

Planning and Environment Act 1987

Environment Protection Act 1970

Panel Report and report of the Chair of Works Approval Conference

Melbourne Regional Landfill Expansion, Ravenhall

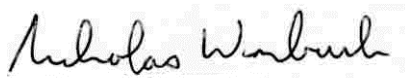
11 January 2017

Planning and Environment Act 1987: Panel report pursuant to s97E

Environment Protection Act 1970: Works Approval conference pursuant to s20B

Planning permit application PA2016/5118 and EPA works approval application 1002191
Melbourne Regional Landfill Expansion, Ravenhall

11 January 2017



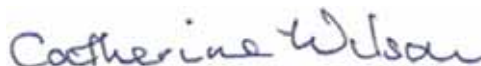
Nick Wimbush, Chair



Sarah Carlisle, Member



Peter Edwards, Member



Catherine Wilson, Member

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List of Abbreviations

APS	Annual Performance Statement (to the EPA)
BPEM	<i>Best Practice Environmental Management Siting, Design, Operation and Rehabilitation of Landfills</i> (EPA Publication 788.3, August 2015)
CHMP	Cultural Heritage Management Plan
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning
DSS	Development Services Scheme (for drainage)
EHP	Ecology and Heritage Partners
EP Act	<i>Environment Protection Act 1970</i>
EPA	Environment Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
LFG	Landfill gas
LPPF	Local Planning Policy Framework
LSIO	Land Subject to Inundation Overlay
MDA	Marshall Day and Associates
MNES	Matters of National Environmental Significance
MRC	Metropolitan Remand Centre
MRL	Melbourne Regional Landfill
MWRRG	Metropolitan Waste and Resource Recovery Group
MWRRIP	Metropolitan Waste and Resource Recovery Implementation Plan
OMR	Outer Metropolitan Ring Road
OU	Odour Unit
PAN	Pollution Abatement Notice under the <i>Environment Protection Act 1970</i>
PAO	Public Acquisition Overlay
PE Act	<i>Planning and Environment Act 1987</i>
PEL	Pacific Environment Limited
PIN	Penalty Infringement Notice under the <i>Environment Protection Act 1970</i>
PPAR	Planning Permit Application Report
PSP	Precinct Structure Plan
S(number)	Submission number

SEMTS	South East Metropolitan Transfer Station
SEPP (AQM)	State Environment Protection Policy (Air Quality Management)
SEPP N-1	State Environment Protection Policy (Control of Noise from Commerce Industry and Trade) No.1 N-1
SPPF	State Planning Policy Framework
SWRRIP	Statewide Waste and Resource Recovery Infrastructure Plan
The Applicant	Landfill Operations Pty Ltd
TSP	Total Suspended Particulates
UGB	Urban Growth Boundary
UGZ9	Draft Schedule 9 to the Urban Growth Zone, proposed for the Mt Atkinson and Tarneit Plains PSP area
VCAT	Victorian Civil and Administrative Tribunal
VPA	Victorian Planning Authority
VPP	Victoria Planning Provisions
WIFT	Western Interstate Freight Terminal
WREC	Western Region Environment Centre

Executive summary

(i) Overview

The Metropolitan Regional Landfill has been operating at Ravenhall in Melbourne's western suburbs since the late 1990s. Up until 2015 it was run by Boral when the operation was taken over by Landfill Operations Pty Ltd, a wholly owned subsidiary of Cleanaway.

The landfill operates by backfilling basalt quarry voids approximately 10 metres deep and then creating a landfill mound approximately 40 metres above natural ground surface. The existing operation has capacity to take waste for another 7 to 10 years.

The landfill operator has applied to extend the landfill life for many decades by applying for a planning permit under the Melton Planning Scheme and a works approval under the *Environment Protection Act 1970*. If the extension is approved, the landfill would continue to accept mixed waste including putrescible waste in quantities up to 1.7 million tonnes per year by 2041.

The Applications were exhibited and attracted significant opposition, particularly from the communities of Caroline Springs, Derrimut, Deer Park and Burnside to the east and north of the landfill. The objections were on many grounds but the impact of odour was the primary concern.

The Minister for Planning called in the planning permit application from Melton City Council and a Panel was appointed to consider the submissions to the application. The Chair of the Panel was also appointed under the *Environment Protection Act 1970* to fulfil the conference obligations for a works approval. The Panel has considered the planning permit application and the works approval concurrently.

Having considered voluminous material and extensive submissions and evidence, the Panel has concluded that a planning permit and works approval should issue, subject to stringent conditions.

However, the Panel is not satisfied that the planning permit should issue for the length of time that the Applicant sought and has recommended a permit expiring in 2046. In a dynamic policy and waste management environment, the Panel considers that the Applicant should not be granted a permit for landfilling for 50 plus years, but that the permit should be granted to align with the 30 year horizon of government waste policy.

This will provide:

- certainty for capacity for landfilling for the life of current policy
- the opportunity for revisiting landfilling on the site in perhaps 20 years (10 years prior to the proposed 2046 end date) to consider the policy context and advances in technology.

Throughout the Hearing, the Panel became aware that significant advances have been made in landfill design, operations and monitoring, particularly over the last 20 years. Today, new landfills are fully engineered, operated by regulated professional organisations and are required to meet ever higher standards.

The Panel considers it likely that standards and requirements for design, management and regulatory oversight will become increasingly stringent as technology continues to develop, and to align with the community's higher expectations. The Panel considers that if landfilling is still required at the site post 2046, then the Applicant should be required to reapply for a planning permit which can be assessed under the policies and regulatory framework of the day.

(ii) Key issues

The Panel's comments on some of the major issues follow.

Policy support

- The proposal and site have strong support in waste management policy and there is a clear need for the landfill expansion, but there is a significant disconnect with broader planning policy.
- Broader planning policy for the surrounding area appears to seek to place a regionally significant waste management hub in the middle of a rapidly developing urban and industrial growth corridor.
- If the site is to be maintained as a waste hub, this needs to be more strongly reflected in planning policy and adequate provision for buffers must be implemented and maintained.

Odour emissions

- The Panel is left in the difficult position where a significant number of complaints about odour from the existing landfill from residents must be balanced with limited evidence from the Applicant (or the EPA) that there is an issue.
- The Panel considers that the scale and detail of the submissions to the Panel and through the Panel's observation suggest there is a real odour issue to be addressed.
- The Panel is satisfied that for the landfill expansion there are technical and operational measures that can be taken to reduce odour impacts to an acceptable level; but this will require significant investment and monitoring.

Landfill gas migration

- Landfill gas (particularly methane) migration from landfills containing putrescible waste is a well-known phenomenon. Landfill gas migrating through soil or preferential pathways if not detected and intercepted can cause off-site impacts ranging from adverse health effects to explosion risk.
- For these Applications, the Panel is satisfied that through a combination of landfill design including cell lining and landfill gas collection, and effective monitoring, the off-site risk to sensitive areas in the west and south should be able to be reduced to an acceptable level without requiring external landfill gas buffers.

Other emissions

- For other emissions (noise, dust and litter) the Panel is satisfied that while they can have significant off-site impacts, they can be managed by appropriate permit conditions and through the works approval.

Groundwater and stormwater

- Further ground water modelling will be required to more accurately determine the long term undisturbed groundwater level to allow the landfill design to be finalised, and potentially, additional landfill liner protective measures may be appropriate in some cells.
- The Panel is satisfied that if leachate escapes, monitoring bores within the buffer zone should allow adequate time to implement mitigation measures to ensure contaminated ground water does not escape from the site.
- The key stormwater management system design parameter is for stormwater to discharge at predevelopment 'greenfields' flow rates and water quality into Skeleton Creek. The Panel is satisfied that this can be achieved.

Traffic

- The Panel accepts that the proposed expansion will not generate a level of traffic that would render the planning permit application unacceptable.
- From its own experiences during the course of the Hearing and site inspections, the Panel notes that predominantly commuter traffic in the Christies Road, Western Freeway, Ballarat Road and Caroline Springs Boulevard intersections already appears to be approaching or exceeding capacity at peak periods.

Social impacts

- The Panel heard many submissions about the impact of the existing landfill on communities in the area and considers there is significant work to be done by the Applicant to reduce impacts and build trust with the local community.
- The 'success' (that is, operating harmoniously with the local community with 'light touch' regulation) of the landfill expansion will largely be determined in the Panel's view by its management of the existing operation in the next 7 to 10 years.

(iii) Recommendations in relation to the planning permit

Based on the reasons in this report, the Panel recommends:

- 1. The Minister for Planning as responsible authority issue planning permit PA2016/5118 with the conditions as shown in Appendix D of this report.**

Appendix D gives effect to the following recommendations:

- 2. The planning permit include a condition that the permit expires in 2046.**
- 3. The planning permit include a requirement for an Odour Management Plan prepared and implemented to the satisfaction of the Responsible Authority and including the elements as described in Chapter 6.1.5 of this report.**
- 4. The planning permit include a condition requiring a Dust Management Plan that contains at least the following:**
 - a. A requirement for best practice airborne particulates control measures.**
 - b. Details of best practice control measures.**
 - c. Operational requirements for weather conditions that may exacerbate the creation of dust.**

- d. An air quality monitoring plan of at least twelve months duration from commencement of works under the planning permit for PM_{10} , $PM_{2.5}$ and Total Suspended Particulates. The monitoring data produced must be assessed against the relevant standards and the effectiveness of the airborne particulate control measures reviewed.
5. The planning permit include a condition requiring the Applicant to engage an appropriately qualified traffic engineer to undertake five yearly traffic impact reviews of its operations on the surrounding road network.
6. The planning permit include a condition requiring the preparation and implementation of a Landscape Plan that addresses as a minimum buffer planting, fencing, landscape maintenance and progressive landscaping after cell rehabilitation.
7. The planning permit include a condition requiring the use of sepia toned or light brown landfill liners where they may be visible from off site.
8. The planning permit include a condition requiring the preparation of a Litter Management Plan that requires measures including:
 - a. Mobile nets near the tip face.
 - b. Perimeter fencing at appropriate heights based on prevailing winds placed between the landfill and landscape buffers.
 - c. Litter traps be placed on stormwater drains.
 - d. A daily program for litter inspection and collection from litter traps, nets and fences including logging of collection activities, findings and system defects and actions taken to correct defects.
 - e. A high wind alarm trigger with criteria for reducing and ceasing landfilling under specified wind conditions.
 - f. Regular reviews and updating as necessary.
 - g. A litter complaints hotline be maintained and responses to complaints be registered.
 - h. The consultative committee be provided with quarterly reports on the hotline complaints and the responses register.
9. The planning permit include a condition requiring a Noise Modelling and Monitoring Plan to be prepared prior to the commencement of works to document ambient noise levels, provide predictions of the most critical times in landfill operation and identify where and when noise mitigation is likely to be required to meet applicable standards.
10. The planning permit include a condition requiring a Noise Management Plan for each cell which includes an assessment of all sources of noise, how scheduling will occur to minimise noise, any mitigation required and how it will be implemented.
11. The planning permit include a condition requiring a Community Consultation and Complaints Management Strategy that includes the following elements:
 - a. A requirement to establish and fund a community liaison group, and participate in regular community liaison group meetings.

- b. A requirement to provide regular information and updates on the performance of the landfill on a public website and to the community liaison group.
 - c. A requirement to establish and maintain a 24 hour dedicated hotline for complaints.
 - d. A requirement to establish and maintain a detailed complaints register.
 - e. Regular reviews of the Strategy.
12. The planning permit include a condition requiring any offsets for native vegetation removal to be to the satisfaction of the Department of Environment, Land, Water and Planning.
13. The planning permit include a condition requiring vermin management on the landfill.

(iv) Recommendations in relation to works approval

Based on the reasons in this report, the Chair of the works approval conference recommends:

14. Works Approval 1002191 be issued subject to the following recommendations.
15. Prior to the works approval being issued, the Environment Protection Authority review the odour modelling to determine if further assessment is required including choice of model, landfill odour emission rates and sensitivity analysis to ensure model outputs are accurate and suitable for informing management responses.
16. Prior to the works approval being issued, the Environment Protection Authority should review the adequacy of the airborne particulate assessment undertaken to date to ensure it is fit for purpose for assessment and monitoring of landfill operation and require any further assessment as deemed necessary.
17. Prior to the works approval being issued further modelling and investigation occur to allow the long term undisturbed groundwater level to be identified to inform the development of Cells 1 and 2.
18. Prior to the works approval being issued the stormwater management system be subject to further detailed design to ensure compliance with Environment Protection Authority and Melbourne Water requirements.

1 Introduction

1.1 Background

The Melbourne Regional Landfill (MRL) has been operating at the Boral Ravenhall quarry site since the late 1990s. Landfilling occurs progressively across the site as quarrying activities are completed. The MRL was initially operated by Boral, until Landfill Operations Pty Ltd (the Applicant) took over in March 2015.

Boral applied to amend the existing landfill permit to expand the MRL, but the application was refused by Melton City Council (Melton) on 27 May 2014. The application was for a larger area than that now proposed and Melton's grounds for refusal included: lack of need, being contrary to orderly planning and development, lack of detail, and inconsistency with planning policy.

On 29 February 2016, the Applicant lodged a new planning permit application PA2016/5118 with Melton for a permit to expand the MRL. On the same day, the Applicant lodged works approval application 1002191 with the Environment Protection Authority Victoria (EPA) for an expansion of the MRL.

Specifically, the permit application is to allow the use of the land for refuse disposal, construct or carry out works and remove native vegetation on the land at 408-546 Hopkins Road Truganina and 1154-1198 Christies Road Ravenhall.

1.2 Exhibition and submissions

The permit application and the works approval application (together, 'the Applications') were exhibited jointly under s52 of the *Planning and Environment Act 1987* (PE Act) and s20AA of the *Environment Protection Act 1970* (EP Act).

The Applications were placed on public exhibition between 14 June 2016 and 15 July 2016 including advertising in state and local newspapers, on the site and through direct notice to landowners within 2 kilometres, interest groups and state agencies. Copies of the Applications were made available online and in hard copy.

The EPA held public information sessions in relation to both Applications on 19 and 20 June 2016 in Caroline Springs.

In response to exhibition, a total of 103 individual submissions were received and 3,859 objecting proforma submissions sent via the objector's group Stop the Tip. A list of submitters is at Appendix A.

Of the 104¹ submissions received, 95 submissions objected to the Applications, five supported the Applications and four were neutral. The main issues raised in submissions included odour, traffic and truck movements, health, off-site impact on amenity, compliance history, litter, buffers, native flora and fauna, the scale of the proposed expansion and siting.

¹ Submission 104 being the cover for the proforma.

1.3 The Panel

On 5 April 2016, the Minister for Planning called in the permit application from Melton under s97B of the PE Act.

The Minister for Planning requested that a Panel be appointed under the PE Act to consider the permit application. The Panel was appointed under delegation from the Minister for Planning on 29 June 2016, under ss97E, 153 and 155, and comprised Nick Wimbush (Chair), Sarah Carlisle, Peter Edwards and Catherine Wilson.

The Panel Chair was also appointed under s20B of the EP Act to preside over a works approval conference to assist the EPA in its consideration of the works approval application. The Panel Chair and Panel members considered the Applications together.

1.4 Hearings and inspections

A Directions Hearing was held on 5 August 2016. A second Directions Hearing was held on 6 September 2016 to finalise the list of expert witnesses and the timetable.

Following the second Directions Hearing, the Panel undertook an unaccompanied inspection of the subject site and its surrounds. An accompanied site inspection took place on 29 September 2016.

The Panel Hearings were held at Planning Panels Victoria on the following dates: 29 September, 3-7 October, 10-15 October, 19-21 October and 28 October 2016; and at Caroline Springs on 24, 26 and 27 October 2016.

Those in attendance at the Panel Hearing are listed in Appendix B.

1.5 Approach to this report and assessment

In this report the Panel is providing advice to the Minister for Planning on whether a permit should issue, and if so under what conditions. The Panel Chair is also providing advice to the EPA on matters for consideration in issuing a works approval for the proposal.

The Panel has considered all the submissions made and material presented to the Hearing in forming its views. The Panel provides conclusions and recommendations against the issues considered, advice as to whether a permit should issue, and how the permit or works approval should address the issues considered.

The report structure provides background on the policy and legislative framework, a focus on the key issues, and an assessment of the planning permit application against the planning scheme. Recommendations for the planning permit and works approval are generally found under the respective issues chapter.

It will become apparent that there are a number of issues not specifically addressed in the report but raised in submissions, for example, waste-to-energy. These omissions are conscious as, whatever the merits of those issues raised, they fall outside the remit of the Panel.

2 The proposal

2.1 The site

The Applications relate to the land at 408-546 Hopkins Road, Truganina and 1154-1198 Christies Road, Ravenhall (the site). The site, which is owned by Boral, is approximately 1,150 hectares and is shown in Figure 1.



Figure 1 The site²

The site is broadly bounded by Hopkins Road to the west, the Melbourne–Ballarat Railway Line to the north, Christies Road to the east and Middle Road to the south. Riding Boundary Road, of which the western portion is a private road, runs east–west through the site.

² PPAR page 11.

The site has been located within the Urban Growth Boundary (UGB) since 2010 and accommodates an existing quarry and landfill.

Two high voltage transmission lines traverse the site — one through the south-east part and the other through the north-west corner. The Northern Grassland Reserve (of about 95 hectares) is located within the north-east corner of the site.

2.2 The existing quarry

The Boral quarry has been in operation since 1964 and extracts basalt for use in the construction industry. The first stages of the quarry have already been filled by the existing landfill. The active area of the quarry is to the south of Riding Boundary Road. The future areas of the quarry will progress ahead of the landfill along the western portion of the site, generally from south to north across Riding Boundary Road. The quarry operations are subject to separate approvals and regulation and are not considered by this Panel.

2.3 The existing landfill

The existing landfill is located in the south-east corner of the site and is shown in pink on Figure 1.

The landfill is one of three long term landfills servicing metropolitan Melbourne. In 2014-15 it accepted approximately 780,000 tonnes of waste. It receives waste from commercial operators and municipal councils (or their contractors). It does not currently accept waste directly from the public, although approval has been granted for a community drop-off point in the south-east corner of the site.

The existing landfill is licensed to accept the following waste:

- putrescible waste
- non-putrescible (or solid inert) waste
- contaminated soil (low level)
- pneumatic tyres shredded into pieces of less than 250 millimetres.

Landfill gas (LFG) is collected from completed cells and burned in stationary engines to generate electricity which is fed into the grid.

The existing landfill operates pursuant to a number of planning permits as shown in Table 1. The main permit is Permit PA2091/97, issued in July 1998, allows the development of the south-east portion of the site as a municipal waste landfill in six stages. Permit PA2091/97 was amended in June 2004 to allow operation 24 hours a day, 7 days a week. Several other permits have been granted for ancillary operations on the site.

A number of works approvals and licences have been issued for the existing operation and these are also shown in Table 1.

Table 1 Main landfill approvals

Approval no.	Date issued	Details
Planning permits		
PA2091/97	July 1998	Development of the south-east portion of the site as a municipal waste landfill in six stages
PA1999/79	November 1999	Buildings and works
PA2000/36	May 2000	Organics Recycling Facility (Pinegro Products)
PA2000/154	February 2001	Training facility
P2005/454	September 2005	Biogas power plant
PA2009/2180	June 2009	Resource Recovery Facility (to process dry commercial and industrial waste)
PA2013/4056	December 2013	Refuse Transfer Station
PA2014/4499	September 2014	Buildings and works (stairway and landing to the weighbridge entrance)
Works approvals and licences		
WA31723	November 1997	
Licence Number ES37288	August 1998	The first EPA licence that was issued
WA53962	February 2004	
Licence Number 12160		Current EPA Licence, allows solid inert waste, putrescible waste, pneumatic tyres shredded into pieces less than 250mm in all directions, and low level contaminated soil to be deposited to land.
WA61195	September 2007	For enhanced biodegradation
WA61767 Licence Number 112063	2007	For the installation of a facility to combust collected landfill gas to electricity (in a 'waste-to-energy')
WA83920	November 2013	For the construction of a leachate pond

2.4 The proposed expansion

The Applications are to extend the existing landfill within Boral's quarry area approved under Permit PA2001/249. There is no proposal to alter the types of waste that the facility is licensed to receive.

The existing landfill operation will run until approximately 2025, providing a 10 year window for detailed planning and design of the proposed expansion.

The permit application seeks an extension of the existing landfill by approximately 311 hectares, or to approximately the year 2068³. The works approval application seeks an extension of the works approval area by approximately 210 hectares, or to approximately 2055. Figure 2 below shows the footprints of the planning permit application area (in green) and the works approval application area (hatched). The application materials refer to the additional land in the planning permit application area as the 'Future Landfill Area'.



Figure 2 Extent of planning permit application area and works approval application area⁴

The Planning Permit Application Report (PPAR) indicates that the footprint of the works approval application has been chosen to correlate with state government landfill policies, which have a 30 year horizon, whereas the footprint of the planning permit application

³ PPAR page 20.

⁴ Ibid, page 9.

(including the Future Landfill Area) has been chosen to provide a 50 year life span for the facility, and to protect the buffers for the facility.

From the 780,000 tonnes of waste received in 2014-2015, waste quantities are expected to grow as shown in Table 2.

Table 2 Expected tonnes of waste received at the site per annum

Year	Expected tonnes of waste
2017	1.3 million
2020	1.4 million
2025	1.5 million
2041	1.7 million

The works approval application seeks permission for 16 new landfill cells as shown in Table 3 and Figure 3. The planning permit application is for the same 16 cells plus an additional 7 new cells which are shown in Figure 3.

Table 3 Cell location and landfill sequencing

Cell No.	Location	Cell capacity/years to fill
1 to 7	South of Riding Boundary Road	22.3 million cubic metres of waste in total, taking approx. 13 years to fill
8 to 16	North of Riding Boundary Road	29.7 million cubic metres of waste in total, taking approx. 17 years to fill

The cells would be capped as each cell is filled, in accordance with the *Best Practice Environmental Management Siting, Design, Operation and Rehabilitation of Landfills* (EPA Publication 788.3, August 2015) (BPEM). The staging of the landfill would follow the staging of the quarry.

According to the PPAR, the precise staging of the quarry (and therefore the landfill) is difficult to determine because quarrying depends on demand for different products and resources over time, and on the quality of stone across the site. The conceptual staging plan contemplates that the landfill expansion would progress from Cells 1-16 as shown in Figure 3. Each cell goes through a separate EPA approval process (licensing) prior to filling; essentially a review against best practice as each cell is filled, approximately every two years.

Works approval for the broader area within the permit application would need to be sought in due course.



Figure 3 Proposed landfill cells⁵

2.5 The surrounding area

2.5.1 The Mt Atkinson and Tarneit Plains Precinct Structure Plan

Land to the west of the site (on the other side of Hopkins Road) is affected by the recently exhibited Amendment C162 to the Melton Planning Scheme, which proposes (among other things) to:

- apply the Mt Atkinson and Tarneit Plains Precinct Structure Plan (PSP) to the area
- rezone the area along Hopkins Road that is currently zoned Farming Zone to Urban Growth Zone
- apply Schedule 9 to the Urban Growth Zone (UGZ9).

The PSP area is rural in nature, and contains a small number of dwellings.

The exhibited PSP, which has been prepared by the Victorian Planning Authority (VPA), contemplates business, industrial and residential development delivering around 6,700 new dwellings to accommodate around 19,000 new residents, and providing up to 18,000 new jobs.

The exhibited PSP acknowledges the existing landfill and notes the proposed expansion. It identifies the 'Potential Melbourne Regional Landfill (Waste and Resource Recovery Hub of

⁵ From PPAR Appendix 1. The additional planning permit cells are P1-P7.

State Importance) on Plan 2 (Precinct Features), and addresses the landfill in Section 2.2 (Response to adjoining existing and proposed land uses). Section 2.2 states that the potential MRL expansion is not anticipated to impact on the PSP, referring to the proposed 1 kilometre separation distance between the landfill and the residential areas in the PSP, and an assumption that landfill gas will be contained within internal buffers on the landfill site.

The exhibited PSP identifies:

- a 'Quarry Blast Buffer', which extends approximately 200 metres from the western edge of the approved quarry works authority
- a 'Quarry Sensitive Use Buffer', which extends approximately 500 metres from the western edge of the approved quarry works authority.

These buffers are shown in Plan 2 in the PSP, which is reproduced as Figure 4 below.

Objectives set out in the PSP (at page 13) include:

- O10 Ensure appropriate planning controls are established for uses located within the quarry sensitive use buffer to ensure the ongoing viability of these uses and the Deer Park Quarry into the future.*
- O12 Ensure that the PSP responds to the potential for adverse amenity from odour from any potential future landfill expansion on adjoining land by enabling a separation of residential uses 1 kilometre from the proposed landfill and ensuring appropriate employment land uses within the business, business/large format retail and industrial land.*

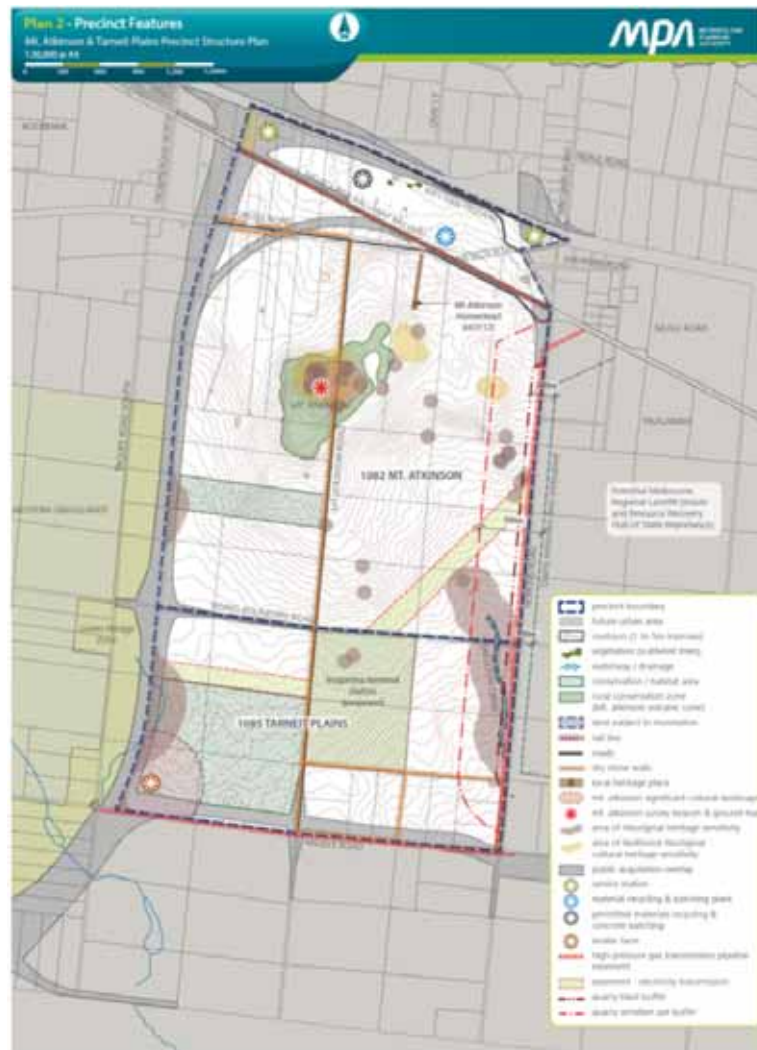


Figure 4 Quarry buffers, Mt Atkinson and Tarneit Plains PSP

The PSP nominates non-residential land uses including business/large formal retail, light industrial, industrial and service open space (drainage) in the Quarry Sensitive Use Buffer (refer to Figure 5 below), which are in turn reflected in the applied zone provisions listed in the UGZ9 controls.

As exhibited, Amendment C162 proposes:

- listed sensitive uses (Child care centre, Preschool, Education centre, Model and Hotel) be prohibited within the Quarry Sensitive Use Buffer
- the Secretary of the Department of Economic Development, Jobs, Transport and Resources⁶ be a determining referral authority for permit applications for subdivision or buildings and works within the Quarry Sensitive Use Buffer.

Amendment C162 does not propose any additional controls or referral requirements that respond directly to the landfill.

⁶ As the Secretary of the Department administering the *Mineral Resources (Sustainable Development) Act 1990*.

2.5.3 Correctional facilities

The Regional Rail Link runs along the eastern boundary of the site, parallel with Christies Road. East of the rail link are a number of publicly operated correctional facilities:

- The Dame Phyllis Frost Centre houses up to 421 women under sentence and on remand. The centre employs 301 people directly, with up to 200 staff and service providers on site at any time including medical services, drug and alcohol services, mental health services and prisoner training programs. A number of children (whose mothers are incarcerated) also live at the facility.
- The Metropolitan Remand Centre houses up to 950 men on remand. It employs 576 people directly, with up to 344 staff on site at any time (based on a typical shift).
- A new medium security men's prison, known as Ravenhall Correctional Centre, is under construction and expected to be completed in 2017. The Ravenhall Correctional Centre will initially accommodate 1,000 prisoners, but will have capacity to accommodate up to 1,300 prisoners. Up to 600 staff are expected to be on site daily when the facility starts operating.

The locations of the prisons are shown in Figure 6 below.



Figure 6 Locations of the prisons

2.5.4 Other surrounding uses

Land to the north of the site (between the Ballarat Railway Line and the Western Freeway) currently contains a range of industrial, commercial and residential uses. This area is proposed for future industrial development pursuant to the Warrawee PSP.

Land to the south of the site (on the other side of Middle Road) is rural in nature and accommodates a number of dwellings. The area is also identified as a potential location for the future Western Interstate Freight Terminal (WIFT).

A number of grassland reserves are located to the north (and east) of the site.

3 Identification of issues

3.1 Summary of issues raised in objections and submissions

Objections and submissions raised many issues.

(i) Responsible authority

The responsible authority for the ongoing administration and enforcement of the permit will be Melton City Council (Melton). The key issues for Melton (S86) were:

- scale of the proposed expansion (both in terms of capacity and length of approval)
- providing appropriate buffers to adjoining land
- identifying, auditing and management of potential landfill gas migration
- traffic modelling that demonstrates the transport network will be able to accommodate the proposed increase in activity
- mitigating and managing off-site amenity impacts
- visual impacts
- impacts on native flora and fauna.

(ii) Applicant and site owner

The key issues for the Applicant were:

- recognising and protecting the landfill as a waste and resource recovery hub of state significance, including through providing external buffers
- protecting the future capacity of the landfill.

Boral owns the site and operates the quarry. Boral (S97) supports the Applications on the basis that landfill is part of the ultimate rehabilitation of the quarry. The key issue for Boral was ensuring that quarry and landfill buffers are protected.

(iii) The Environment Protection Authority

The key issues for the EPA (S78) were:

- the need to coordinate decisions on the Applications with decisions relating to the Mt Atkinson and Tarneit Plains PSP, to ensure that buffer and encroachment issues are adequately addressed
- odour impacts
- landfill gas migration
- ensuring best practice management and operation of the landfill.

(iv) Other relevant agencies

Sustainability Victoria and the Metropolitan Waste and Resource Recovery Group (MWRRG) implement and administer waste management policy in Victoria. The key issues for Sustainability Victoria (S79) and the MWRRG (S63) were:

- ensuring there is no reduction in the planned capacity of the landfill
- protecting and maintaining adequate external buffers to the site
- facilitating resource recovery opportunities for the site

- ensuring best practice management and operation of the landfill
- community and stakeholder engagement.

The VPA is the planning authority for Amendment C162 to the Melton Planning Scheme, to implement the Mt Atkinson and Tarneit Plains PSP. The key issues for the VPA (S77) were:

- odour and amenity impacts
- landfill gas migration risk
- buffers should be internal to the site.

Corrections Victoria is responsible for prisons in Victoria. The key issues for Corrections Victoria (S72) were:

- amenity concerns for staff, prisoners and visitors to the prisons (primarily odour and landfill gas migration)
- impacts on security systems at the prisons (litter, birds roosting on prison walls and in prison grounds)
- traffic.

Melbourne Water is the floodplain management authority for the area. The key issues for Melbourne Water (S76) were:

- the proposal has not considered the Truganina Development Services Scheme (DSS)
- impacts on water quality in Skeleton Creek and its tributaries, including the recorded population of Growling Grass Frogs in Skeleton Creek
- no demonstration that stormwater run-off will be able to be accommodated within the Truganina DSS
- no demonstration that stormwater management will comply with best practice guidelines.

APA Group owns and operates the high pressure gas pipelines near the site. The key issue for APA Group (S93) was potential impacts of migrating landfill gas on the high pressure gas pipeline assets, and on workers maintaining the pipelines.

Nextgen Group owns and operates an optic fibre cable network, part of which is located along Christies Road. The key issue for Nextgen Group (S26) was possible impacts of the proposal on its optic fibre cable assets.

The key issues for Brimbank City Council (S58) were:

- off-site amenity impacts, including dust, odour and litter
- an internal buffer of 500 metres should be required
- the proposed 50 year life span of the permit is too long
- ongoing monitoring requirements
- independent environmental assessment and auditing
- ongoing community engagement requirements
- long term legacy issues associated with landfills and their use post closure.

(v) Major landowners and developers

Several major landowners and developers active in the area objected to the Applications, including Mt Atkinson Holdings (which owns 700 hectares in the Mt Atkinson and Tarneit Plains PSP area), Stockland (which has delivered a number of new communities in Melton)

and Woodlea (which is delivering a 6,300 lot master planned community in the Rockbank PSP area). Key issues for major landowners and developers were:

- an expanded landfill of this size and scale is inconsistent with strategic planning for the West Growth Corridor and existing and proposed surrounding land uses
- impacts on the amenity, health and safety of nearby communities
- a mound method landfill is not best practice, and creates worse environmental, visual and health impacts
- buffers should be internal
- landfill is not the best end use once quarrying has finished
- the needs assessment is inadequate and lacks detail
- the capacity and life span for which approval is being sought is not justified
- traffic, and contributions from the Applicant to local road upgrades
- no social licence to operate
- the proposal stigmatises Melbourne's west as a 'dumping ground'
- the proposal is inconsistent with site's role as a waste and resource recovery hub
- inadequate consideration of waste-to-energy technologies.

(vi) Community groups and individual submitters

Community group objections included from Stop the Tip, Friends of Steele Creek, Terminate Tullamarine Toxic Dump Action Group and the Western Region Environment Centre. Submissions were received from many individuals, including 3,859 proforma submissions. Issues raised by community groups and individuals not raised by other submitters were:

- the location near existing and proposed residential and employment communities is inappropriate
- compliance issues with the existing facility
- environmental impacts, including groundwater and surface water, landfill gas, toxic leachates and diseased and dying birds
- lack of confidence in the air quality modelling
- local conditions (including strong winds and flat, treeless terrain) exacerbate airborne emissions and noise
- doubts about the effectiveness of engineering solutions (such as lining and capping, landfill gas collection systems) over the long term
- greenhouse gas implications
- social impacts, including:
 - the stress and strain on the local community of having to seek to ensure they and their environment are protected from harm
 - the stigma associated with the landfill on local communities
 - embarrassment at living in an area affected by odour
 - the inequity of expecting the community of western Melbourne to have to tolerate the world's largest landfill over a 50 year period
- poor community consultation and engagement
- lack of confidence that post-closure obligations will be implemented and enforced
- decrease in property values.

(vii) Others

ComfortID is a company operating in the renewable energy sector. The key issue for ComfortID (S96) was that the Applications do not represent best practice in waste-to-energy capture.

3.2 Issues dealt with in this report

The Panel has considered all objections and written submissions, as well as submissions presented to it during the Hearing. In addressing the issues raised in those submissions, the Panel has been assisted by the information provided to it as well as its observations from inspections of the site and the surrounding area.

This report deals with the issues as follows:

- Approval and policy context
- Issues analysis:
 - Needs assessment
 - Air amenity
 - Landfill gas migration
 - Water
 - Traffic
 - Landscape and visual issues
 - Other amenity impacts
 - Social impacts
 - Other issues (Greenhouse gas emissions, Aboriginal cultural heritage, Flora and fauna, and Vermin)
- Planning permit assessment.

The Panel's recommended planning permit conditions are included in Appendix D.

4 Approval and policy context

4.1 Approvals framework

Disposing of waste to landfill requires a permit under the Melton Planning Scheme.

Approvals are also required from the EPA, because landfills are scheduled premises under the EP Act. EPA approvals are required:

- to construct the landfill (this requires a works approval issued under s19A of the EP Act)
- to deposit waste in the landfill (this requires an EPA licence issued under s20 of the EP Act).

Further EPA approvals are required for each landfill cell, to:

- initiate the new cell design and have it approved
- commence constructing a new cell
- commence filling a cell (this is generally approved by an amendment to the EPA licence for the landfill).

(i) The relationship between a planning permit and EPA approvals

Planning permits and EPA approvals are issued under separate regulatory regimes. A planning permit is issued by the responsible authority under the planning scheme, whereas a works approval and an EPA licence are issued by the EPA under the EP Act. The permit application and the works approval application must each be considered in accordance with the relevant statutory requirements.

The relationship between a planning permit and an EPA licence was considered by Victorian Civil and Administrative Tribunal (VCAT) in *SITA Australia Pty Ltd and PWM (Lyndhurst) Pty Ltd v Greater Dandenong CC*.⁹ VCAT stated that it would be “...*wrong in law to say that an EPA licence takes precedence over a planning permit in the event of discrepancy between them. Each must be complied with*”.¹⁰ It is therefore important to ensure that the permit and the EPA approvals work effectively together, and that there are no inconsistencies in the conditions of the permit and the EPA approvals.

In the SITA decision, VCAT found that the EPA licence is the more appropriate approval for controlling the detailed technical aspects of a landfill. EPA licences are continually upgraded to reflect best practice improvements and changes in government policy. Planning permit conditions should avoid referring to technical operating requirements for a landfill, or specific details or plans that may change over time.

⁹ [2007] VCAT 156.

¹⁰ Paragraphs 47 and 50 of VCAT’s decision.

Both the planning permit and the works approval/licensing frameworks can:

- require the development of detailed implementation and monitoring plans for planning and environmental issues respectively¹¹
- provide the platform and criteria for enforcement action if conditions are breached.

As will be seen in subsequent chapters, this is a complex permit and works approval application which will require a high degree of planning and environmental regulatory oversight during implementation, operation and rehabilitation.

(ii) The approval process for individual landfill cells

EPA Publication 1323.3 *Landfill Licensing Guideline* September 2016 (the EPA Landfill Licensing Guideline) explains the process of obtaining the EPA approvals required to design, construct and fill each landfill cell. The process is illustrated in Figure 7, extracted from the EPA Landfill Licensing Guideline.

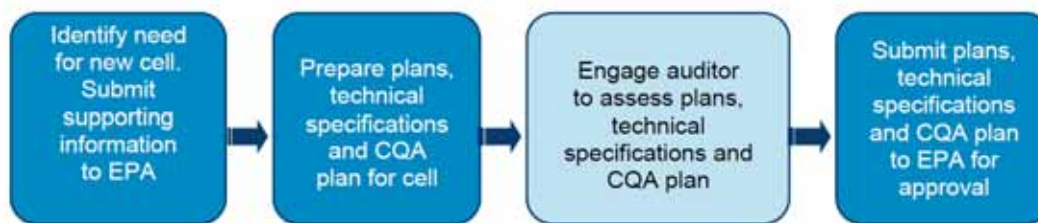


Figure 7 Process for obtaining cell by cell approvals¹²

New cells will not be approved unless existing cells have been progressively rehabilitated. The EPA also considers compliance and environmental performance history in relation to previous cells when considering whether to approve a new cell.¹³

The EPA Licensing Guideline outlines various ‘hold points’ at which the environmental auditor engaged to assess cell construction is required to inspect and verify the landfill construction works. Typical hold points are:

- construction of the subgrade
- clay liner
- geosynthetic clay liner
- geomembrane
- drainage layer and leachate collection pipes
- side walls of the cell
- leak detection survey.

4.2 Strategic planning context

The strategic planning framework is relevant for assessing the planning permit application. The relevant policies and planning scheme provisions are discussed below.

¹¹ For example a ‘Traffic Management Plan’ and ‘Environmental Management Plan’ in the planning permit or the ‘Landfill Gas Management Plan’ in the works approval.

¹² *Landfill Licensing Guideline*, EPA Publication 1323.3, September 2016, Figure 2.

¹³ There is no third party involvement in this process.

4.2.1 Policy framework

(i) Plan Melbourne

The site and surrounding areas are in a 'State significant industrial precinct – future' in *Plan Melbourne*. A strategic objective for State significant industrial precincts is:

To ensure there is sufficient strategically located land available for major industrial development linked to the principal freight network and transport gateways. They will be protected from inappropriate development to allow continual growth in freight, logistics and manufacturing investment.

Plan Melbourne outlines the government's approach to reducing the amount of waste being sent to landfill. It highlights that waste management and resource recovery facilities need secure, long term sites and secure, long term supplies of waste materials to remain commercially viable. It recognises the need for landfills to have good access between transfer stations, recovery facilities and markets for end products, and the need for landfills to be buffered from incompatible and sensitive land uses.¹⁴

(ii) West Growth Corridor Plan

The *West Growth Corridor Plan* identifies the site as a 'Quarry' and designates the future use of most of the surrounding land as 'Industrial'. The area affected by the Mt Atkinson and Tarneit Plains PSP, to the west of the site, is identified as 'Business with residential' and 'Industrial', with a Specialised Town Centre.

Chapter 3.7.5 of the *Growth Corridor Plans* (Planning for Landfills) refers to the need to protect approved and operational landfills from encroachment by sensitive uses, including by ensuring that buffer requirements are taken into account when planning PSPs. Chapter 4.7 of the *West Growth Corridor Plan* refers to the need for any development within 500 metres of the Deer Park landfill (that is, the MRL) to be subject to an environmental audit to ensure that any potential landfill gas migration is mitigated.

(iii) State Planning Policy Framework

The following clauses in the SPPF are relevant to the permit application:

- **Clause 13 Environmental Risks** states that planning should adopt a best practice approach to environmental and risk management, and aim to minimise environmental degradation and hazards. Of particular relevance are:
 - Clause 13.04-1 Noise Abatement seeks to ensure that community amenity is not reduced by noise emissions by using a range of building design, urban design and land use separation techniques as appropriate to the land use functions and character of the area.
 - Clause 13.04-2 Air Quality seeks to ensure, wherever possible, that there is suitable separation between land uses that reduce amenity and sensitive land uses.

¹⁴ Direction 5.8 of *Plan Melbourne*.

- **Clause 14 Natural Resource Management** states that planning should assist in the conservation and wise use of natural resources, to support both environmental quality and sustainable development. Of particular relevance is:
 - Clause 14.02-2 Water Quality, which includes a strategy to “Encourage the siting, design, operation and rehabilitation of landfills to reduce impact on groundwater and surface water.”
- **Clause 17 Economic Development** states that planning should provide for a strong and innovative economy by supporting and fostering economic growth, and building on a region’s strengths to achieve its economic potential. Of particular relevance is:
 - Clause 17.02-2 Design of industrial development, which seeks to provide adequate separation and buffer areas between sensitive uses and offensive or dangerous industries and quarries to ensure that residents are not affected by adverse environmental effects, nuisance or exposure to hazards.
- **Clause 19 Infrastructure** states that planning for development of infrastructure should enable it to be provided in a way that is efficient, equitable, accessible and timely, and that strategic planning should facilitate efficient use of existing infrastructure. Of particular relevance are:
 - Clause 19.03-5 Waste and resource recovery, which includes strategies to maximise resource recovery, ensure buffers for waste and resource recovery facilities are defined, protected and maintained, and to site and manage waste disposal and resource recovery facilities in accordance with the EPA’s *Waste Management Policy (Siting, Design and Management of Landfills)* (2004).
 - Clause 19.01 Renewable Energy, which seeks to promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.

Clause 10.04 Integrated decision making of the SPPF calls for an integrated and balanced approach to planning decision making which focuses on net community benefit. It states:

Society has various needs and expectations such as land for settlement, protection of the environment, economic well-being, various social needs, proper management of resources and infrastructure...

Planning authorities and responsible authorities should endeavour to integrate the range of policies relevant to the issues to be determined and balance conflicting objectives in favour of net community benefit and sustainable development for the benefit of present and future generations...

(iv) Local Planning Policy Framework

The following clauses in the LPPF are relevant to the permit application:

- **Clause 21.03 Planning Visions and Objectives for Melton.** Melton submitted that in support of the overarching vision, one of its key land use planning objectives is to create an environment conducive to economic growth and wealth generation.
- **Clause 22.02 A Sustainable Environment Policy** which seeks to protect and conserve the environmental resources and assets of the municipality for the benefit of current and future communities.

- **Clause 22.05 Employment Policy**, which seeks to create an environment conducive to economic growth and wealth generation. Melton submitted that this policy recognises that the expansion of local employment opportunities in the municipality is necessary to ensure the development of a viable and sustainable community in the long term.

4.2.2 Planning scheme provisions

(i) Zones

The site is zoned Special Use — Schedule 1 (SUZ1)¹⁵, which relates to 'Earth and Energy Resources Industry'. Much of the surrounding area was rezoned to Urban Growth Zone when the area was brought within the Urban Growth Boundary in 2010. Areas immediately abutting the site were retained in the Farming Zone in recognition that appropriate buffers are required for the quarry and landfill.

(ii) Overlays

Small portions of the site are affected by the Environmental Significance Overlay Schedules 2 and 5 (ESO2 and ESO5), and the Land Subject to Inundation Overlay (LSIO). No works are proposed on the area affected by the LSIO.

(iii) Particular provisions

Landfill is a listed use under C52.10 of the Melton Planning Scheme, which defines types of industries and warehouses which may cause offence or unacceptable risk to the neighbourhood if not appropriately designed and located. There is no threshold distance prescribed under C52.10 for a landfill. Note 1 applies, which requires the threshold distance to be assessed “...dependent on the processes to be used and the materials to be processed or stored”.

4.3 State waste policy

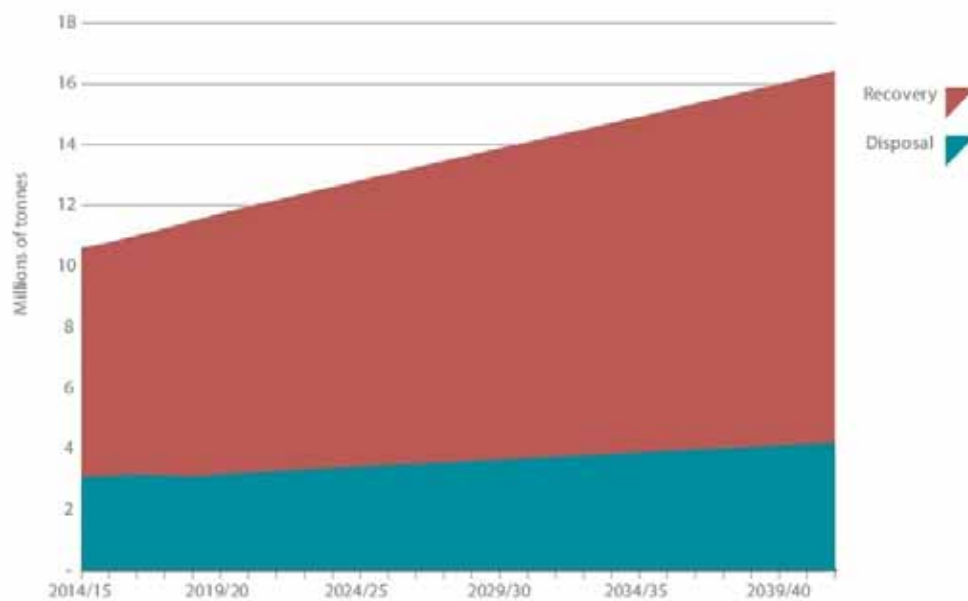
State waste policy is relevant for assessing both the planning permit application and the works approval application.

4.3.1 Overview of waste management in Melbourne

The metropolitan region currently generates roughly 10.5 million tonnes of waste per year, of which roughly 7.5 million tonnes is recovered. The remaining 3 million tonnes is sent to landfill. Annual waste generation rates are projected to grow with population growth. As shown in Figure 8, By 2041–42, projections are that Melbourne will be generating around 16.5 million tonnes of waste per year, roughly 3.8 million tonnes of which will need to be sent to landfill.¹⁶

¹⁵ A small portion of the site is zoned Urban Floodway Zone, but the proposed expansion does not apply to this area.

¹⁶ From MWRRIP 2016 page 78.



Metropolitan Waste and Resource Recovery Implementation Plan 2016

Figure 8 Future waste projections for the metropolitan region¹⁷

4.3.2 Waste policy framework

(i) The waste hierarchy

State waste policy is based on a waste management hierarchy, under which disposal to landfill is the 'last resort'. The waste hierarchy is one of the eleven environment protection principles contained in the EP Act and under the hierarchy disposal to landfill should only be considered when there are no financially and technically practicable higher-level waste management options. The waste hierarchy is recognised and embodied in the state government's high level waste policy *Getting Full Value: the Victorian Waste and Resource Recovery Policy* (2013).

¹⁷ From MWRRIP 2016, page 78.

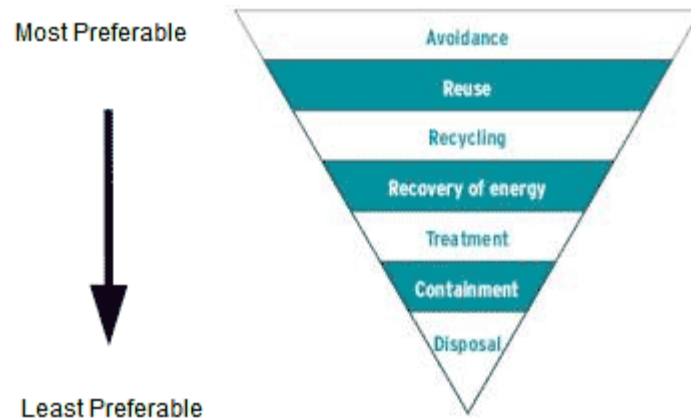


Figure 9 Victoria's waste management hierarchy

State waste policy recognises that while disposal to landfill is a last resort, some waste cannot be practicably removed from the waste stream, and that landfills are an important part of Victoria's waste management infrastructure.

(ii) The Victorian Waste and Resource Recovery Infrastructure Planning Framework

The EP Act establishes the Victorian Waste and Resource Recovery Infrastructure Planning Framework (the State Waste Framework). The objectives of the State Waste Framework include:

- ensuring long term strategic planning for waste and resource recovery infrastructure at state and regional levels
- enabling waste and resource recovery infrastructure planning to be effectively integrated with land use and development planning and policy.

The State Waste Framework is made up of:

- the Statewide Waste and Resource Recovery Infrastructure Plan 2015 (SWRRIP)
- seven Regional Waste and Resource Recovery Implementation Plans
- any guidelines or processes made under the EP Act for facilitating and implementing the SWRRIP and the regional plans.¹⁸

Under s50C of the EP Act, the EPA:

- can refuse to consider a works approval application (or a licence application) for a landfill or a cell if the operation of the facility could be inconsistent with the State Waste Framework
- cannot consider a works approval application for a new landfill unless the landfill is scheduled in the relevant regional implementation plan.

(iii) Statewide Waste and Resource Recovery Infrastructure Plan (2015)

The SWRRIP was prepared by Sustainability Victoria and approved by the Minister for Environment, Climate Change and Water in June 2015. The SWRRIP sets out Victoria's long term strategy for planning waste and resource recovery infrastructure that:

¹⁸ Section 50 of the EP Act

- effectively manages the expected mix and volumes of waste
- reflects the principles of environmental justice to ensure that impacts on the community, environment and public health are not disproportionately felt across communities
- supports a viable resource recovery industry
- reduces the amount of valuable materials going to landfill.

The SWRRIP sets out four goals, of which Goals 1 and 3 are the most relevant:

Goal 1: *Landfills will only be for receiving and treating waste streams from which all materials that can be viably recovered have been extracted.*

Goal 3: *Waste and resource recovery facilities including landfills are established and managed over their lifetime to provide best economic, community, environment and public health outcomes for local communities and the state and ensure their impacts are not disproportionately felt across communities.*

The SWRRIP adopts the concept of waste and resource recovery hubs and spokes. A ‘hub’ is a facility, or group of facilities, that manage recovery of waste or material streams. ‘Spokes’ are networks that move materials from generators to the hubs. There are three levels of hub: state, regional and local.

The MRL is a state significant hub identified in the SWRRIP. The criteria for a state significant hub includes (among other things)¹⁹:

- managing or processing significant proportions of one or more waste streams for the state
- it is an integral component of the supply or processing chain across multiple regions or the state
- if the functionality of the hub was compromised, it would put pressure on the viability of upstream or downstream industries
- it has access to generators, markets, ports or transport infrastructure
- it has capacity for future waste management and resource recovery activities.

With respect to existing hubs of state significance, the SWRRIP notes:

Any impact on the functionality of these sites is likely to affect the waste and resource recovery system at the state level, which needs to be recognised when making local and regional planning decisions.

(iv) Metropolitan Waste and Resource Recovery Implementation Plan (2016)

The seven Regional Waste and Resource Recovery Implementation Plans describe how the long term strategic directions in the SWRRIP will be implemented at the local and regional level, to ensure that the waste and resource recovery infrastructure needs of each region will be met over the next 10 to 30 years.

¹⁹ Refer to page 34 of the SWRRIP.

The Metropolitan Waste and Resource Recovery Group (MWRRG) is responsible for preparing and administering the regional plan for metropolitan Melbourne. The MWRRG released a public consultation draft of the *Metropolitan Waste and Resource Recovery Implementation Plan* in November 2015. The final plan was released in October 2016, during the course of the Hearings.

The focus of both the draft and final MWRRIP is strongly weighted towards increased recycling and resource recovery, recognising that landfills will continue to have a role for the foreseeable future. The final MWRRIP aims to have fewer landfills which are well located and managed in accordance with best practice.

Consistent with the SWRRIP, the final MWRRIP specifically highlights the entire Ravenhall site as a state significant waste and resource recovery hub, noting:

Description and current role

The Ravenhall precinct includes a putrescible and solid inert waste landfill currently in the south-east corner of the site and a quarry and C&D [construction and demolition] recovery operation. ... The landfill and C&D recovery operations are strategically important to Victoria – the landfill is the largest putrescible and solid inert waste landfill in the state and the C&D recovery operations reprocess significant tonnes of materials.

...

Challenges

Growth area precinct structure planning has commenced for land located to the west of the site as part of the Mt Atkinson and Tarneit PSP. This is expected to deliver a mixed residential, industrial, business precinct with an activity centre and new railway station for approximately 20,000 residents. Land to the south of the site is also subject to growth area planning for future industrial development. The impacts of buffer separation distances to sensitive uses proposed within the PSP are being managed through the identification of buffers and zoning.

There is significant community concern with the site's current operations, particularly odour, off-site litter, and frequent and heavy truck movements through local roads. There is also significant objection to the landfill operating beyond its current planning permit.

There is feedback that site operations have recently improved, however, a strengthened and sustained effort will continue to be needed to continue to minimise adverse amenity impacts on the local community.

Future considerations

The Ravenhall precinct has potential capacity to operate beyond 2046. The landfill gas produced on site is captured and used to power generators with the electricity being fed back into the local electricity grid. The site also has the potential to accommodate additional resource recovery operations over

the long term, in line with the strategic directions of the State Infrastructure Plan.

MWRRG wishes to see continued and sustained improvements in operations at the site to minimise amenity issues. MWRRG will continue to work with Cleanaway, Melton City Council and EPA Victoria to establish appropriate buffer zones from the landfill and reprocessing operations. MWRRG also supports the promotion of best practice operations at the site.

If this site does not continue its landfill operations in the medium term (beyond the current 7 to 10 years of approved airspace), Melbourne is at risk of having inadequate landfill capacity to manage waste for which there is no current resource recovery capacity in the network.

If the entire site is not appropriately acknowledged in current precinct structure planning processes, its long term role may be compromised with implications for the metropolitan waste and resource recovery system.

If subsequent planning permit/s are not issued, a new landfill hub of similar capacity will need to be scheduled by 2021, built and commissioned by 2026.

Table 11 of the final MWRRIP schedules the MRL to 2046 (reflecting the full 30 year horizon of state waste policy), with potential to operate beyond 2046. Table 11 notes that the facility only has approval to operate to 2026, and that the Applications are pending. Previously, the draft MWRRIP (which adopted a 10 year horizon) scheduled the site to 2026, with the potential to operate beyond 30 years.

(v) Metropolitan Waste and Resource Recovery Strategic Plan (2009)

The *Metropolitan Waste and Resource Recovery Strategic Plan 2009* (the 2009 Strategic Plan), while currently referenced in the State Planning Policy Framework at C19 (Infrastructure), was replaced by the final MWRRIP in October 2016. The MRL was scheduled in the 2009 Strategic Plan until 2018, with a capacity of 40 plus years and a likely closure date of post 2040.

(vi) Waste Management Policy (Siting, Design and Management of Landfills) (2004)

Under the EP Act, all putrescible landfills must comply with the *Waste Management Policy (Siting, Design and Management of Landfills)* (2004) (the 2004 Waste Management Policy). Clause 19.03-5 of the SPPF (Waste and resource recovery) requires planning to consider the 2004 Waste Management Policy.

The 2004 Waste Management Policy requires agencies making decisions in relation to existing and proposed landfills (including planning and responsible authorities) to pursue the objectives, and apply the principles and intent of the policy. These include:

- protecting the environment, including human health and amenity, from risks posed by landfills
- encouraging diversion of waste from landfill
- minimising the development and use of landfills

- the precautionary principle²⁰, and principles of intergenerational equity²¹ and shared responsibility
- providing the highest practicable level of protection for the community and environment, including local amenity and aesthetic enjoyment
- landfills be cooperatively and strategically planned to minimise their adverse impacts.

(vii) Best Practice Environmental Management — Siting, Design, Operation and Rehabilitation of Landfills

EPA Publication 788.3 *Best Practice Environmental Management Siting, Design, Operation and Rehabilitation of Landfills* August 2015 (the BPEM) is the key document for best practice environmental management measures for landfills. Clause 19.03-5 of the SPPF requires planning to consider the BPEM, and responsible authorities considering a planning permit application in relation to an existing or proposed landfill site must make decisions consistent with the BPEM.²²

Applicants for a works approval or an EPA licence must meet the objectives and outcomes of the BPEM. The EPA must not issue a works approval or licence that does not adopt the suggested measures in the BPEM unless the applicant can demonstrate that alternative measures provide at least an equivalent environmental outcome.²³

The BPEM expresses a preference for the area method of landfilling, where an existing hole such as a former quarry is filled. Litter and leachate are more easily managed in area method landfills than in mounded landfills. The BPEM states that mound landfills, where most of the landfill is located above the natural ground level, are to be avoided. Visual and litter impacts from a mounded landfill can be greater because of their exposed nature, leachate can seep from the side of the landfill, and the landfill cap can be less stable.

The BPEM requires a default buffer of 500 metres between landfills that accept putrescible waste, and any buildings and structures. The buffer is primarily required to manage landfill gas migration risks, but also manages amenity impacts such as odour and dust. The default buffer distance can be reduced, provided it can be demonstrated that the environment would be protected and amenity not adversely affected.

The BPEM advises that for planning permit applications for development within a landfill buffer, responsible authorities should require an environmental audit to be conducted under s53V of the EP Act that assesses the risk of harm to the proposed development.

²⁰ The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

²¹ The principle of intergenerational equity is that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

²² Clause 11(3) of the 2004 Waste Management Policy.

²³ Clause 15 of the 2004 Waste Management Policy.

4.4 The treatment of buffers in planning and waste policy

This section of the report discusses the issue of whether planning and waste policy supports internal or external buffers for the MRL. Specific buffer requirements are dealt with in Chapters 6 (odour) and 7 (landfill gas).

The policy and regulatory frameworks do not give definitive direction as to whether landfill buffers should be external or internal. Determining whether buffers should be internal or external requires a balancing of competing policy objectives.

Relying on the expert evidence of Mr Barlow, the Applicant submitted that in this case buffers could be external. It submitted that the policy balance overwhelmingly favours protecting the landfill over facilitating the development of surrounding industrial land. Landfills, particularly state significant landfills, are essential public infrastructure for which alternative sites are not readily available, whereas there is a plentiful supply of industrial land in metropolitan Melbourne.

Sustainability Victoria (S79) submitted that for some decades, strategic planning has recognised the importance of the MRL, due to its longevity and the need to ensure buffers around it are maintained (that is, not encroached by sensitive uses). While an external buffer will undoubtedly place a burden on the Mt Atkinson and Tarneit Plains PSP land, the burden is acceptable and reasonable in planning terms. Sustainability Victoria submitted that requiring internal buffers would increase the cost of waste disposal in the metropolitan region, and would set a bad precedent not just for the waste and resource recovery industry, but for all industries with off-site amenity impacts.

The MWRRG (S85) submitted that policy strongly supports external buffers to protect landfills from encroachment of incompatible uses, and to minimise harm on surrounding communities. Buffers should be clear, transparent, mapped in the planning scheme, and with clearly defined and delineated controls. If external buffers around the site are not acknowledged and protected, development (particularly within the Mt Atkinson and Tarneit Plains PSP) has the potential to adversely impact the viability of the site.

The EPA (S78) described itself as ‘agnostic’ on whether buffers should be internal or external. Although the BPEM may express a preference for internal buffers, it does not require internal buffers. The EPA noted that landfills often have buffers that are partially internal and partially external, and submitted that the key issue is to ensure that buffers are in place and are reliable, rather than whether they are internal or external.

Melton (S86) submitted that buffers should be internal, and urged the Panel to refuse the Applications, to allow the Applicant to seek approval for an alternative proposal that is consistent with an internal buffer. It submitted:

The Permit Application may be for significant infrastructure to serve metropolitan Melbourne, but it must not come at the unreasonable cost of impacts on land for settlement, including for other industrial uses, impacts on the environment, or health and amenity impacts on the nearby existing and future communities...

The VPA (S77) and Brimbank City Council (S59) submitted that internal buffers are consistent with the BPEM, the *West Growth Corridor Plan*, and C19.03-5 of the SPPF. The VPA

submitted that internal buffers are consistent with various other principles underpinning the PE Act, the EP Act and state waste policy, such as the principles of fair and orderly planning, the polluter pays principle and the 'agent of change' principle.

Mt Atkinson Holdings (S82) submitted that buffers should be internal. Relying on expert evidence from Mr Crowder and Mr Woodland, it submitted that an external landfill gas buffer would effectively stymie development of the affected part of the industrial land in the Mt Atkinson and Tarneit Plains PSP. This would in turn threaten the viability of the whole of the Mt Atkinson Holdings development²⁴, because it would:

- prevent services being brought into the PSP area from the south
- prevent the proposed staging of the development, which involves developing the industrial land with Hopkins Road frontage first.

Mt Atkinson Holdings submitted that external buffers would be unfair. Even if development were able to proceed in the landfill gas buffer (about which there is no certainty), it would involve extra costs and management responsibilities that are properly and fairly the responsibility of the landfill operator, not the PSP landowners. While internal buffers would involve some additional cost for the landfill operator, they would not prevent the landfill from fulfilling its role as a state significant waste and resource recovery hub, because the internal buffer could be used for other waste or resource recovery purposes (such as disposal of solid inert waste).

Mr Crowder's evidence was that internal buffers are preferable because they:

- provide greater certainty
- substantially reduce, if not eliminate, any doubts about the ability of the landfill operator to provide ongoing monitoring and mitigation of landfill gas migration
- eliminate the burden on adjoining land owners
- reduce or eliminate the burden on the responsible authority and the EPA to monitor landfill gas migration issues beyond the site boundary, and to apply and administer the additional controls that would be required to allow development in the landfill gas buffer.

4.5 Applying the policy to the Applications

4.5.1 The relationship between land use policy and waste policy

The SPPF is, to a degree, lagging behind the State Waste Framework. The Panel agrees with the Applicant's submission that the Panel should apply the current State Waste Framework, notwithstanding that elements of it are not currently reflected or referred to in the SPPF.

Melton (S86) urged the Panel not to place too much weight on the State Waste Framework when assessing the permit application, and to not lose sight of the applicable legislative requirements under the PE Act. It submitted that while the State Waste Framework is a

²⁴ The Mt Atkinson and Tarneit Plains PSP is part of a State significant industrial precinct identified in *Plan Melbourne*. The MRL is part of the same State significant industrial precinct.

matter that the responsible authority may consider²⁵, primacy must be given to the provisions of the Scheme and the requirements of the PE Act for assessing permit applications.

4.5.2 Buffers

Buffers enable the land use planning system to perform several key functions, including separating incompatible land uses, protecting essential infrastructure from encroachment by sensitive uses that may compromise its operation, and protecting surrounding areas from off-site amenity impacts of particular land uses. Landfills are essential infrastructure that can have significant off-site amenity impacts. In the Panel's view, planning schemes should clearly identify, map and protect buffers around landfills.

There is no proposal before the Panel which would allow it to recommend planning controls be introduced into the scheme to protect the buffers around the site (whether they are internal or external). This is a matter for other processes, including the Melton Planning Scheme Amendment C162 Panel process (insofar as an external buffer may be required to extend into the Mt Atkinson and Tarneit Plains PSP area). This Panel can make a finding on whether policy provides greater support for buffers around the site to be internal or external.

The Panel has weighed the impacts of internal and external buffers on the landfill and on surrounding land, and sought to determine which outcome is preferred in policy. In carrying out this balancing exercise, the Panel has considered net community benefit, in accordance with C10.04 of the SPPF.

The Panel finds that the state planning and waste frameworks support external buffers to the west of the site if required. In the Panel's view, policy prioritises the preservation of the full capacity of the landfill over the development of the affected portion of industrial land in the Mt Atkinson and Tarneit Plains PSP area. An external landfill gas buffer set at the BPEM recommended 500 metres would affect approximately 60 hectares of industrial land in the PSP, some 20 hectares of which is already subject to significant development constraints. The Panel does not consider that deferring or (at worst) preventing development in this area would be contrary to the broader community's interests, given there is a significant long term supply of industrial land in metropolitan Melbourne (including the PSP and the western industrial precinct). On the other hand, the Panel considers that it could be contrary to the community's interests to constrain the capacity of a state significant waste and resource recovery hub by requiring internal buffers entirely along its western boundary.

In response to Mt Atkinson Holdings' submission that an external landfill gas buffer would have serious consequences for the entire Mt Atkinson Holdings development, the Panel was not persuaded that an external landfill gas buffer would prevent the PSP land from being serviced from the south, or that the success or viability of the entire development is critically reliant on the industrial land along Hopkins Road being developed first.

²⁵ Section 60(1A)(g) of the PE Act states that the responsible authority may consider "any other strategic plan, policy statement, code or guideline which has been adopted by a Minister, government department, public authority or municipal government" when assessing a permit application.

Buffers to the south of the site are also complex. There is an existing high pressure gas pipeline along the southern side of Middle Road, approximately 100 metres from the southern edge of existing and proposed landfill cells. The Public Acquisition Overlay Schedule 3 (PAO3) for a future connection between the Outer Metropolitan Ring Road (OMR) and the Deer Park Bypass abuts the southern boundary of the Applications area. It is not clear when the land will be required or when the road will be built.

In addition to the PAO3, the land south of the site is designated in *Plan Melbourne* and the *West Growth Corridor Plan* as the state significant future Western Interstate Freight Terminal (WIFT). Mr Cohen (S67) submitted that the planning policy framework provides strong strategic support for the WIFT²⁶, justifying internal buffers along Middle Road to protect the future WIFT facility.

The Panel accepts that the WIFT has strong policy support in *Plan Melbourne*. Unlike the industrial land to the west of the site, the WIFT is one of only a few transport gateways identified in *Plan Melbourne*²⁷, and the only transport gateway identified for Melbourne's west. However, planning policy only identifies the WIFT in a high level indicative sense. Neither *Plan Melbourne* nor the *West Growth Corridor Plan* 'lock in' a specific site for the WIFT, or direct that the WIFT necessarily be developed within 500 metres of the southern boundary of the site (in the area that could be affected by an external landfill gas buffer). Nor does the policy framework indicate when the WIFT will be delivered.

The Panel does not consider that there is sufficient clarity around the siting or delivery of the WIFT to justify requiring an internal buffer that would constrain the capacity of the landfill. Submissions raised no concerns in relation to the proximity of the existing and proposed landfill cells to the high pressure gas pipeline, or the future OMR or Deer Park Bypass. The Panel therefore concludes that policy does not support internal buffers along the southern boundary of the site.

In Chapter 7 the Panel discusses in more detail landfill gas, and whether further buffers (beyond the proposed internal setbacks) are required along the southern and western boundaries of the site to manage landfill gas.

It is regrettable that the land use planning framework does not provide clearer guidance on buffers around landfills and waste and resource recovery hubs. The encroachment of sensitive uses into areas surrounding landfills has long been a significant planning issue, and it is unsatisfactory that it remains unresolved. It is disappointing that the planning framework has not been updated as a matter of priority to identify and protect buffers around waste and resource recovery hubs (particularly state significant hubs), and to bring the planning policy framework into line with the recently adopted State Waste Framework.

²⁶ Refer to Initiative 3.6.2 of *Plan Melbourne* in particular.

²⁷ Maps 3, 4, 8, 12 and 23 in *Plan Melbourne* identify the WIFT and other transport gateways across metropolitan Melbourne.

4.5.3 Achieving policy objectives of increased recycling and resource recovery

Many submitters²⁸ argued that granting approval for the landfill expansion would undermine state waste policy objectives of encouraging higher rates of recycling and resource recovery, given that landfill is (currently at least) the cheaper option. This issue was also raised in the proforma submission.

According to the submissions of Sustainability Victoria (S79) and the MWRRG (S63), and the evidence of Mr Kortegast (for the Applicant), recycling and recovery rates are influenced by many factors other than the availability of cheap, long term landfill capacity. Factors required to substantially increase recycling and recovery rates in metropolitan Melbourne include:

- availability of additional recycling and resource recovery facilities
- mature markets for recycled and recovered materials
- a strong level of commitment from the local government sector
- other policy settings and levers, such as increased landfill levies.

The Panel notes that both Sustainability Victoria and the MWRRG have a number of initiatives that are planned or under way to ensure these objectives can be achieved²⁹.

In response to questions from the Panel, Sustainability Victoria and the MWRRG indicated that approving the Applications would not undermine efforts to increase recycling and resource recovery rates, although Sustainability Victoria conceded that there is a 'tipping point' at which scheduling too much excess landfill capacity could potentially impact on the achievement of those objectives. The Panel accepts this proposition.

4.5.4 The role of a waste and resource recovery hub

Melton (S86) and Mt Atkinson Holdings (S82) contested the notion that the site's designation as a state significant hub in the State Waste Framework provides policy support for the extension of a putrescible landfill of such a significant scale on the site. They submitted that hubs have a multifunctional role, including accommodating recycling and resource recovery facilities and solid inert landfill.

The Panel accepts that the designation of the site as a state significant hub does not, in itself, provide policy support for the use of the whole site as a putrescible landfill. However, the Panel does not consider that it would compromise the site's role as a hub to approve the Applications. Complementary waste and resource recovery facilities could be

²⁸ Refer to the submissions of Brimbank (Document 34), the Western Region Environment Centre (S89), Friends of Steele Creek and Tullamarine Toxic Dump Action Group (S90), Stop the Tip (S85) and many individuals.

²⁹ For example, Sustainability Victoria released the *Victorian Market Development Strategy for Recovered Resources* in May 2016, and the *Victorian Organics Resource Recovery Strategy* in September 2015. The MWRRG has (among other initiatives) set goals of recovering 25 per cent of municipal waste and priority materials by 2026, and has scheduled existing and new resource recovery infrastructure required to meet longer term recycling and recovery targets (refer to Tables 8 and 9 of the MWRRIP).

accommodated on other parts of the site, on neighbouring industrial zoned land³⁰ or at another upstream location.

4.5.5 Disproportionate impacts on communities

One of the goals of the SWRRIP is to ensure that the impacts of waste and resource recovery facilities, including landfills, are not disproportionately felt across communities. Many community-based submitters argued that approving a landfill that accepts waste from across the metropolitan region would be inconsistent with this goal, as it places the burden of Melbourne's waste disposal squarely on the community surrounding the landfill.

The Panel asked Sustainability Victoria to clarify how the goal should be interpreted in the context of a policy that encourages centralised landfills, the bulk of which are in Melbourne's northern and western suburbs. Sustainability Victoria submitted that the policy of centralised landfills has several broader community benefits, including helping to achieve a cost effective waste system for all Victorians by fully utilising existing infrastructure, and minimising the need to establish new landfills. Sustainability Victoria submitted that the SWRRIP's goal is achieved by ensuring landfills operate at best practice standards, so that environmental and amenity impacts on the surrounding communities are managed to an acceptable level.

The Panel has found this aspect of its deliberations difficult. There is no doubt that the existing landfill is having a significant impact on the surrounding community, particularly the southern parts of Caroline Springs. Given the landfill accepts waste from across the metropolitan region, it is difficult to see how the effects on the local community are not 'disproportionate'. Based on the language used, the community's interpretation of goal 3 is compelling.

Having said that, the Panel accepts Sustainability Victoria's interpretation of goal 3, that disproportionate effects on communities are to be avoided through best practice management of landfills. If the community's interpretation of goal 3 were adopted, it is difficult to see how the other goals of the SWRRIP (such as encouraging larger and more efficient landfills, and avoiding the proliferation of new landfills) could be achieved.

4.5.6 Area method versus mounded landfill

There was considerable debate as to whether the proposed landfill extension is an area method landfill, or a mounded landfill. Mr Green gave evidence for the Applicant that in his opinion, the proposal was an area method landfill as it will fill an existing quarry hole. In cross examination, Mt Atkinson Holdings put to Mr Green that this position was unsustainable, and that given roughly two-thirds of the landfill was proposed to be above ground it should properly be described as a mounded landfill.

In response to questions from the Panel, the EPA said that the proposal could be described as either an area method landfill or a mounded landfill. The EPA said that the method of landfilling is not material to its assessment of a works approval application. Rather, what is

³⁰ Sustainability Victoria explained in the Hearings that the concept of a hub is not limited to site boundaries.

material is whether the landfill can meet the best practice performance requirements of the BPEM. The Panel accepts this position.

4.6 Conclusions

The Panel concludes that:

- The Panel should apply the most recent state waste policy and guidance documents notwithstanding that they may not be reflected or referred to in the current land use planning framework.
- The State Waste Framework is a relevant matter for the Panel to consider, but it should not be given undue weight.
- The greater Boral site including the MRL is a significant site in the State Waste Framework, and has a significant role to play in metropolitan Melbourne's waste and resource recovery over at least the next 30 years.
- Policy supports the protection of the full capacity of the MRL, including by providing external buffers around the site if required.
- The site's designation as a state significant waste and resource recovery hub does not, of itself, provide determinative policy support for the Applications.
- Approving the Applications would not necessarily undermine the site's role as a waste and resource recovery hub, or the achievement of increased rates of recycling and resource recovery.
- Provided best practice is adopted, approving the Applications would not necessarily result in the surrounding community bearing a disproportionate impact (in the sense this term is used in goal 3 of the SWRRIP).
- Whether the proposed extension is an area method landfill or a mounded landfill is not critical to the Panel's assessment of the Applications – rather, the question the Panel (and the EPA) must address in considering the Applications is whether the proposed design, operation and rehabilitation of the landfill meets best practice.

5 Needs assessment

5.1 The issues

The issues are:

- Whether the future airspace capacity being sought is appropriate when considered against policy and landfill needs.
- Whether it is appropriate to issue a planning permit for the length of time being sought.

5.2 Evidence and submissions

(i) Airspace capacity

The Applicant relied on the expert evidence of Mr Kortegast and Mr Barlow in submitting that there is a clear and demonstrable need for the MRL expansion to accommodate 30 to 44 years of airspace for putrescible waste from around 2025 when the current approved cells are projected to be filled. The Applicant submitted that both the SWRRIP and the MWRRIP rely on the landfill providing this amount of airspace capacity, and that it was not open to the Panel to look behind the SWRRIP and the MWRRIP and substitute its own assessment of the regional need for the landfill.³¹

Mr Kortegast's evidence referred to the forecast closure of a number of landfills currently servicing Melbourne's south-east, and the lack of suitable locations for new landfills in the south-east. He said that this will inevitably result in a significant increase in waste volumes needing to be diverted to the MRL (as well as to the Werribee and Wollert landfills). He said that there is much uncertainty around how effective policies encouraging higher resource recovery rates will be, and around the accuracy of future need and capacity projections. In these circumstances it pays to be somewhat conservative.

Mr Barlow said Melbourne's rapid population growth is the biggest driver for the need to plan future landfill airspace. If the airspace is not needed due to greater resource recovery, then that excess capacity can be released for another use. His evidence was that in the meantime, the city must plan for the need for that capacity into the longer term.

The waste agencies and industry bodies³² submitted that the MRL is a critical component of the state's waste infrastructure, and it is critical that it continues to operate into the future. They submitted that the challenge of managing the projected increases in the metropolitan region's waste are exacerbated by the imminent closure of landfills in the south-east, and that the MWRRIP responds to these challenges through scheduling the MRL to 2046. The MWRRG submitted:

The [MWRRIP] identifies that if any of these five landfills – including MRL Ravenhall – do not operate in accordance with the landfill schedule sequence

³¹ The Applicant cited the Victorian Supreme Court decision in *Barro Group Pty Ltd v Brimbank City Council* [2012] VSC 154 in support of this submission.

³² Sustainability Victoria (S79), the MWRRG (S63) and the Victorian Waste Management Association (S92).

*table, the metropolitan Melbourne region will **not** have sufficient landfill capacity...*

MWRRG brings to the attention of the Panel that it is difficult to quickly replace lost landfill capacity in the network – the planning and commissioning period of landfills is complex and would be expected to take 5 to 7 years.

Many submissions took the contrary view, submitting that the amount of future airspace capacity in the Applications is excessive and unjustified. Mt Atkinson Holdings (S82) submitted that:

No justification has been given for a landfill which achieves more than site rehabilitation. The 'landfill airspace' sought by Cleanaway is simply a commercial imperative rather than a genuine response to site conditions or community need.

Stockland (S73) made submissions to the same effect, submitting that the Applications put too much emphasis on having additional “*just in case*” capacity.

Mt Atkinson Holdings relied on expert evidence from Mr Woodland that there is no need for the capacity being sought. He said that the MWRRIP demonstrates that Melbourne will still have substantial excess capacity in 2046, even if the Applications were refused. He noted that the forecasts in the MWRRIP are based on a conservative assumption that recycling and resource recovery rates remain at approximately 70 per cent. If increased recycling and resource recovery is achieved, he submitted, there will be even more excess capacity in the system at 2046.

(ii) Proposed lifespan

Relying on the evidence of Mr Kortegast, Mr Barlow and Mr Green, the Applicant submitted that the MRL expansion requires extensive long term planning and long term certainty to ensure capital and commercial commitments can be secured. It submitted that a long approval provides certainty for the local community, rather than a constant cycle of seeking new approvals.

Mr Kortegast’s evidence was that a planning horizon of 30 years or more for this size of landfill was not uncommon. He said that landfill planning requires a long lead time to obtain approvals, including the multi-stage approval process for each cell, and to accommodate the differing priorities of the quarrying and landfill operations. A long approval period also provides certainty to the landfill operator, to underpin the commercial viability of the landfill and to provide reasonable ‘whole of life’ economics (including rehabilitation and aftercare costs).

Mr Barlow also supported a long approval period:

...it is considered that the likely duration of the planning permit for a period of approximately 44 years is appropriate for the following reasons:

- *Gives effect to the state’s longer term strategic waste planning framework that now plans for a horizon of 30 years and which nominates a key role for the subject site.*

- *It will allow the broader and longer term planning for the area to be undertaken with greater certainty, similar to the understanding that surrounds the long term use of the subject site as a quarry under its associated planning permit.*
- *It will provide longer term certainty to the landfill operator about its land use planning future. I find this to be particularly important considering the significant investment required in a facility of this nature.*
- *Details of the day-to-day management of the landfill will evolve under the control of the EPA and in response to BPEM – yet the planning permit will establish strategic surety that is needed for a use of this nature.*

Melton (S86) submitted that if the Panel was minded to recommend approval of the Applications, it is “*imperative*” that the approvals be limited to considerably shorter timeframes. It submitted that there is simply no justification for approving the landfill beyond the 30 year outlook of the SWRRIP, which the Panel should assume represents the appropriate balance between providing certainty to government and industry, and allowing for future changes to waste management. It submitted:

... the EP Act has set up the framework to ensure Victoria has a strategic plan with a 30 year outlook and an implementation plan specifying how waste and resource recovery needs will be met with a minimum 10 year outlook.

These timeframes – at least 10 years, but less than 30 years – would appear to provide appropriate parameters to guide the duration of approvals for landfilling (provided, of course, that a proposal is otherwise supportable).

The fact the Applicant may have prepared its proposal on the basis of a longer timeframe that disregards State government policy for waste management cannot be justification for recommending approvals with a longer duration.

Melton submitted that limiting the landfill permit to 2046 may create practical difficulties. The landfill might be designed completely differently (lower, or with a smaller footprint or larger internal setbacks) if it were designed to operate to 2046 rather than 2070. On the current design, if landfilling was limited to 2046, the northern section of the landfill (north of Riding Boundary Road) would end up half built. Melton submitted that a preferable approach would be for rolling 10 year approvals (which would be more consistent with the timeframes the EP Act requires the MWRRIP to address).

Brimbank (S9) raised similar issues to Melton in its original submission, but at the Hearing it revised its position in light of the final MWRRIP, submitting³³ that the final MWRRIP “*has unequivocally answered the role of Metropolitan Regional Landfill Expansion on meeting the ‘future need’ now extending to the long term – 2046*”. Brimbank submitted that the permit, if granted, should include a condition limiting the permission to 2046.

Mr Woodland’s evidence for Mt Atkinson Holdings was that there is no need to plan beyond the 30 year horizon of the SWRRIP (2046). He described the waste and resource recovery

³³ Document 34

sector as “a rapidly changing space”, and he saw no policy or legal basis for approving the landfill beyond 30 years.

WREC (S89) submitted that 50 years is too long a planning horizon. It said that the waste industry is in transition, with bi-partisan state waste management policy recognising landfill as a last resort solution. New technologies are emerging, and it is inevitable that there will be changes in the use and structure of landfills, as well as improvements in landfill siting, design, management and post-closure requirements. Shorter approvals would also be more consistent with principles of environmental justice and fairness, which are embodied in the State Waste Framework.

Many individual submitters objected to the proposed lifespan of the landfill. Submissions pointed to the fact that the residents of the area have already put up with the state’s largest landfill for many years, and another 50 years of landfilling is too long, and too unfair a burden to place on the area’s existing (and future) residents. Mr Grant Wilson (S83) summed up the problems associated with a 50 year approval as follows:

It is therefore not appropriate to extend the life of the Melbourne Regional Landfill without considering the outcome of the alternatives that are under development in the next few years, as these may be able to do a better job at achieving the Victorian government policy objectives – that is, reducing the impact on the community, the environment and public health of surrounding land users.

5.3 Discussion

The current landfill has 7 to 10 years capacity remaining. The Applications provide for another 30 to 44 years of capacity. If approved, the landfill would have sufficient capacity to continue operating for another 37 to 54 years.

The Panel accepts the Applicant’s submission that the need for the facility is established until at least 2046, by virtue of it being scheduled until then in the MWRRIP. It is the role of the MWRRG to plan for long term waste and resource recovery needs for the metropolitan region over a 10 to 30 year horizon, and it would be inappropriate for the Panel to substitute its own judgement in relation to long term capacity needs.

The Panel questioned the MWRRG regarding the scheduling implications if the Applications were refused. The MWRRG indicated that while sufficient capacity would be available elsewhere in the system for the short term, it would need to commence the process of revising the landfill schedule immediately, with the aim of identifying replacement capacity by 2021, and commissioning it by 2026. This reinforces the Panel’s finding that the MWRRIP establishes a long term need for the facility, at least until 2046.

There is logic in submissions that called for the planning permit to be limited to 2046. This coincides with the scheduling of the facility under the MWRRIP, the 30 year horizon of the SWRRIP and the EP Act (s50AA). While the MWRRIP demonstrates a need for the facility to 2046, it does not demonstrate any need for the facility beyond 2046.

The Panel asked the MWRRG and Sustainability Victoria for their views on granting approval for the landfill to operate beyond the 30 year horizon of the SWRRIP and the MWRRIP. The MWRRG pointed out that the Wollert and Werribee landfills have no expiry dates on their

planning permission, and can simply keep filling until they reach capacity. Sustainability Victoria submitted that demand for landfills will not simply cease at 2046, but conceded that there is some logic to the 30 year period. Neither agency expressed strong views on whether the permit should extend beyond 2046.

The Panel finds that there is insufficient policy justification for approving the landfill to operate beyond the 30 year outlook of the SWRRIP and the MWRRIP. Nor does the policy framework establish a need for the facility beyond 2046, the date to which the facility is scheduled in the MWRRIP. The Panel concludes that the approvals for the landfill should not extend beyond 2046.

Approving the landfill expansion until 2046 but not beyond will allow planning and waste management authorities time to consider the appropriateness of the location of the landfill, without compromising the ability of the waste management network to cater for metropolitan Melbourne's medium to longer term landfill needs. The Panel queries whether the site is the most appropriate location for a large state significant landfill in the longer term, given it is approximately 1.5 kilometres from three prison facilities, 3.5 kilometres from established residential areas, 1 kilometre from future residential areas, and in a precinct that is earmarked for significant future growth and development.

The Panel does not consider that incremental, shorter term approvals are necessary to ensure that improved standards and environmental best practice can be built into the approvals. The Panel accepts the evidence of Mr Kortegast and the submissions of the EPA that the ongoing cell by cell approval process provided for in the EPA Landfill Licensing Guideline effectively allows for continuous improvement to be built into licence conditions.

The Panel does not consider that limiting the permit to 2046 will cause insurmountable practical difficulties, as Melton submitted. The design of the cells north of Riding Boundary Road will need to be reconsidered in light of the permit expiring in 2046, but the Panel is confident that this can be dealt with as a secondary consent matter closer to the time when the relevant cells are required to be brought online.

The Panel has not attempted to link the time limit in the recommended permit to a cell or location number; for example 'south of Riding Boundary Road'. The key issue driving the Panel's consideration is the changing policy and technology environment, which is a time rather than space issue. As discussed in Chapter 4, the Panel considers the long term future of the broader site as a state significant hub, should still be protected through changes to the planning scheme, including buffers.

5.4 Conclusions

The Panel concludes:

- The MWRRIP demonstrates that there is a need for the MRL expansion to operate to 2046.
- The planning permit for the MRL expansion should not extend beyond 2046.

5.5 Recommendation

The Panel recommends:

The permit include a condition that the permit expires in 2046.

The recommended permit conditions are included in Appendix D.

6 Air amenity

6.1 Odour

6.1.1 The issue

The degradation of putrescible waste produces gases which can be highly odorous. If the landfill is not properly managed these odorous gases can impact on the local community.

6.1.2 Evidence and submissions

(i) Community objections

Odour is the issue of most concern to the local community as many submitters had been adversely affected by odour attributed to the current landfill.

The Panel received 85 individual objections to the planning permit application, a proforma objection signed by 3,859 people and objections from community groups, Stop the Tip, Friends of Steele Creek and the Western Region Environment Centre. While the majority of these submitters came from Caroline Springs there were submissions on odour from surrounding suburbs including Burnside, Plumpton, Rockbank, Cairnlea, Sunshine West, Ravenhall and Truganina.

The EPA received a similar number of objections and its analysis of submissions found that 63.1 per cent of the individual submissions mentioned odour.

At the Hearing 22 local residents described the odour problems they had experienced. They described the odour as being so strong at times that they, some of whom lived up to 6 to 8 kilometres from the site, were embarrassed to ask friends and family to visit, at times could not stay outdoors, use air conditioners, had to close all their windows, bring damp clothes from the washing line and had, on occasions, left the area to escape the smell. Children, the Panel was told, had stopped playing outside and outdoor sports training sessions had been stopped because of the smell. The odours had impacted on submitters' health through stress, anxiety and, in some cases, strained relationships.

The Panel heard many graphic descriptions of the odour. Ms Sloman, who lives about 4 kilometres from the landfill site said:

The odour is vile. Simply put it is like having my head in my rubbish bin.³⁴

Another, submitter, Mr Mullan, put it thus:

Around October 2012 I first noticed a prominent odour in the air. At first I thought it may be neighbours bin being left out with rotting food, but the smell seemed to be all around and could not escape from it.

³⁴ Document 69.

I noticed the odour started becoming a lot more potent as the nights progressed so I checked the wind direction, mainly South, and while looking at google earth the only structure of any kind was the Boral Quarries.³⁵

To determine the source several residents followed the odour from the homes and submitted that the MRL was the source.

Some submitters, the Panel heard, after living with the odour for years, had moved from the area and as Ms Milhem said “*it is great to have fresh air*”.

There was a general call from the community to reject the planning permit application and for the EPA to do its job and ensure that the current permit and licence conditions are enforced.

The Panel made a number of inspections of the site’s surrounds before and during the Hearing and apart from some minor odours at the site boundary there were no discernible odours off site. However, post Hearing, one of the Panel members recorded very strong landfill odours on the corner of Middle Road and Christies Road under very hot and humid conditions with gusty north to north-west winds. The odours were also clearly apparent, if intermittent, in the industrial area along Sunline Drive approximately 1.25 kilometres to the south-east.

The social impacts of odour are discussed in detail in Chapter 12.

(ii) Environment Protection Authority

The EPA has examined the spatial distribution of odour complaints around the current MRL and found that they are often received more than 1 kilometre from the site. The spatial spread of complaints was primarily across the developed residential areas to the east and north of the site.

The EPA conducted three odour surveillance operations: in February to March 2014, in February to April 2015, and January 2016. The EPA submitted that it conducted 760 odour checks when weather conditions were likely to direct the landfill’s odour towards residential areas.

In July 2015 and February 2016 the EPA ran a rapid response program with trained EPA officers stationed at Caroline Springs from 7 am to 10 pm ready to investigate any odour complaints. During the 2016 program 17 odour complaints were received and investigated.

The EPA’s summary of the strong odours found during its three odour surveillance operations was that:

- Of the seven strong odours detected in 2014, three were attributed to MRL and four to composting.
- Of the 14 strong odours detected in 2015, two could be attributed to MRL. The others were attributed to asphalt and composting.

³⁵ Document 65.

- Of the 10 strong odours detected in 2016, one was attributed to MRL. The others were attributed to a range of non-industrial sources such as a sewer leak, manure and woodchips.

The EPA said in response to community complaints it had investigated, there were two instances where odour was detected beyond the MRL boundary. Two Pollution Abatement Notices were issued, one for daily cover and the other for landfill gas management.

Looking to the future the EPA said:

The pollution reports are not concentrated to any one particular location. Rather, they are spread within the existing residential areas. Therefore, there is a risk that without appropriate design and operational controls, any extension to the landfill could lead to additional amenity impacts for existing communities (that is, Caroline Springs, Deer Park) and any future new sensitive uses (that is, at Mt Atkinson if developed).³⁶

Stop the Tip and many other submitters were highly critical of the EPA's response to the odour problems experienced at Caroline Springs, Deer Park and Derrimut. It said that the EPA's surveillance results were only the tip of the iceberg as odours were regularly experienced in the evening and during the night which was, in the main, outside the times the EPA conducted its surveillance operations. Stop the Tip went on to emphasise that the results indicate that 10 per cent of the checks conducted in Caroline Springs detected odour and these were up to 2.5 to 3 kilometres from the MRL.

Stop the Tip submitted that the EPA's odour surveillance data from 2014 to 2016:

...clearly shows that both strong and weak landfill odour, was detected by EPA officers, at the residential fringe at Caroline Springs, Deer Park and Derrimut, from time to time, during the surveillance periods. According to the modelling relied upon by the Applicant in the Hearing, landfill odours should not have been detectable at the above residential fringes. Having regard to these observations and the other evidence of residents and Corrections Victoria outlined below, it is our submission, that the odour modelling evidence upon which the entire expansion proposal is based, is demonstrably unreliable and must be rejected.³⁷

Stop the Tip called for the EPA to repeat its surveillance work:

...at peak stability times (between 8 pm and 6 am) and during the peak odour generation season (summer) and that the results of this surveillance be considered before any decision (other than a refusal) is made by EPA in respect of the works approval application.³⁸

³⁶ Document 3, paragraph 76.

³⁷ Document 75, section 5.2.

³⁸ Document 75.

(iii) Corrections Victoria

Odour was a significant ground for objection from Corrections Victoria.³⁹ The facilities are described in detail in Chapter 2.5.3. All three facilities are east or north-east of the MRL at a distance of approximately 1.5 kilometres from the current landfill operations. As the facilities provide residential accommodation these are some of the closest sensitive uses.

In its submission Corrections Victoria said that both the Melbourne Remand Centre and the Dame Phyllis Frost Centre experience offensive odours on an estimated 40 to 60 days per year and 20 days per year respectively. It advised prison staff had not (until recently) complained about the odour as they did not know they could, or they did not know who to complain to.

In her witness statement Ms Westin, General Manager of the Metropolitan Remand Centre and previously the Business Manager of the Dame Phyllis Frost Centre, said that from an amenity perspective odour is the most serious issue for the staff, prisoners and contractors at the facilities. She is concerned that, if the permit is granted, the odour impacts will remain or get worse. She also commented that the Applicant's response to complaints was slow and unresponsive.

When questioned, Ms Westin said the odour incidents had not lessened since the Pinegro composting facility on the site had ceased operating.

Mr Green (for the Applicant) responded to Correction Victoria's concerns by saying that the Corrections Victoria facilities are a minimum 2 kilometres away from the extension; and as the landfill moves away the separation distance will increase.

(iv) City of Melton

Melton said the odours experienced by the residents "*are firmly grounded in real, lived experiences*"⁴⁰, not mere perception or fear of change.

It further submitted:

While Council considers the submissions of the community compelling on many points, it considers the observations with respect to odour to be particularly pertinent since odour is not able to be simply and objectively measured (as, for instance, noise can be).

Council's concerns would not be alleviated by requiring a reduction in the tipping face and that in the interests of the local community Council does not approve the application to expand the landfill.

³⁹ Submission 72.

⁴⁰ Document 90, paragraph 8.

6.1.3 The policy and legislative framework for odour

(i) Planning and policy guidance

The SPPF does not specifically address odour, however, C13.04-2 (Air Quality) includes the following objective:

To assist the protection and improvement of air quality.

The clause requires that the State Environment Protection Policy (Air Quality Management) (SEPP (AQM)) must be considered.

SEPP (AQM) is a subsidiary instrument of the EP Act and includes human health and local amenity among the beneficial uses that the policy aims to protect. The SEPP (AQM) requires generators of air emissions to manage their emissions in accordance with the policy and through the application of best practice management.

For odorous emissions of mixed composition that have the potential for adverse amenity impacts, as is the case with putrescible waste, there is a SEPP (AQM) design criteria of 1 odour unit (OU) per three minute average at the site boundary.⁴¹ The SEPP (AQM) also specifies that a generator of odorous emissions may need to demonstrate that local amenity will not be adversely affected by offensive odours through a risk assessment.⁴²

Other relevant policies include the 2004 Waste Management Policy and the BPEM. These policies are outlined in Chapter 4.3.2. The BPEM is the key guidance document and has as one of its key objectives:

To ensure that air quality objectives are met, and that there is no loss of amenity from odour or dust.

The EPA's Landfill Licensing Guidelines⁴³ further stress that odours are not to be released beyond the boundary and says that the EPA may include licence conditions to regulate odour to ensure the local community is not adversely affected.

(ii) Amenity buffers

The Panel outlines in some detail the policy approach to landfill buffers in Chapter 4. Landfill gas buffers are discussed in more detail in Chapter 7. Essentially the BPEM recommends a 500 metre odour buffer between a landfill receiving putrescible waste and sensitive uses⁴⁴. The EPA submitted that the 500 metre buffer applies to mounded or ground level landfills.

The EPA submitted that determining an appropriate buffer distance is not an exact science:

Multiple factors contribute to the extent of off-site odour impacts, in particular, the type and quantities of waste accepted, active cell management, filling profile, size of cells, use and proper management of gas extraction

⁴¹ SEPP (AQM) Schedule A.

⁴² SEPP (AQM) Schedule C, Part C, Clause 2.

⁴³ *Landfill Licensing Guidelines*, EPA publication 1323.3, September 2016.

⁴⁴ Including correctional facilities.

*systems, leachate management, topography, meteorology, number of truck movements per day, all make setting a single separation distance problematic.*⁴⁵

For the MRL expansion, the EPA’s recommended buffer distances are shown in Table 4.⁴⁶

Table 4 EPA recommended buffer distances for the MRL

Area	Odour and amenity buffer recommendations
Residential zones in Caroline Springs, Deer Park, Derrimut, etc	Minimum 1,500 metres between sensitive uses and any proposed landfill cell.
Proposed Mt Atkinson and Tarneit Plains PSP	Minimum 1,000 metres between sensitive uses and any proposed landfill cell.
Closed and rehabilitated landfill	500 metres.

The EPA made these recommendations based on, at least in part:

- its odour surveillance work, which it submitted supports a larger buffer given the distance at which complaints were received
- prevailing winds which are from the south, south-west and west could transport odour towards Caroline Springs, Deer Park and Derrimut. For winds blowing towards the Mt Atkinson and Tarneit Plains PSP area, only about 10 per cent of the winds come from the south-east and 8 per cent from the north-east.

The EPA also noted that there are some buildings in close proximity to the site that are potentially being used as residences.⁴⁷ The Applicant responded that there are no sensitive uses within 500 metres of any of the proposed landfill cells, and no established residential areas within 1 kilometre including the PSP land.⁴⁸

In its final comment on appropriate odour buffers the EPA said that:

*Furthermore, we would note that construction of Cell 1 is not due to occur until 2025, that is, 9 years hence with the potential for future amendments in licensing such that it would be premature to attempt to forecast and set licence conditions and expectations at this time.*⁴⁹

The Applicant, based on the air quality assessments of Pacific Environment Limited (PEL) and Mr Aleks Todoroski, suggested that a buffer between landfilling and residential and other sensitive uses of 1 kilometre would be acceptable to minimise impacts during upset conditions or abnormal weather conditions.⁵⁰

⁴⁵ Document 3, paragraph 81.

⁴⁶ Extract from Presentation by Mr Eaton, EPA.

⁴⁷ EPA submission paragraph 104.

⁴⁸ Document 88, LOP closing, paragraph 34.

⁴⁹ Document 3, EPA submission paragraph 134.

⁵⁰ Landfill Operations Ltd opening submission paragraph 95.

Mr Todoroski in evidence for the Applicant preferred a 1 kilometre buffer based on the modelling results, with a qualification. He stated that AERMOD is not very accurate when modelling odour impacts from large odour sources, such as landfills that emit fugitive odours near ground level. He stated that AERMOD does not accumulate emissions on the one hand while on another it tends to projects emissions further than they can go. For these reasons he said that the contours predicted by AERMOD (and hence the size and shape of the buffers) need to be viewed with caution and professional judgement.⁵¹ He suggested that that it might be better to assess odour using CALPUFF which is a more appropriate model for assessing conditions with little or no wind, which are most likely to occur during stable atmospheric conditions overnight.

At the Hearing he also suggested that the buffer contours (as shown for example in Figure 10) should be based on the contours predicted by the model, but smoothed.

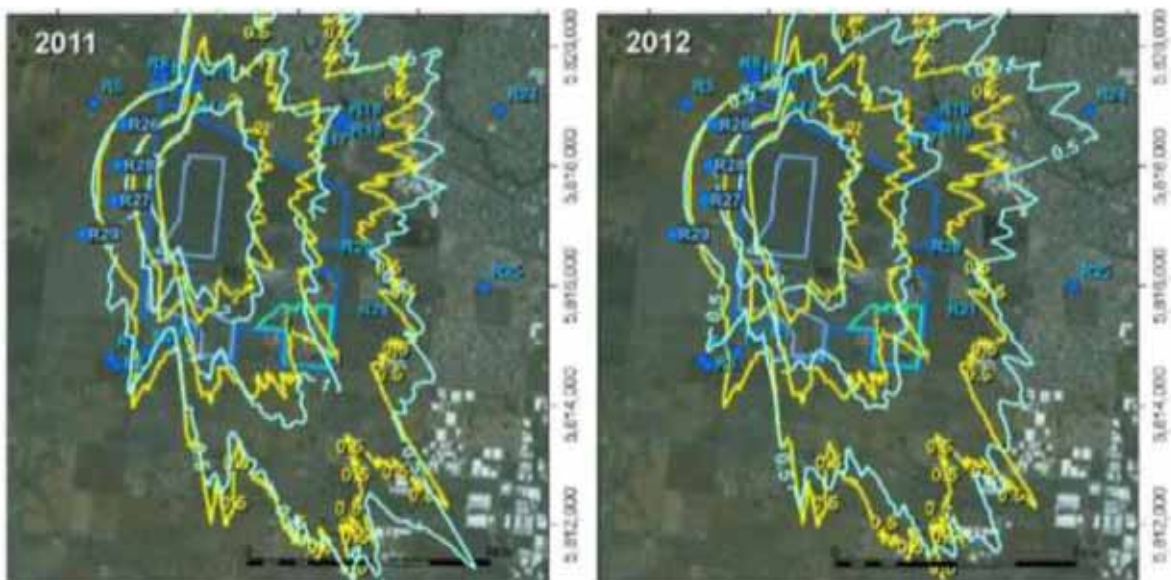


Figure 10 AERMOD odour contours, Scenario 3 (Cell 6 filling)⁵²

Notes: The yellow lines are PEL's odour contours. The blue lines are Mr Todoroski's odour contours. The year in the top left corner relates to the meteorological file used.

6.1.4 The Applicant's approach

Assessments of odour were provided in the two PEL reports referenced in the PPAR, and supplemented by the expert evidence of Mr Todoroski. The primary approach to odour assessment was based on modelling.

(i) Odour modelling methodology

The PEL May 2016 PPAR report is the key assessment document as it establishes the basis used for the works approval and planning permit applications as well Mr Todoroski's peer review. It models air quality for two baseline scenarios, one with Pinegro operating and one

⁵¹ Expert witness statement, Mr Todoroski, paragraphs 104-109.

⁵² Mr Todoroski expert statement page 16.

without. It then models four scenarios for future operations. Two of the four future scenarios include a secondary low emissions future scenario whereby there is a progressive decrease, to a maximum of 30 per cent, in the putrescible component of the waste being deposited to the landfill.

The future scenarios represent the greatest potential for off-site odour impacts, as the active cells are closest to the site boundary.

The inputs into the model include:

- Emission sources: fresh waste delivered and placed in the active cell, interim covered cells, fully capped cells, leachate storage ponds.
- Emission rates (OU/s) for active cells, interim capped cells, capped cells (assumed to be zero) and leachate ponds. Operating parameters: tip face size, cell area, fill rate, leachate pond size.
- Meteorology: five meteorological data sets for 2008–2012 based on wind, mixing heights, atmospheric stability using data from the Bureau of Meteorology's Laverton station, Melbourne Airport and the EPA's Deer Park monitoring station.
- Terrain: Current and projected 40 metre elevation above ground level.
- Receptor locations: includes 20 residential and 5 commercial receptors.

The modelling assumes there will be a high standard of odour management consistent with the practices outlined in BPEM. The EPA's standard model AERMOD was the primary model used.

PEL made the following telling comment in its report⁵³:

With area sources of emissions such as landfills, there are several possible ways to determine emission rates but the different methods return vastly different values. It is generally difficult to reconcile the differences, owing in part to the relatively high uncertainty and variability of results and the economic limitations on gathering large amounts of data, as dynamic olfactometry is a relatively expensive method. The most reliable approach in principle to gather emissions for the most critical dispersion conditions is to rely on data that were generated from isolation flux hood or flux chamber sampling...

(ii) Modelling results

The model predicted the highest odour concentration of 6.89 OUs at Receptor 20 (the Dame Phyllis Frost Centre) for the base case which included emissions from Pinegro. The second highest odour concentration predicted was at the Melbourne Remand Centre.

When emissions from Pinegro were excluded and the tipping face halved in size, the base case odour emissions drop by around 60 per cent, however, the maxima was found to be still above the 1 OU criteria at the correctional facilities.

⁵³ PEL May 2016, page 63.

When the amount of putrescibles being deposited remains the same, and Cells 1 and 4 are being filled, the odour concentrations at Receptor 1⁵⁴ are above 1 OU, peaking at 4.62 OU for a 3 minute odour concentration at the 99.9th percentile. As cell filling moves north the odour impacts decrease at Receptor 1 but peak at Receptor 15⁵⁵ when the northern most works approval cell is being filled. Odour levels at Receptor 15 are predicted to be above the EPA's 1 OU criteria even when modelled with reduced putrescibles.

PEL's addendum report was a qualitative assessment only of the additional seven cells contemplated in the Future Landfill Area (that is, the area covered by the permit application but not the works approval). This assessment assumed filling of those seven cells with waste with 30 per cent less putrescibles, with a commensurate reduction in odour emissions. PEL's assessment is that some receptors would experience odour concentrations above 1 OU.

Mr Todoroski reviewed and re-ran the modelling including some additional receptors to account for the PSP area.

Mr Todoroski made some changes to PEL's model inputs, such as changing the location of some of the sources based on further details provided by the Applicant. He also noted in his statement some areas where he only partially agreed with PEL's approach. Overall his results were consistent with those determined by PEL including the identification of the receptors most likely to be impacted by odour.

The modelling contours produced showed similar patterns. An example of the contours predicted by PEL and Mr Todoroski are shown in Figure 10.

Like PEL, Mr Todoroski was critical of some of Ektimo's⁵⁶ field test results using a flux hood and transect odour sampling.

There was extensive questioning of Mr Todoroski about the modelling and Mr Todoroski's responses are summarised as follows:

- In Mr Todoroski's experience, people's perception of odour is highly complex as some people can become sensitised to a certain odour whereas other become desensitised.
- If it is required to meet limits of 1 OU at the boundary, in Mr Todoroski's opinion the landfill could not operate. 1 to 2 OU in an industrial area in the surrounding area is not a concern. Mr Todoroski submitted odour cannot be detected at 1 OU, and the odour needs to be greater than 5 OU for a period of time before people will complain. If the odour is fleeting people tend not to complain and if they do, by the time an EPA inspector investigates the odour may have dissipated.
- Mr Todoroski considered the greatest source of odour to be the interim cap due to its large surface area. In his modelling, Mr Todoroski assumed a better performing interim cap with lower odour emissions as MRL proposes to use better screened capping material. Mr Todoroski said it could be possible to condition the size of the

⁵⁴ Residence north of Middle Road.

⁵⁵ Residence north west of MRL.

⁵⁶ Ektimo undertook the field testing for model inputs.

interim cap. He also said that limiting the size of the tipping face to 1,800m² was given.

- Odour emission rates from the landfill are highly variable due to variability in the waste. Given this, in Mr Todoroski's opinion the Ektimo samples highly overestimate the odour. Ektimo's analysis found an average emission rate of 150 OU/m²/s at the tipping face. Mr Todoroski considered this 'fanciful' and emissions such as this could generate odour impacts 100 kilometres away. He considered the emission rate used by PEL was consistent with emission rates from active cells which in general range from 2 to 5 OU/m²/s.

(iii) Submissions on modelling from other parties

In closing Melton submitted:

*Council considers the community submissions to cast serious doubt on the odour modelling and conclusions in the expert evidence of Mr Todoroski relied on by the Applicant.*⁵⁷

*These contradictions call into question Mr Todoroski's modelling results. Council agrees with the submission put by Stop the Tip Inc. that if the odour modelling of previous and existing conditions does not correspond with the reports of submitters before this Panel, "then the Panel must reject the theoretical modelling evidence, because it has clearly failed to reflect actual observations".*⁵⁸

Stop the Tip contended that based on the location of odour reports, including those made from late 2015 to August 2016, the likely source of odour was the landfill, not Pinegro. Importantly Stop the Tip submitted none of the evidence submitted by objectors or the EPA's surveillance studies supported the contours produced by the model for the base case scenarios. They also said that the model did not factor in the odour impact due to a doubling of waste being deposited in the future.⁵⁹

Stop the Tip submitted that the application should be refused and:

*...the Panel cannot accept the odour modelling evidence in support of the proposal because it fundamentally inconsistent with that evidence.*⁶⁰

The Western Region Environment Centre expressed similar sentiments regarding direct observations and modelling saying:

*It is the modelling not reality that is at fault.*⁶¹

⁵⁷ Document 90, paragraph 10.

⁵⁸ Ibid, paragraph 13.

⁵⁹ Document 75, paragraphs 4.3 and 9.6.

⁶⁰ Ibid, paragraph 16.5.

⁶¹ Document 59, Paragraph 1.1.6.

The EPA commented that if the modelling is overly optimistic and if odour levels are greater than predicted then the Applicant would need to implement greater control over the material being landfilled such as reducing the putrescible content in the waste.

(iv) Other odour assessments

EPA complaints data

PEL made an assessment of 1,409 reports in the EPA's odour complaints database for the period July 2013 to November 2015. It estimated that 72 per cent of complaints were about MRL. It looked at the wind direction data at the time the complaints were made and nominated Pinegro as the likely source of the majority of the complaints.

Mr Todoroski supported the EPA's field observations that few of the complaints were related to the landfill and the spikes in complaints to the EPA do not appear to be related to any significant change in operations at the landfill.

Risk assessment

PEL used the risk assessment methodology developed by the EPA for broiler farms to determine the level of acceptability of odour impacts on the 25 receptors it considered. In the EPA's broiler farm risk assessment methodology the frequency of odour events and their intensity are evaluated.⁶²

PEL found that for the six future scenarios there is a medium risk of odour impacts at Receptor 1 (at Middle Road) under two scenarios and a medium risk at Receptor 15 (to the north) under one scenario. Five other residences had a low risk for the scenario when the northern most cell was being filled.

Mr Todoroski extended the risk assessment to consider the additional receptors to the north-west of the site. His risk assessment results were similar to PEL's and none of the additional receptors were considered to be at risk of odour impacts. The only difference in Mr Todoroski's assessment was a downgrading of Receptor 15 to low risk.

NSW odour policy performance indicators

PEL assessed the model results against the NSW odour policy performance indicators and found that based on the NSW indicators, only Receptor 1 would be at risk of odours exceeding 2 OU and only under one scenario.

Mr Todoroski, who was involved with the development of the NSW odour policy performance indicators, commented that these indicators were not developed to be used with AERMOD, although he says that in his experience the Victorian and NSW assessment methods produce not dissimilar results.

⁶² PEL May 2016, pages 59-60. The risk methodology for broiler farms was used as this is the only risk assessment tool suitable for applying to landfills. It is noted that the EPA publication on this risk methodology is only in draft form and not available on EPA's website. The Panel relied on the *Broiler Farm Odour: Environmental Odour Risk Assessment*, EPA publication No: 1509, 2012.

Landfill design and management

Both PEL and Mr Todoroski acknowledged that the design and management of the landfill play an extremely important role in reducing the likelihood of off-site odours and that attention needs to be paid to all significant areas likely to generate odour. The measures listed by PEL to reduce the likelihood of odour are similar to those described in various EPA guidance documents, such as minimising the size of the tip face and having effective interim and final caps covering the waste.

6.1.5 The Applicant's response to odour concerns

In closing the Applicant said that in reality, very few actual odour incidents were identified during the EPA's surveillance exercises. However, in response to the community's concerns the Applicant submitted a draft odour management plan condition endorsed by Mr Todoroski⁶³:

Odour management

*Prior to commencement of works and odour management and monitoring plan prepared by a suitably qualified person or firm must be submitted to and approved by the Responsible Authority. The plan must detail the odour management controls and monitoring regime which must be undertaken during the life of the landfill including but not limited to:*⁶⁴

- 1. Identification of potential odour sources (and receptors).*
- 2. Specify the odour mitigation measures and procedures to manage the odour impact off site, the various potential odour sources and to mitigate the odour off-site impacts.*
- 3. Comprehensive monitoring practices, including surveillance by independent and appropriately trained personnel or the use of portable odour detecting and measuring devices.*
- 4. Incorporation of a complaints handling procedure which will include independent investigation of the source of the complaint verifying the source of the complaint (if possible) and appropriate recording keeping in relation to complaints.*
- 5. Procedures for addressing the odour source if a complaint is verified including consideration of any mitigation measures or operational changes that might be required (including the rapid deployment of Tarpomatic – an alternate to soil, a complaints hotline, a 24 hour turnaround, feedback provided to the complaints and reports to EPA).*
- 6. Provision of surveillance or monitoring records to the Community Consultation Committee the Responsible Authority and the Environment Protection Authority.*

⁶³ Document 92.

⁶⁴ Measures in brackets were agreed to by the Applicant during at the Hearing.

7. Incorporation of a requirement to assess new odour management technologies or tools on a regular basis.

The approved Odour Management Plan must be implemented to the satisfaction of the Responsible Authority and must be reviewed, and if necessary, updated every 5 years.

The Applicant submitted that further measures could be considered in the odour management plan.

The Applicant also provided a map of other potential odour sources proximate to MRL.⁶⁵ These included the following:

- to south-east of MRL: Tatura Milk, JJ Richards (waste collection), Auspork/Otway Pork (meat processor)
- near Caroline Springs there are several sewer vents
- to the east there is a chemical works which could be, from the Panel's knowledge, Momentive Specialty Chemicals in Deer Park.

Whilst not relevant to the consideration of the Applications, the Applicant also undertook to implement an odour management plan for the existing MRL landfill which may improve the experience of local residents affected by odour.

6.1.6 Discussion

(i) The modelling approach

The Panel has reviewed the various model inputs and the model output, and finds it difficult to reconcile the outputs with other evidence on odour that has been presented.

In relation to the model inputs, the terrain and meteorological data are relatively straightforward. Good meteorological data is available, and the terrain which changes from flat to an elevated but relatively uniform profile is not overly difficult to model.

Compared to modelling of some industrial facilities, the emission sources from a landfill are relatively few: the tip face, the interim capped areas, the final capped areas, the leachate ponds and landfill gas. Modelling future emissions of a facility of such significant scale and time span has been simplified by identifying the scenarios where the tipping face will be closest to sensitive populations and likely to generate the highest odour impacts.

Emissions inputs from the sources identified above have been determined through direct source testing and by literature reviews. These inputs raise a number of issues. For example:

- An emission rate of 0 OU/m²/s has been assigned to the final capped areas. There has been no account made for any cracking of the final cap which the Panel was told would be likely. It seems to the Panel that cracks in the final cap would, no matter how diligent the Applicant is at repairing them, take time to identify based

⁶⁵ Document 88.

on the size and scale of the areas to be capped and until such time as they are repaired they would be a source of some odorous emissions.

- It is not clear to the Panel if PEL's adjustment of Ektimo's emission rates at the active face are reasonable; although Mr Todoroski supports the PEL rates.
- The sensitivity of the model output to major inputs such as the interim cap and tipping face is not clear. Would significantly higher emission rates produce poor odour outcomes in the model?
- There was mention of the leachate generated by the landfill possibly going to a treatment plant and then to sewer rather than being collected and stored in open ponds. If this were to occur, what type of reduction in odour would this make?
- There is the question of whether AERMOD is the right model to use when the greatest odour impacts may occur at night under stable atmospheric conditions. Mr Todoroski suggested that CALPUFF is better suited to modelling the landfill emissions, particularly under stable atmospheric conditions. In the air quality assessment there was reference to the similarities between odour emissions from broiler farms and landfills. CALPUFF is identified by the EPA as suitable for broiler farm modelling. Mr Todoroski also noted that unlike CALPUFF, AERMOD does not accumulate emissions. CALPUFF can accumulate emissions by 'remembering' and incorporating residual emissions from the previous assessment period into the emissions for the next time period.

It is for the EPA in its assessment of the works approval to determine:

- if CALPUFF or another model would be more suitable in the circumstances
- if emission rates modelled are reasonable
- if sensitivity analysis through multiple model runs is required.

In relation to the risk assessment undertaken there are situations where odour is modelled and found to be, at times, greater than 1 OU beyond the boundary. The EPA considers this in its discussion paper on broiler farms and says:

The risk assessment matrix enables an integrated approach comparing concentrations with frequency rather than the use of a single standard for example 5 OU at the boundary.⁶⁶

Using the most impacted receptor as the test case, proponents need to demonstrate how their proposal meets all low risk criteria.⁶⁷ (our emphasis)

PEL's assessment found that several receptors were at medium risk which is unacceptable, while Mr Todoroski rated odour impacts at those receptors as low risk. The uncertainty in both of the risk assessments arises as they are both based on the modelling outcomes.

The Panel considers the modelling done to date is a useful starting point, but that follow up modelling should be undertaken through the works approval process, probably with a different model, to ensure that the assessment can be verified.

⁶⁶ EPA Publication 1509, page 4.

⁶⁷ Ibid page 4.

(ii) Community concerns

The community's submissions were heartfelt and at times emotional as they described the impact the odour has on their lives. The majority of the objectors affected by odour were from Caroline Springs which is the main population centre in the vicinity of MRL, and being north-east of the current landfill operations in line with the prevailing winds. However, there were submitters from other surrounding areas who described similar impacts. Many said that the odours occurred at night which is generally the time when odour can linger as the wind is usually light and there is less dispersion.

The evidence of Ms Westin for Corrections Victoria corroborated the experience of the local community.

The Panel notes there was much finger pointing that past odours had been caused by the Pinegro composting facility which ceased operating in 2015. However, based on the submissions to the Panel, about ongoing odour problems there is no real evidence that Pinegro was the main odour source.

The Panel also notes the surveillance work done by the EPA and the suggestion that some odours are attributable to other sources. Based on the submissions the Panel considers that MRL is highly likely to be a source of the majority of the offensive odours that impact the local community.

Submissions and evidence relating to odour present a fundamental tension the Panel must address. There is significant complaint data and submissions suggesting that there is a major odour issue from the existing MRL in nearby residential areas that is adversely affecting people's lives. This gives rise to concerns about the MRL expansion in the minds of the community. On the other hand, the Applicant submits there is little or no problem; and the EPA has limited data attesting to odour issues from the MRL.

The Panel is also cognisant of the plain truth: no one wants to live near a landfill. This gives rise to various suggestions that odour complainants are objecting to simply prevent the expansion going ahead, whether or not there really is an odour issue.

Having heard the submissions and met some of the objectors through the Hearing process, the Panel:

- is not in the position to determine whether some of the objections are vexatious
- is satisfied that many of the submissions and complaints put to the Panel are genuine.

Even if only a small proportion of the submissions and complaints are genuine, this leaves the Panel (and regulators) with a serious issue to address. Not addressing it is condemning the landfill operator, the regulators and most importantly the community to an ongoing 'fight' that may last for years and could be expensive in both dollar and community impact terms.

The Applicant made certain commitments to improve odour management procedures and reporting for the current operation. While the Panel is not able to make recommendations about the current operations, the Panel strongly supports the Applicant's commitments, and strongly encourages the Applicant to implement these commitments as a matter of priority.

The Panel is satisfied for the MRL expansion that odour should be able to be managed subject to appropriate conditioning and controls. The types of responses to reduce odour can include for example:

- a smaller operating tip face
- improved capping materials
- operating criteria based on weather (wind direction and strength)
- improved management of other odour sources such as leachate ponds.

The suggested odour management plan condition put by the Applicant can provide the framework for a more sophisticated approach than currently occurs and this is supported by the Panel. The Panel has included an appropriate odour management plan condition in Appendix D.

The expansion is also moving in a direction further away from the existing residential concentrations, which also should help reduce odour impacts to some extent.

(iii) Buffers

Wind roses provided in PEL's air quality assessment shows the predominant winds in the area are from the north-west, west and south. Winds are shown to be infrequent from the north-east through to the south-east. The odour modelling as shown in Figure 10 shows the influence these winds have on odour contours and these support the application of a less traditional non-radial buffer.

The EPA recommends non-radial buffers of between 1 kilometre and 1.5 kilometres between MRL and sensitive uses, in line with the wind direction and odour contours. The Applicant, based on the air quality assessments, proposes a 1 kilometre buffer to the residential areas within the Mt Atkinson and Tarneit Plains PSP area.

It would appear to the Panel that due to the acknowledged limitations of AERMOD that the modelling, and the risk assessment that is based on the modelling, does not provide sufficient justification for a radial buffer of 1 kilometre. There is, however, adequate data to support a non-radial buffer and applying the precautionary principle to protect beneficial uses the Panel endorses the non-radial buffers recommended by the EPA.

Given the time span of the both the works approval and planning permit if at some future date it can be demonstrated, through observations, odour sampling, complaints data and more suitable modelling, that odour is not impacting on the local communities then the buffer could be reduced.

6.1.7 Conclusion

The Panel concludes:

- There is some level of odour impact, in the Panel's view significant, on residential communities and the correctional facilities to the east and north of the existing MRL.
- This existing impact is driving significant opposition to any thought of expansion for the MRL and needs to be addressed and managed to reduce off-site odour impacts.
- The Panel is not satisfied that the modelling undertaken to date adequately represents the likely emissions from the expansion. Further modelling should be

undertaken as part of the works approval application assessment, including a review of the choice of model and a sensitivity analysis, to ensure that the model outputs are suitable to inform effective responses under the proposed odour management plan.

- The Panel is satisfied that there are design and management responses available that should reduce the impact of odour from the MRL expansion to acceptable levels. This will require a level of commitment and investment from the Applicant, but is feasible.
- The Panel supports the EPA's approach to a buffer on the eastern and northern side of the landfill of 1.5 kilometres, and a buffer of 1 kilometre to proposed residential areas on the western side of the landfill.
- The odour management plan approach is supported and a condition has been recommended accordingly.

6.1.8 Recommendations

The Panel recommends:

The planning permit include a requirement for an Odour Management Plan prepared and implemented to the satisfaction of the Responsible Authority and including the elements as described in Chapter 6.1.5 of this report.

Prior to the works approval being issued, the Environment Protection Authority review the odour modelling to determine if further assessment is required including choice of model, landfill odour emission rates and sensitivity analysis to ensure model outputs are accurate and suitable for informing management responses.

Recommended conditions are included in Appendix D.

6.2 Airborne particulates

6.2.1 The issue

The SPPF C13.04-2 Air Quality requires that SEPP (AQM) must be considered.

The statutory requirements for the management of the emissions of airborne particulates for an extractive industry site are set out in the *Protocol for Environmental Management: Mining and Extractive Industries* (PEM (M&E)).⁶⁸

The PEM (M&E) is an incorporated document of the SEPP (AQM) and the Applicant has relied on compliance with the PEM (M&E) in making its assessment of airborne particulates.

The issue is whether the combined operations of Boral and the Applicant on the site can meet the PEM (M&E) requirements for airborne particulates.

⁶⁸ Protocol for Environmental Management: Mining and Extractive Industries, EPA Publication 1191, 2007.

6.2.2 The PEM requirements

The PEM (M&E) states that it is:

...applicable to new developments and where significant modification or expansion of existing developments occurs.⁶⁹

The PEM (M&E) sets out what needs to be assessed in relation to airborne particulates. It states that:

For all proposals requiring an air quality assessment the following indicators must be assessed:

- *PM₁₀ (Particles with mean aerodynamic diameter less than 10 microns)*
- *PM_{2.5} (Particles with mean aerodynamic diameter less than 2.5 microns)*
- *Respirable crystalline silica (defined as the PM_{2.5} fraction).⁷⁰*

It also specifies the criteria for these indicators when averaged over a 24 hour period, as shown in Table 5.

Table 5 Airborne particulate criteria

Indicator	Criteria ($\mu\text{g}/\text{m}^3$)
PM ₁₀	60
PM _{2.5}	36
Respirable crystalline silica (as PM _{2.5})	3

The PEM (M&E) then outlines the level of assessment required which is dependent on the location of the extractive industry in relation to residential or urban areas and the amount of material extracted.

The PEM (M&E) has three assessment levels and for each of these levels monitoring requirements are specified for the airborne particulate.

The Landfill BPEM only mentions that reactive dust management is required, and the EPA *Landfill Licensing Guideline* only says that an EPA licence for landfills may require inclusion of some conditions to manage dust.

6.2.3 Submissions

Airborne particulates were not raised as a critical issue by objectors to the permit application except by Mr van Moorst from the Western Region Environment Centre (WREC) and Brimbank. WREC (S89) is concerned about the lack of consideration of PM_{2.5} due to its health impacts. Brimbank (S59) submitted that the existing unsealed roads within the site are creating significant dust amenity impacts, and that the permit or works approval should require internal roads to be sealed.

⁶⁹ Protocol for Environmental Management: Mining and Extractive Industries, EPA Publication 1191, 2007, page 3.

⁷⁰ Ibid, page 6

6.2.4 What assessment of airborne particulates was made?

The assessment of airborne particulates was undertaken in the same reports and evidence as odour.

PEL developed an emissions inventory for Total Suspended Particulates (TSP) and PM₁₀ for the landfill to incorporate into its air quality modelling of airborne particulates.⁷¹ PEL also used in its modelling an emissions inventory of TSP and PM₁₀ from the existing Boral operation.^{72,73}

From the inventory it was estimated that Boral currently emits 342 tonnes per year of TSP and 96 tonnes per year PM₁₀ and the current landfilling operation emits 252 tonnes of TSP and 54 tonnes of PM₁₀. These estimates were made for the various scenarios with airborne particulates peaking under Scenario 2 when an estimated 387 tonnes per year of TSP and 87 tonnes per year of PM₁₀ will be emitted.

PEL used AERMOD to model airborne particulates in various scenarios, and used the particulate emission inventory together with the data sets for meteorology, topography and operating conditions⁷⁴ and background particulate concentrations derived from the EPA Deer Park monitoring data and other key industrial facilities.

Mr Todoroski redid the particulate modelling and included additional receptors and made some adjustments to the locations of some of the airborne particulate sources.⁷⁵

Both PEL and Mr Todoroski found the modelling indicated that MRL would comply with the 60 µg/m³ standard for PM₁₀ at all receptors for all scenarios. PEL's modelling indicated that Receptors 1 and 17 will experience the highest PM₁₀ levels. Receptor 17 which is in a commercial area to the north-east of the site, had a modelled maximum 24 hour average of PM₁₀ level of 59 µg/m³ when Cell 4 is to be filled (Scenario 2). Receptor 1, which is currently a sensitive use near Middle Road had a maximum 24 hour average PM₁₀ level of 58 µg/m³ when Cell 1 is to be being filled (Scenario 1). Scenarios 1 and 2 represent landfill operation with active cells on the southwest corner of the site. Mr Todoroski's maximum 24 hour PM₁₀ averages were lower than the PEL results although his maxima was at a receptor not assessed by PEL.

PEL also modelled dust deposition and estimated the maximum to be 0.92 g/m²/month with the landfill operations contributing 0.57 g/m²/month. These are below the generally accepted guideline of 2 g/m²/month⁷⁶.

⁷¹ *Melbourne Regional Landfill Air Quality Assessment*, Pacific Environment Ltd Landfill Operations Pty Ltd, 13 May 2016, Appendix H8.

⁷² Ibid, page 78.

⁷³ PEL also used data from a recent assessment it had made of the Boral quarry.

⁷⁴ These were the same data sets that were used to model odour.

⁷⁵ Extension of the Melbourne Regional Landfill – Expert Report – Air Quality, A Todoroski, 15 September 2016.

⁷⁶ *Melbourne Regional Landfill Air Quality Assessment*, Pacific Environment Ltd Landfill Operations Pty Ltd, 13 May 2016, page 92.

PEL identified the major source of airborne particulates from the landfilling operations as the haul roads.

Some limited real time PM₁₀ monitoring on the site, as well as a review of as PM₁₀ monitoring, was conducted in late 2015. Both datasets showed the 24 hour average PM₁₀ to be below 60 µg/m³.⁷⁷

6.2.5 Current licence requirements for particulates

The EPA licence, of 30 December 1998⁷⁸, for the current landfill operations has a requirement that:

*Nuisance airborne particles must not be discharged beyond the boundaries of the premises.*⁷⁹

Also of relevance to the particulate emission requirements for the site is the Boral operations and the conditions in the 2015 Boral planning permit.⁸⁰ That permit requires, among other things, that Boral have a Dust Management Plan that incorporates best practice dust control measures to ensure dust does not impact on the amenity of the surrounding area. It also requires that Boral monitor PM₁₀, PM_{2.5} and dust deposition for a year once the plant authorised by the 2015 permit is in full operation.

(i) What is proposed to control and monitor airborne particulates

Based on the modelling results PEL did not consider dust monitoring would be required.⁸¹ Notwithstanding PEL's conclusion, the Applications propose a preliminary monitoring plan⁸² will be conducted which will include:

- monitoring of dust deposition
- maintenance of a dust complaints register
- maintenance of a register of EPA communications.

The Applicant also suggested that if high dust levels occur then further monitoring will be undertaken to determine the source.

As required by the BPEM, the Applicant only proposes reactive dust management measures if significant dust is detected beyond the boundary. These measures are:

- *Increased frequency of ambient air monitoring at the site perimeter according to wind direction*
- *Visual monitoring of dust plumes*
- *Increased watering of haul roads*

⁷⁷ *Melbourne Regional Landfill Air Quality Assessment*, Pacific Environment Ltd Landfill Operations Pty Ltd, 13 May 2016, page 92.

⁷⁸ *Ibid*, page 2.

⁷⁹ *Ibid*, page 99.

⁸⁰ City of Melton, Planning Permit 2015-4807-1, pages 4 & 5.

⁸¹ *Melbourne Regional Landfill Air Quality Assessment*, Pacific Environment Ltd Landfill Operations Pty Ltd, 18 February 2016, Page 100.

⁸² *Information to Support Works Approval Application, Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall*, Golder, February 2016 Appendix N: Monitoring Plan, Section 3.7.

- *Restricting the size of disturbed areas as much as practicable*
- *Temporary suspension of operations under extreme wind conditions if required.*⁸³

The PEL report and the expert witness statement of Mr Todoroski propose some measures to control dust including regular watering of the haul roads, sealing some internal roads and using moisture and vegetation of control dust on the capped cells.⁸⁴

A number of questions were put to Mr Todoroski about dust sources not included in the modelling such as cell and berm construction. Mr Todoroski replied that the sources omitted from the modelling are not of great consequence or in the case of construction for a limited time period.

In relation to not modelling PM_{2.5}, given PM_{2.5} particulates are the most harmful to human health, Mr Todoroski said he did consider it warranted as PM_{2.5} makes up only 5 per cent or less of emissions from haul roads that are the largest source of particulates from the landfilling operation.

6.2.6 Discussion

The Panel's considerations rely on the technical assessment, the expert evidence and questioning of the air quality expert by parties to the Hearing.

The PEM (M&E) requires certain levels of assessment for extractive industries proposing a new development or a significant modification of an existing development. Landfilling is not an extension of the site's extractive industry, therefore the assessment requirements of the PEM (M&E) are not strictly applicable. However, the landfill should meet the PM₁₀ criteria set out in the PEM (M&E). The Panel acknowledges that the landfill is unlikely to be a large generator of PM_{2.5} or crystalline silica.

(i) Modelling

The particulate assessment is based on the modelling which includes the emissions inventory and checking the modelling outcome against a limited period of real time monitoring undertaken by the Applicant and Boral. A range of assumptions were made and incorporated into the model. The modelling indicates marginal compliance with the PEM (M&E) criteria for PM₁₀. The assessment, without adequate real time monitoring and a check of the assumptions made, does not appear to be sufficiently rigorous.

(ii) Planning permit conditions

The 1998 and current licence for the landfill has the general requirement that there should be no nuisance dust beyond the boundary. Boral's work authority also requires that there be no adverse impacts from dust to local amenity.⁸⁵ Boral, which has a recent 2015 planning

⁸³ *Information to Support Works Approval Application, Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall, Golder, February 2016, Section 19.15.1.2.*

⁸⁴ *Extension of the Melbourne Regional Landfill – Expert Report – Air Quality, A Todoroski, 15 September 2016, pages 27 & 28.*

⁸⁵ *Variation to Work Authority 97, Deer Park Quarry 28/12/2012.*

permit associated with the relocation of some of its plant and equipment, is required to have a Dust Management Plan that includes dust control and management measures as well as a requirement to monitor TSP, PM₁₀ and PM_{2.5} for 12 months once the new plant is operational. The Panel was told that Boral's airborne particulate emissions will reduce once the new plant is operational although the Panel was not given any details about the level of reduction. The Panel did, however, note on the accompanied site visit there was considerable visible dust emitting from Boral's operations (apparently the crushing plant) under high wind conditions.

Apart from regular watering of haul roads, the Applicant is only proposing reactive dust management. Mr Todoroski mentioned a range of particulate management measures that could be adopted, although it is unclear if measures such as sealing some of the roads are being contemplated.

The emissions inventory shows that the combined quarrying and landfilling operations on the site have significant sources of TSP and PM₁₀.⁸⁶ As noted above, the emissions inventory indicates that the TSP and PM₁₀ emissions generated by the landfill are slightly lower but comparable to those from Boral's existing quarrying operations, particularly under Scenario 2 (active landfill cells in the south-west corner of the site).

6.2.7 Conclusions

The Panel concludes:

- Based on the significant PM₁₀ and TSP contributions from the existing landfill and the likely emissions from the expansion, the Applicant should be required to have a comprehensive Dust Management Plan in place.
- The Dust Management Plan should be similar, as applicable, to that required under Boral's 2015 planning permit, as well as including the type of mitigation measures suggested by Mr Todoroski.
- The EPA through its evaluation of the works approval application should consider the adequacy of the airborne particulate assessment undertaken to date. This evaluation should rigorously examine the assumptions relied on in the airborne particulate assessment and determine if additional monitoring data is needed to provide greater certainty from the modelling. It should also consider the impact that the recent relocation and upgrading some of Boral's plant will have on airborne particulate levels.

6.2.8 Recommendations

The Panel recommends:

The planning permit include a condition requiring a Dust Management Plan that contains at least the following:

- **A requirement for best practice airborne particulates control measures**
- **Details of best practice control measures**

⁸⁶ Similarly crystalline Silica.

- **Operational requirements for weather conditions that may exacerbate the creation of dust**
- **An air quality monitoring plan of at least twelve months duration from commencement of works under the planning permit for PM₁₀, PM_{2.5} and Total Suspended Particulates. The monitoring data produced must be assessed against the relevant standards and the effectiveness of the airborne particulate control measures reviewed.**

Prior to the works approval being issued, the Environment Protection Authority should review the adequacy of the airborne particulate assessment undertaken to date to ensure it is fit for purpose for assessment and monitoring of landfill operation; and require any further assessment as deemed necessary.

The recommended permit conditions are included in Appendix D.

7 Landfill gas migration

7.1 The issue

Putrescible waste in landfills decomposes to produce landfill gas (LFG). LFG contains a proportion of methane which is both a significant greenhouse gas and a direct risk to human safety due to its explosive nature at the right concentration and potential for asphyxiation.

LFG migration off site through the soil profile from open and closed landfills has been a known risk for decades. The policy framework for LFG is outlined in Chapter 4.

The existing landfill produces and collects LFG and burns it in four engines connected to electrical generators, providing enough electricity to power approximately 4,000 houses. The Applicant has approval to install another four engines.⁸⁷ If this permit is issued, at peak capacity approximately 27 engines will be required to burn the LFG generated.

Management of LFG is a combination of collection and use (or flaring) and landfill design to prevent migration from cells. There was no disagreement among the Applicant, submitters or experts that LFG migration is a fundamental issue to be addressed when deciding on the application.

The works approval application contains a Landfill Gas Management Plan at Appendix H in the PPAR which is the primary document for managing the issue during proposal implementation.

The issue around LFG migration essentially comes down to what buffer distance should be provided between the edge of the landfill (nearest cell) and off-site uses. For the landfill extension north of Riding Boundary Road, a 500 metre internal setback (buffer) is being provided. This accords with BPEM recommendations, and there is general agreement that this is suitable. This chapter thus focuses on the western and southern boundary of the landfill extension south of Riding Boundary Road, where internal setbacks of 100 metres and 80 metres respectively are proposed.

7.2 Evidence and submissions

(i) The expert's differing positions

A number of parties called expert evidence in LFG migration as shown in the appearances table in Appendix B. An expert meeting on LFG migration was held in the lead up to the Mt Atkinson and Tarneit Plains PSP⁸⁸ Panel Hearing at which Mr Mival (for the VPA), Mr Kortegast (for the Applicant), Mr Eggleston for Mr Mulvey (for Mt Atkinson Holdings) and Mr Simmons and Mr Demetriou (EPA observers) were present. The experts produced a statement outlining areas of agreement and disagreement. Mr Nolan (for Melton) was not present at the expert meeting but at this Panel's invitation provided his written comments on the earlier statement.⁸⁹

⁸⁷ Planning Permit Application page 14.

⁸⁸ Melton C162.

⁸⁹ His comments and the earlier statement dated 8 September 2016 were tabled as Document 29.

The experts agreed on a number of LFG principles but also disagreed on a number of key points. In essence Mr Kortegast was of the view that the on-site buffer of 100 metres, plus an 80 metre off-site 'buffer' provided by the road reserve and gas pipeline easement to the west, coupled with landfill design and monitoring/response, would be adequate to ensure there was acceptable risk to properties to the west.

In the agreed statement Mr Kortegast suggested that additional engineering measures that could be applied if LFG migration were detected within the 100 metre on-site buffer could include:

- *additional liner components (based on historic monitoring of precursor cell performance)*
- *additional active LFG extraction*
- *exterior extraction wells or a boundary venting trench*
- *cutoffs.*⁹⁰

Mr Mival and Mulvey agreed that these might be appropriate response measures if LFG migration was detected. However, they were of the view that even with appropriate design and monitoring/response, a 500 metre buffer is still required to protect industrial/commercial uses to the west as “...engineering controls are known to fail”.

Mr Nolan in his later comments noted that LFG considerations, including reducing buffers to less than the BPEM recommended 500 metres, should be undertaken within a risk assessment framework. The generally accepted form of risk assessment for LFG is an audit under s53V of the EP Act. Mr Nolan noted that the relevant landfill cells (Cells 4 to 7 for the western boundary) are not likely to be filled for approximately 30 years, and that a meaningful s53V audit would be difficult if not impossible to carry out before the cells are operational. Mr Mival and Mr Mulvey agreed. Mr Nolan's evidence was that an alternative approach would be to only allow buildings and structures to be built within the 500 metre buffer in advance of Cells 4 to 7 being operational if the buildings or structures incorporate LFG mitigation measures.

(ii) Submissions

The Applicant submitted that the BPEM does not require a fixed 500 metre buffer for LFG migration (or indeed fixed amenity buffers). Rather it provides for lesser buffer distances subject to a risk assessment that considers design and operational measures.⁹¹

The Applicant went on to note that there is general agreement among the experts that with good landfill design, 500 metres is an adequate distance between landfilling and buildings. It submitted that in the negotiations for the PSP, the Applicant had agreed to a 500 metre internal setback north of Riding Boundary Road on the basis that the 500 metres for the landfill south of Riding Boundary Road would be provided primarily on the PSP land west of Hopkins Road.⁹²

⁹⁰ Expert statement dated 8 September 2016, page 3.

⁹¹ Document 5, para 99.

⁹² Ibid, paras 101 – 107.

Mt Atkinson Holdings submitted that on the basis of Mr Kortegast's evidence for the Applicant, the risk of LFG migration is low and any residual risk can be managed at the time of cell licensing; consequently there is no need to apply controls to the PSP land. If Mr Kortegast's evidence is not accepted, and a buffer of more than 180 metres is required, the additional buffer distance should be internal to the landfill site.⁹³

Melton expressed concern in relation to the area of landfill south of Riding Boundary Road and particularly the interface to the PSP land west of Hopkins Road. They put in submissions that the BPEM recommended 500 metres buffer distance is appropriate and necessary for LFG migration risk, and that the evidence of Mr Kortegast should be given little weight and that his evidence "...was factually inconsistent with the advice he had given as an auditor on the same site."⁹⁴

Melton's preferred approach was that if a permit is to issue, then the Panel should recommend the provision of a buffer (presumably of at least 500 metres) wholly internal to the site. However, in the circumstances they submitted the application should be refused pending a revised application with an internalised buffer.⁹⁵

The EPA submitted clearly the view that the 500 metre buffer distance in the BPEM guidelines is appropriate to apply in this instance.⁹⁶ They submitted that the buffer could be within the site or on neighbouring property and any structure should be set back the 500 metres:

For this reason EPA submits that any residential, commercial or industrial building or structure that humans enter must be considered a sensitive land use and therefore the 500 metre buffer should be maintained between such buildings and structures.⁹⁷

A number of submissions also identified that the Panel in its consideration of the permit application has no authority to establish an off-site buffer. For example Brimbank noted that the only way the Panel could establish such a buffer would be via an on-site buffer, and that a separate strategic planning decision would be needed to establish a buffer on surrounding land.⁹⁸

The question of s53V audits under the EP Act was also raised by submitters. In essence a neighbouring landowner may be required to demonstrate via a s53V audit that there is no LFG on their land. This has two major components: who pays for the audit; and is the audit meaningful given it may provide the all clear in a circumstance where the risk from LFG migration is many years in the future.

⁹³ Document 47, para 92.

⁹⁴ Document 55, para 87.

⁹⁵ Ibid, para 98 – 100.

⁹⁶ Document 3, paras 69-77.

⁹⁷ Ibid, part para 73.

⁹⁸ Document 34, paras 3.7-3.8.

A number of submitters drew attention to recent enforcement action taken by the EPA in relation to LFG detected in monitoring bores and service pits and sought by extension to suggest:

- The Applicant does not have a demonstrated track record in complying with licence conditions
- The design of a landfill is not of itself a guarantee that LFG migration will not occur, and thus appropriate buffers are needed.

The Applicant in response provided a detailed breakdown of the EPA action taken against it in recent times and a summary of expenditure on legacy issues addressed since the Applicant took over the existing landfill operation from Boral on 1 March 2015.⁹⁹

The information outlines that when the Applicant took over the landfill, they were aware that there were legacy issues related to Boral's operations in several areas, including LFG.

The EPA issued Pollution Abatement Notices (PANs) to the Applicant for LFG on 3 May 2016 (late notification of LFG exceedance) and 6 June 2016 (exceedance of LFG levels). The EPA also issued two Penalty Infringement Notices (PINs) in relation to LFG on 7 July 2016 related to the PAN incidents above.

For both PANs, the Applicant submitted that they are legacy issues that are being addressed by improvements in equipment and operating procedures.

The Applicant submitted that at the existing landfill they have spent in the order of \$1.9 million on LFG management including installing new LFG wells in the landfill and replacing faulty wells and ancillary equipment. The aim of this work was said to be specifically to return the landfill to BPEM compliance.

South of Middle Road is designated for future road and freight considerations in strategic planning and the submissions of Mr Cohen relating to this area are outlined in detail in Chapter 4.5.

7.3 Discussion

This section addresses whether the proposed internal setbacks (buffers) along the western and southern boundaries of the site are adequate to deal with LFG risks. Broader issues of buffer policy are addressed in Chapter 4.

Potential LFG migration was a highly contested area of the Hearing. The Panel has expressed elsewhere in this report its disappointment at the strategic planning framework that has developed around the subject site, and specifically the lack of broader planning protection and direction on buffers, whether on or off site.

The Panel concludes that policy supports external buffers, for the reasons set out in Chapter 4.

The Panel accepts there is no statutory mechanism for enforcing an off-site buffer through conditions on the planning permit. If the Panel concluded that the BPEM recommended 500

⁹⁹ Document 5 Appendices A and B.

metre buffer is required, the only satisfactory way that this Panel could seek to achieve this is via enforcing an internal 500 metre buffer by way of a permit condition.

This Panel is, however, cognisant of the fact that the Panel for Amendment C162 is able to make recommendations about external buffers, at least to the west of the site.

The Panel has not got to the bottom of the ‘agreement’ between the Applicant and the VPA that effectively provides for a 500 metre internal buffer north of Riding Boundary Road, but an external buffer further south. There were various positions put forward on such an agreement, but whatever the genesis, it has effectively nullified LFG migration as an issue north of Riding Boundary Road.

South of Riding Boundary Road is more complex. Proposed Cells 4 to 7 on the western boundary are proposed to be set back only 100 metres from the western site boundary, providing an effective buffer of 180 metres (including the Hopkins Road reserve and the gas pipeline easement) to potential development on the PSP land. These cells are scheduled to be filled between 2032–2039¹⁰⁰ with any potential LFG migration issues to develop some years after 2032.

When Cell 4 development and filling commences, the PSP land may be fully developed, partially developed or not developed at all. If the land has some development on it within 500 metres (particularly ‘structures’ as per the BPEM) then the Applicant will need to satisfy the EPA during cell licensing that the available distance¹⁰¹ is adequate to manage any risk. The Applicant will also need to satisfy the EPA during cell licensing that LFG risks to the existing high pressure gas pipeline along Hopkins Road can be appropriately managed. This will be a technical exercise where the Applicant will need to convince the EPA that the proposed cell design, monitoring systems, and contingency planning reduce the risk to an acceptable level.

The Panel fully expects that even if the PSP land is not developed when Cell 4 is to be developed and filled, the EPA would take a similar view at the licensing stage of whether it was appropriate to approve landfill cells within 500 metres of potential future buildings and structures.

When Cells 4 to 7 are ready to be developed, the landfill operator will have another 10 to 15 years of experience in managing the landfill cells in the quarry void environment from the ongoing existing landfill and the construction and operation of Cells 1 to 3. Monitoring data from these operations should inform the considerations in design, monitoring and response for Cells 4 to 7.

The above scenarios illustrate the weaknesses in requiring s53V audits on neighbouring land. If they are done in advance of landfilling then they are clearly a waste of effort. If they are done after landfilling they may be ineffective in detecting any LFG migration depending on timing.

¹⁰⁰ Table 4, page 52, Mr Green’s evidence.

¹⁰¹ 160 metres to the western edge of the gas easement. From Plate 5 of Mr Green’s evidence.

There was much technical discussion about the uncertainty of many issues including potential LFG pathways through fractures in the basalt post quarrying. The Panel considers these are real issues that may require significant further investigation during cell design, but that they are technical issues that can be resolved.

The Panel has reviewed the Landfill Gas Management Plan (Appendix H to the works approval application) and notes that appropriately, critical issues such as the number and location of LFG monitoring bores are to be agreed with the EPA.

The future use and development of the PSP land will be established primarily through Amendment C162. Whether the land within 500 metres of the proposed landfill edge has particular controls placed on it in relation to LFG is not an issue this Panel can or should seek to influence. However, on the basis of the technical evidence and material before this Panel, the Panel is of the view that design and engineering solutions are available to enable the risk from LFG migration to be adequately managed without significant impact on neighbouring properties. The Panel finds that external LFG buffers, beyond those effectively provided by the road reserves and gas pipeline easements on the western and southern boundaries of the site, are unlikely to be required.

Many parties raised the spectre of the Stevensons Road Landfill in Cranbourne and its impact on the Brookland Green Housing Estate as an example of what can go wrong, and thus the need for a conservative approach to LFG management. The Panel was taken to the Ombudsman's Inquiry report of October 2009.

The Panel does not need to reiterate the contents of that Inquiry report; suffice to say the Ombudsman was scathing of multiple technical and procedural failures across multiple levels of government over a long period of time. Largely because of that unfortunate experience the system of regulation of landfills has, in the Panel's view, been significantly improved over the past 10 years.

The Panel considers that Stevensons Road stands for an outdated approach to landfill design, management and regulation and it does not consider the comparison with it reasonable; everything from the design, management and regulatory context to the scale and geology of this proposal is different.

Of interest, the Panel notes that the Ombudsman, at Recommendation 49, recommends that the 500 metre minimum buffer be made a 'mandatory requirement' of the landfill property owner, either on land owned or controlled by the landfill owner. This recommendation has only been given effect to the extent that the BPEM recommends a 500 metre buffer, but not that it be owned or controlled by the landfill owner, which suggests that some level of flexibility in the size of the buffer can be countenanced with adequate safeguards.

Apart from the submissions of Mr Cohen (S67), there was very little focus on the issue of potential LFG migration to the south across Middle Road. The on-site buffer distance is only approximately 80 metres – less than the proposed 100 metre setback on the western boundary. The Panel is satisfied in principle as for the western boundary that LFG should be able to be managed within this distance in the event of an escape of LFG from Cell 1.

The Panel considers it important to note that the approved existing landfill has been operating at this boundary for many years at the same distance and gas monitoring bores adjacent to the existing landfill should provide useful data to input into future detailed cell design.¹⁰²

The Panel notes that the land to the south is potentially to be used for industrial, transport or road purposes. As already noted the situation is broadly similar to the western boundary: any residual risk should be able to be managed within the site subject to detailed design, monitoring and contingency planning.

Mr Cohen also submitted that there are already 'structures' on his property within 500 metres¹⁰³; being enclosed sheds approximately 250 metres south of Middle Road. The Panel does not think these structures on their own should give rise to changes to the location of Cell 1 but they should be considered in detailed design of the LFG monitoring system in terms of potential pathways.

The Panel notes the concern expressed by various parties to the effect that the Applicant cannot be trusted given past poor performance in relation to LFG management. However, the Panel is satisfied on the submissions and material from the Applicant outlining the approach to legacy issues 'inherited' from Boral, that the past acknowledged poor performance in this area is being addressed and should not be a guide to future performance.

The Panel is satisfied that the investment and remedial measures being undertaken to achieve compliance with the BPEM demonstrates that the Applicant is taking its responsibilities in this area seriously.

All parties and experts acknowledge that effective ongoing monitoring will be needed to ensure compliance is achieved for the existing and proposed operation. This will be an important consideration in the EPA's assessment of the works approval application, as well as the cell licensing process.

7.4 Conclusions

The Panel concludes:

- LFG migration is a very significant issue that will require a high level of attention to detailed cell design, effective monitoring to detect any unplanned escapes and contingency plans for addressing unplanned escapes.
- The Panel is satisfied that the risk of LFG migration can be satisfactorily addressed on site subject to the implementation of effective monitoring and responses.
- The Landfill Gas Management Plan prepared by Golder Associates forms the appropriate basis for addressing the issue in the works approval and licensing process.

¹⁰² Appendix B of the Landfill Gas Management Plan with the Works Approval Application indicates there are five existing gas monitoring bores along the southern boundary of the existing landfill; GM5-6 and GM14-16.

¹⁰³ Document 83.

- The Panel has no capacity to impose land use or development controls on the PSP land to the west or land to the south, but considers the risk to surrounding properties can be managed to an acceptable level within the site and that external buffers beyond the proposed internal setbacks are unlikely to be required in this instance.
- The approach to strategic planning for buffers around landfill and resource recovery facilities (including for amenity and LFG) is an issue that requires urgent consideration at a strategic level to ensure appropriate buffers are identified in planning; whether on or off site, in a logical manner, rather than through a contested permit application process.

7.5 Recommendation

The Panel does not make any specific recommendation on landfill gas for the planning permit and works approval. The Panel does wish to stress the importance of undertaking strategic planning to ensure strategic waste and resource recovery hubs are reflected, and protected, in planning schemes. The Panel considers this is critical as the city expands and its population grows.

8 Water

8.1 The issues

Issues raised in submissions principally focused on:

- Whether leachate would escape from the site and contaminate groundwater.
- Whether stormwater run-off from the site will contaminate the local catchment.

8.2 Leachate and groundwater

8.2.1 Evidence and submissions

The Panel was fortunate to have three experts present hydrology evidence which allowed groundwater and leachate issues to be thoroughly explored. A conclave of these experts was held prior to the Hearing and they agreed on several issues. Where there was disagreement, all parties generally agreed that further analysis and investigation would allow these outstanding matters to be resolved.

Mr David Ife submitted evidence on behalf of the Applicant, Mr John Nolan provided evidence for Melton and Mr Philip Mulvey appeared to give evidence for Mt Atkinson Holdings.

The Panel places significant weight on the conclave meeting as the experts found 'common ground' and clearly identified where their respective points of difference occur.

Key findings from the conclave were:

- Further groundwater investigation and modelling will be required to determine the long term undisturbed groundwater level, but it is likely to be 1.4 to 2.5 metres above its current level.
- Providing a 100 metre buffer between the edge of landfill and the site boundary would allow adequate distance and time to implement rectification measures (if required) if leachate was escaping from the landfill.
- Groundwater conditions should be monitored by installing two rows of appropriately spaced monitoring bores 20 metres from the edge of the landfill and at the site boundaries. The inner row of bores would identify if leachate has escaped from the landfill whilst the outer row of bores would confirm the effectiveness of remedial measures.
- The experts agreed that some monitoring bores indicate that groundwater conditions are already changing. The cause may be leachate or run-off from the closed composting facility.
- Leachate migration modelling shows downstream groundwater would not be compromised based on the model input assumptions. However, further modelling, including a sensitivity analysis should be considered.

In relation to leachate Mr Green noted that it would be pumped directly to evaporative leachate storage ponds which are separate to the stormwater system. The landfill design includes a contingency area around the leachate storage ponds to increase their size if required and/or construct a leachate treatment facility.

8.2.2 Discussion

As part of Mr Ife's evidence, he provided a map of groundwater contours overlaid with the proposed landfill cells, colour coded to show which cells would be close to the watertable.¹⁰⁴

The Panel found Mr Ife's plan showing estimated groundwater levels useful and was able to determine that for the majority of the site, the current groundwater table is well below the base of the proposed landfill (10 to 20 metres for the north portion). At the southern end, the base of Cells 1 and 2 and the watertable may be less than the desirable 2 metre minimum separation.

The EPA clarified that the groundwater level used for landfill design is the "*long term undisturbed groundwater level*", but 'long term' and 'undisturbed' were not defined.

Groundwater levels rise and fall due to rainfall recharge and other environmental and human influences. The Panel considers that determining the long term undisturbed groundwater level appears problematic as change is constant, whether it be climate, or changing land uses which impact on groundwater levels.

Nevertheless, the fundamental tenet of landfill design is to ensure that the waste is placed above the watertable to minimise the likelihood of groundwater contamination. The experts agreed in the conclave that the long term ground water level may rise between 1.4 to 2.5 metres to account for future changes. Subject to further modelling, the Panel believes that it would be prudent to adopt the 2.5 metre above the existing groundwater level as the long term undisturbed groundwater level. This may mean Cells 1 and 2 need to be raised to meet the 2 metre desired separation or re-engineered to make a distance less than 2 metres acceptable.

Groundwater contamination was an issue raised by several submitters. The conclave agreed that liner systems could fail leading to leachate escape. It is noted that BPEM criteria accepts some seepage will occur through the landfill liner. Mr Ife noted that the 1 metre¹⁰⁵ compacted clay liner beneath the liner provides extra security, but Mr Mulvey said that clay liners can fail. The Panel noted and clarified with Mr Mival that his opinion was that additional safety over and above BPEM could be realised with, for example, a double composite liner with leak detection.¹⁰⁶ The Panel believes a prudent approach is appropriate, and in locations, which may be close to the watertable, additional protective measures should be considered.

The Panel notes that all experts agreed that if leachate escaped, monitoring bores within the proposed internal setbacks should allow adequate distance and time to implement mitigation measures (generally pumping to remove contaminated groundwater). The experts did not agree on how quickly contaminants would travel: it ranged from 3 to 9 years for groundwater to travel 100 metres. The Panel is comfortable that this would provide

¹⁰⁴ Figure 5.6, page 36 in the AECOM Hydrogeological Assessment submitted with the PPA.

¹⁰⁵ Golder Associates design drawing Figure 27 shows 0.5 metres.

¹⁰⁶ An example was provided by Mr Mival in Appendix E to his evidence: Figure 1 in a paper *Waste Containment: Strategies and Performance* by C.H Benson.

sufficient time to implement remedial measures to ensure contaminated groundwater would not escape from the site.

On the southern boundary the distance between the edge of the landfill and Middle Road is only 80 metres, rather than 100 metres. In this area the Applicant and regulatory authorities should have good information on the performance of the existing landfill to the east as for LFG (discussed in Chapter 7). For this relatively short edge of Cell 1 the Panel is satisfied that the 80 metre distance should be adequate for suitable monitoring and response.

8.2.3 Conclusions

The Panel concludes:

- Further ground water modelling is required to accurately determine the long term undisturbed groundwater level; it may be 1.4 to 2.5 metres above its current level, which is particularly relevant to Cells 1 and 2. In locations close to the watertable, additional protective measures over and above BPEM (such as those suggested by Mr Mival) should be considered.
- The experts agree that if leachate escaped, monitoring bores within the buffer zone would allow adequate time (3 to 9 years) to implement mitigation measures to ensure contaminated ground water does not escape from site.

8.3 Stormwater drainage and surface run-off

8.3.1 Evidence and submissions

A number of submitters flagged that run-off from the site would contaminate or compromise Skeleton Creek and areas downstream from the site.

Mr Andrew Green gave evidence on behalf of the Applicant relating to stormwater drainage and overland flow, as part of the overall design of the landfill site. His evidence was:

The relevant BPEM objective for water management is to protect beneficial uses of receiving waters and to avoid any adverse environmental impact on surface and ground waters.

and

The proposed water management strategy includes an element of capture and use of stormwater during the staging of construction, rehabilitation and post rehabilitation works. Re-use of harvested stormwater for landfill operations.

Stormwater and run-off from external catchments (that is, non-landfill areas) would be diverted around the site using diversion bund walls as currently occurs with the existing landfill. Internal catchments would drain into a number of local sumps which are generally located in the quarry floor. The design incorporates a series of stormwater storage ponds (this water is either evaporated or reused) and discharge ponds (sediment is allowed to settle out of the water column prior to monitoring and discharge from the site). Swale drains run around the perimeter of the landfill to collect and direct surface flow to these ponds.

The drainage system is designed to accommodate the 1 per cent (1 in 100 year) storm event.

Stormwater will discharge at predevelopment 'greenfield' flow rates and water quality standard into Skeleton Creek. Mr Green advised that he was continuing to liaise with Melbourne Water to resolve the ultimate waterway alignment through the site, cognisant that the conceptual waterway alignment intersects the approved Boral quarry extraction area.

In the Applicant's closing submissions they confirmed that Melbourne Water has offered in principle support to the proposed waterway realignment.

The other experts generally flagged that further modelling or detail was required as opposed to the proposed design being grossly inadequate or inappropriate.

8.3.2 Discussion

The Panel accepts Mr Green's evidence that the stormwater run-off and overland flow management system meets or exceeds BPEM requirements. The Panel is satisfied that the further modelling and detailed design required can occur, in close consultation with the EPA and Melbourne Water, as part of the works to ensure downstream environs are not adversely affected.

Several submitters are concerned about water quality issues. However, Melbourne Water issues appear to be nearing resolution. Using settlement ponds, and controlling discharge flows from the site should ensure 'greenfield' discharge rates and water quality continue to occur. Melbourne Water also has its own statutory powers under the *Water Act 1989*.

8.3.3 Conclusions

The Panel considers that the proposed MRL stormwater management system is appropriate.

8.4 Recommendations

The Panel recommends:

Prior to the Works Approval being issued further modelling and investigation occur to allow the long term undisturbed groundwater level to be identified to inform the development of Cells 1 and 2.

Prior to the Works Approval being issued the stormwater management system be subject to further detailed design to ensure compliance with Environment Protection Authority and Melbourne Water requirements.

9 Traffic

9.1 The issue

Issues raised in submissions principally focused on:

- localised traffic congestion and safety on the surrounding road network
- traffic implications of transferring waste across Melbourne
- adequacy of the road network to accommodate future growth.

9.2 Evidence and submissions

Mr Stephen Hunt submitted traffic evidence for the Applicant. His evidence included a peer review of the planning permit traffic impact assessment prepared by GTA consultants. Mr Hunt and GTA identified that there were no traffic engineering grounds which would warrant refusal of the Applications.

Mr Hunt identified that in 2035, the proposal (including Community Transfer Station) would generate 3,215 vehicles per day including 1,680 commercial vehicles as shown in Table 6. Approximately 120 daily truck movements (6 trucks per hour) will be associated with transferring waste from the South East Metropolitan Transfer Station (SEMETS) in Dandenong to the site using a fleet of 37 tonne B-Double trucks (equivalent to approximately five standard garbage trucks) or possibly 43 tonne A-Double trucks on the freeway network.

Table 6 Christies Road south of Western Freeway – Estimated Daily Traffic Volumes (vpd)¹⁰⁷

Component	2014		2017		2035	
	Total	CV	Total	CV	Total	CV
Existing (2014)	1850	1250	1850	1250	1850	1250
Landfill extension	-	-	75	50	445	230
SEMETS	-	-	110	110	120	120
Community Transfer Station			800	80	800	80
Caroline Springs railway Station			1000	100	1000	100
Total	1850 vpd	1250	3830 vpd	1590	4210 vpd	1780

Site access would remain from Christies Road. During MRL peak periods (7:15 am to 8:15 am and 11:00 am to 12:00 pm) traffic modelling identified sufficient capacity on Christies Road and the Western Freeway interchange to accommodate traffic associated with the landfill, as well as future traffic growth. The projected increase of truck traffic on the freeway network is very low in relative and absolute terms.

¹⁰⁷ Table 5-6 of Mr Hunt's evidence on page 21. Note there are minor errors in the table in that some columns do not add up correctly.

In terms of traffic modelling for ongoing future development along the Western Growth Corridor, Mr Hunt referred to the Victorian Integrated Transport Model which takes into account projected overall growth to 2046 and provides estimates of travel patterns and daily traffic volumes on the arterial road network. The Western Freeway is likely to carry in excess of 140,000 vehicles per day at that time, and he noted that the projected 120 truck movements generated between the SEMTS and the site per day are inconsequential. He did not believe that further modelling would meaningfully assist in assessing this proposal.

No other parties submitted traffic evidence.

VicRoads, the responsible agency for the freeway and arterial road network did not object to the proposal.

Several submitters were concerned with worsening congestion and road safety and the impact of additional trucks on already busy roads; many specifically referred to the difficulties of getting on and off the Western Freeway at Christies Road/Western Freeway interchange as well as localised congestion at Ballarat Road/Christies Road/Caroline Springs Boulevard intersection. Ms Weaver referred to Christies Road as “*Christies car park*” in peak periods due to long queues and delays.

Some submitters have witnessed an unsafe situation where trucks (and motorists) travel along the wrong side of Christies Road, overtaking the stationary line of northbound vehicles, to access the right turn lane onto the Western Freeway, potentially conflicting with oncoming southbound traffic.

A number of submitters were also concerned with the traffic implications of transferring waste across Melbourne, in particular road safety, adequacy of existing infrastructure and additional traffic flow on the freeway network.

9.3 Discussion

The Panel considers the analysis undertaken by Mr Hunt to be thorough and his findings well founded. In particular, whilst waste to landfill increases from 780,000 tonnes to 1,360,000 tonnes by 2069, it is anticipated that the maximum waste from SEMTS will be 650,000 tonnes.¹⁰⁸ This major component of waste equates to around 120 articulated truck movements per day (five to six B-Doubles per hour). Mr Hunt identified that a maximum of six trucks per hour will be able to be processed.¹⁰⁹ These truck volumes are significantly lower than the number of traditional garbage trucks that currently access the site as shown in Table 6. The Panel notes that VicRoads did not object to waste being transferred from SEMTS to the site on its freeway network, which is designed to safely accommodate freight traffic.

Submissions and observations from site inspections confirm that current traffic conditions are close to or are exceeding capacity, leading to long queues and delays on Christies Road and Caroline Springs Boulevard. In the PM peak, motorists queued along Caroline Springs

¹⁰⁸ Section 2.3, page 4 of Mr Hunt’s evidence. The Panel calculated that approximately 48 per cent of total waste stream to Ravenhall would be from SEMTS (that is, $(650,000/1,360,000) \times 100 = 48$ per cent).

¹⁰⁹ Section 5.3, page 19 of Mr Hunt’s evidence.

Boulevard, Christies Road, the Western Freeway off-ramp and back onto the freeway; in the mornings, Caroline Springs Boulevard had a long queue with motorists trying to access Ballarat Road or the Western Freeway on-ramp. It appears residential and commuter traffic is a significant contributor to congestion.

However, MRL traffic does not appear to contribute to congestion in a significant way, particularly in the PM period, when garbage and waste transport trucks were rarely seen by the Panel. This is confirmed by Mr Hunt's and GTA analysis of Christies Road/Western Freeway intersection.

In the afternoon peak period, the Panel observed some motorists and truck drivers travelling along the wrong side of Christies Road to access the Western Freeway on-ramp. Other submitters had flagged trucks and motorists speeding along Caroline Springs Boulevard. These road safety and driver behaviour issues should be addressed through police enforcement.

Major development and infrastructure upgrades will continue to occur throughout the area. Considering the potential life of the MRL expansion, the Panel supports Mr Hunt's suggestion for five yearly traffic impact reviews to ensure traffic generated by the landfill continues to have minimal impact on the surrounding road network.

9.4 Conclusions

The Panel concludes:

- The proposed extension of the MRL is considered satisfactory on traffic engineering grounds.
- MRL should be required to engage an appropriately qualified traffic engineer to undertake five year traffic reviews of its operations on the surrounding road network.

9.5 Recommendation

The Panel recommends:

The planning permit include a condition requiring the Applicant to engage an appropriately qualified traffic engineer to undertake five yearly traffic impact reviews of its operations on the surrounding road network.

An appropriate permit condition is included in Appendix D.

10 Landscape and visual amenity

10.1 The issues

After filling the quarry void the landfill will create a mound approximately 40 metres above natural ground level at the highest point. Some submitters were concerned about unwanted changes this will have on a relatively flat landscape.

The visual impact of the landfilling operation was also raised as an issue by submitters.

10.2 Evidence and submissions

The impact of the completed landfill mound form on the local and subregional landscape was a live issue through the Hearing.

Mr Allan Wyatt was called by the Applicant to give evidence on landscape and visual impact. Mr Wyatt also supervised the preparation of the photomontages and assessment of landscape in the PPAR prepared by ERM. In the Hearing he adopted the summary findings of the ERM reports including:

...the landfill will be progressively rehabilitated and the low rising hill that is created will be a feature that is not dissimilar to other topographical features in this volcanic plain landscape and could provide another elevated viewing location across the plain...

Once planting on the newly created landform has established, it could be seen by many viewers as a positive development within the landscape.¹¹⁰

He noted that the landscape assessments in the PPAR rated the visual impact from distance as low to negligible and medium from closer distances. Mr Wyatt rejected submissions that the height was akin to a 13 storey building, submitting that the gently variable slopes of the landfill could not be compared to the vertical face of a building.

Mr Wyatt provided a range of options for post-closure rehabilitation and concluded in part that:

There are Victorian and overseas examples of parklands and community facilities being established on completed landfills. These are of benefit to the surrounding community and often have a significant benefit at a metropolitan level. Given the scale of the proposed MRL site, there is the potential for this to be a major parkland space as part of Melbourne's future.¹¹¹

Ms Kate Dundas provided expert evidence for Melton. She was critical of the landscape and visual impact assessment on many levels including:

- lack of detail on landscape character assessment
- lack of assessment of the sensitivity of the landscape as a whole or its sensitivity to change

¹¹⁰ Mr Wyatt's evidence statement page 2, taken from the PPAR Appendix Landscape report.

¹¹¹ Mr Wyatt's evidence statement page 19.

- lack of consideration of the static and non-static viewing patterns
- unsatisfactory consideration of the magnitude of change in the landscape
- lack of detail on assessment of the change in the landscape character of the surrounding area in particular specific landscape elements such as Mt Cottrell and Mt Atkinson¹¹²
- inadequate information to assess the visual impact of the MRL extension during operations, including the visual impact of the exposed geotextile.

Whilst remediation options include the planting of trees on the MRL landform, Ms Dundas stated that this would not be similar enough to the existing landscape as the character of the Western Volcanic Plan is mostly without trees.

A number of submitters commented on the negative visual impact of the proposed landfill expansion:

- WREC (S89) said it would be a visual intrusion on the Western Plains and any final landform benefits will not be experienced for 60 to 80 years
- Melton (S86) commented on the actual height and the perceived height of 70 metres when viewed from some angles
- Stockland (S73) submitted that the new 'hill' will have an active face that will be a substantial visual blight for several decades. WREC and a number of submitters made a similar comment about the ongoing visual impact of operations.

Some submitters were also concerned about the use of lights on the tip face if this operation is to run 24 hours a day. The Applicant noted in its closing submission that the visual impact of the landfill during operations cannot be reliably shown in photomontages. The current operations, which are nearing the full approved height of 40 metres, should provide an indication of the visual impact that the active tipping face will have nearing the top of the proposed cells.

10.3 Discussion

The Panel has reviewed the PPAR landscape and visual impact assessments and considers they are a reasonable attempt to categorise the landscape and the likely potential impacts. This does not mean some of the criticisms made by Ms Dundas are not valid; there are areas such as the broad landscape sensitivity and sensitivity to change that could have been better assessed.

The Panel, however, does not consider these criticisms fatal to the Panel's assessment of the proposal or the proposal itself. This is a landscape that has already undergone significant change through urban and industrial development, quarrying and transport infrastructure and is likely to go through considerably more change through further development such as the PSP area.

The fact that a hill, or rubbish mountain to some, is being created where one does not exist is not of itself a reason to refuse the proposal. The Panel generally accepts the evidence of Mr Wyatt that the form of the finished landfill will not be discordant in this landscape.

¹¹² Ms Dundas' expert statement p8.

That being said the Panel is acutely aware that the landfill will have significant visual impacts during the operational phase, and that the final form and rehabilitation may be decades into the future and any suggested benefits from significant parkland may not be enjoyed for several generations.

The progressive rehabilitation of the landfill will be critical to minimising the overall visual impact of the extension. Having viewed the existing operation from on the site, and particularly reflecting on the eastern slope facing Christies Road, the Panel is satisfied that a softened 'natural' finish can be established relatively quickly after landfilling, even if it is not the final landfill rehabilitation.

The Panel considers that the visual impact of the operation (filling) will be most significant from Mt Atkinson, assuming the PSP is developed prior to the landfill along Hopkins Road. Although the residential areas are likely to be at some distance (at least 1 kilometre away) the Panel can foresee that new residents in that development are likely to be unimpressed.

Whilst the operating face may be relatively small, the active area of cell construction, vehicle movement and general waste movement and earthworks is likely to be much larger based on viewing the existing operation. Mr Wyatt has suggested, and the Applicant accepts, that a natural toned finish to the cell lining and covering may be one way to reduce the visual impact of operations. This has been addressed in suggested permit conditions accordingly.

Other mitigation measures proposed such as boundary screen planting should also contribute to screening the operations from nearby viewing points. Introducing landscaping early will allow for planting to reach maturity when the northern section of the landfill is developed, further minimising adverse visual impact on neighbouring properties. This has been addressed in suggested permit conditions.

Specific conditions relating to post closure rehabilitation and end use have not been recommended as the landfill BPEM provides extensive guidance on this issue which will be subject to future EPA approvals.

The Panel notes the submissions regarding night lighting on the operating tipping face. Lights will be needed for safe landfill operations and these should be the minimum necessary and placed to avoid directing lighting off site. The Panel notes that night lighting currently occurs on site. The Panel has recommended a condition accordingly in Appendix D.

10.4 Conclusions

The Panel concludes:

- The finished landfill form will be a significant change to the landscape of the area
- The landscape of the area does not have particular recognition in planning for its significance and has already undergone significant change
- Arguably urban development in the area is a more significant change to the local and subregional landscape than has occurred, or will occur
- Progressive rehabilitation of the landfill will be critical to minimising the visual impact
- Minimising the area of operating landfill and the use of more natural coloured construction membranes will be important to minimise visual impact from filling.

10.5 Recommendation

The Panel recommends:

The planning permit include a condition requiring the preparation and implementation of a Landscape Plan that addresses as a minimum buffer planting, fencing, landscape maintenance and progressive landscaping after cell rehabilitation.

The planning permit include a condition requiring the use of sepia toned or light brown landfill liners where they may be visible from off site.

Recommended conditions are included in Appendix D.

11 Other amenity impacts

11.1 Litter

11.1.1 The issue

Under the EP Act¹¹³ it is illegal to litter. This includes windblown litter from premises (unless it was accidental and every effort was made to retrieve the litter) or litter thrown from a vehicle.

The issue is whether the MRL will be able to comply with the EP Act and contain litter within the boundaries of the site.

Under the 2004 Waste Management Policy it is a requirement that the holder of a works approval or licence for a landfill site must among other things meet the objective and every outcome of a BPEM.

In relation to litter the objective of the BPEM¹¹⁴ is:

To keep the landfill and surrounding environment in a litter-free condition.

The required outcome is:

That no litter from the landfill operations reaches beyond the boundary of the premises.

The BPEM provides the following suggested measures to control litter:

- *Minimise the size of the tipping area.*
- *Use litter screens at least four metres high to control litter at the active tipping area.*
- *Establish a program of at least daily cleaning of litter from fences and the surrounding area.*
- *Deposit waste in areas of the landfill that are sheltered from the wind.*
- *Establish contingency plans to deal with extreme events that cause gross litter problems.*
- *Use of appropriate daily cover to reduce litter.*

11.1.2 Evidence and submissions

Many submitters raised the issue of litter escape and its adverse impact on amenity. Submitters raised concerns about litter escaping beyond the property boundary, both for the current landfill operations and the proposed expansion.

The EPA's assessment of submissions to the works approval estimated that 31.1 per cent of submitters were concerned about litter.¹¹⁵

¹¹³ Sections 45A, 45E and 45G.

¹¹⁴ Section 7.8 Litter control.

¹¹⁵ Document 4.

At the Hearing, local resident Ms Volpe said that plastic bags had blown onto her car windscreen; Ms Mengler, who lives in Mt Derrimut, said that under high winds rubbish gets blown into her backyard and into the streets.

The Stop the Tip proforma submission¹¹⁶ included litter from the convoy route for trucks going to the landfill as an amenity impact.

One of the neighbours¹¹⁷ to the existing landfill runs who cattle on his land expressed concern about the health risk to his cows as they have been observed chewing plastic bags.

Melton acknowledged the efforts of the Applicant to mitigate off-site litter, but submitted that it was aware of many complaints about litter, and considers that the Applicant has a lot of work to do to address its off-site impacts.¹¹⁸

No experts gave evidence on litter, however, several experts with landfill experience responded to questions on litter:

- Mt Atkinson Holdings asked Mr Green his opinion about the difference in controlling litter when there are mounds compared with other situations such as filling quarry holes. Mr Green said that more measures are needed for mounds but indicated that he considered the litter was not difficult to control.
- Mr Wyatt considered that boundary fencing would assist in litter control but recommended that the fencing should go behind the perimeter landscaping (between the tipping face and the landscaping) to prevent the litter getting stuck in the landscape buffer.
- Mr Nolan and Mr Mulvey both expressed concerns about litter and the need to control it.

The Corrections Victoria facilities to the east are discussed in Chapter 2.5.3. The facilities provide residential accommodation and are some of the closest sensitive uses.

Ms Westin, General Manager of the Metropolitan Remand Centre (MRC) and previously the Business Manager of the Dame Phyllis Frost Centre, said in her witness statement that:

I am concerned that the Applicant does not currently manage litter within the Landfill land despite requirements in the section 173 Agreement which applies to the land and the planning permit dated July 1998, both of which I have reviewed... I am concerned that the existing litter problem will be exacerbated if the Applicant is granted a permit that facilitates expansion of the landfill.

Litter flies from the landfill and over the prison wall into MRC on a daily basis. On days of high wind, there is a significant and large amount of litter that flies over the wall and into the MRC.

The litter blown into the prison environs present amenity and security problems.¹¹⁹ At the Hearing Ms Westin said that she was not aware of any other litter sources in the area and

¹¹⁶ Submission MRL 00104.

¹¹⁷ Submission MRL00062.

¹¹⁸ Submission MRL00086.

¹¹⁹ Submission MRL00072, paragraph 3.3.

that she had not noticed any difference in the amount of litter at the facilities in the past few years.

Ms Westin, in a confidential briefing to the Panel and legal representatives of the key parties, expanded on the negative impacts litter causes on the general operation of the prisons.

At the Hearing Corrections Victoria indicated that it wants a planning permit condition that prohibits litter escaping from the site.

The Applicant disclosed that it had not complied with its EPA licence condition (LI WM3) that specifies that no litter is to be deposited beyond the boundary of the site. The 2015–2016 Annual Performance Statement (APS) discloses breaches of this licence condition occurred on 21 August 2015, 6 October 2015, 25 October 2015 and 18 March 2016. The APS disclosed that the escaped litter was caused by high winds and that the litter was collected and management measures implemented including a reduced tipping face or closure of the site during high winds.¹²⁰

The Applicant claimed that there have been no material litter escapes from the site since Cleanaway took over operations in March 2015. On taking ownership of the landfill operations the Applicant implemented a Litter Management Plan.

Other actions since the Applicant took over the MRL include, in summary¹²¹:

- Ordinary operating procedure such as mobile nets at the tipping face, perimeter fencing, litter collection by staff and reduced tipping on windy days.
- 12 metre high perimeter fencing on the southern boundary of the existing landfill, and 6 metre high perimeter fencing on the eastern boundary.
- Management of illegal dumping.

The Applications indicate that stormwater litter traps will be installed and litter crews will collect off-site litter from the site entrance to the railway overpass twice daily. Litter control measures will be monitored and any litter observed outside the site perimeter will be recorded; including weather conditions at the time.¹²²

In response to submissions made by Stop the Tip about litter generated by trucks delivering waste, the Applicant said Cleanaway trucks are covered, as are other trucks carrying putrescible waste. Trucks carrying hard waste and construction waste are usually covered with a tarpaulin (although the tarpaulin may not be visible from the road)¹²³, and Cleanaway encourages other operators to have loads covered when travelling on public roads to the MRL.

In addition, the tip face is covered daily with soil, which helps to reduce litter escaping from the site. The Applicant also said that especially in relation to its neighbour's concerns about

¹²⁰ Document 8. The WREC (S89) noted there were six litter breaches in 2014–15 when the site was operated by Boral.

¹²¹ Landfill Operations, Closing Submission, paragraphs 54-57.

¹²² Golder, Appendix N: Monitoring Program, Section 3.9 Litter, Feb 2016.

¹²³ Closing Response to submissions, page 31.

his cattle, that litter escapes should be reported to its hotline and the litter will be cleaned up.

11.1.3 Discussion

The Applicant claimed that there have been no material litter escapes from site since Cleanaway took over operations in March 2015, which the Panel interprets to mean that there has been no enforcement action in relation to litter during that period.¹²⁴ However, the Panel notes the Applicant's 2015–2016 APS discloses breaches of its licence in relation to litter, all of which the Applicant regarded as minor.

From the above evidence and submissions a summary of the measures that can be taken by the Applicant to contain litter (either already implemented or possible) are as follows:

- mobile nets near the tip face
- perimeter fencing which vary in height based on the prevailing winds
- maintaining fencing
- litter crews collecting litter from the surrounding land
- on high wind days increased inspections and litter collections by the litter crews
- reduction of the tipping face
- based on alarm triggers, on high wind days a reduction of the tipping face area and when the wind is extremely high, closure of the landfill
- stormwater litter traps.

The Panel inspected the surrounds of the MRL on a number of occasions including before the Hearing, during the Hearing and during the site visits. The Panel observed perimeter fencing in places and netting near the tip face as well the litter crews patrolling. The Panel observed very little off-site litter. These observations go some way in showing that off-site litter can be controlled.

While the details provided to the Panel in the confidential briefing by Corrections Victoria about the impact of litter on its operations at its facilities cannot be disclosed, the Panel takes its concerns very seriously. It accepts that litter has hindered operations and resulted in Corrections Victoria and ultimately the taxpayer incurring additional expense.

If litter does escape and it can be attributed to MRL there are actions that can be taken by the EPA, the responsible authority, Corrections Victoria as well as the public to penalise the Applicant for breaching its licence or fine the owners of vehicles that do not secure their load resulting in litter escape.

The Panel also noticed some illegal dumping near the site's boundaries as well as signage stating that dumping is illegal. If people are observed dumping it should be reported to the EPA (with as many details as possible to aid the identification of the person dumping).

¹²⁴ Document 5 Annexure B.

11.1.4 Conclusions

The Panel concludes:

- As reported in its Annual Performance Statement, litter has emanated from the MRL which is a breach of its current EPA licence.
- Litter has impacted on the operations of the correctional facilities to the east of the site causing additional public expense. The most likely source of the litter is the MRL.
- Litter from the MRL can be contained, or at the very least, minimised with proper management.
- There are mechanisms that can be used to penalise the owners of vehicles that litter.

11.1.5 Recommendations

The Panel recommends:

The planning permit include a condition requiring the preparation of a Litter Management Plan that requires measures including:

- **Mobile nets near the tip face.**
- **Perimeter fencing at appropriate heights based on prevailing winds placed between the landfill and landscape buffers.**
- **Litter traps be placed on stormwater drains.**
- **A daily program for litter inspection and collection from litter traps, nets and fences including logging of collection activities, findings and system defects and actions taken to correct defects.**
- **A high wind alarm trigger with criteria for reducing; and ceasing landfilling under specified wind conditions.**
- **Regular reviews and updating as necessary.**
- **A litter complaints hotline be maintained and responses to complaints be registered.**
- **The consultative committee be provided with quarterly reports on the hotline complaints and the responses register.**

A recommended condition is included in Appendix D.

11.2 Noise

11.2.1 The issue

The SPPF C13.04-1 Noise requires the State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1) must be considered.

The issue is whether noise generated by the proposed MRL extension will comply with SEPP N-1 has as its policy goal:

*...to protect people from commercial, industrial or trade noise that may affect the beneficial uses made of noise sensitive areas while recognising the reality of the existing land use structure in the Metropolitan Region.*¹²⁵

Beneficial uses to be protected as specified in SEPP N-1 are:

*...normal domestic and recreational activities, in particular, sleep in the night period.*¹²⁶

11.2.2 Evidence

Noise was not raised as a critical issue by objectors to the planning permit.

The Panel's considerations rely on the technical assessment, the expert evidence and questioning of the noise expert by parties to the Hearing.

(i) Technical assessment and modelling

Marshall Day Acoustics (MDA) as part of the works approval application undertook a noise assessment¹²⁷. This report is for the 30 years works approval area only (2025–2055).

An addendum report was also prepared by MDA. This report extends the assessment to cover the additional areas included in the permit application.¹²⁸

These assessments were supplemented with the expert witness statement of Mr Christophe Delaire that included the following¹²⁹:

- Appendix A - Clarifications
- Appendix B – Errata
- Appendix E – Mt Atkinson and Tarneit Plains Precinct¹³⁰
- Appendix F – Noise contribution from gas turbines.

The main purpose of the assessments was to determine whether the extended MRL could comply with SEPP N-1.

The technical assessment included baseline noise measurements at four nearby residences followed by noise modelling. The modelling included inputs from topography, sound power levels from likely machinery on the site, truck volumes and speed on the site, and noise from Boral operations.

¹²⁵ State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1, No. S31, 16/5/1989, Gazette 15/6/1989, Clause 6.

¹²⁶ State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1, No. S31, 16/5/1989, Gazette 15/6/1989, Clause 8.

¹²⁷ Marshall Day Acoustics, Melbourne Regional Landfill, Noise Assessment, (Works Approval Specialist Report), 10 February 2016.

¹²⁸ Marshall Day Acoustics, Melbourne Regional Landfill, Planning Permit Application Noise Assessment, Addendum, 12 February 2016.

¹²⁹ Appendices C and D detailed Mr Delaire's qualifications and experience.

¹³⁰ As the noise modelling for Mt Atkinson and Tarneit Plains Precinct is being considered by the Panel for the Melton C162, it is not being considered by this Panel.

The modelling was undertaken on several ‘worst case’ cell-sequencing scenarios that effectively account for high levels of filling activity close to sensitive receptors.

The modelling results were assessed against the SEPP N-1 limits for the applicable zoning and the time of day for the ten closest residential locations to the MRL site (including the Dame Phyllis Frost Centre).

In accordance with SEPP N-1 guidance some noise penalties were applied to the results, for example a tonal penalty was applied for the use of reverse beepers by trucks delivering waste to the landfill.

A number of assumptions were included in the model, for example only one model of dozer will operate at night and the telehandler will not operate at the same time as the rollers for cell construction.

The MDA reports state that the modelling is considered conservative because, for example, interim capping and final capping will not occur simultaneously. However, in some of the noise sensitive locations, the predicted noise levels are at the SEPP N-1 noise limits.

As an additional modelling exercise¹³¹ the gas engines were increased from four to the proposed 27. These were located at sites within the MRL. The modelling indicated that the gas engines would be required to be setback a minimum of 1250 metres from all sensitive receivers in order to meet SEPP N-1 limits.

Mr Delaire further emphasised at the Hearing that the modelling was only a determination of the ability of the MRL to comply with SEPP N-1 and that more detailed modelling will be required.

(ii) Results and mitigation

Mr Delaire stated that, based on current operational assumptions that were provided as input to the model, the MRL can comply with SEPP N-1 at all existing residential properties provided certain noise mitigation steps are employed. For the PSP area, it was also found that cumulative noise levels would be SEPP N-1 compliant.

The modelling undertaken only incorporated the noise generated by Boral’s operations at its current location. While a noise assessment had been undertaken for the Boral relocation to the north-east this was not included because, at the time of the MRL modelling, Boral did not have the necessary approvals. Mr Delaire undertook the noise modelling for the Boral plant relocation and found that it is likely to produce less noise as it will have better equipment and is moving further from sensitive uses.

Mr Delaire confirmed that the modelling started with non-compliance and through reiterations moved as Melton described it “*to marginal compliance at some properties*”.

Future modelling will be used to for example determine the exact height and location of the berms and the location of gas engines.

¹³¹ Christophe Delaire, Expert Witness statement, 14 September 2016, Appendix F.

For the on-site equipment, noise levels from various databases, such as manufacturers data, were used in the model. The data used, Mr Delaire said, was generally in the upper range of noise levels for normal operating conditions and it takes into account ageing of the equipment. However, the model does not take into account wear and tear. Equipment maintenance will play an important role to minimise equipment noise. When asked about future equipment needs, especially when there is an increase in the amount of waste accepted at the MRL, Mr Delaire advised that the Applicant had provided the information about the equipment to be used, and any differences would be taken into account in the further modelling.

(iii) Mitigation measures

A range of mitigation measures were included in the modelling including restrictions on trucks with reverse beepers, noise barriers, restrictions on the time some equipment can be used and restricting construction to the daytime.

The following additional comments were provided by Mr Delaire in relation to the proposed mitigation measures:

- Based on the long time frame some of the measures proposed may not be required.
- Noise barriers were identified from the modelling as being needed in some locations including to protect residences on Middle Road. The key purpose of the noise barriers (or berms) is to control noise from the haul roads. A range of materials can be used for noise barriers including earthen mounds, shipping containers or timber paling walls. At 4 metres, these barriers will provide a 4 to 5 dB noise reduction.
- Broadband beepers, used when a truck is reversing, are considered by Mr Delaire to be more effective at mitigating noise than reverse beepers.
- It is proposed that there be a night time ban on trucks entering the site if they have reverse beepers. Currently 90 per cent of the trucks entering the site at night are from the same company.

(iv) Noise management and monitoring

Mr Delaire said that a Noise Management Plan will be required for the life of the site's activities and this has been included in the draft planning permit. It will need updating regularly and will need to incorporate details on:

- restrictions on the equipment and operation including for customer trucks
- mitigation measures for each cell
- monitoring and modelling requirements for each cell, noting this may vary depending on the previous cell and its location – some cells will be more critical in ensuring compliance with SEPP N-1
- changes that occur over time in the immediate surround that would alter noise impacts on sensitive uses including Boral's operations
- a complaints management strategy
- records of equipment malfunction
- requirements if non-compliance with SEPP N-1 is demonstrated
- regular reviews

- equipment and other operational changes over time.

(v) Other matters

Mt Atkinson Holdings indicated that owners of the properties in Middle Road and to the south-west of the site will not accept any noise mitigation measures on their land. However, it was also disclosed that drainage changes are proposed which could result in the owners moving from their properties in the future. Mt Atkinson Holdings submitted while the owners continue to live in their properties they need to be protected from excessive noise.

11.2.3 Discussion

The Panel accepts the MDA preliminary assessment of noise demonstrates that the requirements of SEPP N-1 can be complied with subject to effective management and mitigation. Whilst some parties questioned the noise studies and evidence in cross examination, the Panel considers there was no significant challenge to the findings. As indicated by Mr Delaire further modelling work is required to test the assumptions and mitigation measures suggested.

11.2.4 Conclusions

The Panel concludes:

- On the assessments and evidence presented to us, there are no noise issues of such a fundamental nature as to warrant refusal of the issuing of the planning permit or works approval based on noise.
- The MRL expansion can, with appropriate noise mitigation measures, meet the requirements of SEPP N-1.
- As the assessments show marginal compliance at some locations further assessment of the noise impacts is required once detailed design has been completed.
- A Noise Management Plan should be required for the life of the site activities and given the timeframe being considered, updated regularly.

11.2.5 Recommendations

The Panel recommends:

The planning permit include a condition requiring a Noise Modelling and Monitoring Plan to be prepared prior to the commencement of works to document ambient noise levels, provide predictions of the most critical times in landfill operation and identify where and when noise mitigation is likely to be required to meet applicable standards.

The planning permit include a condition requiring a Noise Management Plan for each cell which includes an assessment of all sources of noise, how scheduling will occur to minimise noise, any mitigation required and how it will be implemented.

Recommended conditions are included in Appendix D.

12 Social impacts

12.1 The issues

The issues are:

- the landfill impacting on the use and enjoyment of private properties and local community facilities
- feelings of stress, anxiety and embarrassment among local residents associated with living near the landfill
- community engagement issues
- whether the landfill expansion will have a social licence to operate
- the suggested unfair burden being placed on local residents (addressed in Chapter 4.5(v)).

Many of the social impacts of the landfill arise from odour. This Chapter discusses the social impacts of odour. Other aspects of odour are discussed in Chapter 6.

12.2 Evidence and submissions

Stop the Tip called Mr Glenn Weston to give expert evidence on the social impacts arising from the landfill. His firm conducted a survey of residents in the area, and focused discussion groups with members of Stop the Tip, in relation to how odour impacted their quality of life.

Mr Weston's evidence was that odour from the existing landfill has a disproportionate and rather severe social impact on the local community. While he was unable to confirm that the landfill is the source of the odour, his evidence was that it is clear that many people are smelling offensive odours, and that this is impacting their quality of life. These impacts may increase with the landfill expansion and the development of surrounding areas (including Mt Atkinson and Tarneit Plains).

The key findings from Mr Weston's survey were:

- 86 per cent of respondents were at least 'moderately annoyed' by odour
- 68 per cent were concerned that odours may be impacting on their health and that of family and friends
- 66 per cent of respondents felt embarrassed in front of visitors due to odour
- 34 per cent had chosen not to invite family or friends to their home because of odour
- 29 per cent feel unwell due to odour.

The social impacts of the landfill were explored in more detail in submissions and statements from residents of Caroline Springs, Deer Park, Derrimut and Burnside, several of whom were called by Stop the Tip as lay witnesses to give evidence about the impacts of the landfill on their quality of life.

(i) Restrictions on use and enjoyment of homes and local facilities

Residents said that the existing landfill has had significant impacts on their use and enjoyment of their homes and their suburbs. The predominant issue was odour, although

litter, traffic impacts, health impacts and the spread of disease through birds and vermin at the landfill were also strong themes. Several residents said that they would not have purchased in the area had they known about the landfill, and some said that the impacts of the landfill were so bad that they have decided to move.

Several residents submitted that they were unable to use their backyards and swimming pools during large portions of the year, particularly in the warmer months when the odour tends to be worse. Social interactions with friends and families are restricted as a result. Others submitted that they can no longer enjoy the award winning lakes, parks and outdoor facilities in the Caroline Springs estate due to odour and concerns about the spread of disease from birds and vermin from the landfill. Submitters also referred to the impact odour has on community-based outdoor events such as soccer training.

Examples of some of the concerns raised by submitters are:

*It smells a bit like off eggs or rotten garbage. It is disgusting and terrible and it can make you feel sick. Sometimes the odour is so strong we need to stay indoors and close the doors and windows to escape it.*¹³²

*When a cool change comes at the end of a hot day windows cannot be opened due to the stench of rotting waste.*¹³³

*My wife has awakened in the middle of the night feeling nauseas with the smell, where I had to close all the windows and turn off our air conditioning.*¹³⁴

*My washing (that is, bedsheets) often lingers of a funky/rubbish like smell.*¹³⁵

*These odours...has forced our family to vacate our house, we have spent many evenings at the cinemas or shopping centres.*¹³⁶

(ii) Stress, anxiety and embarrassment

Many residents submitted that the landfill is a source of embarrassment. For example, Angela Marevic¹³⁷ stated “I have been extremely embarrassed by these odours especially when entertaining my family and friends that live on the other side of town”. Residents referred to the stigma associated with living near the landfill, and the embarrassment they felt at references to Caroline Springs as ‘Caroline Stinks’ in the media and the broader community.

Several residents commented on the increased levels of fear and anxiety they experienced living near the landfill. They referred to stinging eyes and tingling sensations in their throats and on their tongues on high odour days, and expressed concerns about what impacts air emissions from the landfill could be having on their health and that of their families. They

¹³² Anthony Calandrella, Document 62.

¹³³ Graeme Jeffs, S45.

¹³⁴ Gary Mullan, Document 65.

¹³⁵ Anita Vojtek, Document 74.

¹³⁶ Zig Dimitrovski, Document 72.

¹³⁷ Document 80.

felt that health concerns such as asthma, psoriasis and allergies are exacerbated by the air emissions from the landfill. One submitter referred to the difficulties of living near the landfill with children who suffered from autism, and become distressed when they smell the odour from the landfill, or when the family has to alter its usual routine due to odour.

Jaroslaw Kaszkiel (S65) described concerns about the health impacts of living near a large landfill:

... there appears to be a growing body of independent evidence indicating that living within a few kilometres of a large landfill does produce measurable increases in health risk. The most recent research published in the International Journal of Epidemiology in Oxford (see ref 1)¹³⁸ illustrates a significant increase in respiratory diseases (consistent with the previous research) and a possible risk of lung cancer for people living within 5 kilometre of a large landfill.

Amanda and Robert Dunne commented¹³⁹:

On other nights we can smell a perfume chemical smell (I liken it to a shopping centre air freshener) and I wonder 'what is this trying to cover up and what are we breathing in now'?

Submitters were concerned that birds and vermin from the landfill are spreading disease among the local wildlife and domestic pets. Several submitters referred to an outbreak of avian botulism at the lakes in Caroline Springs, resulting in significant numbers of bird deaths. They thought the landfill might be the source of the disease. They referred to their distress at seeing sick and dead birds in their neighbourhood. One submitter described the death of a family dog after swimming in the lakes at Caroline Springs.

Some submitters described increased tensions within their families as a result of differing sensitivities to the landfill, and one family member(s) wanting to move while the other(s) want to stay. David Anderson reported feeling agitated and frustrated when they see the landfill, describing it as a “*mountain of rubbish*” and a “*blight on the horizon*”¹⁴⁰. Friends of Steele Creek submitted that “*offering us a mountain of Melbourne’s smelly, ugly rubbish as an improvement to our landscape is insulting and demeaning*”.¹⁴¹

(iii) Community engagement

Many residents highlighted feelings of frustration and apathy arising from the perceived lack of action taken by the EPA in response to odour complaints. Residents reported that their complaints were not taken seriously, were rarely acted upon, and they were often told by the EPA officers that they must be mistaken about the landfill being the source of the odour.

¹³⁸ Mr Kaszkiel cited a study by F Mataloni et al 2016, *Morbidity and mortality of people who live close to municipal waste landfills: a multi-site cohort study*, International Journal of Epidemiology, 2016.

¹³⁹ Document 64.

¹⁴⁰ Document 77.

¹⁴¹ Document 60

This was consistent with the evidence of Ms Westin, Manager of the Melbourne Remand Centre.¹⁴²

Residents also reported experiencing frustration in their interactions with the Applicant (or its parent company Cleanaway). They reported that Cleanaway had little respect for the community, and were often dismissive of their complaints, refusing to accept that the landfill could be the source of the odour. They also reported that staff answering the complaints phone number provided on the Cleanaway website appear not to be based at (or even near) the landfill, and were not effective in addressing or resolving complaints.

The MRL Community Consultation Group was set up by Cleanaway in April 2015, and disbanded after the resignation of the independent facilitator in April 2016. Boral had also established a community liaison group when it was operating the landfill prior to Cleanaway.

Community Consultation Group member Marlene Gorman, who appeared at the Hearing on behalf of the residents of the Burnside Retirement Village, stated¹⁴³:

Several meetings were held by Cleanaway with the [Community Consultation Group]. In my opinion, there was no adequate responses from Cleanaway to serious questions put to their experts on the source of the odours, the traffic management, rubbish in the environs, leachate, gas migration and road dirt.

Michael Hewitt (S102) submitted that Cleanaway had been less cooperative with the Community Consultation Group than Boral had been when it was operating the landfill. He said that Boral provided information to the group whether it was good or bad, whereas Cleanaway had been less forthcoming. He said that the group had for some time been asking Cleanaway for information on tonnages of waste and truck numbers, and this information was not provided until the Applications were lodged (and even then, it was not provided directly to the community).

Frank Alexopoulos (a proforma submitter who appeared at the Hearing) submitted that the disbanding of the community liaison group had resulted in a breakdown in community engagement with Cleanaway. He submitted that disbanding the group has led to a level of distrust in the community, because it looks like the Applicant “*has something to hide*”. He submitted that there should be an ongoing community liaison group, as well as a single contact point for complaints.

Other submitters referred to the fact that English is not the first language of a high proportion of residents in the surrounding community, and submitted that information about the proposed expansion should have been provided in other languages.

(iv) Social licence to operate

Stop the Tip¹⁴⁴ submitted that the State Waste Framework clearly recognises the need for landfills to have a social licence to operate, and that a social licence to operate is critical to

¹⁴² Document 52.

¹⁴³ Document 81.

¹⁴⁴ Document 75.

the viability of a state significant waste and resource recovery hub. It submitted that the repeated breaches of odour conditions on the EPA licence for the existing landfill, and the repeated failure of the EPA to prosecute these breaches, has resulted in there being no social licence to operate:

The residents of these suburbs can have no confidence that there will be any change in this regard in the future. Consequently, in our submission, there is no social licence for the proposed extension of the landfill...this Panel ought to regard this lack of a social licence as fatal to the Applicant's case.

Similar submissions were made by major landowners such as Leakes Road, Rockbank (S61), community groups such as Western Region Environment Centre (S89) and individuals. Mr Weston also gave evidence that the Applicant has no social licence to operate.

12.3 Discussion

Mr Weston's survey did not constitute a full social impact assessment. It did not balance the impacts of the landfill on the local community against the benefits the landfill may bring to the local or the broader community. Mr Weston also noted there was considerable variation among survey responses, which could be due to the location of particular homes or individual movement patterns across the day and year, differences in human olfactory perception and differences in aesthetic expectations.

The Applicant questioned the reliability of Mr Weston's evidence, pointing to the fact that the survey was completed very quickly, the focus group and survey participants were to some degree 'self-selecting', accepted survey methodologies may not have been employed, no odour experts were consulted in connection with the survey questions or results, and the survey did not involve any form of testing or scientific analysis.

The Panel has taken these matters into account in determining the weight to be afforded to Mr Weston's evidence. Nevertheless, the general thrust of Mr Weston's evidence is supported by the submissions of local residents. The existing landfill clearly has social impacts, and without careful management (particularly of odour emissions), there is the potential for these impacts to be exacerbated if the landfill is expanded, and as the surrounding areas are developed.

The impacts currently being felt by the local community are impacts from the existing landfill. The Panel is persuaded by the submissions and evidence from the Applicant that there were many legacy issues associated with the existing landfill that are slowly being improved, and that the design and management of the landfill expansion will be more efficient and more advanced than the existing landfill (particularly the older cells).

The level of discontent in the community about the existing landfill, and the large number of objections to the proposed expansion, suggest to the Panel that the Applicant arguably does not currently have a social licence to operate. Gaining a social licence to operate will require a continued and sustained effort from the Applicant to improve the performance of the existing landfill (particularly with regard to odour emissions), and to address the legacy issues associated with the existing landfill. That effort will need to be sustained throughout the life of the existing landfill and the landfill expansion if the Applicant is to keep its social licence to operate.

Looking forward, the Panel is confident that the landfill expansion will have less detrimental impacts on the surrounding community than the existing landfill, provided the approvals for the new landfill are appropriately conditioned, and effectively implemented, monitored and enforced.

As discussed in Chapter 6 of this report, the Panel is satisfied that the approvals for the landfill expansion can be conditioned to ensure odour is managed more effectively. The Applicant indicated in its reply submissions that it would implement a detailed odour management plan in relation to the existing operations, as well as accept conditions for a detailed odour management plan for the landfill expansion. The Panel has recommended appropriate permit conditions relating to the odour management plan in Appendix D. The Panel considers that the odour management plan will help inform detailed odour management conditions on future EPA licences to operate future cells.

Effective enforcement of odour conditions will be critical. Effective enforcement relies on detailed monitoring and reporting requirements, as well as an effective complaints handling procedure being implemented by the Applicant. The Panel addresses these issues in its recommended permit conditions in Appendix D.

Another critical element in managing the social impacts of the landfill is maintaining an open and transparent dialogue between the landfill operator, the regulators and the community. This should primarily be through a community liaison group. The Panel has recommended appropriate conditions in Appendix D relating to a community liaison group.

An open and transparent dialogue through the community liaison group will help the community to ensure that the Applicant is held to account in complying with the conditions on its approvals. Provided there is good will from both sides, it will also help to rebuild trust between the Applicant and the community, and will hopefully result in the facility gaining a social licence to operate. Rebuilding trust and gaining a social licence to operate will take some time. While the Panel is only able to recommend conditions for the landfill expansion, it strongly encourages the Applicant and the community to work towards establishing a community liaison group in relation to the existing landfill operation as soon as possible.

Submitters suggested that the Applicant should provide funding support for the community liaison group, to cover the appointment of an independent facilitator, basic administrative costs of the group, and the costs of engaging independent experts to review the Applicant's reporting and performance data. The basic costs are included in the recommended permit conditions but not funds to engage independent experts.

Friends of Steele Creek noted other examples where the EPA has provided funding for the community to engage independent experts to provide advice to community groups. The Panel agrees that funding support for such independent advice has merit in principle but has not sought to embed it in conditions. The Panel considers such funding could help to rebuild trust between the community on the one hand and the Applicant and EPA on the other, but it should be provided on a voluntary, rather than compelled, basis. The Panel encourages the Applicant and the EPA to further consider such funding support.

The EPA's perceived lack of responsiveness relating to odour complaints was a strong theme in submissions from residents. The Panel encourages the EPA to work with the local

community to address odour complaints more effectively. This could include better training of EPA officers staffing the odour complaints hotline, appointing a dedicated staff member(s) within the EPA to handle odour complaints regarding the landfill, or seeking more funding or resources to support the EPA in this important work. Ultimately, the EPA taking legal action against the Applicant for breaches of licence conditions should not be discounted.

12.4 Conclusions

The Panel concludes:

- Critical to managing the social impacts of the landfill are:
 - careful management of the landfill, particularly odour
 - open and effective dialogue between the landfill operator, the regulators and the community
 - the establishment by the Applicant of an effective complaints handling procedure.
- The Applicant should be required to establish and fund a community liaison group for the landfill expansion.
- The permit for the landfill expansion should contain appropriate conditions dealing with these matters.
- The Panel strongly encourages the Applicant and the community to work together to re-establish the community liaison group for the existing landfill as soon as possible, with a view to rebuilding trust and gaining a social licence to operate the facility.

12.5 Recommendations

The Panel recommends:

The planning permit include a condition requiring a Community Consultation and Complaints Management Strategy that includes the following elements:

- **A requirement to establish and fund a community liaison group, and participate in regular community liaison group meetings.**
- **A requirement to provide regular information and updates on the performance of the landfill on a public website and to the community liaison group.**
- **A requirement to establish and maintain a 24 hour dedicated hotline for complaints.**
- **A requirement to establish and maintain a detailed complaints register**
- **Regular reviews of the Strategy.**

A recommended condition is included in Appendix D.

13 Other issues

13.1 Greenhouse gas emissions

13.1.1 The issue

As described in Chapter 7 significant quantities of methane are produced in a landfill containing putrescible waste. Methane has a greenhouse gas warming potential twelve times that of carbon dioxide. The general operations of the landfill such as use of equipment also produce greenhouse gases.

It is a requirement of the Victorian *Climate Change Act 2010* that when the EPA assesses a works approval it considers greenhouse gas emissions of the premise. In addition, the SEPP (AQM)¹⁴⁵ requires that generators of greenhouse gases manage their emissions and implement cost effective greenhouse gas mitigation measures.

Generators of greenhouse gas emissions such as landfills are required to report annually on their current and expected energy consumption and their energy and non-energy related greenhouse gas emissions annually to the EPA.

The EPA's *Protocol for environmental management Greenhouse Gas and energy efficiency in industry*¹⁴⁶ applies to premises that require a works approval and licences and requires the application of best practice to the management of greenhouse gas emissions and energy consumption. The protocol specifies the procedure for estimating greenhouse gas emissions and energy consumption.

13.1.2 Evidence and submissions

Evidence and submissions on greenhouse gas emissions and energy efficiency was limited. The Panel was informed that:

- Landfill gas (LFG) is collected and used to generate energy or flared as described in Chapter 7.
- Cleanaway provided a summary table of its current and proposed greenhouse gas emissions based on the EPA Protocol¹⁴⁷. The calculation for the proposed emissions is based on a scaling up of current emissions and a 75 per cent efficiency of the gas collection system, although the efficiency of the gas collection system is likely to be higher than 75 per cent.¹⁴⁸
- As required under the BPEM an assessment has been made of various options to reduce greenhouse gas emissions. The main opportunity to reduce greenhouse gas emissions is through collection of LFG and its conversion to electricity. Other

¹⁴⁵ Clause 13.

¹⁴⁶ EPA, *Protocol for environmental management Greenhouse Gas and energy efficiency in industry* Publication 824, 2002.

¹⁴⁷ Appendix F of the Works Approval application.

¹⁴⁸ 75 percent is the default collection efficiency for LFG (Source: *Information to Support Works Approval Application, Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall*, Section 19.17, February 2016.

reduction opportunities included an expanded use of hybrid plant and through the promotion of waste minimisation strategies.

- The Applicant is currently assessing the potential of using biodiesel which produces up to 85 per cent less greenhouse gases than petroleum based diesel¹⁴⁹.

13.1.3 Discussion and conclusion

While greenhouse gas generation is inextricably linked to the collection of LFG for electricity generation, the Panel is not able, on the limited information provided, to make any definitive conclusions or recommendations on the adequacy of the estimated greenhouse gas emissions and whether their management meets best practice.

In the Panel's view this is not an issue that should lead to refusal of a planning permit and the Panel is satisfied that the existing regulatory requirements around greenhouse gas emissions ensure best practice can be achieved.

13.2 Aboriginal cultural heritage

13.2.1 The issue

Aboriginal heritage was briefly considered in the PPAR¹⁵⁰, and a Cultural Heritage Management Plan (CHMP) dated 21 April 2016 prepared by Ecology and Heritage Partners (EHP) was included with the Applications. Under s52 of the *Aboriginal Heritage Act 2006*, a permit cannot be issued until a CHMP is approved under that Act which is acknowledged in the PPAR.

As most of the area to be disturbed for the landfill has or will have been disturbed by quarrying, the CHMP relates to a relatively small range of facilities and activities including:

- stormwater ponds and drains outside the quarry area
- works in the quarry buffers that do not have previous significant ground disturbance
- the location of a new weighbridge
- drainage and gas infrastructure.

The surveys associated with preparation of the CHMP identified an artefact in the Hopkins and Riding Boundary Road area which is recommended for salvage. The CHMP makes recommendations on this and other actions necessary to properly address Aboriginal heritage.

13.2.2 Discussion and conclusion

The approval of the CHMP is subject to a separate statutory approval pathway under the Aboriginal Heritage Act and it is not up to this Panel to assess the adequacy of the CHMP. A planning permit cannot issue until the CHMP is approved.

¹⁴⁹ *Information to Support Works Approval Application, Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall*, page 99, February 2016.

¹⁵⁰ On page 51.

A specific recommendation is not needed on this issue as the Minister for Planning is statutorily constrained from issuing a permit until the CHMP is approved.

13.3 Flora and fauna

13.3.1 The issue and submissions

The existing quarry approvals cover the majority of the site and thus the issue of flora and fauna, and particularly native vegetation of conservation significance, have been dealt with in previous applications.

As described in the Aboriginal cultural heritage chapter, there are, however, a number of relatively small new elements outside the existing approvals which may impact on flora and fauna values.

The Applicant commissioned work by EHP to consider:

- Whether a planning permit is required for native vegetation removal under the *Planning and Environment Act 1987*.
- Whether approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) is required, noting that Commonwealth issues have been addressed in the past through the creation of the grassland reserve on the site.¹⁵¹

EHP concluded that a planning permit is required for vegetation removal for the elements of the proposal that are located outside existing quarry approvals. They also concluded that the vegetation in these areas¹⁵² is of relatively poor quality that can be dealt with by offsetting through planning permit conditions.

Melton in their submission agreed that a permit is required for native vegetation removal and that assessment and offsetting is an appropriate response to C52.17 of the planning scheme.¹⁵³

For Commonwealth matters EHP concluded that provided the works are undertaken within the ambit of the existing EPBC Act approval conditions, then a new referral to the Commonwealth is not required for the Striped Legless Lizard or other matters of national environmental significance (MNES).¹⁵⁴

Western Region Environment Centre (S89) stated that the site has some significant flora and fauna values, including legless lizard habitat, and most of these will disappear if the site is quarried to the full extent of the Boral permit. It submitted that although Boral has met its offset obligations under the Commonwealth and state environmental legislation, some other sections of the site should be subject to further conservation measures rather than quarrying or landfilling.

¹⁵¹ PPAR pages 50-51.

¹⁵² The landscape buffers, the proposed stormwater ponds adjacent to Riding Boundary Road and the proposed weighbridge location, EHP Report of 11 February 2016, page 4.

¹⁵³ Document 55, para 26.3.

¹⁵⁴ EHP Report of 11 February 2016, page 5.

Melbourne Water (S76) stated that it has identified Skeleton Creek as a priority area for investment under the Healthy Waterways Strategy (Melbourne Water, 2013). It aims to achieve this by restoring and enhancing the condition of the headwaters, the upper reaches of the creek (that is, Ravenhall) which contribute strongly to water quality and flora and fauna diversity in the lower reaches.

Melton (S86) stated that it has concerns regarding the data that has been used to assess whether the Striped Legless Lizard is found on the site. It stated that the Striped Legless Lizard was widely and abundantly found on the site during survey work undertaken between 2004 and 2007.

13.3.2 Discussion and conclusion

The impact on flora and fauna is not a major determinant in the proceedings given:

- the existing approvals for quarrying on the site which necessitates the removal of habitat
- the relatively small new areas of disturbance associated with the landfill extension.

The Panel is satisfied that the planning permit conditions proposed for the landfill extension can manage any residual risk to flora and fauna and enable suitable offsets to be provided. A suitable condition is included in Appendix D.

The Panel notes the EHP findings in relation to Commonwealth MNES. These are outside the scope of the Panel's jurisdiction but the Panel encourages the Applicant to monitor any MNES issues closely during project implementation.

13.3.3 Recommendation

The Panel recommends:

The planning permit include a condition requiring any offsets for native vegetation removal to be to the satisfaction of the Department of Environment, Land, Water and Planning.

A suitable condition is recommended in Appendix D.

13.4 Vermin

13.4.1 The issue and submissions

A number of submissions raised the issue of vermin, and particularly birds (native and introduced). Some of the particular issues are discussed in Chapter 12, but essentially the issue is birds feeding on the tip and then dispersing into nearby residential areas to roost or take advantage of waterbodies or other environments.

Other vermin such as rats and foxes could also be expected to be present at the landfill.

13.4.2 Discussion and conclusions

The Landfill BPEM¹⁵⁵ requires consideration of vermin control to reduce the risk of disease vectors travelling between the landfill and other areas. The BPEM includes management measures that may be appropriate such as effective daily cover, pest control, limiting nearby water bodies.

The MRL extension will need to ensure that plans are in place to manage vermin at acceptable numbers to avoid an risk to off-site communities.

13.4.3 Recommendations

The Panel recommends:

The planning permit include a condition requiring vermin management on the landfill.

A recommended condition is included in Appendix D.

¹⁵⁵ At clause 7.12.

14 Planning permit assessment

14.1 Background

The permit application seeks permission to use part of the site for refuse disposal, buildings and works associated with that use, and native vegetation removal. The permit application includes landscaping, access tracks/haul roads, stormwater and leachate ponds and drains, bunds and soil wedges, a weighbridge, site offices and amenities, car parking and fencing. It also includes additional landfill gas-to-energy plant to convert landfill gas to electricity.

The Melton Planning Scheme sets out the objectives, policies and provisions relating to the use and development of land within the municipality, and regulates use and development of land through planning provisions to achieve those objectives and policies. These include planning policies in the SPPF and LPPF, zones and overlay controls. Those that are relevant to the permit application are discussed in Chapter 4.

The proposal requires a permit under the clauses in the planning scheme shown in Table 7.

Table 7 Permit triggers

Clause	Control	Permit trigger	Purpose (summarised)
37.01	SUZ1	<ul style="list-style-type: none"> - To use the site for refuse disposal - To construct a building or construct or carry out works 	<ul style="list-style-type: none"> - To recognise or provide for the use and development of land for earth and energy resources industry. - To encourage land management practice and rehabilitation that minimises adverse impact on the use and development of nearby land.
42.01-2	ESO2 and ESO5	<ul style="list-style-type: none"> - To construct a building or construct or carry out works - To remove any vegetation (ESO2) - To remove native vegetation (ESO5) 	<p>ESO2:</p> <ul style="list-style-type: none"> - To protect and conserve wetlands and to discourage inappropriate use and development - To protect and conserve the riparian habitat and associated escarpment and to discourage inappropriate development - To identify, conserve and enhance the character of significant landscapes <p>ESO5:</p> <ul style="list-style-type: none"> - To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity - To enhance the environmental and landscape values of the area

Clause	Control	Permit trigger	Purpose (summarised)
Clause 52.09	Stone Extraction and Extractive Industry Interest Areas	- To use and develop land within 500m of stone extraction	- To ensure that use and development of land for stone extraction does not adversely affect the environment or amenity of the area during or after extraction. - To ensure that excavated areas can be appropriately rehabilitated. - To ensure that sand and stone resources, which may be required by the community for future use, are protected from inappropriate development.
Clause 52.17	Native vegetation	- To remove native vegetation	- To ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria's biodiversity.

The responsible authority must consider the decision guidelines in C65 of the planning scheme, and the requirements of the PE Act, when assessing the permit application.

The decision guidelines in C65 include (as relevant):

- the purpose of the zone, overlay or other provision, and any matter required to be considered in the zone, overlay or other provision
- orderly planning
- the effect on the amenity of the area
- factors likely to cause or contribute to land degradation, salinity or reduce water quality
- whether the proposed development is designed to maintain or improve the quality of stormwater within and exiting the site
- the extent and character of native vegetation and the likelihood of its destruction
- whether native vegetation can be protected, planted or allowed to regenerate
- flood, erosion or fire hazard.

Matters that the responsible authority must consider under s60(1) of the PE Act include (as relevant):

- the planning scheme
- the objectives of planning in Victoria
- all objections
- any decision and comments of referral authorities
- any significant effects the use or development may have on the environment, or which the environment may have on the use or development
- any significant social effects and economic effects — the responsible authority must (where appropriate) have regard to the number of objectors in considering whether the use or development may have a significant social effect.

Matters that the responsible authority may consider under s60(1A) of the PE Act include (as relevant):

- any relevant State Environment Protection Policy
- any other strategic plan, policy statement, code or guideline which has been adopted by a Minister, government department, public authority or municipal council (this includes the State Waste Framework).

14.2 Policy assessment

As discussed in Chapter 4, in undertaking the policy assessment of the permit application the Panel has applied the current State Waste Framework, notwithstanding that the planning policy framework does not reference up to date waste policy.

The Panel considers that the planning policy framework and State Waste Framework provide strong strategic policy support for the proposal. The site is identified as a state significant waste and resource recovery hub, needed to service metropolitan Melbourne until at least 2046. The site and its ongoing function as a landfill are identified and recognised in *Plan Melbourne* and the *West Growth Corridor Plan*. The Panel considers that the proposal is supported by the SPPF, in particular C19.03-5 (which seeks to define, protect and maintain buffers to waste facilities, and requires planning to consider the current regional waste plan and the 2004 Waste Management Policy), and C19.01 (which seeks to promote renewable energy). The proposal is supported by the LPPF, in particular those parts (such as C22.05) which encourage economic growth, employment and wealth generation (the Applications indicate that the proposal will involve a substantial investment from the Applicant).

The SPPF, the LPPF, the 2004 Waste Policy and the BPEM make it clear that the landfill expansion must apply and maintain the highest standards of environmental performance, and must minimise impacts on the amenity of surrounding land uses. These requirements are an important factor in the Panel's consideration of the appropriate conditions to place on the permit (set out in Appendix D).

14.3 Planning provisions and decision guidelines assessment

The Panel considers that the proposal is consistent with the objectives of planning in Victoria. The proposal provides for the fair, orderly, economic and sustainable use and development of land by maximising the capacity of the site as a waste and resource recovery hub, which aids efficient and cost effective waste management in metropolitan Melbourne. The site is well located for major transport links, allowing the efficient transport of waste to the site. The proposal seeks to protect the site to enable the orderly provision and coordination of facilities for the benefit of the community, and the Panel considers that the proposal represents an appropriate balance of the present and future interests of all Victorians.

The Panel considers that the proposal is consistent with the purposes of the relevant zone and overlay controls, to the extent that they are applicable. The proposal, provided it is appropriately conditioned, encourages rehabilitation of the quarry in a manner that minimises adverse impact on the use and development of nearby land (consistent with the purposes of C37.01), and provides for an appropriate end use and long term rehabilitation of the excavated quarry (consistent with the purposes of C52.09).

The purposes and associated decision guidelines of the ESO2 and the ESO5, and of C52.17, primarily relate to the protection and management of impacts on wetlands, riparian habitat, ecological communities, flora and fauna, native vegetation and landscape values. The Panel has specifically addressed impacts on surface and groundwater in Chapter 8, landscape and visual impacts in Chapter 10, and native vegetation and flora and fauna in Chapter 13. The ESO2 and ESO5 apply to only a small area of the site, and the amount of native vegetation proposed to be removed (at 0.36 hectares) is not significant in the context of the size of the site. While the landfill expansion will impact on these values to a limited extent, the Panel does not consider those impacts to be unreasonable, given the extent of the impacts and the site's context (being located in an industrial precinct and surrounded by areas that will be subject to considerable growth in the coming years).

The permit application received a significant number of objections (approximately 4,000), indicating to the Panel that the proposal has social impacts. The Panel has considered social impacts in detail in Chapter 12, and found that while the existing landfill is causing social impacts, the planning permit can be conditioned to ensure that social impacts of the landfill expansion will be minimised. The Panel has recommended appropriate permit conditions relating to odour management, monitoring and reporting, complaints handling and community engagement in Appendix D.

14.4 Referral authority comments

According to DELWP¹⁵⁶, referral authorities for the permit application are:

- the EPA, pursuant to C66.02-1 of the planning scheme
- Secretary to DELWP, pursuant to C66.02-2 and 66.04
- Powercor, pursuant to C66.02-4.

The EPA required the following condition to be included on the permit (if one is granted):

*The Applicant must apply for and be issued with a Works Approval from the Environment Protection Authority with respect to the expansion to the landfill.*¹⁵⁷

The Panel has included this condition in its recommended permit conditions in Appendix D.

The key issue for the Secretary to DELWP¹⁵⁸ was ensuring that permits for subdivision and buildings and works comply with the conditions of the Melbourne Strategic Assessment. These issues are dealt with in Chapter 13.3. DELWP did not require any conditions to be included in the permit.

The Secretary to DEDJTR was given notice of the permit application pursuant to C66.04 of the scheme. The Earth Resources Regulation branch of DEDJTR did not object to the permit application¹⁵⁹.

¹⁵⁶ Document 2.

¹⁵⁷ EPA is also required to refer the Works Approval Application to the Department of Health and Human Services.

¹⁵⁸ Outlined in its referral response dated 19 July 2016.

¹⁵⁹ Confirmed in a letter dated 15 July 2016.

VicTrack and VicRoads provided referral authority comments on the permit application. They did not object to the permit application, and did not require any conditions to be included.¹⁶⁰

14.5 Conclusion

The Panel is satisfied that, on balance, the assessment of the permit application against the provisions of the planning scheme and the requirements of the Act result in the conclusion that a permit should issue. This conclusion is subject to the application of conditions as shown in Appendix D to this report.

A 'without prejudice' conditions discussion was held at the close of the Hearing. Where possible the Panel has tried to reconcile the opinions put forward while:

- ensuring the views of referral authorities are considered and adopted as relevant
- trying to avoid replicating other statutory heads of power
- avoiding a 'belts and braces' approach where similar conditions are sought to be applied at multiple points
- ensuring that the fundamental elements and values to be protected are adequately addressed.

14.6 Recommendation

The Panel recommends:

The Minister for Planning as responsible authority issue planning permit PA2016/5118 with the conditions as shown in Appendix D of this report.

¹⁶⁰ Confirmed in letters from VicTrack dated 13 July 2016 and VicRoads dated 25 July 2016.

Appendix A Submitters to the application

No.	Submitter
1	Yongbiao Xie
2	Donna Lauder
3	Peter Ranasinghe
4	Sash Petrovski
5	Brenda Maguire
6	Keith John Newman
7	Justin Williams
8	Mozart Williams
9	Christina H. Munday
10	Michael Fulcher
11	Razija Numan
12	Elroy Newman
13	Mark Johns
14	Giuseppe Canturi
15	Priscilla Canturi
16	Trevor Glenn Nithsdale
17	Thomas Christou
18	Mark Anthony Ciciulla
19	Michael Ward
20	Liz Ozanne
21	Sam Mallia
22	Qi Guo
23	Quanling Guo
24	Maryann Darmanin
25	Wendy Bronwyn Mason
26	Nextgen Group
27	S.S. (no further details supplied)
28	Tania Melich
29	Maureen Williams
30	Xuereb and Galea Family

No.	Submitter
31	Amanda Shinton
32	Kristy O'Toole
33	Bruno Larosa
34	Vinh
35	Joan Bowker
36	Al
37	Maree Buttigieg
38	Zaklina Markovska
39	Luba Belokozovska
40	Juliet Theresa Stojanovski
41	Slobodan Markovski
42	Peter Belokozovski
43	Ilo Beokozovski
44	John Ravaneschi
45	Graeme Patrick Jeffs
46	Gloria Au Pty Ltd
47	Zhiyun Situ
48	Skyteck Pty Ltd
49	Fab Giarratana
50	Upul Ranchagodage Don
51	Christine Xue
52	Stefan Parnis
53	Zhao Min Xue
54	Diane Anderson
55	David M Anderson
56	Mohammad Rafique
57	Sonia Madamba
58	Gary Gartside
59	Brimbank City Council
60	Anita Lussetti

No.	Submitter
61	Woodlea on behalf of Leakes Road Rockbank Pty Ltd
62	Peter Batur
63	Metropolitan Waste and Resource Recovery Group
64	Sue Graham
65	Jaroslav Kaszkiel
66	Hanna Santos
67	Eyal Cohen
68	Dr Don Senadipathy
69	Graeme John Hodgson
70	Lolita Gunning
71	Erin Richardson
72	Department of Justice and Regulation (Corrections Victoria)
73	Stockland
74	Sally Hand
75	Intaj Khan
76	Melbourne Water
77	Victorian Planning Authority
78	Environment Protection Authority Victoria
79	Sustainability Victoria
80	J & F Carabott
81	K & L Luu
82	Mt Atkinson Holdings Pty Ltd
83	Grant Wilson
84	Derrimut 247 Gym
85	Stop the Tip Incorporated
86	Melton City Council
87	Victorian Waste Management Association
88	Department of Economic Development, Jobs, Transport and Resources
89	Western Region Environment Centre
90	Friends of Steele Creek

No.	Submitter
91	Lindsay Swinden
92	Victorian Waste Management Association
93	APA VTS Australia
94	Wei Ming Yao
95	Zhao Min Xue
96	ComfortID.com Pty Ltd
97	Boral Construction Materials
98	Denise Thorpe
99	Mirjana Marevic
100	Haileluel Gebre-Selassie
101	Marion Martin
102	Michael Hewitt
103	Angela Marevic

Submission 104 is the cover submission for 3,859 proforma submissions sent via Stop the Tip.

Appendix B Parties to the Panel Hearing

Submitter	Represented by
The Minister for Planning as responsible authority	Rachael Joiner, Director – State Planning Services, Department of Environment, Land, Water and Planning (DELWP)
EPA Victoria	Tim Eaton, Acting Director Knowledge Standards and Assessments and Penny Renc, Legal Services
Landfill Operations Pty Ltd	Chris Canavan QC and Emily Porter of Counsel instructed by Alexandra Guild of Norton Rose Fulbright and calling expert evidence as follows: <ul style="list-style-type: none"> - Michael Barlow in planning - Tony Kortegast in need - Andrew Green in landfill design - David Ife in hydrogeology - Tony Kortegast in landfill buffers and landfill gas - Allan Wyatt in landscape and visual - Aleks Todoroski in air quality - Christophe Delaire in acoustics - Stephen Hunt in traffic
Boral Construction Materials	Jane Sharp of Counsel instructed by Tim Power of Herbert Smith Freehills
Victorian Planning Authority	Adele Patterson of Counsel and calling expert evidence as follows: <ul style="list-style-type: none"> - Ken Mival in landfill gas
Brimbank City Council	Stefan Fiedler, Russell Kennedy
Mt Atkinson Holdings Pty Ltd	Jeremy Gobbo QC and Nicola Collingwood of Counsel instructed by Rhodie Anderson of Rigby Cooke and calling expert evidence as follows: <ul style="list-style-type: none"> - David Crowder in planning - Mark Woodland in planning - Philip Mulvey in landfill gas
Sustainability Victoria	Alastair Smith
Metropolitan Waste and Resource Recovery Group	Michelle Lee
J & F Carabott	Jeremy Gobbo QC et. al. as per Mt Atkinson Holdings Pty Ltd
K & L Luu	Jeremy Gobbo QC et. al. as per Mt Atkinson Holdings Pty Ltd

Department of Justice and Regulation (Corrections Victoria)	Represented by Eliza Bergin of Victorian Government Solicitors Office and calling expert evidence as follows: - Melissa Westin, General Manager, Metropolitan Remand Centre
Melton City Council	Greg Tobin of Harwood Andrews and calling expert evidence as follows: - John Nolan in environmental engineering, including hydrogeology and landfill gas - Kate Dundas in landscape and visual
Frank Alexopoulos	
Lindsay Swinden	
Western Region Environment Centre	Harry van Moorst
Friends of Steele Creek	Helen van den Berg
Stop the Tip Inc.	Joanne and Peter Merrylees, Merrylees Legal calling the following lay witnesses: - Shagun Saini, Lody Aquilina, Anita Vojtek, Andrew Severson, Steven Abboushi, Suzanne Volpe, Anthony Calandrella, Amanda and Robert Dunne, Gary Mullan, Davina D'Menzie, Fiona Sloman, Anne – Marie Cassar, Zig Dimitrovski and expert evidence as follows: - Glenn Weston in social impacts
Catherine Johns	
Martin Taylor	
ComfortID.com Pty Ltd	Erwin Boermans and others
David Anderson	
Mirjana Marevic	
Michael Hewitt	
Angela Marevic	
Haileluel Gebre-Selassie	
Residents of Burnside Retirement Village	Marlene Gorman
Margaret Hewitt	
Priscilla Weaver	
Eyal Cohen	
Wendy Mason	
Fatima Milhem	

Gabriela Silva and Johann Psaila

Lucinda Bailey

Linda Hurlston

Maria Kolic

Appendix C Hearing document list

No.	Date	Description	Tabled by
1	29/9/2016	Drawings and plans (A3 format)	Landfill Operations
2	3/10/2016	DELWP submission	DELWP
3	3/10/2016	EPA submission – Planning Permit Application	EPA
4	3/10/2016	EPA submission - Works Approval	EPA
5	3/10/2016	Submission (2 Documents)	Landfill Operations
6	3/10/2016	Folder of reference documents	Landfill Operations
7	3/10/2016	Response to the EPA’s Section 22 Request under EP Act	Landfill Operations
8	3/10/2016	Annual Performance Statement 2015/2016	Landfill Operations
9	4/10/2016	Minutes of Meeting signed by A Terrill re TPI landfill dated 5 May 2015	Landfill Operations
10	4/10/2016	Extract – <i>Plan Melbourne</i> 2015 MAC Report	Landfill Operations
11	4/10/2016	Melton PS SUZ1 Schedule	Landfill Operations
12	4/10/2016	Section 173 Agreement Planning Permit P2091/97 for Boral Land	Corrections Victoria
13	5/10/2016	EPA Publication 1323.3 Landfill Licensing Guidelines	Landfill Operations
14	5/10/2016	Metropolitan Waste and Resource Recovery Strategy	Landfill Operations
15	5/10/2016	Boral Submission	Boral
16	6/10/2016	EPA data on odour (2 documents)	EPA
17	6/10/2016	Conclave statement from Hydrogeology Experts	Landfill Operations
18	6/10/2016	EPA Publication 1518 Recommended Separation Distances for IRAE	Landfill Operations
19	6/10/2016	EPA Publication 1625 Assessing Planning Proposals near Landfills	Landfill Operations
20	6/10/2016	CIRIA C665 Risk assessment for hazardous ground gases in buildings	Landfill Operations
21	6/10/2016	Extract from British Standard BS8485:2015 Protective Measures for Methane and CO ₂ in Buildings	Landfill Operations
22	6/10/2016	Addendum to evidence - A Kortegast	Landfill Operations

No.	Date	Description	Tabled by	
23	6/10/2016	Email from Metropolitan Waste and Resource Recovery Group to Panel Chair re: Notice of Approval and Gazettal of MWRRIP	Panel Chair	
24	7/10/2016	Groundwater database (maps)	Mt Atkinson Holdings	
25	7/10/2016	Woodward Clyde Monitoring Data	Mt Atkinson Holdings	
26	7/10/2016	Appendix F from report by P Ramsay	Mt Atkinson Holdings	
27	7/10/2016	Gas monitoring bores (Aerial)	Mt Atkinson Holdings	
28	7/10/2016	Air Monitoring (odour contours)	A Todoroski	
29	11/10/2016	Comments on LFG conclave Nolan	Melton City Council	
30	11/10/2016	Responses to Panel and DELWP queries	Landfill Operations	
31	11/10/2016	Victorian Planning Authority Submission	Victorian Authority	Planning
32	11/10/2016	Victorian Planning Authority West Growth Area Corridor Plan	Victorian Authority	Planning
33	11/10/2016	Schematic diagram of Precinct Structure Plan for Mt Atkinson and Tarneit – response to landfill	Victorian Authority	Planning
34	12/10/2016	Submission	Brimbank City Council	
35	12/10/2016	Metropolitan Waste and Resource Recovery Infrastructure Plan (2016, final)	Panel Chair	
36	13/10/2016	Mt Atkinson and Tarneit Plains Commercial and Industrial Land Review	Landfill Operations	
37	13/10/2016	Amendment C162 to MPS	Landfill Operations	
38	13/10/2016	Presentation overheads from expert witness Mr Woodland	Landfill Operations	
39	13/10/2016	Growth Corridor Planning Principles in detail Chapter 3	Landfill Operations	
40	13/10/2016	Folder of documents	Mt Atkinson Holdings	
41	13/10/2016	Works Approval Application, EPA Publication 1307.10	Mt Atkinson Holdings	
42	13/10/2016	Table of dimensions for hypothetical cells	Mt Atkinson Holdings	
43	14/10/2016	Responses to Questions received by the EPA (via email)	EPA	
44	14/10/2016	Sustainability Victoria Submission	Sustainability Victoria	
45	14/10/2016	Metropolitan Waste and Resource Recovery Group (MWRRG) Submission plus attachments	MWRRG	
46	14/10/2016	Wellington Planning Scheme Environmental Significance Overlay Schedule 7	MWRRG	

No.	Date	Description	Tabled by
47	14/10/2016	Mt Atkinson Holdings Pty Ltd Submission outline	Mt Atkinson Holdings
48	14/10/2016	Alternate Landfill Plan	Mt Atkinson Holdings
49	14/10/2016	Extract – Ombudsman report into Brookland Green Estate methane leaks (2009)	Mt Atkinson Holdings
50	14/10/2016	Email from Melbourne Water plus attachments	Mt Atkinson Holdings
51	19/10/2016	Confidential Expert Statement – Not Available to the Public ¹⁶¹	Corrections Victoria
52	19/10/2016	Submission on behalf of Secretary of the Department of Justice and Regulation	Corrections Victoria
53	19/10/2016	Current Planning Permit	Corrections Victoria
54	19/10/2016	Hearing Folder	Melton City Council
55	19/10/2016	Submission	Melton City Council
56	19/10/2016	<i>Environment Protection Act 1970</i> , Section 50C	Melton City Council
57	20/10/2016	Melton Landscapes – Final Report 2016	Melton City Council
58	21/10/2016	Submission - Dr Lindsay Swinden	Western Region Environment Centre
59	21/10/2016	Submission - Mr Harry van Moorst	Western Region Environment Centre
60	24/10/2016	Submission - Ms Helen van den Berg (includes 4 attachments)	Friends of Steele Creek
61	24/10/2016	Submission - Mr Steve Abboushi ¹⁶²	Merrylees Legal
62	24/10/2016	Submission - Mr Anthony Calandrella	Merrylees Legal
63	24/10/2016	Submission – Ms Davina D’Menzie	Merrylees Legal
64	24/10/2016	Submission – Ms Amanda & Mr Robert Dunne	Merrylees Legal
65	24/10/2016	Submission – Mr Gary Mullan (and emails)	Merrylees Legal
66	24/10/2016	Submission - Ms Lody Aquilina	Merrylees Legal
67	24/10/2016	Submission – Mr Andrew Severson	Merrylees Legal
68	24/10/2016	Submission – Ms Suzanne Volpe	Merrylees Legal
69	24/10/2016	Submission – Ms Fiona Sloman	Merrylees Legal

¹⁶¹ Corrections Victoria made an application to the Panel for certain issues to be put in confidence which the Panel accepted. Those present included the Panel and legal representatives of the Applicant, the EPA, Mt Atkinson Holdings and Melton City Council. Party representatives signed a legal agreement as to confidentiality.

¹⁶² Documents 61-74 are contained within the submission of Stop the Tip.

No.	Date	Description	Tabled by
70	24/10/2016	Submission – Ms Anne – Marie Cassar	Merrylees Legal
71	24/10/2016	Submission - Ms Marion Martin	Merrylees Legal
72	26/10/2016	Submission - Mr Zig Dimitrovski	Merrylees Legal
73	26/10/2016	Submission – Mr Shagun Saini	Merrylees Legal
74	26/10/2016	Submission – Ms Anita Vojtek	Merrylees Legal
75	26/10/2016	Submission - Stop the Tip (plus folder)	Merrylees Legal
76	27/10/2016	Submission – Mr Erwin Boermans	ComfortID
77	27/10/2016	Submission – Mr David Anderson	Mr Anderson
78	27/10/2016	Submission – Ms Mirjana Marevic	Ms M Marevic
79	27/10/2016	Submission – Mr Mick Hewitt	Mr Hewitt
80	27/10/2016	Submission – Ms Angela Marevic	Ms A Marevic
81	27/10/2016	Submission - Burnside Retirement Village	Ms Gorman
82	27/10/2016	Submission - Ms Margaret Hewitt	Ms Hewitt
83	27/10/2016	Submission - Mr Eyal Cohen	Mr Cohen
84	27/10/2016	Submission - Ms Wendy Mason	Ms Mason
85	27/10/2016	Submission – Ms Linda Hurlston	Ms Hurlston
86	28/10/2016	Submission – Ms Maria Kolic	Ms Kolic
87	28/10/2016	Closing Submissions	Landfill Operations
88	28/10/2016	Map of other possible odour source near MRL	Landfill Operations
89	28/10/2016	Reply submissions reference document (folder)	Landfill Operations
90	28/10/2016	Closing Submission (attachments: Werribee landfill Planning Permit, Section 97B P&E Act, Melton CC Staff report for Ravenhall Landfill)	Melton City Council
91	28/10/2016	Draft Permit Conditions (revised)	Landfill Operations
92	28/10/2016	Odour Management (draft permit condition)	Landfill Operations

Appendix D Panel recommended planning permit

Draft Permit Conditions – PA2016/5118

1. Before the use or development starts, amended plans to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plans will be endorsed and will then form part of the permit. The plans must be generally in accordance with the plans submitted with the application, but modified to show:
 - a) Increased setbacks of the landfill extent to ensure a 100 metre buffer to Skeleton Creek.
 - b) Any other consequential changes required as a result of condition 1(a).
2. The use and development as shown on the endorsed plans must not be altered (unless the Melton Planning Scheme specifies that a permit is not required) without the prior written consent of the Responsible Authority.
3. Before the use or development starts, a Works Approval must be issued by the Environment Protection Authority under the Environment Protection Act 1970.
4. Within 30 days of the Environment Protection Authority issuing or amending any works approval for the land, any consequential changes to the endorsed plans to the satisfaction of the Responsible Authority must be submitted to the Responsible Authority for endorsement.

Landscaping

5. A detailed Landscape Plan or Plans prepared to the satisfaction of the Responsible Authority must be submitted to and endorsed by the Responsible Authority. The plan(s) must be implemented to the satisfaction of the Responsible Authority and be generally in accordance with the plans submitted with the application and show:
 - a) the location of all areas proposed to be set aside for buffer landscaping to screen the landfill
 - b) the location and typical planting layouts to be provided for screening
 - c) a schedule of plant species in accordance with any Melton City Council landscaping guidelines
 - d) existing perimeter planting to the western and southern boundaries to be retained
 - e) planting without any gaps in vegetation to existing perimeter planting to the western and southern boundaries
 - f) a schedule showing:
 - i. the establishment of perimeter screen planting required to effectively screen each cell at least 5 years in advance of the proposed commencement of construction of the relevant cell, to allow for the planting to be sufficiently mature to provide effective screening when construction of the relevant cell commences
 - ii. how all landscaping (including buffer screen planting) will be maintained
 - g) the progressive landscaping of each final capped cell.
6. Landscape Plan(s) may be prepared in stages provided that a Landscape Plan for any particular stage of the landfill is prepared and approved by the Responsible Authority prior to the commencement of any building and works required for the landfill operations in that particular stage.

7. The landscaping must be carried out and then maintained in accordance with the endorsed Landscape Plan(s) (and any schedules to that plan(s)) to the satisfaction of the Responsible Authority.
8. A landscape bond in a sum and form approved by the Responsible Authority must be provided to the Responsible Authority prior to the commencement of buildings and works for landfill operations in each stage. The bond is to ensure that the perimeter screen planting for each stage is carried out in accordance with the endorsed Landscape Plan(s) for that stage. The bond will be returned as soon as practicable following completion of the relevant stage of perimeter landscape screening.

Traffic

9. Before the use or development starts, a Traffic Impact Assessment must be submitted to and be to the satisfaction of the Responsible Authority. The Traffic Impact Assessment must assess:
 - a) the volume and type of vehicles accessing the land
 - b) the traffic implications of the vehicle volumes and types
 - b) any road engineering implications of the vehicle volumes and types
 - d) recommendations on any measures necessary to address the traffic and road engineering impacts of the use of the land under this permit, either onsite or on the public road system.

If requested by the Responsible Authority and subject to the consent of the road manager, the recommendations of the Traffic Impact Assessment (including updates in accordance with Condition 10) must be implemented within six months of the Responsible Authority's approval.

10. At intervals of 5 years after the use or development starts, an updated Traffic Impact Assessment must be submitted to and be to the satisfaction of the Responsible Authority in accordance with the assessment and response requirements of Condition 9.

Community Consultation and Complaints Management

11. Before the use or development starts, a Community Consultation and Complaints Management Strategy must be submitted to and be to the satisfaction of the Responsible Authority. The approved strategy, as amended from time to time to the satisfaction of the Responsible Authority, must be implemented to the satisfaction of the Responsible Authority. The strategy must include:
 - a) The establishment of a complaints handling procedure which will include:
 - i. The establishment and maintenance of a 24 hour complaints telephone hotline
 - ii. Details of the types of action to be taken depending on the nature of the complaint
 - iii. For odour complaints, independent investigation of the source of the complaint to verify the source of the odour (if possible).
 - b) The maintenance of a complaints register recording the time, date, and nature of any reasonable public complaints, the name and address of the complainant where provided, and action taken in response to the complaint. The complaints register must be made available for inspection by the Responsible Authority on request at reasonable times.
 - c) The establishment and continuation of a community consultation committee comprising representatives from at least:
 - i. Local residents
 - ii. The permit holder
 - iii. The Responsible Authority
 - iv. The Environment Protection Authority
 - v. Corrections Victoria.

- d) The convening of regular meetings of the community consultation committee, with all reasonable costs including those associated with provision of a facilitator, note taker, secretarial duties and venue hire borne by the permit holder.
- e) The provision of a website maintained by the permit holder including:
 - i. Clear information on how to make a complaint about the landfill
 - ii. Relevant contact details
 - iii. A copy of this permit and any relevant approvals from the Environment Protection Authority
 - iv. Data from the complaints register excluding the personal information of complainants
 - v. Information regarding the community consultation committee and minutes from committee meetings.
- f) A mechanism to ensure the strategy is regularly reviewed.

Environmental Management Plan

12. Prior to the commencement of any works, an Environmental Management Plan dealing with the following matters must be prepared to the satisfaction of the Responsible Authority:
- a) Odour
 - b) Dust
 - c) Litter
 - d) Noise
 - e) Illegal dumping including the erection of signs around the site advising of the penalties for illegal dumping
 - f) Vermin
 - g) Birds
 - h) Removal of native vegetation
 - i) Protection of retained native vegetation
 - j) Weed management
 - k) Staff training and supervision, to ensure that the persons responsible for the operation of the site are familiar with the conditions of this permit and the plans approved under this permit
 - l) The nature and operation of any mobile lighting.

The approved Environmental Management Plan must be implemented to the satisfaction of the Responsible Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Responsible Authority.

Odour

13. Prior to the commencement of any works, an Odour Management and Monitoring Plan prepared by a suitably qualified person or firm must be submitted to and approved by the Responsible Authority. The plan must detail the odour management controls and monitoring regime which must be undertaken during the life of the landfill including but not limited to:
- a) Identification of potential odour sources and receptors
 - b) Specifying the odour mitigation measures and procedures to manage the odour impact off-site of the various potential odour sources and to mitigate the off-site odour impacts
 - c) Comprehensive monitoring practices, including surveillance by independent and appropriately trained personnel or the use of portable odour detecting and measuring devices
 - d) Procedures for addressing the odour source if a complaint is verified, including consideration of any mitigation measures or operational changes that might be required
 - e) Provision of surveillance or monitoring records to the Community Consultation Committee, the Responsible Authority and the Environment Protection Authority

- f) Incorporation of a requirement to assess new odour management technologies or tools on a regular basis.

The approved Odour Management and Monitoring Plan must be implemented to the satisfaction of the Responsible Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Responsible Authority.

Litter

14. Prior to the commencement of any works, a Litter Management and Monitoring Plan prepared by a suitably qualified person or firm must be submitted to and approved by the Responsible Authority. The plan must detail the litter management controls and monitoring regime which must be undertaken during the life of the landfill including but not limited to:

- a) Mobile nets near the tip face
- b) Perimeter fencing at appropriate heights based on prevailing winds placed between the landfill and perimeter screen planting
- c) Litter traps on stormwater drains
- d) Requiring all trucks entering the site to be covered and all trucks leaving the site to be either empty of waste or covered, to prevent spillage of windblown materials outside the site
- e) A daily program for litter inspection and collection from litter traps, nets and fences including logging of collection activities, findings and system defects and actions taken to correct defects
- f) A high wind alarm trigger with criteria for reducing and ceasing landfilling under specified wind conditions
- g) Provision of monitoring and response records to the Community Consultation Committee the Responsible Authority and the Environment Protection Authority.

The approved Litter Management and Monitoring Plan must be implemented to the satisfaction of the Responsible Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Responsible Authority.

15. Litter arising from the operation of the landfill must be confined within the boundaries of the land.

Dust and airborne particulates

16. Prior to the commencement of any works, a Dust Management and Monitoring Plan prepared by a suitably qualified person or firm must be submitted to and approved by the Responsible Authority. The plan must detail the dust management controls and monitoring regime which must be undertaken during the life of the landfill including but not limited to:

- a) A requirement for best practice airborne particulate control measures
- b) Details of best practice control measures
- c) Operational requirements for weather conditions that may exacerbate the creation of dust
- d) An air quality monitoring plan of at least twelve months duration from commencement of works under the planning permit for PM₁₀, PM_{2.5} and Total Suspended Particulates

- e) A review of the effectiveness of the airborne particulate control measures in light of the monitoring data produced in accordance with condition 16(d) and the relevant standards for the control of airborne particulates.

The approved Dust Management and Monitoring Plan must be implemented to the satisfaction of the Responsible Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Responsible Authority.

Vermin

- 17. Prior to the commencement of any works, a Vermin Management Plan must be submitted to and approved by, the Responsible Authority. The Plan must detail the measures to reduce disease vectors at the landfill and the spread of vermin from the landfill to the surrounding area.

The approved Vermin Management Plan must be implemented to the satisfaction of the Responsible Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Responsible Authority.

Native vegetation

- 18. Prior to commencement of development, the following must be undertaken with the agreement, and to the satisfaction of, the Department of Environment, Land, Water and Planning:
 - a) any Spiny Rice-Flower located on the land must be salvaged and translocated
 - b) any required offsets for native vegetation must be identified and provided.

Noise

- 19. Prior to the commencement of any works in relation to a cell, a Noise Management Plan must be prepared for that cell by a suitably qualified acoustic engineer. The plan must be submitted to the Responsible Authority for approval. The plan must detail:
 - a) All potential noise sources from the land (including a list of all landfill machinery for construction and operation of the cell and all quarry machinery that will be operating at the same time, all machinery and equipment associated with ongoing quarrying and landfill activities, the biogas engines, truck traffic, unloading of waste, and occasions where additional machinery is required on-site) for each stage
 - b) The proposed scheduling of works and activities (including measures to avoid or minimise overlap between different noise generating activities carried out on the land, including but not limited to vehicle movements, cell construction, lining, capping, earthmoving, rehabilitation, shaping, filling, drilling, resource recovery, as well as any quarrying activities)
 - c) Measures and operational procedures for limiting noise emissions from the land including noise from vehicles and equipment operating on the land
 - d) A description of how noise levels will be managed to achieve compliance with Condition 21 of this permit
 - e) The dimensions and a description including a visual depiction of all noise mitigation measures.
- 20. Prior to the commencement of any works, a Noise Modelling and Monitoring Plan must be prepared by a suitably qualified acoustic engineer. The plan must be submitted to the Responsible Authority for approval. The plan must detail the noise modelling based on the proposed site operations and the monitoring to be undertaken at critical times in the life of the landfill and measures taken to address any potential non-compliance issues including but not limited to:

- a) Documenting the existing ambient noise levels in the area during normal operating times, measured at sensitive receptors or a suitable derived point
 - b) Identifying the times in which the noise levels may approach the noise limits defined in Condition 21 of this permit (the critical times) and the sensitive receptors most likely to be affected by that noise
 - c) Requiring that monitoring of noise received at the sensitive receptor or a suitable derived point be undertaken to determine compliance with Condition 21 of this permit during the critical times
 - d) Requiring the monitoring be undertaken at the start of construction of each cell and that a report be prepared that compares the actual noise levels with the predicted noise levels and either verifies that the measures specified in the Noise Management Plan remain appropriate, or specifies additional measures that must be taken to meet the noise limits defined in condition 21 of this permit
 - e) If the monitoring evidences any non-compliance with Condition 21 of this permit, immediately investigating the cause of any non-compliance with regard to lack of adherence to any scheduling requirement, measure, procedure or control or other matter required by the Noise Management Plan and remediating any such lack of adherence
 - f) Identifying and initiating remedial measures required to ensure compliance with Condition 21
 - g) Establishing a process for monitoring the success of any remedial measures taken and for amending the Noise Management Plan as required
 - h) Establishing a process for reporting to the Responsible Authority in relation to the matters referred to in conditions 19, 20 and 21 of this permit.
21. Noise emanating from the use of the land must comply with State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1) as measured at any nearby sensitive receptor or a suitable derived point in accordance with the method of assessment in SEPP N-1 as amended from time to time, or any alternative method forming part of the approved Noise Management Plan or Noise Modelling and Monitoring Plan endorsed from time to time.

General

22. The use must not adversely affect the amenity of the area by reason of the transportation of materials, noise, vibration, odour, dust, litter, the presence of vermin or birds or otherwise.
23. The active tipping face of the landfill must not exceed 1,800 square metres at any time.
24. The land must be adequately drained of stormwater such that discharge offsite does not exceed that of pre-development levels to the satisfaction of the Responsible Authority on the advice of Melbourne Water.
25. A wheel wash must be available for use by vehicles prior to leaving the land to ensure that materials such as refuse, clay, mud or the like are not deposited outside the land to the satisfaction of the Responsible Authority.
26. If landfilling operations require the use of a liner that is visible from land beyond the boundaries of the land, the liner must be sepia or light brown, or other non-reflective colour approved in writing by the Responsible Authority.
27. External lighting must be located and baffled to avoid any direct overspill of light beyond the site to the satisfaction of the Responsible Authority.

28. On or prior to the completion of landfilling operations, all redundant buildings and structures erected in connection with the landfilling operations must be removed unless they are required for an end use as agreed by the Responsible Authority in writing.

Fire suppression

29. A static water supply of not less than 50,000 litres together with a pump, hoses and fittings to comply with Country Fire Authority requirements must be provided so that water may be discharged in adequate volume to extinguish a fire on any part of the land.
30. Waste must not be burnt and fires must not be lit in the open air on any part of the land.
31. In the event of a fire at the landfill, the operator must:
- a) Take prompt action to extinguish the fire
 - b) Immediately notify the Environment Protection Authority
 - c) Within 14 days of the fire, submit a report detailing the date, time, location and suspected cause of the fire and the time when it was extinguished to the Environment Protection Authority.

Expiry

32. This permit will expire:
- a) If plans are not endorsed in accordance with condition 1 of this permit within 8 years of the date of this permit
 - b) If use and development in accordance with this permit is not commenced within 10 years of the date of this permit.
 - c) On 31 December 2046.
33. This permit authorises ongoing development while the land is used in accordance with the permit.

Note:

The Melbourne Strategic Assessment was conducted under Part 10 of the Environment Protection and Biodiversity Conservation Act 1999 in relation to an area including this site. The Melbourne Strategic Assessment includes obligations that apply to this site.