of dust generated and hence lead to a reduction in potential dust impacts.

It is indicated that deodoriser sprays would be installed which activate when the fast-acting doors to the building open. These sprays would have some potential to minimise fugitive emissions of dust leaving the building from this opening.

#### Indoor air quality monitoring

The provisions of the ACT Work, Health and Safety Act 2011 specifically provide for the regulatory obligations, rights and requirements to ensure worker safety. Indoor air quality monitoring is used to determine worker exposure to pollutants and may form part of the site's occupational health and safety program.

The composition of air within the building would include emissions associated with loading/unloading material, processing and handling of material and vehicle exhaust emissions. The building ventilation system has been designed to provide five air changes per hour to supply adequate fresh air within the building.

#### Potential toxic fumes from fire incident

There will be a range of measures implemented to prevent the event of a fire at the Project and the potential release of toxic fumes. These measures include:

- ✦ Back to base fixed smoke and fire alarm systems within the shed building;
- ✦ Portable and fixed thermal cameras to identify significant heat change in waste stockpiles;
- ✦ Fire warning systems and fire exits;
- ✦ Fixed fire hoses;

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- ✦ Water and foam sprinklers;
  - ✦ Fixed zoned sprinkler system; and
  - ✦ Machinery sprinklers where appropriate.

Please feel free to contact us if you would like to clarify any aspect of this report.

Yours faithfully,  
Todoroski Air Sciences



Aleks Todoroski



Philip Henschke

## References

SA EPA (2016)

"Evaluation distances for effective air quality and noise management", prepared by SA EPA, August 2016

The Odour Unit (2018)

"Capital Recycling Solutions Material Recovery Facility and Rail Freight Terminal Odour Impact Assessment", prepared by The Odour Unit for Capital Recycling Solutions, January 2018.

