RED DOT DECISION SUMMARY

The practice of VCAT is to designate cases of interest as 'Red Dot Decisions'. A summary is published and the reasons why the decision is of interest or significance are identified. The full text of the decision follows. This Red Dot Summary does not form part of the decision or reasons for decision.

VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL

ADMINISTRATIVE DIVISION

PLANNING AND ENVIRONMENT LIST

VCAT REFERENCE NOS. P790/2017, P794/2017, P795/2017, P805/2017 & P877/2017

IN THE MATTER OF	Melton City Council Mount Atkinson Holdings Pty Ltd Middle Hopkins Investments Pty Ltd Brimbank City Council Stop the Tip Inc v Environment Protection Authority
BEFORE	Helen Gibson AM, Deputy President Ian Potts, Senior Member Greg Sharpley, Member

NATURE OF CASE	Works approval application for review under section 33B *Environment Protection Act 1970* – issues and extent of Tribunal's jurisdiction
POTENTIAL GUIDELINE DECISION	Yes
LOCATION OF PASSAGE OF INTEREST	Paras 585 – 670
REASONS WHY DECISION IS OF INTEREST OR SIGNIFICANCE	
LEGISLATION – interpretation or application of statutory provision	Consideration of nature and scope of Tribunal's jurisdiction in a section 33B application
POLICY – interpretation or application of policy	Consideration and application of policies relating to waste management and landfills
APPLICATION – significant, interesting or unusual use or development; application of policy, provision or principle; or circumstances	Consideration of application by objectors to review issue of works approval for extension of Melbourne Regional Landfill at Ravenhall, which is the largest landfill in Victoria and a waste management hub of State importance.

SUMMARY

Landfill Operations proposes to extend its current landfill operations at Ravenhall Melbourne Regional Landfill (MRL). This landfill is the largest landfill in Victoria and has been identified as a hub of state importance in policy documents. EPA has issued a works approval that would allow the construction

of seven additional landfill cells and supporting infrastructure. Five applications for review were made under section 33B of the *Environment Protection Act 1970* objecting to the grant of the works approval. The applicants for review all have different interests and rely upon various grounds about odour, landfill gas, litter and other wastes, buffer distances and non-compliance with waste management policies.

Overall, the Tribunal finds that the proposal is consistent with all relevant aspects of the strategic policies governing landfills in Victoria. There is no strategic justification to reduce its scale or time frame. This works approval for an extension to the MRL is very important strategically and is strongly supported under the State-Wide Waste and Resource Recovery Implementation Plan Victoria 2015-44 (SWRRIP) and the Metropolitan Waste and Resource Recovery Implementation Plan 2016 (MWRRIP), which are key elements of the Victorian Waste and Resource Recovery Infrastructure Planning Framework. The MRL is identified in the SWRRIP and MWRRIP as a landfill of state and regional importance with capacity to operate to least 2046 and beyond. Its construction and the scale of its capacity are vital to the ability to manage waste for metropolitan Melbourne in the immediately foreseeable future.

The works proposed are significant, and the issues raised by the parties were numerous and extremely complex, particularly about odour. The Tribunal concludes that a works approval should be issued, but on amended and additional conditions. These conditions have been framed to ensure that there will not be any inconsistency with any applicable policy, and that the risks of any discharge, emission or deposit of waste to the environment that could unreasonably and adversely affect the interests of any of the parties are properly and appropriately managed.

The decision is significant because of the consideration and analysis of Tribunal's jurisdiction and powers in connection with an application for review under section 33B. The Tribunal finds there is nothing in the legislation to justify a view that an application for review under section 33B of the *Environment Protection Act 1970* is any different in principle to other types of applications for review to which the *Victorian Civil and Administrative Act 1998* applies where the Tribunal stands in the shoes of the original decision-maker and must make the correct or preferable decision on the material before the Tribunal.

The Tribunal disagrees with the view taken by the EPA that the review here is different or "far more confined in its scope". It finds that the terms of section 33B(2) of the *Environment Protection Act 1970* do no more than frame the grounds of an applicant. They do not frame the basis of the decision that the Tribunal must make under section 20C(2) or (3) of the Act when standing in the shoes of the Authority. Under these provisions, the EPA must have regard to policy so that the works approval and any condition in, or relating to, the works approval is consistent with all applicable policies. However, with respect to causing or contributing to pollution, causing an environmental hazard, or

endangering public health, which are all ways in which a works approval and the use of the works may unreasonably and adversely affect the interests of a third person, the obligation resting on EPA is to avoid the likelihood of causing pollution, an environmental hazard or endangering public health.

In exercising the powers of the EPA when it stands in its shoes, the Tribunal is called upon to consider whether:

- There will be an inconsistency with applicable policy or an outcome that is contrary to policy; and/or
- Whether one of the other three outcomes under s20C(3)(a)(ii) to (iv) is *likely* to occur.

The Tribunal has power under the *Victorian Civil and Administrative Act 1998* to vary a decision. It can do this to amend conditions or include new conditions so that the Tribunal can be satisfied that the *Environment Protection Act 1970* will be complied with, that the works approval will be consistent with all applicable policies, and to ensure that none of the grounds relied upon by an applicant under section 33B(2) are established. In doing so, the Tribunal stands in the shoes of the original decision-maker (i.e. the EPA) and can make whatever changes to the works approval proposal that would have been open to the EPA when it made its original decision.

In reaching this conclusion, the Tribunal considers and applies the decision of the High Court in *Shi v Migration Agents Registration Authority.*[1] It distinguishes that aspect of the decision by Cavanough J of the Supreme Court in *Thirteenth Beach Coast Watch Inc v The Environment Protection Authority*[2] regarding the application of section 20C of the *Environment Protection Act 1970* to applications for review under section 33B.

[1] [2008] HCA 31.
[2] [2009] VSC 53

VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL

ADMINISTRATIVE DIVISION

PLANNING AND ENVIRONMENT LIST

VCAT REFERENCE NOS. P790/2017, P794/2017, P795/2017, P805/2017 & P877/2017

CATCHWORDS

Section 33B *Environment Protection Act 1970* – application by objectors to review issue of works approval for extension of Melbourne Regional Landfill at Ravenhall – consideration of policies relating to waste management and landfills – consideration of nature and scope of Tribunal's jurisdiction in a section 33B application – consideration of principle of integrated decision-making

APPLICANT	
P790/2017	Melton City Council
P794/2017	Mount Atkinson Holdings Pty Ltd
P795/2017	Middle Hopkins Investments Pty Ltd
P805/2017	Brimbank City Council
P877/2017	Stop the Tip Inc
RESPONDENT	
P790/2017, P794/2017, P795/201, P805/2017 & P877/2017	Landfill Operations Pty Ltd
RELEVANT AUTHORITY	Environment Protection Authority
JOINED PARTY	Metropolitan Waste and Resource Recovery Group
OTHER	Sustainability Victoria
SUBJECT LAND	1154-1198 Christies Road RAVENHALL and 408-506 Hopkins Road TRUGANINA VIC 3029
WHERE HELD	55 King Street, Melbourne
BEFORE	Helen Gibson AM, Deputy President Ian Potts, Senior Member Greg Sharpley, Member
HEARING TYPE	Hearing
DATE OF HEARING	30-31 July, 1-2 August, 6-8 August, 13-16 August, 20-23 August, 3-7 September 2018
DATE OF ORDER	17 June 2019

CITATION Melton CC v Landfill Operations Pty Ltd (Red Dot) [2019] VCAT 882

ORDER

Amend works approval application

1 Pursuant to section 127 and clause 64 of Schedule 1 of the *Victorian Civil and Administrative Act 1998,* the works approval application is amended to comprise the following:

> The application accepted on 13 May 2016 comprising the application received on 29 February 2016 as augmented by additional information received on 13 May 2016, amended as described in 'Summary of Works – Melbourne Regional Landfill Extension', prepared by Andrew Green of Golder Associates Pty Ltd in relation to VCAT proceedings P790/2017, P794/2017, P795/2017, P805/2017 & P877/2017 and dated 9 July 2018 ("Summary of Works").

Amend statements of grounds

2 In applications P794/2017 and P795/2017 pursuant to section 127 of the *Victorian Civil and Administrative Act 1998,* the statements of grounds by Mt Atkinson Holdings Pty Ltd and Middle Hopkins Investments Pty Ltd are amended to include the particulars regarding groundwater supplied on 1 August 2018 in document D-16.

3 Costs reserved with respect to amendment of statement of grounds by Mt Atkinson Holdings Pty Ltd and Middle Hopkins Investments Pty Ltd.

Works approval issued

4 In applications P790/2017, P794/2017, P795/2017, P805/2017 & P877/2017 the decision of the Environment Protection Authority is varied.

5 The Tribunal directs that a works approval shall be issued subject to the amended conditions set out in Appendix C of this decision and deletion of Appendix A in the works approval.

Helen Gibson AM
Deputy President

Ian Potts
Senior Member

Greg Sharpley
Member

Table of Contents

ORDER 2
Amend works approval application 2
Amend statements of grounds 2
Works approval issued 2
Appearances 7
Information 10
Abbreviations used 10
REASONS 12
WHAT IS THIS PROCEEDING ABOUT? 12
Overview of proposal and Tribunal's approach to decision-making 12
Description of the proposal 15
Historical context to the works approval application 15
The proposed works 17
Use of the works 20
Proposed operation of the works 21
Amendment to works approval application 22
The applications for review 24
Melton City Council – Application P790/2017 25
Mount Atkinson Holdings Pty Ltd and Middle Hopkins Investments Pty Ltd – Applications P794/2017 & P795/2017 (the developers) 27
Brimbank City Council – Application P805/2017 28
Stop the Tip Inc – Application P877/2017 28
STATUTORY FRAMEWORK 28
PLANNING FRAMEWORK 29
Context of the site 29
Planning controls and the Melton Planning Scheme 33
STRATEGIC WASTE MANAGEMENT FRAMEWORK 40
Victorian Waste and Resource Recovery Infrastructure Planning Framework 40
The SWRRIP and the MWRRIP 41
Scheduling for landfill 41
MRL as a hub of state importance 44
Responsibility for implementing waste management policy 45
Our assessment of consistency with waste management policy 46
POLICIES UNDER THE *ENVIRONMENT PROTECTION ACT 1970* 48

WMP 48
BEPM 48
ODOUR 49
Protection of amenity and air quality 49
Parties' positions and evidence 49
The key issue about odour 50
What are the WMP and BPEM requirements for odour? 50
What odour management performance standard does the SEPP (AQM) require? 54
What does the relevant odour management performance standard require? 56
How should we assess the future odour management performance of the landfill? 59
Odour emissions modelling 61
Parties' positions 61
The experts' evidence 62
Odour emissions from the transect method 66
The history of complaints about odour 67
Odour surveys of landfill performance 71
Sources of odour 71
PEL surveys of 2014 72
Tonkin and Taylor Odour Surveys – 2017 & 2018 74
The odour face and boundary monitoring 75
Will offensive odour emissions occur beyond the boundary? 76
The control of odours as an operational matter 78
Tipping and covering the waste 78
Size of the tipping area 80
Cell design and layout of the facility 81
Use of the works 81
Our assessment of odour emissions and management 83
LANDFILL GAS MANAGEMENT 84
Parties' positions 84
What are the BPEM requirements for landfill gas management? 85
Site selection under the BPEM 85
Buffers under the BPEM 86
BEPM objectives and requirements for landfill gas 87
What does the SEPP (AQM) require for landfill gas management? 89

The design response, experts' conclave and evidence about landfill gas management 89
Landfill gas risk assessment and landfill gas management 95
Our assessment of the landfill gas management system against BPEM requirements 97
Will landfill gas be emitted that will unreasonably and adversely affect the interests of the applicants? 98
MOUND OR AREA LANDFILL 100
What does the BEPM say about landfill types? 100
Parties' positions 101
Our assessment of the type of landfill proposed 101
GROUNDWATER 104
What are the WMP and BPEM requirements for groundwater? 104
Parties' positions and evidence 105
Our assessment of groundwater against the WMP and BEPM 109
SURFACE WATER AND DRAINAGE 110
What are the BPEM requirements for surface water and drainage? 110
Parties' positions 112
Our assessment of surface water and drainage 112
LITTER 114
What are the BPEM requirements for litter? 114
Parties' positions 116
Landfill Operations response 116
Our assessment of proposals to manage litter against BPEM requirements 117
ALTERNATIVE WASTE DISPOSAL OPERATIONS 118
LANDFILL BUFFERS 120
Land uses within the Mt Atkinson and Tarneit Plains PSP 120
Are the proposed landfill buffers acceptable? 126
Landfill gas 126
Odour 127
Our assessment of landfill buffers 128
NATURE AND SCOPE OF THE TRIBUNAL'S JURISDICTION 129
What are the Tribunal's powers in a section 33B application? 129
EPA's position 130

Is the Tribunal limited in its ability to amend works approval conditions in section 33B applications? 133
Summary of Tribunal's findings 133
Functions and powers of Tribunal on review 135
Functions and obligations of EPA 139
Is there any justification for reading down the Tribunal's powers? 144
Is there discretion to accept an inconsistency with a policy or allow pollution in issuing a works approval? 149
Is there discretion to require standards that are more stringent than required by policy in issuing a works approval? 151
CONCLUSION 151
Parties' standing and grounds of review 151
Integrated decision-making 151
Overall conclusion to issue a works approval 153
Additional conditions 154
Appendix A – works approval 138994 156
Appendix B – TABLE 11 Metropolitan Waste and Resource Recovery Implementation Plan 2016 169
Appendix C – works approval amended conditions 170
GENERAL CONDITIONS 170
WORKS CONDITIONS 171
REPORTING CONDITIONS 174

APPEARANCES

For Landfill Operations Pty Ltd	Mr Chris Canavan QC and Ms Emily Porter of Counsel, instructed by Norton Rose Fulbright They called the following witnesses: • Andrew Green, civil geotechnical engineer, Golder Associates Pty Ltd • Aleksandar Todoroski, air quality consultant, Todoroski Air Sciences Pty Ltd • Anthony Paul Kortegast, senior environmental engineering consultant, Tonkin & Taylor Pty Ltd • David Ife, hydrogeologist and technical director, AECOM Australia
For Melton City Council	Mr Greg Tobin, Solicitor, of Harwood Andrews He called the following witnesses: • John Nolan, civil engineer, Nolan Consulting • Simon John Welchman, environmental engineer, odour and air quality consultant, Katestone Environmental Pty Ltd
For Mt Atkinson Holdings Pty Ltd & Middle Hopkins Investments Pty Ltd	Mr Jeremy Gobbo QC and Mr David Dellar of Counsel, instructed by Rigby Cooke, and Ms Nicola Collingwood, Solicitor, of Rigby Cooke (on 20 & 22 August 2018 only) They called the following witnesses: • Phillip Mulvey, hydrogeologist and senior principal scientist, Environmental Earth Sciences Victoria • Gary Graham, air quality consultant, Northstar Air Quality
For Brimbank City Council	Mr Stefan Feidler, Solicitor, and Ms Clare Alexander, Solicitor (on 22 August 2018 only), of Russell Kennedy He called the following witness: • David Cocks, waste and recycling consultant, MRA Consulting Group

For Stop the Tip Inc	Mr Paul Chiappi of Counsel, instructed by Merrylees Legal Pty Ltd and Mr Peter Merrylees, Solicitor, of Merrylees Legal Pty Ltd (on 22 August 2018 only) He called the following witnesses: • Dr John Terrence Bellair, environmental science consultant, Environmental Science Associates • Dr Donald Graeme Ross, consultant air pollution modelling and meteorology, Graeme Ross & Associates • Glenn Weston, social scientist, Public Place Melbourne Pty Ltd • Nicholas Solisky, General Manager Melbourne Assessment Prison, formerly at Ravenhall Metropolitan Remand Centre • Catherine Johns • Maria Kolic • Deval Nirmal • David Budd • Anthea Waters • Kanishka Epa Senevirathne • Anita Vojtek • Lody Aquilina • Karen Cassar • Wendy Mason • Vin Grillo
For Environment Protection Authority	Mr Jason Pizer QC and Ms Joanne Lardner of Counsel by direct brief
For Metropolitan Waste and Resource Recovery Group	Dr Joseph Monaghan, Solicitor, of Holding Redlich He called the following witness: • Colin Arthur Sweet, civil engineer and waste industry consultant, Sweet Enviro Pty Ltd
For Sustainability Victoria	Ms Bridget Phelan, Solicitor, of King and Wood Mallesons

For Attorney-General (8 August 2018 only)	Mr Bayly, Victorian Government Solicitors Office

INFORMATION

Description of proposal	Works approval for seven additional cells at the Melbourne Regional Landfill at Ravenhall
Nature of proceeding	Applications under section 33B of the *Environment Protection Act 1970* – to review the issue of a works approval
Tribunal inspection	An accompanied inspection of the landfill operations, proposed extension and surrounds was undertaken on 30 August 2018. A further unaccompanied inspection of the surrounds was undertaken in October 2018.

ABBREVIATIONS USED

BEPM	Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills (Publication 788.3, August 2015)
EPA	Environment Protection Authority
EPA Method	EPA Regional Services Guidance – Brooklyn survey procedure, EPA Victoria, August 2008
ESO	Environmental Significance Overlay
FIDOL	Odour frequency, intensity, duration, offensiveness (character) and location
FOGO	Food organics and garden organics
IFC	Isolation flux chamber
ILEAP	Independent Landfill Expert Advisory Panel
LFG	Landfill gas
LGRA	Landfill gas risk assessment
MRL	Melbourne Regional Landfill
MWRRIP	Metropolitan Waste and Resource Recovery Implementation Plan 2016
OER	Odour emission rate
OU	Odour unit

PAN	Pollution abatement notice
PEL	Pacific Environment Ltd Report: Melbourne Regional Landfill Air Quality Assessment (13 May 2016)
PSP	Precinct Structure Plan
RWRRIPs	Regional Waste and Resource Recovery Implementation Plans
SEPP (AAQ)	State Environment Protection Policy (Ambient Air Quality) 9 February 1999
SEPP (AQM)	State Environment Protection Policy (Air Quality Management) 21 December 2001
SEPP (W)	State Environment Protection Policy (Waters
SWRRIP	State-Wide Waste and Resource Recovery Implementation Plan Victoria 2015-44
UGZ9	Urban Growth Zone Schedule 9 Melton Planning Scheme
VCAT	Victorian Civil and Administrative Tribunal
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
VDI 3882(1)	German Standard VDI for Olfactometry – Determination of hedonic odour tone
VDI Method	Ambient air – Determination of odour in ambient air by using field inspection – Part 1: Grid method, European Committee for Standardisation (CEN), prEN 16841 – 1:2015E, February 2015
WMP	Waste Management Policy (Siting, Design and Management of Landfills) (as amended on 28 June 2018)

REASONS[3]

WHAT IS THIS PROCEEDING ABOUT?

Overview of proposal and Tribunal's approach to decision-making

1 Waste is an unpleasant but inevitable product of all communities. Appropriately managing waste is an ongoing challenge for communities and a responsibility for government.

2 Victorian government has responded to the need to appropriately manage waste by establishing a wastes hierarchy.[4] Wastes should be managed in accordance with the following order of preference:

(a) avoidance;

(b) re-use;

(c) re-cycling;

(d) recovery of energy;

(e) treatment;

(f) containment;

(g) disposal.

3 Victoria has an extensive and complex regulatory framework for waste management that is embodied in the *Environment Protection Act 1970,* policies under the Act, best practice and other guidelines, and waste and resource recovery implementation plans.

4 Within this framework there is a system under the *Environment Protection Act 1970* that enables the Environment Protection Authority (EPA) to issue a works approval to an occupier of a scheduled premises. A scheduled premises includes a premises at or from which waste is, or is likely to be, discharged, emitted or deposited to the environment. Waste includes solid, liquid and gaseous matter amongst other defined substances or things.[5] When a works approval has been obtained and the works have been satisfactorily completed, the EPA may issue a licence for the discharge, emission or deposit of waste to the environment subject to conditions. Such conditions must not be inconsistent with any conditions specified in the works approval.[6]

5 Responsibility for administering and implementing various aspects of the waste management policy framework is conferred on a number of Waste

---

3 The submissions and evidence of the parties, any supporting exhibits given at the hearing, and the statements of grounds filed, have all been considered in the determination of the proceeding. In accordance with the practice of the Tribunal, not all of this material will be cited or referred to in these reasons. Throughout our decision, the pronoun 'we' is used, however any questions of law have been determined in accordance with the opinion of Deputy President Gibson, who is an Australian lawyer.

4 Section 1I of the *Environment Protection Act 1970.*

5 Section 4(1) of the *Environment Protection Act 1970.*

6 Section 20(7) of the *Environment Protection Act 1970.*

and Resource Recovery Groups, including Metropolitan Waste and Resource Recovery Group, and Sustainability Victoria. Both these bodies were either joined as parties to these proceedings or given leave to make a submission because of their roles and interest in waste management under the *Environment Protection Act 1970.*

6 There are various rights of review to VCAT under the *Environment Protection Act 1970* by applicants in respect of works approvals and licences.[7] There are much more limited rights of review on the part of third parties in respect of works approvals and licences.[8]

7 Landfill Operations is the occupier of scheduled premises, being the subject land, where it currently operates a very large landfill known as the Melbourne Regional Landfill (MRL). This landfill is the largest landfill in Victoria and has been identified as a hub of state importance in policy documents.

8 Landfill Operations proposes to expand its current landfill operations in a westerly direction. EPA has issued a works approval that would allow the construction of seven landfill cells and supporting infrastructure. A copy of Works Approval 138994 is included in Appendix A.

9 The seven additional cells will commence after completion of the existing approved landfill cells. This is expected to occur over the 2022/2023 period. The seven additional cells would extend the life of the landfill by approximately 13 years to 2036, based on present day projections of waste disposal demand.

10 This expansion of the MRL is strongly supported by policy, as detailed by Sustainability Victoria and the Metropolitan Waste and Resource Recovery Group.

11 The five applicants for review in these proceedings – Melton City Council (Melton), Brimbank City Council (Brimbank), Mt Atkinson Holdings Pty Ltd and Middle Hopkins Investments Pty Ltd (the developers), and Stop the Tip Inc (Stop the Tip) – have each applied to review the decision of EPA to issue the works approval pursuant to section 33B of the *Environment Protection Act 1970.*

12 The applicants for review all have different interests and rely upon various grounds under section 33B. Key issues they rely on relate to odour, landfill gas, litter and other wastes, buffer distances and non-compliance with waste management policies. EPA, in particular, challenges the legal standing of several of the applicants and submits that none have established the grounds upon which they rely. Landfill Operations focussed on challenging the substantive grounds the applicants for review relied upon and their evidentiary basis.

[7] Sections 33 and 33A of the *Environment Protection Act 1970.*
[8] Section 33B of the *Environment Protection Act 1970.*

13 We discuss the relevant components of the landfill cells' design and construction in more detail later in our reasons. By way of an overview, the design of each cell includes:

- Composite, low permeability cell floor and wall linings.
- A leachate collection system that will direct leachate to a central leachate storage/evaporation pond.
- A landfill gas collection system, including intermediate, horizontal trenches and pipes that will direct landfill gas to a central gas-to-energy plant that currently operates on the site.
- A capacity for up to two years of waste disposal in each cell[9]; and
- A composite clay and soil cap with final (pre-settlement) heights not exceeding 40m above the surrounding natural surface level.

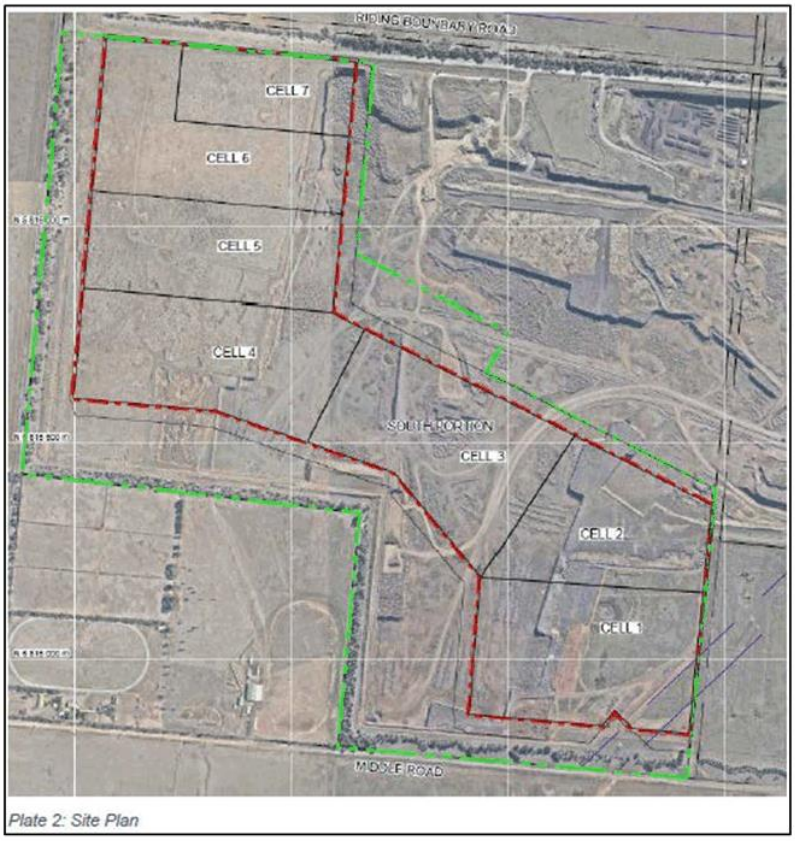


Figure 1 – General layout of landfill cells

[9] Mr Green's evidence indicates the capacity of each cell varies from 1.2 years to 2.2 years: Table page 22 of his July 2018 witness statement.

14 The general layout of the landfill cells is shown in figure 1 above.[10]

15 We emphasise here, that the works approval provides only for the construction of the works. Whilst section 33B requires us to consider whether the use of the works will give cause for concerns, the works approval does not actually provide for or allow the use of the works. That is a matter for later processing by the EPA when it comes to issue a licence. Nevertheless, we must be satisfied about the way in which the works will be used as part of our determination whether or not to issue a works approval and what conditions to specify.

16 We also emphasise that this proceeding is not in the nature of an enforcement proceeding or a means of punishing Landfill Operations for past poor performance of its current landfill operations. Stop the Tip called numerous lay witnesses who attested to their experience of detecting foul odours they attribute to the MRL. We will discuss this evidence and the weight we place on it later.

17 On the other hand, there is no doubt that the single most contentious aspect of this works approval is the potential for the landfill operations to generate offensive odour detectable off-site. We had five expert witnesses give evidence about odour over many days, none of whom agreed with one another. One of the key issues we must be satisfied about is whether the landfill operations will generate unreasonable offensive odours when used in the proposed manner.

18 In addition, we must be satisfied that the works as constructed will not cause other offsite impacts that will adversely affect the interests of the applicants.

19 In approaching our task of determining whether to affirm the decision of EPA to issue the works approval, vary this decision, set it aside, or set it aside and remit the works approval for re-consideration by EPA,[11] we will first identify the statutory and policy context within which we must make our decision. Then we will consider the evidence about various aspects of the proposal and explain our findings about that evidence within the framework of legislation and policy. In this context we will address the specific grounds of review raised by the applicants. Finally, we will consider the nature and scope of the Tribunal's jurisdiction and present our overall conclusions.

Description of the proposal

Historical context to the works approval application

20 The subject land at 408-546 Hopkins Road, Truganina and 1154-1198 Christies Road, Ravenhall is owned by Boral Resources (Vic) Pty Ltd (Boral). It has a total area of approximately 1,150ha.

[10] Plate 2, page 24 of Mr Green's witness statement dated July 2018.
[11] Section 51(2) of the *Victorian Civil and Administrative Act 1998.*

21 Boral operates the Deer Park Quarry on the land under planning permit P2001/249 (quarry permit), although quarrying of basalt rock has been undertaken on the land since 1964. There is no expiry date on the quarry permit, and it is expected that active quarrying will continue for at least the next 60 years.

22 Landfill Operations is a wholly owned subsidiary of Cleanaway Waste Management Ltd (Cleanaway). Landfill Operations operates the MRL at 1154-1198 Christies Road under planning permit P2091/97 (landfill permit). Cleanaway is a publicly listed company providing total waste management, industrial and environmental services at over 180 sites nationwide.

23 The MRL occupies approximately 133ha of the subject land being the now-exhausted stages of the Deer Park Quarry void. The extent of the MRL, existing quarry operations and the approved quarry under the quarry permit are depicted below in figure 2.

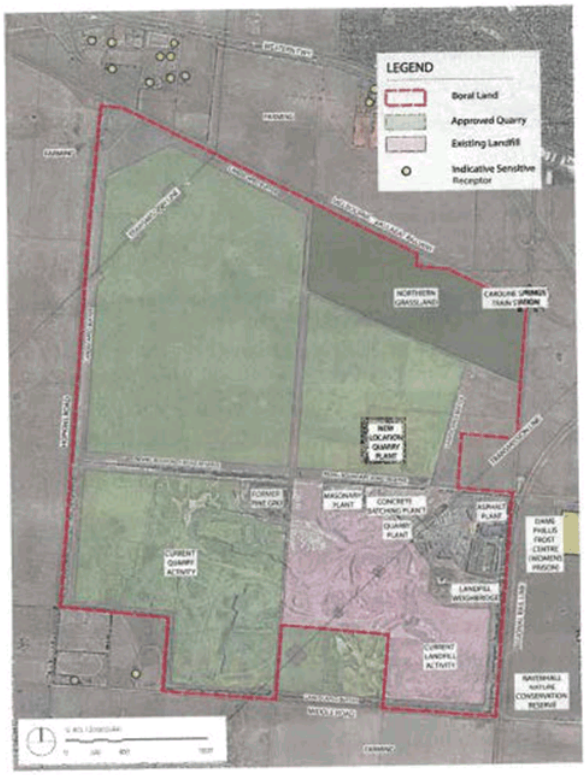


Figure 2 – Layout of the subject land

24 The MRL has been operating since 1998. It is the largest landfill of its type in Victoria, accepting waste from municipal and commercial customers throughout metropolitan Melbourne. The MRL currently receives an estimated 11 million tonnes of waste each year and this is predicted to

increase to 16.5 million tonnes per year by 2041/42. The MRL has approximately 4-5 years' worth of airspace remaining within the area approved under the landfill permit.

25 In February 2016, Landfill Operations submitted a works approval application and a planning permit application to extend the MRL. The extension was proposed to match the western part of the approved area under the quarry permit, enabling the quarry void to be progressively filled. That proposal was for seven cells to be located to the south of Riding Boundary Road (the south portion, 149.3ha) and nine cells to the north of this road (the north portion, 197.4ha), totalling 346.7ha in area. Landfilling was proposed to occupy approximately 210ha of that area.

26 Following its evaluation of the works approval application and a section 20B conference conducted in parallel with a Planning Panel hearing (conducted in late 2016), EPA issued a works approval in March 2017 for the south portion, i.e. seven cells. A subsequent planning permit issued by the Minister for Planning in 2017 has granted planning permission for the extension to the same southern portion of the original proposal (the planning permit).

The proposed works

27 An overview of the proposed extension to the present landfill facility (now confined to the southern portion of the works approval application) was presented in Mr Green's evidence.[12] What follows is a summary of this description.

28 The layout and immediate locational context of the landfill is shown in figure 3. The total area of the landfill cells is some 96ha. With respect to the life, capacity and nature of the wastes to be deposited at the landfill:

- The first of the new cells (Cell 1) is proposed to commence at the completion of the existing MRL facility in approximately 2022/2023. The capacity of the seven cells will allow the landfill to be operational for an approximate period of 13 years to about 2036, based on projected filling rates.
- The new cells will accept the same waste stream types as the present operation, i.e. putrescible (municipal) waste, solid inert waste, shredded tyres and prescribed waste category C (low level contaminated) soils. We were advised during the course of the hearing that the licence has recently been amended to include waste acid sulphate soils.
- The landfill will operate as a type 2 landfill.

29 The amended plans before us and included in Mr Green's evidence provide for the following features required under the planning permit and works approval:

[12] Tribunal Book 8, Tab 128.

- The southern boundary of the site adjoining Middle Road adjusted to satisfy the requirement for a 100m setback from the boundary along this road.
- A 100m buffer to Skeleton Creek.
- Locating the leachate treatment plant from the north portion to the south portion, to a position adjoining the South Portion Leachate Pond (both to the north of proposed Cell 3).
- A proportionate reduction in the landfill gas management capacity to match the reduction in the size and volume of the landfill and the removal of the Main Gas Transfer Pipe where it crossed over Riding Boundary Road as it is no longer needed.

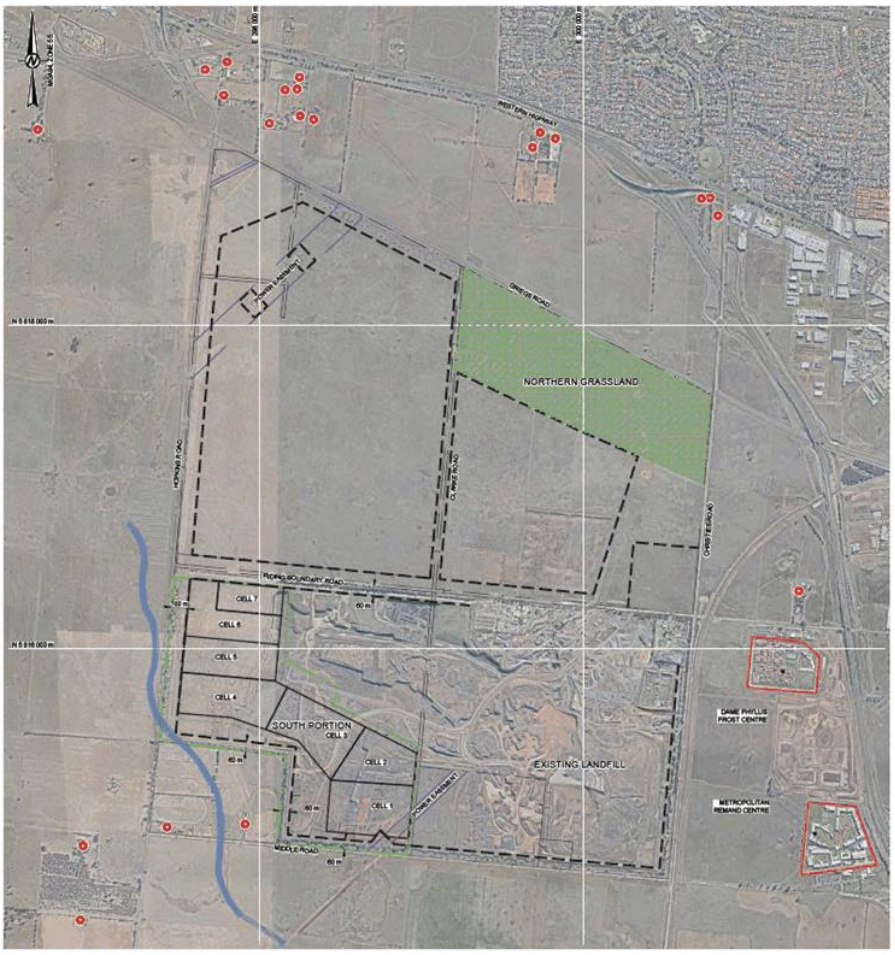


Figure 3 – Layout and immediate locational context of the landfill

30 Each landfill cell is subject to further detailed design and approval. The works approval application proceeds on the basis of the following general

design on which the subsequent detailed design will be based. This design comprises the following key elements:

- Base and side liner systems within the quarry void.
- Inclusion of leachate and landfill gas (LFG) collection systems, with the latter including sacrificial horizontal collection systems during filling of the cell and progressive construction of permanent vertical collection systems.
- A graded low permeability cap over the final filled form of each cell; progressively constructed.
- Stormwater management systems to capture and divert rainfall runoff from active fillings areas and capped areas.

31 Conceptual designs of the landfill liners and cap are shown in figure 4 and discussed in more detail later in respect to a key issue about landfill gas management.

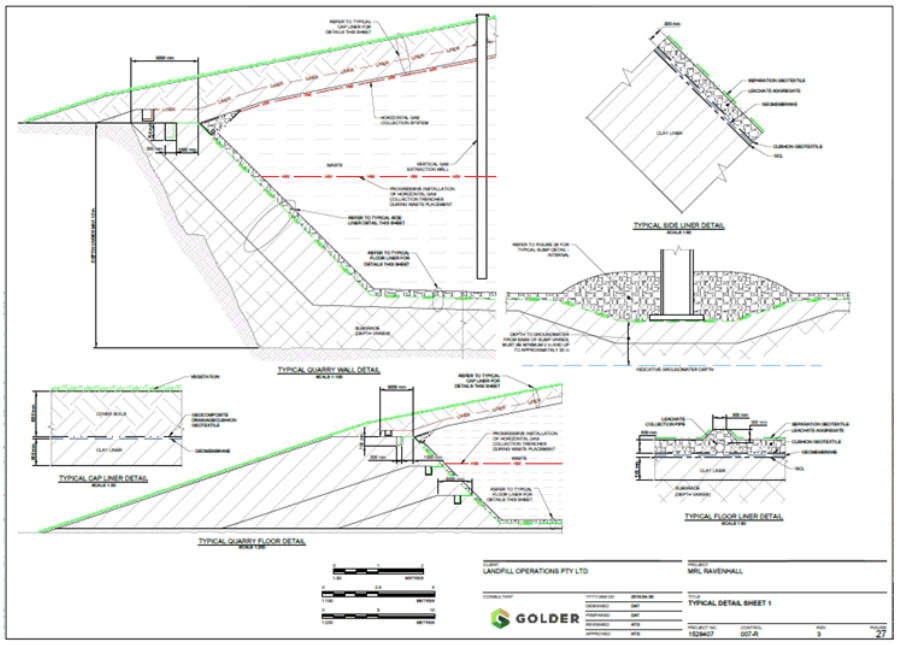


Figure 4 – Conceptual design of the landfill liners and cap

32 A groundwater drainage layer for interception of possible rising groundwater levels (discussed later in our reasons) has also been included in the conceptual design. This would be located beneath compacted subgrade material of some of the cells to provide two metre separation of waste (including the leachate collection system) from groundwater.

33 The form of the landfill would fill the quarry void – a depth of approximately 10m – and extend approximately 40m above surrounding

natural ground levels. EPA considers that the landfill is therefore both an area type landfill as well as a mound type, a matter of some contention that we address later.

34 Cross sectional plans indicate that along the southern section of the landfill, the southern toe of the Cells 1, 3 and 4 will be offset from the quarry void wall by 60m, i.e. the face of these cells will sit inside the void. The design provides for stability through a series of raised toes (see figure 4). The western sides of Cells 4, 5 and 6 will butt against the void wall, at a distance of 100m from the site's boundary. This geometry is shown in figures 5 and 6 respectively.

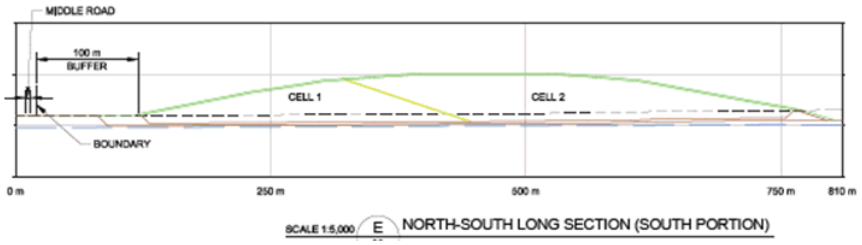


Figure 5 – North-south section of the landfill

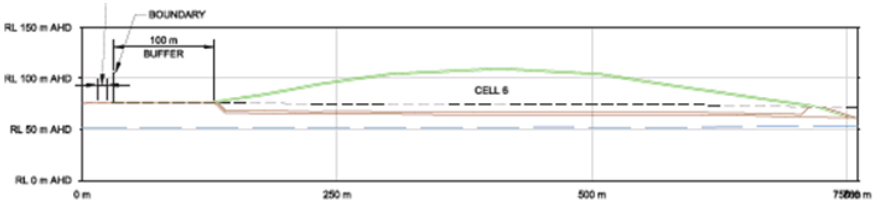


Figure 6 – West-east section of the landfill

Use of the works

35 Use of the works will be governed by a licence issued by EPA under section 20 of the *Environment Protection Act 1970.* EPA can only issue a licence subject to any conditions that are not inconsistent with any conditions specified in the works approval.[13]

36 We note that section 33B(2) allows a third party to apply for a review of the issue of a works approval on grounds that if the works are completed in accordance with the works approval, the use of the works will result in a discharge or emission which will unreasonably and adversely affect the interests of the person, or will be inconsistent with any relevant Order declared under section 16 of the Act.

37 We agree with the following comments of the Tribunal in *Dual Gas Pty Ltd v Environment Protection Authority*[14] that this means we must consider the

[13] Sections 20(7) and 20(7C) *Environment Protection Act 1970.*
[14] [2012] VCAT 308.

way in which the works will be used in order to assess whether an application for review under either section 33B(2)(a) or section 33B(2)(b) can be sustained:

> [45] We consider that the reference to "use of the works" in s 33B(2)(b) requires us to look beyond the design standards for the works, and to consider the consequences of the works in terms of the future discharges and emissions to the environment, and the manner in which they can or should be regulated or controlled within the works approval. This is further supported by the fact that the EPA can only issue a licence that is "not inconsistent with any conditions specified in the works approval", and perhaps also by the fact that the issue of a licence is not open to third party review where a works approval has first issued.

38 We have therefore described relevant aspects of the proposed use or operation of the works in the context of considering specific issues, such as odour or landfill gas management.

Proposed operation of the works

39 Prior to construction of each cell the detailed design is reviewed and approved by an independent Auditor and submitted to EPA for approval to construct. A quality assurance and quality control program are also developed and approved by an independent Auditor; the purpose of which is to ensure the integrity of the liner systems.

40 The Auditor subsequently monitors and approves the construction of the cell and its readiness to receive waste. Following approval and the issue of a licence by EPA, the cell can be used for the deposition of waste.

41 Waste is received at the MRL on a 24-hour basis with a reduced throughput during the night.

42 All wastes arriving at the site pass over a weighbridge and inspection station located near the existing entrance. Vehicles are directed to the tipping face and the waste is tipped at both the top and bottom of the tipping face. A combination of bulldozers and compactors spread the waste over the inclined tipping face and compact the waste into a stable form. As additional wastes are tipped, the tipping face progresses across the cell and the compacted waste is progressively covered with a clay-rich soil cover. As each lift is completed, the tipping face is established on top of the previous lift and waste deposition continues until the approved pre-consolidation waste level for the cell is reached.

43 As the landfill rises, a series of near horizontal gas collection pipes are progressively installed to allow for the progressive collection of landfill gas generated as the cell is being filled. The landfill gas is directed to an onsite landfill gas burning power generation facility.

44 Any leachate generated during and post filling of the cell is collected by a series of collection pipes situated above the lined base of the cell and pumped to an onsite leachate treatment facility.

45 Once filled, the cell is capped in accordance with the EPA approved capping design. The construction of the cap is monitored and subject to the approval of the independent Auditor.

Amendment to works approval application

46 The works approval application submitted by Landfill Operations to EPA in 2016 is a voluminous document, which includes details of the proposed works on both the north portion and the south portion. There was further voluminous documentation submitted in response to requests for further information by EPA and during the course of the Planning Panel hearing.

47 The works approval issued by EPA includes condition WA_G2, which provides as follows:

> The works must be constructed in accordance with the application accepted on 13 May 2016 comprising the application received on 29 February 2016 as augmented by additional information received on 13 May 2016, 23 September 2016, 30 November 2016 and 9 December 2016 as identified in the documents listed in Appendix A of this Works Approval restricted to the South Portion as shown on Schedules 1A, 1B and 1C ("the application") except that, in the event of any inconsistency arising between the application and the conditions of this approval, the conditions of this approval shall apply.

48 The list of documents referred to in Appendix A of the works approval is included in the copy of Works Approval 138994 included in Appendix A of this decision.

49 In our view, this collection of documents, which is intended to form the basis of one of the most important conditions in the works approval, namely the parameters that describe how the works must be constructed, is uncertain, open to potential dispute, and inappropriate to adequately describe how the works must be constructed.

50 This was a matter we raised with the parties at the hearing. We suggested that the application for the works approval should be amended to more accurately reflect what is now proposed to be constructed. We made directions accordingly.

51 Landfill Operations produced a proposed amendment to the works approval statutory document as follows:

> **Landfill Ops' proposed amendments to works approval statutory document**
>
> Proposed amendment to WA_G2:
>
> The works must be constructed in accordance with the application accepted on 13 May 2016 comprising the application received on 29 February 2016 as augmented by additional information received on 13

May 2016, ~~23 September 2016, 30 November 2016 and 9 December 2016 as identified in the documents listed in Appendix A of this Works Approval restricted to the South Portion as shown on Schedules 1A, 1B and 1C~~, amended as described in 'Summary of Works – Melbourne Regional Landfill Extension', prepared by Andrew Green of Golder Associates Pty Ltd in relation to VCAT proceedings P790/2017, P794/2017, P795/2017, P805/2017 and P877/2017 and dated 9 July 2018 ("Summary of Works") (together "the application") except that, in the event of any inconsistency arising between the application and the conditions of this approval, the conditions of this approval shall apply.

Consequential amendment to WA_W1

…The plans, technical specifications and CQA plan must comply with the application ~~Works Approval Application~~, the liner configuration given in Figure 27 (No 1528407, Rev 3) of ~~Appendix B included in Doc 2~~ Appendix F of the Summary of Works…

Appendix A to be deleted

52 We consider the amendment to be acceptable in concisely defining the now approved scope of the works.

53 Concerns were expressed by EPA about the Tribunal's power to amend a works approval application. However, we consider that the provisions of clause 64 of Schedule 1 of the *Victorian Civil and Administrative Act 1998* make the Tribunal's powers in this respect quite explicit. It provides as follows:

> **64 Amendment of application**
>
> (1) This clause applies to the following proceedings—
>
> …
>
> (b) a proceeding for review of a decision under the **Environment Protection Act 1970** in relation to—
>
> (i) a determination of the Environment Protection Authority or a delegated agency in respect of an application for a works approval or licence;
>
> …
>
> (2) At any time in a proceeding to which this clause applies the Tribunal may make any amendment it thinks fit to the application for the permit, works approval or licence the subject of the proceeding.
>
> …
>
> (4) This clause is in addition to, and does not limit or affect section 127.

54 In our view, it is important that if any condition in a works approval is going to refer to and require compliance with an application (be it for a

works approval, a planning permit or the like), then the application must be sufficiently certain and well-defined so that such a condition can be confidently relied upon by the works approval holder and, if necessary, so it can be enforced.

55 Accordingly, we have amended the works approval application as proposed by Landfill Operations.

The applications for review

56 The five applications for review are all made under section 33B(1)(a) of the *Environment Protection Act 1970.* Relevantly, section 33B provides as follows:

> **33B Applications for review by third parties**
>
> (1) If the Authority or a delegated agency—
>
> (a) issues a works approval; or
>
> (b) issues a licence on an application to which section 20(8) applies; or
>
> (c) amends a licence on an application to which section 20A(6) applies; or
>
> (d) removes the suspension of a licence—
>
> a person whose interests are affected by the decision (other than the applicant or licence holder) may apply to the Tribunal, within 21 days after the decision is made, for review of the decision.
>
> …
>
> (2) An application for review under subsection (1)(a) is to be based on either or both of the following grounds—
>
> (a) that if the works are completed in accordance with the works approval, the use of the works will result in—
>
> (i) a discharge, emission or deposit of waste to the environment; or
>
> (ii) the reprocessing, treatment, storage, containment, disposal or handling of waste; or
>
> (iii) the reprocessing, treatment, storage, containment, disposal or handling of substances which are a danger or a potential danger to the quality of the environment or any segment of the environment—
>
> which will unreasonably and adversely affect the interests, whether wholly or partly of that person;
>
> (b) that if the works are completed in accordance with the works approval, the use of the works will result in—

(i) a discharge, emission or deposit of waste to the environment; or

(ii) the reprocessing, treatment, storage, containment, disposal or handling of waste; or

(iii) the reprocessing, treatment, storage, containment, disposal or handling of substances which are a danger or a potential danger to the quality of the environment or any segment of the environment—

in the area which will be inconsistent with any relevant Order declared under section 16, 16A or 17A for the area, or if no relevant Orders have been declared under any of those sections for that area, would cause pollution or an environmental hazard.

57 In terms of section 33B(2)(b), relevant orders declared under sections 16, 16A or 17A applicable in this proceeding include:

- State Environment Protection Policy (Air Quality Management) – SEPP (AQM).
- State Environment Protection Policy (Waters) – SEPP (W).[15]
- Waste Management Policy (Siting, Design and Management of Landfills) (WMP).

58 Referenced in the WMP are the following documents:

- Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills (BPEM).
- Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP**).**
- State-Wide Waste and Resource Recovery Implementation Plan (SWRRIP).

Melton City Council – Application P790/2017

59 The subject land is located within the municipality of Melton.

60 In its application for review, Melton's original grounds were that if the works were completed in accordance with Works Approval 138994, the use of the works will result in:

(a) Emissions of waste to the environment; and

(b) Disposal of waste,

[15] SEPP (W) was gazetted on 23 October 2018 after hearings had been completed. Concurrently, the State Environment Protection Policies (Groundwaters of Victoria) and (Waters of Victoria) were revoked. Where relevant, we have considered and applied the SEPP (W). We note that the essential elements of the SEPP (W) with respect to protection of beneficial uses and consideration of the principles of environmental protection do not depart from those of the previous SEPPs it now replaces.

which will unreasonably and adversely affect the interests of Melton City Council.

61 The emission of wastes referred to include odour and landfill gas. It was said that:

- Residents near the existing landfill (MRL) experience odour impacts. The impacts will be exacerbated by the additional landfill cells.
- Buffers required for landfill gas migration, safety and amenity impacts occur over land not owned or under the control of the landfill operator. This will unreasonably and adversely affect nearby land owners and the Council when considering the future use and development of this land, which is in a growth area.
- Disposal of waste is the least preferred method of waste management within the waste hierarchy. The MWRRIP estimated the existing MRL had a 7-10 year life (of airspace) without WA138994. Approval of the additional seven cells is contrary to the wastes hierarchy at section 1L of the *Environment Protection Act 1970* and policy direction to reduce waste sent to landfill in the SWRRIP and MWRRIP. The additional cells will distort policy objectives and prolong the adverse impacts of the landfill on nearby residents through odour impacts and suppress the realisation of appropriate State waste policy objectives.

62 Following directions by the Tribunal, Melton filed further and better particulars of its statement of grounds. Melton now says that exacerbated impacts will arise from:

- The expansion of the landfill, which will increase the volume and area of decomposing waste, regardless of any tipping face restrictions, and increase the size of the potential landfill odour source; and
- The extension of time for the operation of the landfill, which will increase the length of time during which odour may be emitted.

63 Melton refers to current and future owners of land beyond the landfill premises within 500m of the landfill cells. It does not say there will be landfill gas migration beyond the boundary of the landfill; but it refers to the imposition of a 500m buffer to manage the risk of landfill gas migration and the impacts of this buffer being required beyond the land boundary

64 Melton says the works and conditions will not sufficiently manage odour impacts.

65 In respect to policy, Melton says the landfill cells will provide excess landfill capacity that has not been planned for and is contrary to the waste hierarchy in the *Environment Protection Act 1970,* the goals of the SWRRIP and objectives of the MWRRIP.

Mount Atkinson Holdings Pty Ltd and Middle Hopkins Investments Pty Ltd – Applications P794/2017 & P795/2017 (the developers)

66 Mount Atkinson Holdings Pty Ltd is the developer and representative of a number of entities that together own and control approximately 700ha of land west of Hopkins Road to the west of the subject land. This is land which is the subject of the Mt Atkinson and Tarneit Plains PSP.

67 Middle Hopkins Investments Pty Ltd is the owner of the land at 548-620 Hopkins Road, which is located on the north-east corner of Hopkins Road and Middle Road. This land comprises a dwelling and associated agricultural facilities and operations.

68 Together we will refer to these applicants as 'the developers'.

69 In their statements of grounds, the developers say their interests will be unreasonably and adversely affected by the granting of a works approval for the landfill without an 'internalised' buffer area because it will result in the discharge, emission or deposit of waste to the environment, and the reprocessing, treatment, storage, containment, disposal or handling of substances which are a danger or a potential danger to the quality of the environment, including:

- Odour emissions beyond the boundary of the landfill as odour management does not meet odour management best practice of SEPP (AQM).
- Landfill gas migration beyond the boundary of the landfill as landfill gas management does not comply with the BEPM and the WMP.

70 At the hearing, the developers raised a further issue they say arises from the proposed depth of the landfill and the local groundwater conditions. They claim that:

- The design of the landfill and EPA's assessment have failed to account for perched groundwater occurring in the basalt formation.
- The design of the landfill and EPA's assessment have failed to properly establish the long-term regional groundwater levels because of interference from groundwater extraction that supports the past, current and ongoing quarry operations.

71 The developers assert that these points demonstrate an inconsistency with relevant policies, namely the WMP and SEPP (W). The consequence of these inconsistencies is said to present a risk of failure to the landfill liner systems or, in the alternative, the groundwater drainage mitigation systems now proposed will generate legacy issues beyond the life and licensing of the landfill.

72 Leave was given to the developers to amend their statements of grounds to include these issues.

Brimbank City Council – Application P805/2017

73 Brimbank is the adjoining municipality to the east of the subject land. In its amended statement of grounds, Brimbank claims that use of the works will result in the disposal or handling of waste which will unreasonably and adversely affect the interests of Brimbank and will be inconsistent with the WMP.

74 Brimbank relies on the MRL for waste disposal from its municipality. It acknowledges that the MRL forms important infrastructure for the provision of waste management services to its community. However, Brimbank's Waste, Recycling and Litter Strategy 2018-2028 articulates its commitment to diverting residual waste from landfill to advanced resource recovery technologies. Specifically, it advocates for the development of advanced waste technology and resource recovery infrastructure and the development of the domestic market for recycled products.

75 It contends that the capacity of the MRL under the works approval and extended duration of its operation reduces risk to Landfill Operations, allowing dominant market share to be secured and preventing alternative advanced technologies from entering the market. It further contends that the objectives, goals and attainment program of the WMP are not achieved by the decision to issue the works approval. Brimbank says the decision provides long-term air space for Melbourne, reducing demand on regional Victoria's air space, which ultimately undermines investment in advanced waste technology and the domestic market for resource recovery.

76 To address these issues, Brimbank says the works approval should be limited to 2028 (5 years) and the works approval should compel the licence holder to recover recyclable materials from the waste prior to disposal.

Stop the Tip Inc – Application P877/2017

77 Stop the Tip is an incorporated community group. It contends, under section 33B(2)(a) of the *Environment Protection Act 1970*, that the landfill to be conducted under the works approval will result in the emission of odour, which will unreasonably and adversely affect the interests of its members, who are residents of Caroline Springs, Burnside, Deer Park, Derrimut, Truganina and Tarneit.

78 Stop the Tip also contends under section 33B(2)(b), that the emission of odour and litter will be inconsistent with the SEPP (AQM) and the WMP through adverse effect on local amenity.

STATUTORY FRAMEWORK

79 The *Environment Protection Act 1970* (the Act) sets out the regulatory framework for the issue of works approvals and licences, and applications for review to the Tribunal in respect of them.[16]

[16] Part III Divisions 2 and 3; and Part IV of the *Environment Protection Act 1970.*

80 The *Environment Protection Act 1970* also establishes the Victorian Waste and Resource Recovery Infrastructure Planning Framework.[17] For the purpose of the Act, the Victorian Waste and Resource Recovery Infrastructure Planning Framework means the State-Wide Waste and Resource Recovery Implementation Plan (SWRRIP); the Regional Waste and Resource Recovery Implementation Plans (RWRRIPs); any guidelines in relation to the SWRRIP and RWRRIPs; and the process under section 50BD facilitating integration of the SWRRIP and RWRRIPs.[18]

81 The Victorian Waste and Resource Recovery Infrastructure Planning Framework comprises the strategic framework within which waste must be managed in Victoria.

82 In addition to the regulatory regime under the *Environment Protection Act 1970,* regard must be had to the planning context of the site. Previous decisions of the Tribunal have highlighted how decision making under the *Planning and Environment Act 1987* and the *Environment Protection Act 1970* must work in an integrated way.[19] Planning decisions under the *Planning and Environment Act 1987* and planning schemes focus on planning matters, whilst decisions under the *Environment Protection Act 1970* focus on pollution control. Nevertheless, decisions under each Act must have regard to issues arising under the jurisdiction of the other Act[20] and resolve land use conflicts.

PLANNING FRAMEWORK

Context of the site

83 The subject land is included in the Special Use Zone Schedule 1 – Earth and Energy Resources (SUZ1).

84 To the immediate west of the landfill site lies the Mt Atkinson and Tarneit Plains PSP. To the south are the Chartwell East and Derrimut Plains PSPs. The site itself and land to the east falls within the Ravenhall Quarry Site PSP and to the north-east and south-east are the Robertson Road Employment Area North and South respectively. The general configuration of these and other PSP and planning zones are shown in figure 7.

---

17 Part IX Division 2AB of the *Environment Protection Act 1970.*
18 Section 50 of the *Environment Protection Act 1970.*
19 For example, see *SITA Australia Pty Ltd and PWM (Lyndhurst) Pty Ltd v Greater Dandenong CC* [2007] VCAT 156.
20 For example, under the *Planning and Environment Act 1987,* section 60(1A)(f) requires the responsible authority and section 84B(2)(e) requires the Tribunal to take account of and give effect to any relevant State environment protection policy declared in any Order made by the Governor in Council under section 16 of the *Environment Protection Act 1970.* Section 37A(a) of the *Environment Protection Act 1970* requires the Tribunal considering an application for review or declaration to take into account any relevant planning scheme.

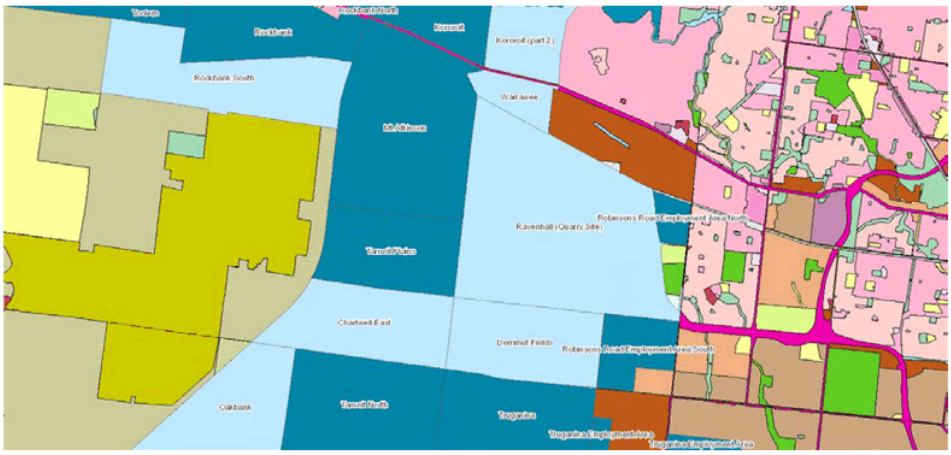


Figure 7 – PSPs and zones proximate to the site

85 The Mt Atkinson and Tarneit Plains PSP has been completed and incorporated into the Melton Planning Scheme (Amendment C162). The future urban structure for the PSP is included in figure 8.

86 This PSP indicates that the land immediately to the west of the landfill site will comprise a mix of industrial and retail uses. A large area of the industrial land will be given over to the proposed Truganina terminal station. Drainage reserves, which incorporate the head waters of Skeleton Creek, are proposed that will include shared recreational pathways. A high-pressure gas pipeline easement is shown along Hopkins Road along with the present easement and pipeline along Middle Road. Business and residential uses and a town centre are planned to the north-west of the proposed landfill cells, along with up to four possible school sites. Extension of the arterial road network along Middle Road is shown.

87 Development has commenced in the Mt Atkinson and Tarneit Plains PSP, some 2km from the western boundary of the proposed landfill site. Residential development has commenced to the south in the Truganina PSP some 3km to the south of the landfill site.

88 The underlying, current planning zones around the landfill site are shown in figure 9.

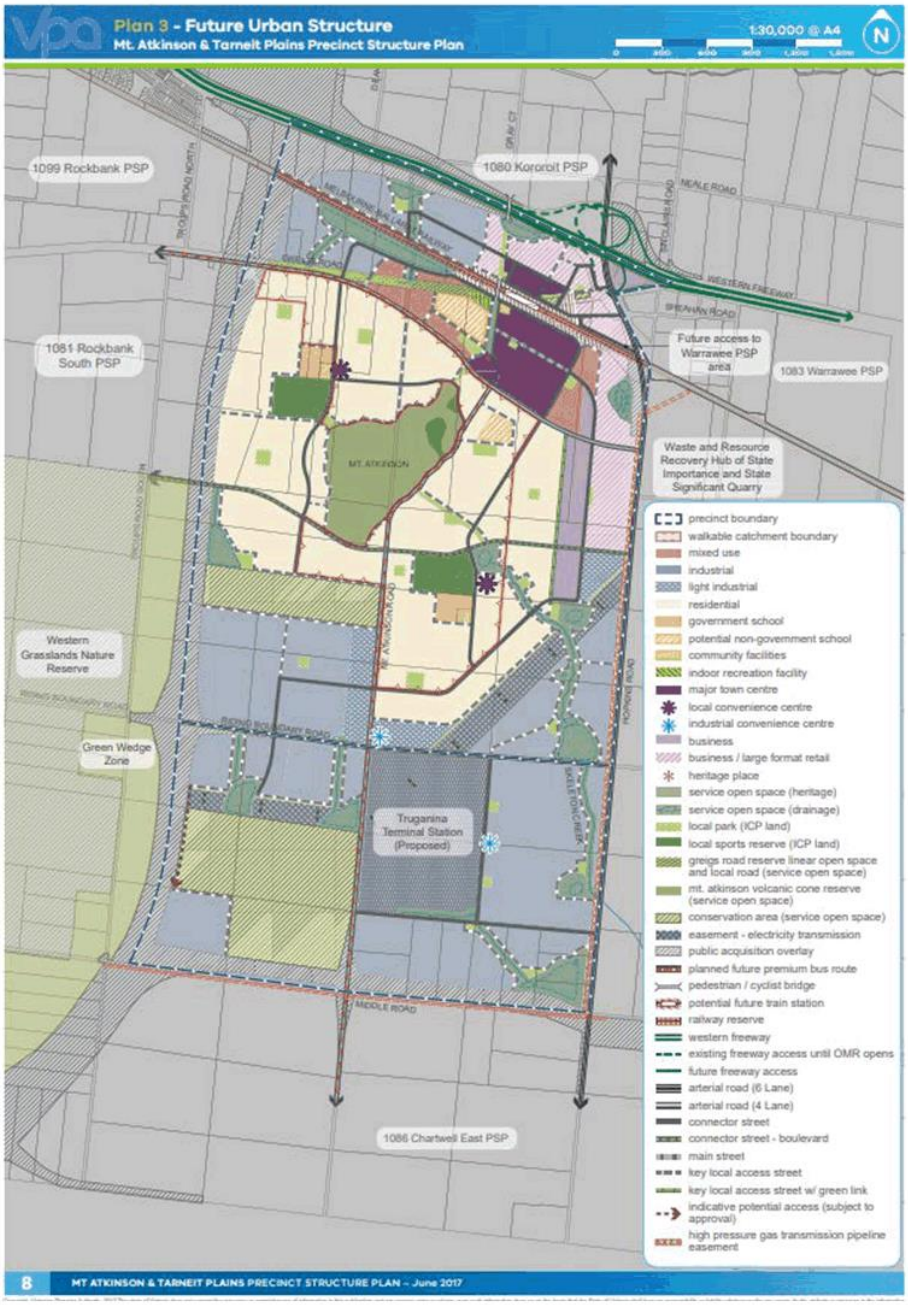


Figure 8 – The Mt Atkinson and Tarneit Plains PSP Future Urban Structure

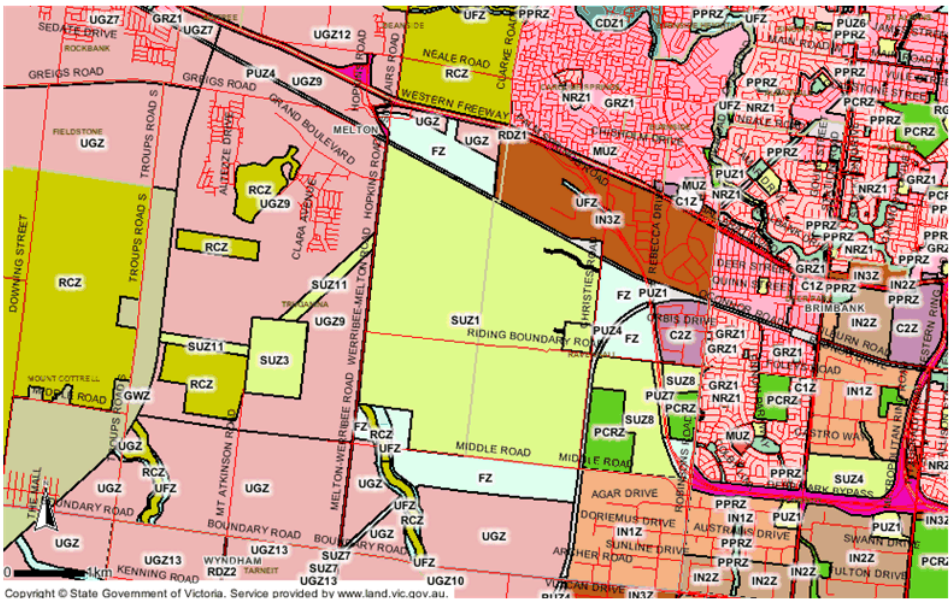


Figure 9 – Zones proximate to the site

89 Figure 9 shows that urban development is proposed immediately to the west of the landfill, which is in the Urban Growth Zone Schedule 9 (UGZ9). To the south is a portion of land zoned Farming (FZ) approximately 500m wide, beyond which is the continuation of the UGZ. Land to the east is in part Public Conservation and Resource Zone (PCRZ), FZ and Special Use Zone Schedule 8 – Prisons Precinct (SUZ8), which contains the Dame Phyllis Frost Centre, Ravenhall Prison and Metropolitan Remand Centre. North of the present-day landfill is the remaining area of SUZ1 (the quarry land) and beyond is a stretch of FZ land and IN3Z land. To the north of this is the Western Freeway and the largely residential land of Caroline Springs.

90 Apart from the land use planning that has and is occurring around the site, the Mt Atkinson and Tarneit Plains PSP anticipates and has responded to buffer requirements for the high-pressure gas pipeline along Hopkins Rd and the blast and amenity buffers for future quarry operations. These are shown in figure 10. We note in particular that there is a 500m 'quarry sensitive use buffer' nominated in this plan. There is no translation of this buffer into the Melton Planning Scheme.

91 Further, we note that no buffer is shown for the proposed landfill operations. This is to be controlled by way of DDO4, which has been included in the Melton Planning Scheme under Amendment C162. The extent of DDO4 is shown in figure 11. It applies to land 500m from the proposed landfill cells. It is not described as, nor we do we ascribe the purpose of this DDO to be, a land use buffer (i.e. to control or regulate land use). DDO4 seeks only to regulate how development may occur.

92 A range of subsurface infrastructure is also planned as shown in figure 12.

Planning controls and the Melton Planning Scheme

93 The explanatory report for Amendment C162 contains the following statement in respect to DDO4:

> Insert Schedule 4 to the Design and Development Overlay (DDO4) and apply it to land in the Precinct within 500 metres of the proposed putrescible landfill cell contained within the planning permit application PA2016/5118 for the Melbourne Regional Landfill. The DDO4 requires permit applications for buildings and works and subdivision to include supporting information detailing the geological and hydrological conditions and demonstrating how adverse impacts from the potential offsite migration of landfill gas from putrescible landfill have been avoided.

94 The explanatory report for Amendment C162 also highlights and addresses the various interface issues along Hopkins Road, the quarry and the landfill as follows:

> The Amendment provides clarity for the development of land along the western side of Hopkins Road, responding to the existing quarry works authority by prohibiting the construction of most buildings within the Quarry Blast Buffer (shown in the PSP) and designating certain sensitive land uses be prohibited near the interface with the quarry (Quarry Sensitive Use Buffer), whilst also introducing a permit trigger for a range of uses considered sensitive to potential impacts from the quarry. An urban design framework (UDF) is also required for the Hopkins Road Business Precinct and must address how the design and layout of new development will respond to the potential impacts of the quarry. The responsible authority and the Victorian Planning Authority must seek the views of the owner and operator of the Boral Ravenhall Quarry and the Secretary to the Department of Economic Development, Jobs, Transport and Resources in relation to how the urban design framework responds to the potential impacts of the quarry.
>
> The Melbourne Regional landfill site is located at 1154-1198 Christies Road, Ravenhall and has been in operation since the late 1990s. The existing landfill does not currently have any impact on the PSP.
>
> A planning permit (PA2016/5118) was granted on the 31/5/2017, and a works approval (138994) was granted on the 24 March 2017 for the Melbourne Regional Landfill to allow use and development for refuse disposal.
>
> The planning permit and works approval granted was for land south of Riding Boundary Road. The applied industrial zoning to the south of the electricity transmission easement negates the need for a specific response to potential odour from the landfill given the lower amenity expectations inherent in industrial areas and the ability of the responsible authority to exercise discretion when considering permits for potentially sensitive uses.
>
> A Design and Development Overlay – Schedule 4 (DDO4) will be introduced to the planning scheme as part of the Amendment to

respond to the risk of landfill gas migration from the proposed putrescible landfill expansion to the Melbourne Regional Landfill. The DDO4 will apply to land in the Precinct within 500 metres of the approved putrescible landfill cell for the Melbourne Regional Landfill. The DDO4 requires permit applications for buildings and works and subdivision to include supporting information detailing the geological and hydrological conditions and demonstrating how adverse impacts from the potential offsite migration of landfill gas from putrescible landfill have been avoided.

The use of land for a Child care centre has been prohibited on all land with an applied Industrial 1 Zone (IN1Z) at the request of the EPA.

Two high pressure gas pipelines traverse the Precinct in a north-south direction, parallel to Hopkins Road and also in an east-west direction, parallel to Middle Road. The pipelines require protection to ensure they are not ruptured during the course of development. The UGZ9 has been drafted to require a construction management plan to be submitted prior to any works (including demolition) being carried out within 50 metres of the pipeline easement. An application for certain sensitive uses and types of development will require notice to be given to the gas pipeline licensee where these uses or development types are proposed within the measurement length for the pipelines, as shown in the PSP.

95 In addition to DDO4, the above land use and development controls are embodied in a range of provisions under the Urban Growth Zone Schedule 9 (UGZ9). The following controls apply to the use of land under clause 2.3 of the UGZ9:

Use of land within the Quarry Sensitive Use Buffer

A permit is required to use land for Business college, Car wash, Dry cleaner, Employment training centre, Panel beating, Research and development centre and Tertiary institution on land shown within the Quarry Sensitive Use Buffer on Plan 11 in the *Mt Atkinson & Tarneit Plains Precinct Structure Plan*.

A permit is required to use land for Dry cleaning agent, Laundromat and Supermarket on land shown as 'Business' and 'Business/Large Format Retail' within the Quarry Sensitive Use Buffer on Plan 11 in the *Mt Atkinson & Tarneit Plains Precinct Structure Plan*.

The use of land for Dry cleaning agent, Laundromat and Supermarket on land shown as 'Light Industrial' within the Quarry Sensitive Use Buffer on Plan 11 in the *Mt Atkinson & Tarneit Plains Precinct Structure Plan* is prohibited.

The use of land for Accommodation, Child care centre, Education centre (other than Business college, Employment training centre or Tertiary institution) and Hotel on land shown within the Quarry Sensitive Use Buffer on Plan 11 in the Mt Atkinson & Tarneit Plains Precinct Structure Plan is prohibited.

Use of land within the High Pressure Gas Transmission Pipeline Measurement Length

A permit is required to use land for Accommodation (other than Dwelling), a Child care centre, Cinema based entertainment facility, Corrective institution, Education centre, Hospital, Place of assembly and Service station in the 'high pressure gas transmission pipeline measurement length' shown on Plan 11 in the Mt Atkinson & Tarneit Plains Precinct Structure Plan.

Use of land for a child care centre

The use of land for a Child care centre is prohibited where the applied zone is Industrial 1 Zone.

96 Clause 2.5 of the UGZ9 includes the following relevant provisions:

No buildings within Quarry Blast Buffer

The construction of a building (not including a temporary building, a building associated with a minor utility installation, a renewable energy facility or telecommunications facility, a structure, a fence or other appurtenances of a building) on land shown within the quarry blast buffer on Plan 11 of the Mt Atkinson & Tarneit Plains Precinct Structure Plan is prohibited.

97 Clause 2.7 of the UGZ9 requires:

Ravenhall Quarry

An application to use land, or to construct a building on land, identified within the 'Quarry Sensitive Use Buffer' shown on Plan 11 of the Mt Atkinson & Tarneit Plains Precinct Structure Plan must be referred in accordance with Section 55 of the Planning and Environment Act 1987 to the Secretary to the Department administering the Mineral Resources (Sustainable Development) Act 1990.

98 Clause 6 contains the following decision guideline:

Ravenhall Quarry Sensitive Use Buffer

Before deciding on an application to use land or construct a building within the Quarry Sensitive Use Buffer, in addition to the decision guidelines in Clause 37.07-14, the responsible authority must consider the effect that emissions of noise, vibration, odour, dust and grit from the nearby Ravenhall Quarry (located east of Hopkins Road) may have on the proposed use or building.

99 The development and use of the land along the interface with the quarry and hence with the landfill are not unfettered. Apart from DDO4, a range of other matters are to be taken into consideration and planning controls apply under the UGZ9.

100 We find the complaints of the developers about the onerous nature of DDO4 difficult to reconcile when regard is had to the range of other planning controls applied under UGZ9 (and the PSP). We observe that in planning land uses to the west of the MRL and quarry, a range of constraints have been identified. The PSP, through the auspices of the UGZ9 and DDO4, has sought to manage and integrate the development and use of this land with those constraints.

101 In our view, the arguments about landfill gas and odour impacts put to us by the developers were tantamount to the developers seeking to run a case against the planning controls that have been put in place.

102 In our jurisdiction under the *Environment Protection Act 1970,* we are required to consider the planning scheme.[21] We have done this and conclude that the scheme seeks to integrate the development of future land uses with the present and future development of the quarry and the MRL. It is not our role in the context of this proceeding to critique or review these planning controls. Rather, we consider that the proposal and the works approval provide for development consistent with the planning scheme.

103 We also note that this was the conclusion broadly reached by the Minister in determining to grant the planning permit for the proposal.

[21] Section 37A(a) of the *Environment Protection Act 1970.*

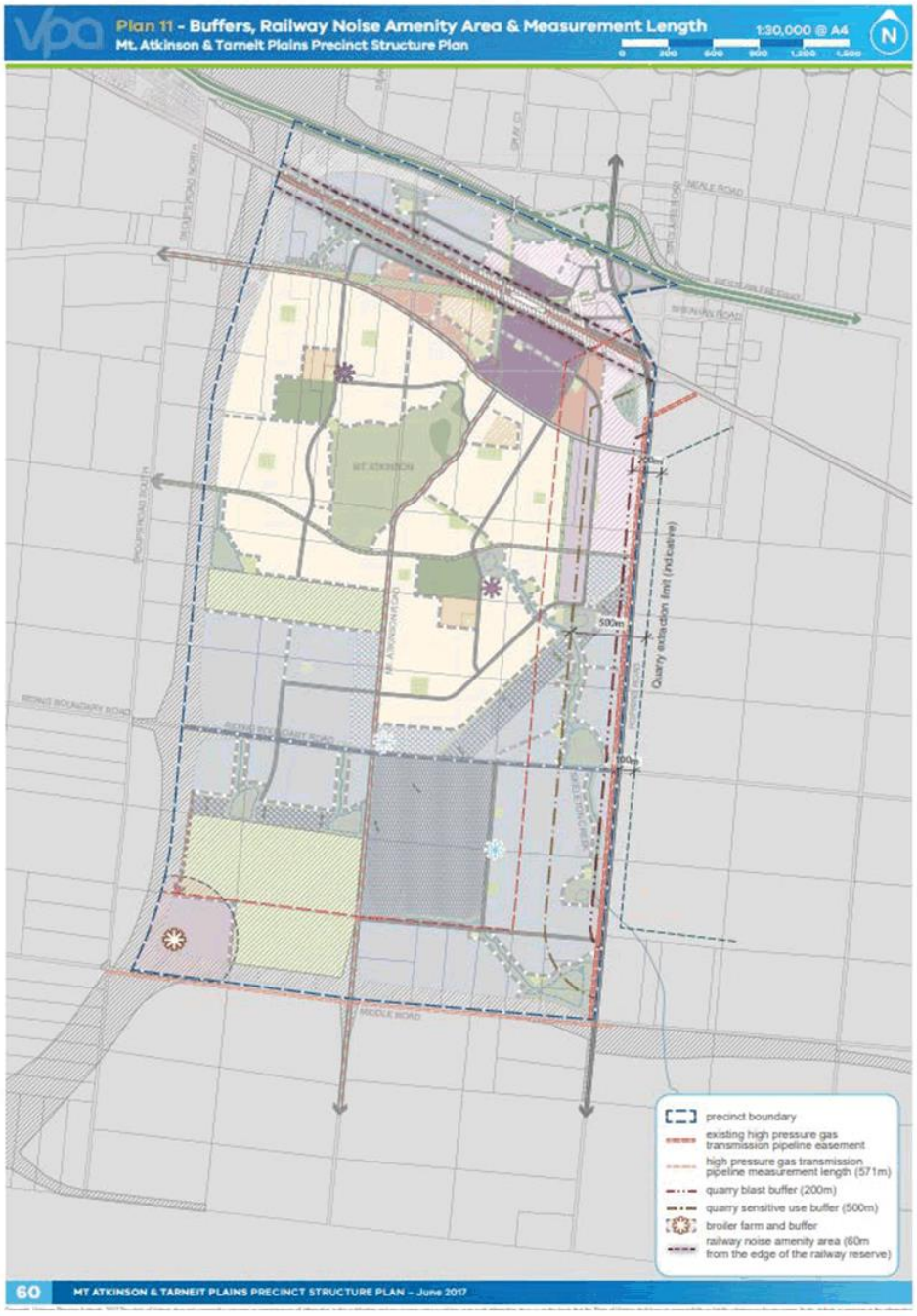


Figure 10 – Mt Atkinson and Tarneit Plains PSP Buffers

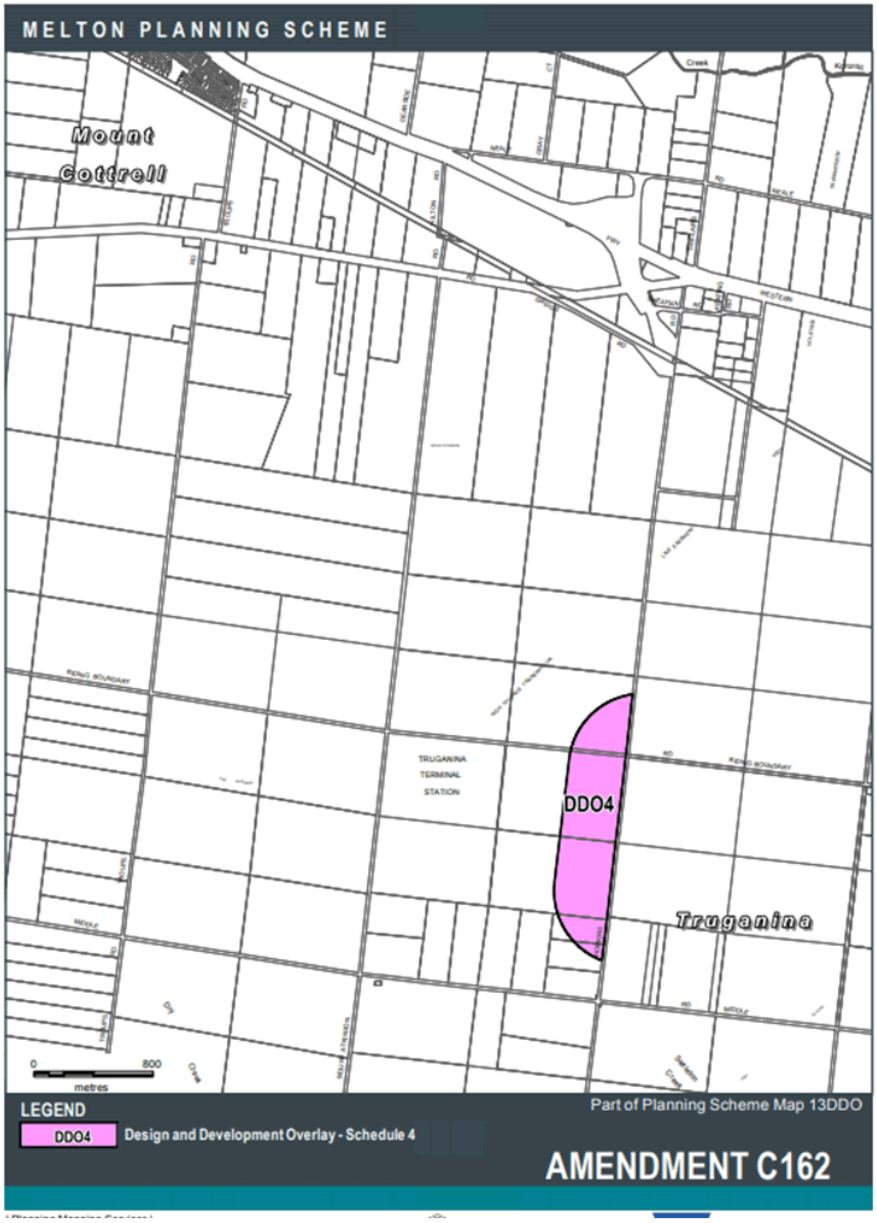


Figure 11 – Design and Development Overlay Schedule 4

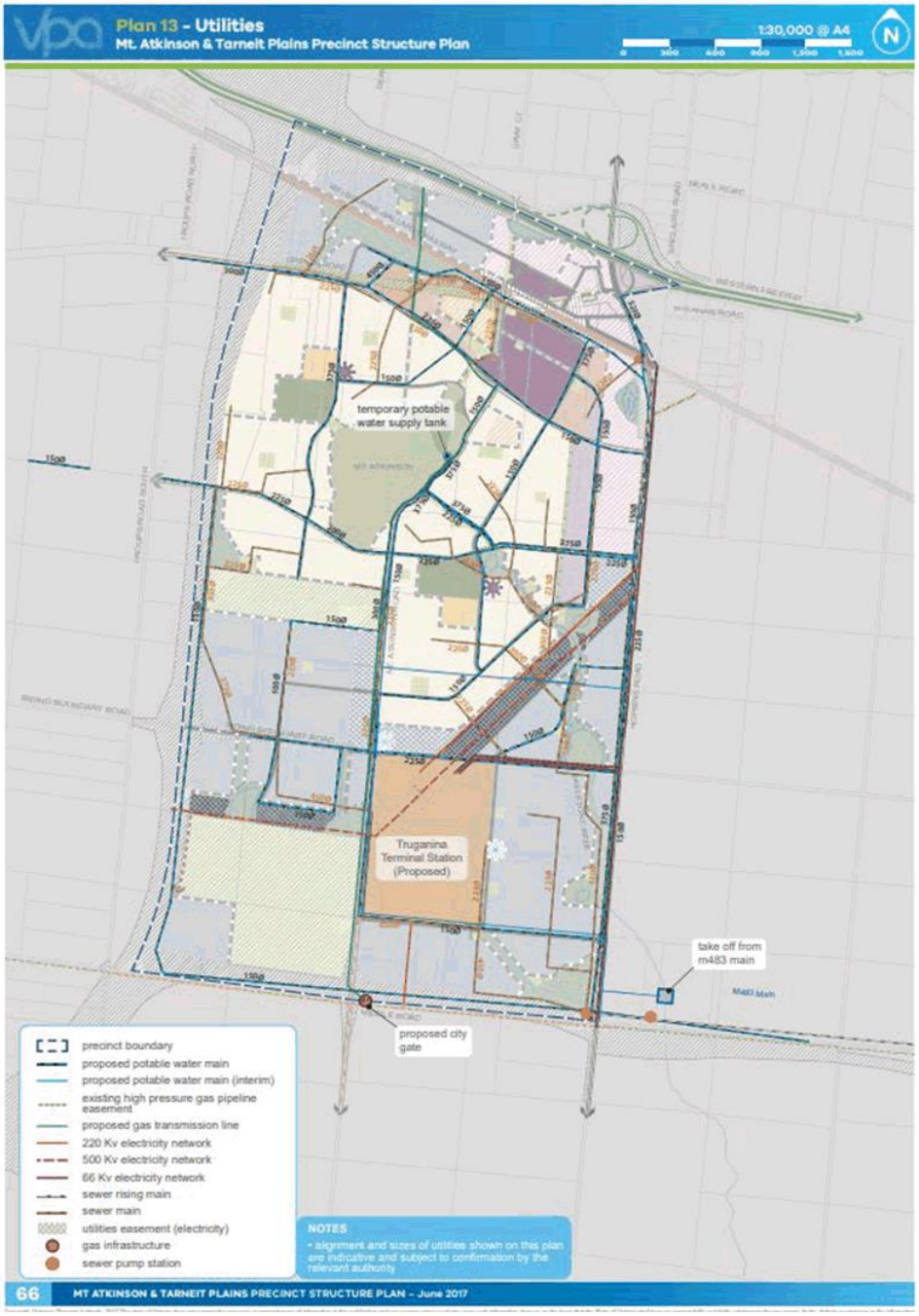


Figure 12 – Mt Atkinson and Tarneit Plains PSP Utilities

STRATEGIC WASTE MANAGEMENT FRAMEWORK

Victorian Waste and Resource Recovery Infrastructure Planning Framework

104 The *Environment Protection Act 1970* identifies the bodies responsible for preparation and implementation of aspects of the Victorian Waste and Resource Recovery Infrastructure Planning Framework:

- Sustainability Victoria[22] is responsible for the SWRRIP.[23]
- Waste and Resource Recovery Groups[24] are responsible for RWRRIPs.[25]

105 Sustainability Victoria is Victoria's lead agency for long-term state-wide and integrated planning for waste and resource recovery infrastructure in the state.

106 The Metropolitan Waste and Resource Recovery Implementation Plan (MWRRIP) is a RWRRIP under the Act, which was prepared by the Metropolitan Waste and Resource Recovery Group.

107 Section 50A of the *Environment Protection Act 1970* sets out the objectives of the Victorian Waste and Resource Recovery Infrastructure Planning Framework, which are:

(a) to ensure long-term strategic planning for waste and resource recovery infrastructure at State and regional levels; and

(b) to facilitate the integration of State-wide directions for the management of waste and resource recovery infrastructure and regional infrastructure needs; and

(c) to enable waste and resource recovery infrastructure planning to be—

(i) effectively integrated with land use and development planning and policy; and

(ii) effectively integrated with transport planning and policy; and

(d) to ensure Sustainability Victoria and the Waste and Resource Recovery Groups work together to integrate the State-Wide Waste and Resource Recovery Infrastructure Plan and Regional Waste and Resource Recovery Implementation Plans; and

(e) to enable waste and resource recovery infrastructure planning decisions to be made at the appropriate level of the Framework.

22 Sustainability Victoria is established under the *Sustainability Victoria Act 2005.*
23 Part IX Division 2AC of the *Environment Protection Act 1970.*
24 Waste and Resource Recovery Groups are established under Part IX Division 2AA of the *Environment Protection Act 1970.*
25 Part IX Division 2AD of the *Environment Protection Act 1970.*

The SWRRIP and the MWRRIP

108 The SWRRIP is the overarching document giving direction and guidance to the RWRRIPs, to public and private investors in waste and resource recovery infrastructure, and to decision-makers in transport and land-use planning.

109 The SWRRIP Purpose is:[26]

> To provide strategic direction for the management of waste and resource recovery infrastructure to achieve an integrated system that 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, supports a viable resource recovery industry and reduces the amount of valuable materials going to landfill.

110 In discussing waste and resource recovery infrastructure across the state, and achieving the SWRRIP Purpose, the SWRRIP notes that:[27]

> While the SWRRIP's goals and strategic directions seek to maximise recovery of materials, landfills are recognised as a critical component of Victoria's system for managing residual waste. However, to support recovery, new and expanded landfills will only be established if there is a demonstrated need for additional airspace to manage materials that cannot be viably recovered and to meet potential contingency requirements such as a natural disaster. This is in accordance with EPA's *Waste Management Policy (Siting, Design and Management of Landfills)* that seek to limit the use and development of landfills.

111 The MWRRIP describes how the strategic actions listed in the SWRRIP will be implemented.

Scheduling for landfill

112 One of the long-term strategic directions identified in the SWRRIP is to reduce landfill reliance.[28] There is further discussion of this strategic direction in the SWRRIP, which includes the following statements about scheduling for landfill:[29]

> **Scheduling for landfill**
>
> Works approvals for new landfills can only be considered by EPA if they are provided for in the proposed sequence for filling of available landfill sites in the Infrastructure Schedule of a Regional Implementation Plan (EP Act s50C), as discussed in Section 6.8. Landfills and the wastes they may accept, are only listed in schedules after analysing the landfill airspace required to manage expected

[26] SWRRIP page 25.
[27] SWRRIP page 21.
[28] SWRRIP page 25.
[29] SWRRIP page 29.

levels of residual waste (after extracting all materials that can be viably recovered) from that region or other regions using the landfill.

The process used to develop infrastructure schedules in each Regional Implementation Plan is prescribed in the EP Act. A consistent statewide methodology is used that considers:

- waste generation rates.

  the likely diversion from landfill for recovery.
- approved available airspace in operating landfill sites.
- provisions for contingencies.
- identified capacity gaps.

If additional landfill airspace is considered necessary, the landfill scheduling process provides guidance on how to address this need.

113 Section 50BB(1) of the *Environment Protection Act 1970* sets out the content of RWRRIPs. They must include:

(a) a description and analysis of waste and resource recovery infrastructure within its waste and resource recovery region, including a consideration of—

  (i) environmental and financial performance; and

  (ii) current infrastructure and anticipated opportunities for providing infrastructure across the waste and resource recovery region; and

  (iii) the waste and resource recovery infrastructure needs, priorities and preferred locations for the waste and resource recovery region; and (iv) regional transport and land use planning; and

(b) a description of how the long-term directions in the State-Wide Waste and Resource Recovery Infrastructure Plan will be implemented to give effect to local and regional infrastructure needs within the waste and resource recovery region; and

(c) a schedule of existing and required waste and resource recovery infrastructure within the waste and resource recovery region including—

  (i) the type, general location and other requirements of new waste and resource recovery infrastructure, other than landfills; and

  (ii) the timeframe for when new waste and resource recovery infrastructure is needed; and

  (iii) an identification of steps required to align the schedule with local planning schemes; and

  (iv) the proposed sequence for the filling of available landfill sites for at least the next 10 years; and

(v) a program for replacing and rehabilitating landfill sites; and

(vi) the intended or likely date of closure of each landfill site; and

(vii) options for future landfill capacity and resource recovery infrastructure; and

(d) any matters required by guidelines made under section 50CA.

114 Section 50C of the *Environment Protection Act 1970* provides that the EPA must refuse to consider an application for a works approval in relation to a new landfill if the landfill is not provided for in the proposed sequence for filling of available landfill sites in a relevant schedule of existing and required waste and resource recovery infrastructure within a RWRRIP.

115 The relevant RWRRIP applicable to Ravenhall is the MWRRIP. The MWRRIP is a very detailed document, the purpose of which is to set out how the waste and resource recovery infrastructure needs of the greater Melbourne region will be met over at least a 10 year period. The plan looks out to a 30 year horizon to align with other metropolitan planning strategies and plans.[30]

116 The strategic objectives for the MWRRIP are:[31]

- Reduce waste sent to landfill.
- Increase organic waste recovered.
- Deliver community, environmental and economic benefits.
- Plan for Melbourne's growing population.

117 Consistent with the statutory requirements for RWRRIPs set out in section 50BB(1)(c) of the *Environment Protection Act 1970*, the MWRRIP includes a schedule of existing and required waste and resource recovery infrastructure for metropolitan Melbourne. Table 11 shows the landfill sequence of filling existing landfills across a 30 year period. A copy of Table 11 is included in Appendix B.

118 The MWRRIP does not schedule any new landfills – only extensions to existing landfills. However, the MWRRIP states that:[32]

> The metropolitan Melbourne region will not have sufficient landfilling capacity if any of the significant landfills, listed below, do not operate in accordance with this sequence. Significant landfills are those in a designated hub of state importance, and are:
>
> - SUEZ Hallam and SUEZ Lyndhurst
> - Cleanaway MRL Ravenhall
> - Hanson Landfill Wollert

30 MWRRIP page 10.
31 MWRRIP page 11.
32 MWRRIP pages 47 and 50.

- Werribee Landfill

119 An important factor to note from Table 11 with respect to the MRL is that it has potential to operate well beyond the 30 year period of the current landfill schedule due to its size and potential long term capacity. We also note it is expected that during this 30 year period and beyond, there will be changes in the need and ability of these sites to undertake resource recovery and disposal activities.

MRL as a hub of state importance

120 The SWRRIP contains a chapter relating to integrated land use planning and hubs[33], which emphasises the critical importance of integrating land use, transport and waste and resource recovery planning to protect the community, environment and public health and the functionality of Victoria's waste and resource recovery system. Hubs are a facility or group of facilities that recover or manage material streams or waste at either the state, regional or local level. A well-located and well-functioning hub will:[34]

- Facilitate aggregation and consolidation of individual material streams to achieve the tonnages needed to maximise resource recovery;
- Attract investment in resource recovery infrastructure;
- Have appropriate buffers to support waste and resource recovery activities;
- Have good access to transport networks;
- Be co-located with complementary activities that provide feedstocks or markets for products and services made from the activities;
- Minimise community, amenity, environment and public health impacts;
- Support and create employment opportunities;
- Be integrated within a broader precinct with complementary activities in terms of land use planning; and
- Operate over time.

121 The Ravenhall Precinct, which includes the Boral Quarry and the MRL, is classified as a hub of state importance in the SWRRIP. The SWRRIP contains a detailed description of the Ravenhall Precinct and its importance. It states that:[35]

> If this site does not continue its landfill operations in the medium term (beyond the currently approved airspace), the metropolitan region is at risk of having inadequate landfill to meet expected needs for disposal for materials for which there is no other resource recovery capacity; a

33 SWRRIP chapter 3.
34 SWRRIP page 64.
35 SWRRIP page 67.

new landfill may need to be scheduled by 2021, and built and commissioned by 2026.

122 These sentiments are echoed in the MWRRIP in its analysis of Metropolitan Melbourne hubs of state importance.[36]

Responsibility for implementing waste management policy

123 There is strong policy in both the SWRRIP and the MWRRIP in support of both resource recovery and the expansion of some existing landfills such as the MRL. The policy choice is not between landfills or resource recovery technologies: both are supported. As both documents note, even with increased waste and resource recovery, there will remain a residual need for landfills.

124 The amount of waste the metropolitan region generates will continue to grow along with the growth in population. According to the MWRRIP, by 2041-42 waste volumes are projected to grow by 63%, meaning around 16.5 million tonnes of waste will need to be managed each year. A significant boost in new infrastructure will be needed to manage this growth. These projections indicate that by 2041-42, Melbourne will need one million tonnes of new landfill capacity each year and five million tonnes of new resource recovery capacity.[37] As the following figure 13 from the MWRRIP shows, the proportion of waste that is recovered each year will rise, but there will remain an ongoing need for disposal capacity, even though the figure as a proportion of total waste will be reduced.

Figure 6. Future waste projections

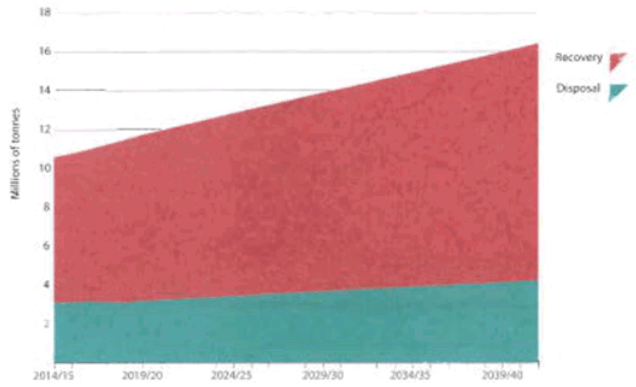


Figure 13 – Future waste projections for Melbourne (MWRRIP)

125 The responsibility for implementing waste policy rests with Sustainability Victoria and the waste and resource recovery groups. Responsibility for implementation does not rest with EPA. The Authority must be consulted during preparation of the SWRRIP and RWRRIPs,[38] and any works

36 MWRRIP page 68.
37 MWRRIP page 78.
38 Sections 50AC and 50B of the *Environment Protection Act 1970.*

approvals or licences it issues must be consistent with both the SWRRIP and a relevant RWRRIP.[39]

126 Once published in the Government Gazette, the SWRRIP and any RWRRIP become a waste management policy pursuant to section 16A of the *Environment Protection Act 1970.* As with any official government policy, the document must be accepted at face value. Neither the EPA nor, on review, this Tribunal can look behind what is contained in the policy or seek to formulate alternative strategies to achieve the objectives of the policy.

Our assessment of consistency with waste management policy

127 In the case of the SWRRIP and the MWRRIP, whilst one of the objectives is to reduce waste sent to landfill, there is nevertheless a strategy to continue to provide for adequate landfill capacity to meet the needs of the metropolitan area over time. This includes explicit recognition of the need to approve and provide for further landfill capacity at the MRL Ravenhall.

128 Therefore, we find that the proposed works approval is consistent with both the SWRRIP and the MWRRIP. In particular, we find that the details relating to the MRL scheduled in Table 11 of the MWRRIP mean that both the time and scale of the proposed works are in accordance with this policy.

129 We accordingly reject the submissions by Melton and Brimbank which suggest that approval of an additional seven landfill cells would be contrary to the waste hierarchy at section 1I of the *Environment Protection Act 1970,* the policy intent at clause 9 of the WMP, and policy direction in the SWRRIP and MWRRIP to reduce waste sent to landfill.

130 Rather, we find that both the SWRRIP and the MWRRIP contemplate that approval of additional landfill cells at the MRL is necessary to implement the strategies set out in these policies. In our view, to suggest that the works are not necessary or that a lesser volume of airspace or a different time period should be approved would constitute an attempt to look behind the specific details of the policies as they relate to the MRL and to substitute an alternative view about how the strategy to reduce waste sent to landfill should be achieved. Such a course of action is not open to the Tribunal.

131 The responsibilities for developing the Victorian Waste and Resource Recovery Infrastructure Planning Framework rest with Sustainability Victoria and the waste and resource recovery groups. Clearly, they must have regard to the principle of wastes hierarchy in the Act. The SWRRIP and any RWRRIPs are unlikely to be approved by the Minister under the Act if they do not. But the policy choice is not between landfills or resource recovery technologies: both are supported in the context of implementing strategies to achieve the objectives of the SWRRIP and the RWRRIPs. How the strategies are to be implemented will be set out in

[39] Section 50C of the *Environment Protection Act 1970.*

these documents. Any specific proposals, which require planning approval, a works approval or a licence, must be considered in light of whether they are consistent with the SWRRIP or relevant RWRRIP. If they are, then they will need to be assessed on their merits and in terms of their compliance or consistency with any other relevant policies.

132 There is a plethora of policies that have relevance in this proceeding. Most of them contain high level objectives that reflect the principle of wastes hierarchy in the *Environment Protection Act 1970.* But re-iteration of these principles or general objectives, for example to reduce waste sent to landfill, does not provide an opportunity to revisit the policy framework and detailed strategic planning settled within the SWRRIP and the RWRRIPs, or to suggest alternative means of implementing those objectives. Rather, the policy framework must be read holistically. There is a cascading sequence of relevance to the policies relevant in this proceeding. In our view, at the upper level is the SWRRIP and the MWRRIP. They set the scene and provide the necessary high-level policy endorsement to the expansion of the landfill at Ravenhall by way of its scheduling in the MWRRIP.

133 Once it is established that the works are consistent with the SWRRIP and the MWRRIP, it is necessary to consider the physical impacts of the works on the environment. In this context other policies become relevant, such as the WMP and the BEPM.

134 The status of the MRL as a hub of state importance means that it is a suitable site to host other waste and resource recovery infrastructure. Its size and location lend it to such purposes and activities. However, they cannot be grafted onto this particular proposal, which is to expand the existing landfill.

135 In this context we must reject the arguments put by Brimbank, which encouraged us to include in the works approval a condition to compel the licence holder to recover recyclable materials from the waste prior to disposal. This is not part of the proposal that we must assess. Any strategy to require this type of waste recycling prior to disposal to landfill should be implemented through the strategic waste management framework. That is a responsibility which rests with Sustainability Victoria and the waste and resource recovery groups, not this Tribunal.

136 So far as we are concerned, we find there is no inconsistency between this proposal to expand the MRL and any of the strategic policies for the management of waste disposal and resource recovery, or the wastes hierarchy set out in the Act and policies. To express this finding positively, we find it is consistent with all relevant strategic policies.

POLICIES UNDER THE *ENVIRONMENT PROTECTION ACT 1970*

WMP

137 The WMP – Waste Management Policy (Siting, Design and Management of Landfills) (as amended on 28 June 2018) – is an Order under section 16(1) of the *Environment Protection Act 1970.* Consequently, it is relevant in the context of any applications for review under section 33B(2)(b) on the ground that if the works are completed in accordance with the works approval, the use of the works will result in a discharge or emission which will be inconsistent with any relevant Order declared under section 16.

138 The WMP is a generic policy which applies to all existing and proposed landfill sites that accept Category C prescribed industrial wastes and/or non-prescribed wastes for disposal to land.[40]

139 Clause 15(3) of the WMP requires applicants for a works approval for a landfill site to:

(a) Comply with the policy as well as all other relevant State environment protection policies and waste management policies;

(b) Meet the objectives of the BPEM; and

(c) Meet each required outcome of the BPEM.

140 Sub-clause (4) provides that an applicant for a works approval should use the suggested measures in the BPEM to demonstrate that the above requirements in subclause (3) will be met.[41]

141 We will discuss the specific provisions of the WMP, so far as they are relevant, in the context of our discussion of specific issues.

BEPM

142 The BPEM – Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills (Publication 788.3, August 2015) – is also a generic document that applies to landfills accepting certain categories of waste[42]. It applies to the MRL. The requirements must be taken into consideration in any works approvals or licensing of existing and new sites, as well as in the design and construction of landfill cells.[43]

143 The content and structure of the BPEM is far more comprehensive than the WMP. The BPEM is "intended to be used as a default position for landfill siting, design, operation and rehabilitation."[44] Landfill operators "must meet the objectives and required outcomes by implementing the best-practice measures, described as suggested measures" contained in the BPEM.[45] The suggested measures are the default means of achieving the

40 WMP Clause 4.
41 WMP Clause 15(4).
42 BPEM Section 2.2.
43 BEPM Section 1.3.
44 BPEM Section 1.1.
45 *Ibid.*

required outcomes, but alternative means may be adopted following a risk-based assessment:[46]

> Where a landfill operator believes that, for a particular section of the guidelines, alternative means can achieve the objectives and required outcomes, a risk-based assessment will be required to support the proposed alternative measure. Alternatively, if EPA believes that additional requirements are needed to protect the environment, then this will also be supported by a risk-based assessment.

144 One of the difficulties in applying the BPEM literally is that its structure includes not only objectives, requirements and suggested measures to comply with clauses 15(3) and (4) of the WMP, but in addition, a considerable body of text is given over to discussion on topics and statements of an advisory nature, using terms such as 'require', 'should', 'should include' and 'must'. This structure somewhat clouds what are requirements and measures that meet the WMP clauses and what are to be taken as advisory guidance. We discuss the issues this creates in the context of our consideration of specific issues.

ODOUR

Protection of amenity and air quality

145 The preamble of the WMP and the policy framework objectives[47] establish that the intent of the WMP is to protect people and the environment, including local amenity, from inherent risks arising from the disposal of waste to landfills.[48] It is not contested that the generation of odours and dust are inherent risks to local air quality arising from landfill operations.

146 In this section we focus on the matter of odour. Whilst dust is another possible risk to air quality, the grounds of the various applicants did not pursue the matter of dust emissions. To be clear and for the sake of completeness, we recognise that dust emissions can potentially impact local air quality, however the management of dust is subject to well established practices that can be applied to this operation. Given this and the fact that no grounds were pursued about dust impacts, our focus on air quality is on odour emissions as pursued by Melton, the developers and Stop the Tip.

Parties' positions and evidence

147 Odour was the single most contentious issue associated with the proposal raised by Melton, the developers and Stop the Tip. They say that residents near the existing landfill already experience adverse odour impacts. They assert that the impacts will be exacerbated by the additional landfill cells. The works and conditions will not sufficiently manage odour impacts. As a result, the emission of odour will be inconsistent with the SEPP (AQM) and the WMP through adverse effect on local amenity.

46 Ibid.
47 WMP Clause 7.
48 Also made apparent in clause 9(1) of the WMP.

148 Five expert witnesses gave evidence about odour over many days, none of whom agreed with one another. As well, many lay witnesses were called by Stop the Tip who gave evidence about their experiences of odour, which they said emanated from the existing landfill operations at the MRL. The following experts gave evidence on behalf of the following parties:

- Mr Todoroski on behalf of Landfill Operations.
- Mr Welchman on behalf of Melton.
- Mr Graham on behalf of the developers.
- Dr Bellair and Dr Ross on behalf of Stop the Tip.

The key issue about odour

149 We accept that evidence and survey results tabled in the course of the hearing about odour migration beyond the boundary of the site demonstrate that landfill operations in the past have failed to achieve the outcome sought by the WMP of protecting local amenity from risks arising from the disposal of waste to landfills. The key question we must determine is whether we are satisfied that the operational procedures proposed by Landfill Operations in respect of the new works will adequately manage those risks and prevent loss of amenity through the emission of offensive odour offsite.

What are the WMP and BPEM requirements for odour?

150 In terms of landfill siting, design and management requirements, the relevant clauses 15 and 16 of the WMP do not contain specific requirements about landfill odour management. Clause 20 provides that the EPA may direct a landfill operator to install a landfill gas extraction system where emissions are causing or may cause odours.

151 It is in the BEPM that details are spelt out to support the protection of amenity sought by the WMP.

152 As we discuss with respect to landfill gas, the BPEM's best practice siting considerations seek to manage the risk to local amenity, including from odour, by establishing sites with sufficient buffers from sensitive land uses. We address the issue of buffers elsewhere in these reasons. Our focus here is on the question of use of the landfill and the adequacy of odour management regimes to protect local amenity to the appropriate standard. This focus arises from the BPEM objective and required outcomes with respect to odour and air quality.

153 Section 6.7.3 of the BPEM addresses odour. This section falls under the best practice design section of the BPEM. The relevant BPEM objective to achieve compliance with clauses 15(3) and (4) of the WMP is:[49]

[49] BEPM Section 6.7 page 36.

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

154 The required outcome to meet this objective, as it relates to odour, is:

- Prevention of any offensive odours beyond the boundary of the premises.

155 The suggested measure to manage odour is to:

- Ensure waste is covered appropriately and on time.

156 Section 7 of the BPEM deals with best practice operation. Several aspects of best practice operation deal with matters that encompass the management of odour risks and maintenance of local amenity. However, there is no singular BPEM requirement or activity that neatly deals with odour.

157 This demonstrates clearly the principles espoused in *Dual Gas*[50] that consideration of whether best practice has been achieved requires an integrated and holistic assessment of the proposal. There are several BPEM objectives, which are relevant to the management of the landfill's operation, that will influence odour generation and management and that require a holistic approach in assessing compliance.

158 First is the BPEM objective to protect the environment by managing environmental risks. Required outcomes of the BPEM to meet this objective are:[51]

- Ensure that a site specific environmental management procedure is in place to manage key risks and provide for contingencies.
- Training of all relevant staff in the implementation of the site's environmental management procedure.

159 The suggested BPEM measure is:

- Use ISO 14001 for guidance on the development of an environmental management procedure.

160 Thus, it would be expected that any site environmental management procedures will put in place steps to assess and manage the risk of odour emissions that could cause a loss of amenity beyond the landfill. Such steps would include practical and implementable measures to reduce odour emissions as well as a monitoring program and criteria [triggers] to determine whether odour emissions are acceptable or not (in terms of preventing any offensive odours beyond the boundary of the premises) and when remedial actions are required.

161 Secondly, the nature and pre-treatment of the waste accepted at the landfill are operational aspects that influence the level of odour risk. Here the proposal and design are aligned for the receipt of putrescible, solid inert waste, shredded pneumatic tyres, contaminated soil (category C) and acid sulphate soils. It is clear from the evidence of the odour experts that the

[50] *Dual Gas Pty Ltd & Ors v Environment Protection Authority* [2012] VCAT 308.
[51] BEPM Section 7.1 page 41.

control of putrescible waste is of particular importance in the management of odours.

162 Relevant BPEM objectives in respect to controlling waste loads are:[52]

- To ensure that only allowed wastes are deposited at the landfill.
- To reduce the long-term risk posed by the waste and to improve general landfill performance.

163 In relation to the first of these objectives, the BPEM establishes the following requirements:[53]

- Landfill operator to ensure that non-conforming waste is not disposed of at the landfill site.
- Provide signs advising the types of wastes allowed at the site.
- Implement a procedure to deal with the dumping of non-conforming waste at the landfill site.

164 These requirements are not matters challenged by the applicants in respect of the proposal.

165 In relation to the second of these objectives about long term risk, the BPEM does not establish any requirements. It does however outline the following suggested measures:[54]

- Separate putrescible fractions from waste streams where possible, and continually improve the separation of putrescible wastes.
- Shred and/or bale wastes to improve landfill management and performance.

166 The body of the accompanying text identifies that:[55]

> By removing the waste that has a high calorific value or is compostable, landfills containing the residual waste stream require a shorter aftercare period and have fewer landfill gas emissions to the environment … Best practice is to continually improve efforts to remove putrescible fractions from the waste stream.

167 This suggests that the focus of the suggested measures and the objective for managing long term risk is about managing landfill gas emissions through a process of reducing the sources of such gas. This is further adduced from the fact that the BPEM goes on to support mechanical-biological pre-treatment to reduce the putrescible fraction of the waste to a 'relatively stable material', thereby reducing the 'gas generation potential' and leachate generation. Value is also said to be achieved in reducing the degree of settlement and increasing the density of placed waste.

---

52 BEPM Sections 7.4 and 7.5 page 43.
53 BEPM Section 7.4 page 43.
54 BEPM Section 7.5 page 43.
55 BEPM Section 7.5 page 43.

168 Section 7.7 of the BPEM deals with the covering of waste. It sets out that the covering of waste is an essential part of landfill operations given the multiple benefits, which include minimising odours. The BPEM goes on to state that:[56]

> To achieve these outcomes, waste must be covered at the end of every day, though landfills that receive significant volumes of waste in a day might need to progressively cover waste during the day.

169 As previously noted, the site operates continuously every day of the year and the tipping face is progressively covered to minimise its area. Given the scale of operation at this site, there is no question that progressive covering of waste is necessary and should not be optional. As discussed later, the evidence clearly points to minimising open areas of waste to the atmosphere as a key step in managing odour emissions.

170 Other aspects are also addressed about covering wastes. Ultimately, the BPEM sets out that the objective (to comply with Clause 15 of the WMP) is:[57]

> To ensure that wastes are covered appropriately, to mitigate against any environmental or health impacts.

171 Required outcomes include:[58]

> Covering of the waste, at least daily, with soil or another approved cover material for all sites that accept putrescible waste and maintain the cover.
>
> Close cracks in old, exposed cover layers to contain landfill gas and odour.

172 Suggested measures include:[59]

> Where soil is used as cover, cover with 0.15 to 0.3 metres of soil.
>
> Avoid creating low-permeability confining layers in the landfill by partial removal of low-permeability cover material prior to placement of wastes in that location.
>
> Stockpile sufficient cover material at the tipping face for at least two weeks of operations.

173 Overall then, our review of the BPEM and WMP identifies that there are no quantitative objectives or criteria set for odour. The qualitative objectives are:

- to ensure air quality objectives are met; and
- there is no loss of amenity.

174 The latter objective requires consideration of what the existing amenity of the locality is and what it may be in the future, which in turn raises the issue

56 BEPM Section 7.7 page 44.
57 BEPM Section 7.7 page 45.
58 Ibid.
59 Ibid.

of relevant land use and development under the planning scheme. The reference to air quality objectives we interpret to be a reference to the objectives under the SEPP (AQM) as per section 2.2 of the BPEM. These are matters to which we turn next.

What odour management performance standard does the SEPP (AQM) require?

175 The SEPP (AQM) establishes ambient air quality (i.e. air external to a building) objectives via the SEPP (AAQ).[60]

176 The desired outcome of the SEPP (AAQ) is to achieve:[61]

> …ambient air quality that allows for the adequate protection of the beneficial uses set out in clause 8.

177 The beneficial uses applicable to odour that SEPP (AQM) and SEPP (AAQ) seek to protect include:[62]

> local amenity and aesthetic enjoyment;

178 There is no quantitative environmental indicator or environmental quality objective for odour in the SEPP (AAQ).

179 The SEPP (AQM) establishes odour to be an unclassified air quality indicator for the purposes of the policy.[63] The design criterion for general odour is established in Schedule A (as is a design criterion for total suspended particles – nuisance dust). There are no intervention levels or ambient air quality indicator objectives for odour in the SEPP (AQM).

180 The SEPP (AQM) establishes environmental management instruments in the form of Protocols for Environmental Management, Risk Assessment and Separation Distances.[64]

181 These instruments may include a protocol for environmental management developed for:

> … managing the emissions from industrial, commercial, domestic or mobile sources and impacts on air quality, the production and use of goods and services, the management of wastes that may generate emissions and any other requirements necessary for effective air quality management.[65]

or:

> The use of risk assessment in air quality management.[66]

60 SEPP (AQM) Clause 11.
61 SEPP (AAQ) Clause 6(1).
62 SEPP (AQM) Clause 9(c) and SEPP (AAQ) Clause 8(5).
63 SEPP (AQM) Clause 10(1)(d).
64 SEPP (AQM) Clauses 15, 16 and 17.
65 SEPP (AQM) Clause 15(4).
66 SEPP (AQM) Clause 16(1).

182 A protocol has not been developed for odour management from landfill or waste management facilities. There is no general or landfill specific protocol for odour risk assessments.

183 The third form of environmental management instrument is a protocol for the provision of separation distances.[67] There is no separate protocol for a separation distance for landfills. These are established through the WMP and BPEM.

184 Emissions of odour are to be managed in accord with clause 18 (general requirements) and clause 19 (new sources) of the SEPP (AQM). These clauses require generators of emissions to:[68]

> a) manage their activities and emissions in accordance with the aims, principles and intent of the policy;
>
> b) pursue continuous improvement in their environmental management practices and environmental performance; and
>
> c) apply best practice to the management of [these] emissions…

185 In assessing sources of emissions, the Authority (and in turn the Tribunal standing in the shoes of the EPA), may require:[69]

- Modelling of the transport and dispersion of odour emissions; and
- Require the modelling for new sources of emissions to demonstrate that the model predictions meet the relevant design criteria; or
- In the case of odorous emissions for which design criteria are not established, demonstrate that local amenity will not be adversely affected by offensive odours.

186 The air dispersion and transport modelling of odour from a landfill must be completed in accordance with Schedule C of the SEPP (AQM), there being no protocol for landfills or landfill odour modelling.

187 Schedule A of the SEPP (AQM) establishes 1 OU (odour unit) as the *design criterion* for general odour (an unclassified indicator). The notes to this schedule state that:

> 6. All emissions of pollutants covered by the SEPP (AQM) must be managed to ensure that the beneficial uses identified in Clause 9 of this Policy are protected and that continuous improvement in Victoria's air quality is achieved. Regardless of the classification of a pollutant all emissions must be minimised by the use of best practice as described in Clauses 18 and 19 of this Policy.
>
> 8. Emissions of mixed odorous substances, such as those from sewage treatment farms, rendering plants and intensive animal industries may be offensive and therefore need to be minimised

[67] SEPP (AQM) Clause 17.
[68] SEPP (AQM) Clause 18(3).
[69] SEPP (AQM) Clause 28(1).

> and controlled to ensure that the beneficial uses of the environment are protected. General odour is defined in SEPP (AQM) as an unclassified air quality indicator of local amenity and aesthetic enjoyment of the air environment. The design criteria for new sources of general odour is the odour detection threshold (1 odour unit) and should be applied at and beyond the boundary of a premises.

What does the relevant odour management performance standard require?

188 The designation of 1 OU as a design criterion and the above notes are a source of contention between the parties as to whether the landfill must meet a 1 OU threshold at the boundary. Landfill Operations and the EPA say this is not a criterion that is to be strictly applied. The applicants, to varying degrees, argue otherwise.

189 We disagree with the contention that 1 OU at the boundary is an absolute criterion that must be achieved at the boundary. The 1 OU criterion is a design criterion to be applied to an *assessment* of emission for the purposes of assessing whether the emission meets (or is consistent with) the objectives of protecting beneficial uses set out under the SEPP (AQM). In the words of the SEPP (AQM) at the head of Schedule A:

> This schedule prescribes the Class 1, 2 and 3 indicators and their design criteria referred to in Clause 10 of this Policy. These criteria are to be used in the assessment of the design of new or expanded sources of emissions such as industrial premises. They are to be used in conjunction with the modelling procedures outlined in Schedule C of this Policy.[70]

190 Therefore, in our view, the odour criterion is to be applied in the course of an emissions modelling assessment, which in turn is a task to be undertaken for the purposes of estimating 'the potential impact of new or modified sources of emissions to air in Victoria'.[71]

191 We acknowledge that in the words of the SEPP (AQM) note 8 at Schedule A, this criterion should be applied at the premise's boundary and beyond. This is replicated in Schedule C, Part C(2) of the SEPP (AQM), which we set out below in full:

> **2. Assessment against design criteria for new or modified sources of emissions**
>
> (a) The predicted maximum concentration as defined in Part C1 of this schedule must not exceed the design criterion for the relevant pollutant listed in schedule A.

---

70 We note here that in fact the schedule includes design criteria for the unclassified air quality indicators of odour and dust also referred to in clause 10 of the policy. This inconsistency of reference between class 1, 2 and 3 indicators, the term 'pollutants' and the unclassified odour and dust indicators occurs frequently throughout this policy. We find this inconsistency is a source of confusion and adds complexity to understanding and applying this policy.

71 SEPP (AQM) Schedule C.

> (b) Design criteria for air quality indicators based on toxicity apply everywhere, except inside buildings. In cases where the design criteria can only be met beyond the property boundary, advice should be sought from the Authority in the assessment of the model simulation.
>
> (c) For odorous emissions, the design criteria based on odour apply at and beyond the boundary of the premises.
>
> (d) In cases where the design criteria are not met the proponent may carry out a health risk assessment to demonstrate that there will be no adverse impact from the proposal.
> [*Tribunal emphasis*]

192 However, the application of the design criteria for odour (and for toxicity based design criteria – see 2(b)) at boundaries under this part of the policy includes a caveat. That caveat, which is set out in 2(d), is that when these criteria are not met at the boundary, a health risk assessment may be carried out to assess the impact of the proposal. This is consistent with the purpose of the emissions modelling.

193 Here we note the interchangeable and somewhat confusing use of the terms 'pollutants', 'air quality indicator' and 'odour' in this part of the policy. When considered against the meaning of such terms across the policy and the meaning of 'pollution of atmosphere' given at section 41 of the *Environment Protection Act 1970*, the generation of odour that affects the beneficial use of amenity is pollution and hence odour is a 'pollutant'. Thus, the requirement that predicted maximum concentrations of relevant pollutants must not exceed the design criteria applies to odour as a pollutant.

194 However, this part of the policy schedule does not say where the criteria for odour (whether general or as an individual odour/toxic pollutant) is to be applied. Parts C(2)(b), (c) and (d) of Schedule C provide this guidance – namely, at the boundary or, if not at the boundary, at locations to be assessed under a risk assessment process.[72]

195 We therefore find that if the 1 OU criterion is achieved at the boundary and beyond, then it can be said that the outcome is consistent with the objectives of the SEPP (AQM) and no further assessment is required. If the odour emission exceeds this criterion, then further assessment of the possible impact on beneficial uses is required to ascertain whether the objectives will be met.

196 At the hearing, there was some debate about the SEPP (AQM) reference to a health risk assessment. The developers argued that a health risk assessment cannot be applied to odour, as odour is an amenity or aesthetic air quality indicator and not a health risk. We consider that when reading this part of the SEPP (AQM), as we discuss in the context of landfill gas,

[72] For toxicant pollutants (i.e. criteria based on toxicity for class 1,2 and 3 air quality indicators), the design criteria do not apply inside buildings but apply everywhere else.

the reference to a health risk assessment should not be read strictly. This is because this schedule of the SEPP deals with modelling of emission assessments that are not expressly limited to classified toxicant air quality indicators.

197 In our view, the intent of the SEPP (AQM) is that whether dealing with a class 1, 2, 3 or unclassified air quality indicator, if emissions modelling predicts a non-compliance with design criteria at the boundary, this is not the end of the application. Further consideration of the effects can be undertaken by consultation between the applicant and EPA and/or a risk assessment approach can be applied to understand the effect of these emissions. It is thus a matter for EPA to then assess the impacts beyond the boundary and be satisfied that the intent, purpose and outcomes of the SEPP (AQM) are being met.[73]

198 We therefore agree with EPA's submission that:

> A failure of modelled outcomes to meet the design criteria is not determinative of whether a generator of emissions complies with the SEPP (AQM).[74]

199 Consequently, we turn to the matter of what constitutes an appropriate form of risk assessment. We were told that EPA referred Landfill Operations' odour consultant to the risk matrix approach contained in the EPA Guidelines for Broiler Farm Odours Assessments. Perhaps unsurprisingly, there is disagreement between the experts as to whether such a risk assessment process is appropriate for a landfill. However, all the odour experts agree that a risk assessment of odour impacts requires odour frequency, intensity, duration, offensiveness (character) and location ('FIDOL' factors) to be considered.

200 In the context of this proceeding, we do not need to decide whether the Broiler Farm approach to such matters is appropriate or not.

201 The approach under Schedule C of the SEPP (AQM) relies on soundly based modelling predictions of odour transport and dispersion. For reasons that we will explain, we are not satisfied that the modelling undertaken for this proposal is sufficiently sound or robust enough to support such a risk assessment. However, this does not mean that the proposal cannot be considered against the SEPP (AQM).

202 Our ultimate task in this proceeding is, as stated earlier, to determine if consistency with the relevant policies will be achieved by the use of the works constructed in accordance with the works approval. Clauses 18 and 19 require us to consider whether the odour emissions and hence the sources of the emissions will be managed in accordance with best practice. Best practice management of landfill odours is established under the WMP and BPEM, as discussed earlier.

[73] See clause 2(c) and (d) of Part C to schedule C, and Clauses 16, 18 and 19 of SEPP (AQM).
[74] At [69] of EPA-94: Closing submissions. See also [68] of same.

203 Clause 27 of the SEPP (AQM) similarly requires us to consider the same outcome (namely, impact on local air quality), along with recommended separation distances from sensitive land uses and the outcomes of dispersion modelling. However, the latter (i.e. the use of dispersion modelling and design criteria) do not impose a mandatory requirement. As provided for under clause 28, it may be a requirement of the authority and (on review) of the Tribunal, but dispersion modelling and compliance with design criteria are not mandatory requirements necessary to assess compliance or consistency with the SEPP (AQM).

204 In our view, such an assessment of impact on local air quality can still be performed in the absence of satisfactory modelling.

How should we assess the future odour management performance of the landfill?

205 The grounds of appeal available to the applicants require us to contemplate the management and impact of odour emissions under two possible scenarios:

- Will the use of the landfill cells, constructed in accordance with the works approval (the works to be approved) be inconsistent with the WMP, the BPEM or SEPP (AQM)?[75]
- Will the use of the landfill cells, constructed in accordance with the works approval (the works to be approved) unreasonably and adversely affect the interests, whether wholly or partly, of the applicant(s)?

206 It follows from the above analysis of the WMP, the BPEM and SEPP (AQM) that the WMP and BPEM objective is to meet the air quality objectives of the SEPP (AQM), which in turn is to ensure there is no loss of local amenity in the area surrounding the landfill.

207 What constitutes 'amenity', and therefore its loss, is, to a degree, subjective. It will depend on the sensitivity of individuals and their perception of odours; how widespread any perception of odours may be and whether the odours are offensive. The FIDOL factors are also relevant.

208 Modelling of odour emissions and dispersion seeks to apply a quantifiable framework around the question of amenity. It does this by firstly applying any design criterion for emissions at the boundary and through a risk assessment process if this criterion is predicted to be exceeded.

209 In this proceeding, notwithstanding the number of odour experts who gave evidence, we do not have the benefit of sufficiently reliable modelling to apply such an approach.

[75] We are not required to consider whether the use of the works when constructed in accordance with the works approval would cause pollution or an environmental hazard, as relevant orders have been declared by way of the WMP and the SEPP (AQM) that apply to the area physically and in terms of the area of topical interest.

210 Loss of amenity will arise where offensive odours are experienced to such an extent that the environment becomes unsuitable for its intended use, be it a current or reasonably foreseeable future use. We agree with Mr Welchman that what is offensive to residents in a residential area may not be offensive to workers in or visitors to an industrial area or commercial area. It is a matter of context.

211 Thus, in the absence of dispersion modelling, we are left to qualitatively assess whether the amenity of the air environment will remain suitable for the intended use of land within the surrounding land use context in order to ascertain whether the proposal will be consistent with the SEPP (AQM).

212 However, the test of whether the management of odours is consistent with policy is not limited to the effects of the odour emissions. To be consistent with the SEPP (AQM), the WMP and the BPEM, the management of odour and its sources also needs to demonstrate best practice.

213 Having regard to the test in section 33B(2) of the *Environment Protection Act 1970*, we conclude that the interests of persons applying for review must be considered in the same way. It is not a matter of whether a resident in the surrounding residential areas (whether existing or future) will smell a landfill odour. The interest in respect to odour is one of people enjoying or having available to them an agreeable or pleasant context within which to reside, to work or to visit.

214 The difficulty with such a concept is, of course, the varying views of people as to what constitutes a pleasant amenity. It is clear enough from some of the lay witnesses who gave evidence on behalf of Stop the Tip that even detecting a whiff of a landfill odour is upsetting to some people[76] while others may consider they are not affected until strong, persistent odours occur.

215 The cues to the test of a relevant interest are to be found in the words of section 33B(2)(a) – i.e. the odour emission must be unreasonable, and it must have an adverse impact. Put another way, the expectation of amenity must be reasonable within the context of which that amenity is being or is expected to be experienced, and it must be this amenity that is adversely affected by the emissions. Heightened sensitivity to an odour cannot be an acceptable test in a situation where the test is one of reasonableness. Similarly, an expectation of high levels of amenity in areas allocated for industrial land uses cannot be considered reasonable. Likewise, those areas that border an existing industrial use should not have the same level of amenity expectation as those deep within a residential area.

216 It follows that the expectation of amenity is to be tempered by the contextual experience of the odour emission, which is the intent of the assessment though the FIDOL factors of frequency, intensity, duration, offensiveness and location.

[76] For example, the oral evidence of Wendy Mason.

217 In light of our findings about the modelling outcomes, we have approached our task of assessing the potential for adverse effects by considering the complaints and survey of odour emissions from past practices as an indicator of future potential effects, and by considering the design and the proposed future practices or use of the works against best practice requirements.

218 Before doing so however, we will explain why we have found the modelling to be wanting.

Odour emissions modelling

Parties' positions

219 We have been presented with a range of evidence based on, and about, the efficacy of air emissions modelling.

220 Submissions by Landfill Operations say that the modelling is 'broken' – meaning that what is before us indicates that none of the modelling is of particular assistance in determining future odour impacts.

221 The developers submit that this is not the case. Rather, they say the modelling put forward with the works approval application has been found wanting, as demonstrated by the response of the ILEAP and the EPA assessments to discount that modelling. They assert that the revised modelling by Mr Todoroski fails to provide a proper assessment of potential odour impacts because it under-predicts odour migration. They say the modelling put forward by Dr Bellair and Dr Ross should be preferred because only this modelling has matched the lay witness evidence and reports from odour surveys that landfill odours have been detected off site. They say that this matching of 'real experience' can give greater confidence to the predictions about future amenity impacts.

222 EPA does not necessarily agree that the modelling is broken. Rather, it says that modelling of an area source such as a landfill is fraught with complexity that current modelling approaches cannot adequately deal with. Because of these limitations, it says modelling outcomes need to be considered in light of the historical odour monitoring it has undertaken, in part as a response to complaints and in part its own survey campaigns, as well as the surveys commissioned by Landfill Operations. EPA also says that we should have confidence that the authority will enforce licence conditions to ensure no offensive odours will be emitted beyond the boundary.

223 For the following reasons, we consider the positions of Landfill Operations and EPA, at least in how to address the conundrum about modelling, are the more realistic in charting a way forward. As we will explain, having considered the competing evidence about the emissions modelling, we are not persuaded that any of the predictive modelling has proven to be sufficiently robust to support an assessment of the likely future impacts of odour emissions.

The experts' evidence

224 As we have already detailed, the purpose of the odour modelling is to respond to the combined objectives of the WMP, the BPEM and SEPP (AQM), to assess whether offensive odours will migrate beyond the landfill property and adversely impact the amenity of surrounding areas.

225 Emissions modelling conducted in accordance with Schedule C of the SEPP (AQM) is required to assess the worst-case scenarios (impacts) under normal operating conditions.

226 Worst-case scenarios for the landfill under normal operating conditions are not the emissions when some system or procedure fails, such as excessively large open waste areas being exposed or when particularly obnoxious waste is deposited into the cell. Worst-case normal operations would be when the open waste face is at its allowable maximum area and filling procedures are occurring under normal operational procedures. Buffers are intended to manage dispersions from one-off, operational failures.

227 Mr Welchman's modelling, by his own evidence, was not intended to provide such answers. He gave evidence that he was providing a comparative analysis to test the approach of Pacific Environment Ltd (PEL)[77] and Todoroski to not include emissions from final capped areas. He disagreed with the assumption that emission from final capped areas should be discounted. He applied a 0.05 OU m^2/s odour emission rate to PEL's scenario 4 to compare the outcome. The difficulty for us is that this scenario included cells that are no longer part of the proposal and the comparative assessment does not assist in assessing the proposal that is before us. Therefore, we cannot give Mr Welshman's modelling assessment any material weight.

228 Mr Graham advised that his modelling had relied on erroneous meteorological data and that sections of his review of the proposal could therefore not be relied on in absolute terms. He suggested that the modelling provided comparative analysis but even this was questionable in light of the fact that his modelling could not replicate a base case similar to PEL's 2016 modelling.

229 Our focus has therefore been on the contest between the modelling of Mr Todoroski for Landfill Operations and of Dr Bellair and Dr Ross for Stop the Tip – a contest that accounted for a considerable period of the hearing.

230 By way of an overview to our consideration of this evidence, it is fair to say that a key input into the landfill emissions modelling is identifying odour sources and their respective emission rates. The experts agree on possible sources, though there is disagreement about the degree of influence from some. All the experts agree that the active filling face is a key source of odour. The experts also agree that daily covered areas, intermediate capped areas and leachate ponds can be the sources of other waste odours, which

[77] Air Quality Assessment, prepared by Pacific Environment Ltd, 13 May 2016; Tribunal Book 3, Tab 49.

need to be considered. There is agreement that final capped areas emit odours, but disagreement about whether these odours should be accounted for.

231 Mr Todoroski relied on testing of final capped areas to support his view that no landfill or offensive waste odours are emitted from a properly constructed and maintained final cap. When tested at the MRL site; it was shown that the odours are more earthy-like and are not offensive. Thus, it was his view that including them in the model would overestimate the emissions of offensive odours.

232 We think there is sound logic to this evidence. The focus of the WMP, the BPEM and SEPP (AQM) is on the loss of amenity by the generation of offensive odours. The testing of landfill cap areas conducted at MRL indicated that the character of the odour was of earthy tones that are not offensive. While it is submitted by Stop the Tip and it was the evidence of Mr Welchman that a cap might partly fail by way of cracks and the like, Landfill Operations proposes, and the works approval conditions (and subsequently the licence) require, management of the cap to reduce this risk along with emissions monitoring to support remedial activity. These steps accord with best practice.

233 Further, the release of odours through the failure of the cap would not represent a worst-case scenario under normal operating conditions. In fact, it would represent a failure in implementing best practice. In this respect, we agree with EPA that enforcement and remedial actions would appropriately address such a failure.

234 The cap has been designed to best practice standards and landfill gas extraction is proposed, which the experts agree meets best practice standards, if not exceeding them. Thus, the design seeks to apply best practice management to one of the potentially significant sources of odour once the landfill cells are capped.

235 We conclude that in demonstrating that best practice is being applied to the management of the cap and landfill gas controls, the approach adopted by Mr Todoroski and in the PEL assessment not to include emissions from the capped cells is reasonable and soundly based.

236 Conversely, this is a reason to not accept Dr Bellair's assessment. In light of his direction to Dr Ross to apply emission rates to capped areas, his assessment will overestimate offensive odour emissions as the landfill is progressively filled and capped.

237 In considering the main source of odour from the active tipping cell, there is disagreement between the experts as to how Columbia tippers and other waste tipping and compacting activities are accounted for. Dr Bellair gave extensive evidence on his first principles approach to support his view that odour emission rates will vary with incoming tonnage, weather conditions, antecedent conditions of the collected waste (by which we mean, in lay terms, that over summer, bins being collected in hot weather will be more

odorous than bins collected in the cold weather of winter), compaction of waste, daily covering and uncovering of waste.

238 Dr Bellair therefore disagrees with the approach of a constant odour emission rate. He says a time varying rate factored for seasonal temperature and for daily tonnage rates should occur.

239 There was also argument about how data from the transect method relied on by PEL in the initial works approval assessment, Mr Todoroski's modelling and Dr Bellair's modelling should be applied in the odour emissions modelling. We heard extensive evidence from Dr Ross and Mr Todoroski on this subject.

240 Having considered this evidence, we ultimately agree with the words of caution in Dr Ross's assessment, which echo similar comments in the EPA's review.[78] To paraphrase both, the application of the transect method, at least in this instance, relies on a number of assumptions about odour source and behaviour that have not been sufficiently verified. Accordingly, the transect results have a high degree of uncertainty and should be applied in the determination of odour emission rates with a great deal of caution.

241 Quite apart from the odour emission rates for the active filling face, we also observe that the modelling did not account for deep waste burial of offensive, odorous material. Whether this source of odour has any material impact is simply unknown as it was not accounted for in any site surveys of odour emission or the modelling. However, we think that such a source should have been included given its daily occurrence,[79] which therefore means it would be a source of routine operations.

242 Similarly, Landfill Operations put to us that not all the reported areas of exposed waste presented in various materials was in fact the active tipping face. Landfill Operations refers to some areas as tipping pads. It also conducts tipping operations at the base and top of the active face, with a reported height of some 4m. We are not satisfied that these sources of odour have been accounted for in the assessment of odour emissions rates under any of the modelling.

243 Aerial photographs and mapping of exposed waste areas, which were tabled at the hearing, indicate that under past and even more recent operations, while tipping may be confined to a 1,800m^2 area, larger areas of waste remain exposed. In some instances, open waste areas of more than 10,000m^2 have occurred.[80] Whatever the reasons for these open waste faces, the calibration of the various models did not account for such large areas. This is likely to lead to errors in the calibration of the model factors

78 Tribunal Book 1, Tab 3, pages 107, 111, 290-292.
79 Exhibit LO-116 para [6], which states that on average, there are 5 to 10 deep burials a day.
80 Exhibits LO-85 and STT-111; and Dr Bellair's evidence statement Tribunal Book 8, Tab 125, pages 7653, 7654 and 7665-7671.

(e.g. higher emission rates given the assumption of lesser areas of exposed waste) and therefore the modelling of future operational scenarios.

244 We also consider that Dr Bellair's first principles approach was infected by his attempts to match emission outputs with the lay witness reports. This was done without proper consideration being given to how other sources of emission may have affected those reports or indeed without proper consideration given to testing the veracity of those reports, unlike Mr Todoroski. This, we believe, has led Dr Bellair to apply overestimates of odour emission rates that he justifies through his various scaling measures.

245 Taken collectively, we find the evidence points to a range of uncertainties about the inputs and hence outputs of the odour emission modelling. The modelling undertaken in this proceeding therefore does not provide us with the necessary level of confidence that it can be applied to an assessment of future impacts on the air environment.

246 We conclude from the evidence that the science of assessing odour emissions from landfill activities (be it from first principle considerations like that undertaken by Dr Bellair, site assessments of odour emission rates by flux chambers or transect methods, or the numerical modelling of odour dispersion from large waste faces) is fraught with uncertainties and has some way to go in being formalised into an agreed framework by the scientific community. These uncertainties arise from the range of factors that might influence odour emission rates, ranging from temperature, wind speed, atmospheric stability, composition of waste, area of uncovered waste (which in turn may be influenced by tonnages being processed versus the speed of coverage) and the time varying nature of all these factors.

247 We conclude that the modelling is not 'broken'. Rather, we conclude that the capacity of present-day modelling approaches is not adequate to deal with these complexities. Therefore, they are not sufficient to perform the task required under Schedule C of the SEPP (AQM) for a case of this nature being such a large scale, complex landfilling operation.

248 Finally, in response to our questions, Mr Todoroski considered that his modelling was appropriate for comparative purposes but would not provide indicative values of odour concentrations due to the emissions from the site. This advice needs to be compared to the purposes outlined in the SEPP (AQM) for a regulatory model as outlined earlier. Having regard to Mr Todoroski's approach, it may be understandable why he sought to reduce odour emission rates to a flux chamber so as to get comparable results for scenario testing. However, that approach does not achieve the purpose of the SEPP (AQM) for a regulatory model, which is required to predict emissions for the assessment of impacts to amenity.

249 That said, even if we were to accept Mr Todoroski's advice that the 1 OU outputs from his modelling would indicate the extent of area impacted by detectable odours, we conclude that the extent of his calibrated model does not compare favourably with actual survey results.

250 For these reasons, and for the reasons we discuss in more detail in the next section of our decision, we conclude that the key modelling undertaken by Mr Todoroski, Dr Bellair and Dr Ross, and that in the PEL works approval application report, are not sufficient to rely on in our assessment of this landfill proposal.

Odour emissions from the transect method

251 In this section we discuss in more detail why we do not trust the modelling undertaken by the various experts.

252 We have referred earlier to the method adopted by Dr Ross, PEL and Mr Todoroski in their respective determination of odour emission rates from a transect assessment of odours along the tipping face. While discounting the modelling of odour dispersion modelling, we have found the estimates of the odour emissions from these assessments to be useful in assessing the impact from odour emission events.

253 We consider that Dr Ross gave cogent reasons as to why the transect calculated odour emission rates should not be adjusted or scaled back to reflect IFC sample results, which was the approach adopted by Mr Todoroski. Most particularly, his demonstration of the effects on scenario modelling of dispersion outcomes has been persuasive.

254 Mr Todoroski was critical of Dr Ross's modelling for imprecision in matching values of odour that he applies to the intensity values reported from the survey. He also challenged Dr Ross's modelling assessment of the transects for its lack of clarity over what the scenarios are intended to represent (an 8 minute average or a 3 minute average), and how his calibration reflects the VDI method of 10 second sampling periods over a 10 minute period.

255 We conclude that such criticisms misconceive the value of Dr Ross's analysis. We regard Dr Ross's assessment to be no more than a demonstration that by adopting various back calculated odour emission rates, the modelling of the transect plumes should broadly match the reported odours from the transect and downwind boundary. His assessment of the 20 September 2017 scenario seeks to match a situation where odours detected at levels of some 290 OU to 550 OU proximate to the face of the active cell disperse (under the respective varying meteorological conditions) to the reported levels of odour of nil, very weak, weak and distinct intensity some 800m downwind at the landfill boundary. These degrees of intensity correspond broadly to <1 OU to 10 OU, per the scaled relationship identified by Mr Todoroski in the PEL report.[81]

256 We do not consider that in modelling an 8 minute average, the 12 OU he matched at the boundary was a poor outcome. Instead, it confirms that the OU emission rate he has applied supports peak odour levels of around 10

[81] Detailed in PEL Report 13 May 2016, Tribunal Book 3, Tab 49, pages 2358-2360; 2381-2383; and 2395.

OU or the distinct odour reported, albeit for a short period, 800m downwind.

257 We have found Dr Ross's modelling of this aspect of the odour assessment helpful, as it provides reasonable matches with observations of odour migration during odour surveys undertaken in 2014 and 2017/18, which we discuss below. These survey campaigns have variously identified:

- Odour impacts from the Pinegro facility at offensive levels at the boundary but dissipating to weak levels by 4 to 5km.
- Waste odours from the active tipping face at the boundary that border on offensive (being moderate in intensity), dissipating to weak some 1-2km downwind.

258 We consider such evidence supports the view by Dr Ross and others that the PEL and Todoroski assessments have relied on emission rates which are too low, as discussed earlier.

259 For these reasons, we do not accept the evidence of Dr Bellair that the emission rates determined from the transect and other assessments need to be factored to reflect all the other various influences which he says support his approach.

260 In our view, the evidence of Dr Ross is instructive on these points. By applying the back calculated odour emission rates in small, simple models without such adjustments, he has been able to reflect actual monitored odour conditions at the boundary (as discussed below).

The history of complaints about odour

261 The current landfill has been in operation since the 1990's. Odour has been an ongoing issue. We were given evidence about odour complaints made to the EPA, and EPA complaints records between mid-2016 and mid-2018.

262 Stop the Tip relied on the evidence of eleven lay witnesses, who live in residential areas surrounding the MRL (such as Caroline Springs, Deer Park, Tarneit and Truganina), and Mr Selisky, who was Senior Operations Manager at the Ravenhall Metropolitan Remand Centre from 2006-2010 and from 2015-2017. They gave evidence about their experiences with odour emissions, which they believe to have come from the current MRL operations.

263 Many of these witnesses spoke very passionately about their experiences and variously described the smell as 'unpleasant', 'absolutely disgusting', 'very terrible', 'offensive and repulsive'.

264 In assessing what weight to give this evidence and the relevance of the witnesses' experience relating to past operation of the MRL compared to the proposed operation of the seven new landfill cells, there are a number of factors to consider.

265 Landfill Operations submitted that due to various matters, we should discount a range of data sets/periods because:[82]

- An outdoor, windrow composting facility operated at the northern area of the site, close to Cells 1A and 1B from prior to 2009 until 2015, with a peak in complaints occurring in 2014 when that operation was the subject of a pollution abatement notice (PAN). Complaints decreased, and off-site monitoring of odour indicated a decrease in off-site odour migration after the PAN was issued and responded to by the operator of the composting facility.
- Composting ceased, and the composting operation closed in or about October 2015.
- The quarry operator initially operated the landfill, which was then sold to Cleanaway in or about 2014. This raised the public profile of the landfill at a time that was coincident with a spike in complaints.
- On acquisition, Cleanaway implemented new on-site practices.
- Cleanaway contracted the operation of the landfill between 2015 to 2018.
- Landfill Operations, which is a wholly owned subsidiary of Cleanaway, took over the running of the operation from 2018 and revised a number of work practices.

266 Landfill Operations further submitted that since taking over the operations role in 2018 and introducing revised operating practices, the potential for odour complaints has been minimised.

267 In assessing the lay witness evidence about odour for Stop the Tip, we must consider to what extent it may be infected by the fact that it is given by a group of people who have an expressed intention to close down the landfill. Given they consider it is the landfill that is affecting their amenity, this may be a legitimate objective on their behalf. However, many resident lay witnesses gave evidence that at first instance they did not know what odour they were smelling and from where it came until someone else told them there was a landfill in the area. They gave no consideration to other possible sources of odour, notwithstanding the presence or potential presence of odour generating industries in surrounding industrial areas. We have already noted that the surrounding land uses to the south, east and north of the site include industrial zoned land. Such land may have contained waste resource industries or other uses capable of producing odours with a wide range of character.

268 We are not persuaded by the evidence given that many of the lay witnesses had sufficiently considered such possibilities. Instead, on hearing of the landfill's presence, they have assumed it has been the sole source of odour.

[82] PEL Report 13 May 2016, Tribunal Book 3, Tab 49 – executive summary.

269 We understand that historically the site included an open-air green waste composting facility, which is now shut. A bitumen batching plant also is present on the northern side of the quarry site. Both these activities are odorous, with emissions of similar character and persistence reported by some of the residents, e.g. producing acrid or burning sensations or vile organic smells and rotting meat or vegetation smells. These characteristics are all the more pronounced when composting activities are not well managed and compost turns anaerobic.

270 We also consider that Mr Todoroski's assessment of odour complaints made to the EPA is informative regarding the veracity of the complaints and the weight that can be placed on them. We acknowledge there were some challenges to his method of analysis, and we agree that at times the EPA reporting files result in some confusion about the time and location of odours being reported. Nevertheless, we find that his assessment demonstrates there are instances when the reports of landfill odours occurred from locations that did not match downwind directions from the landfill.

271 The odour complaints must necessarily be considered in light of the odour surveys commissioned by Landfill Operations and those undertaken by EPA. For reasons that we set out shortly, these survey results confirm the migration of odours beyond the site boundary under current and past operational conditions. The results substantiate what has been put to us by Landfill Operations, that meeting a 1 OU design criteria at all times is not likely to be achieved for this landfill. Equally though, the surveys assist us in assessing the degree of adverse impact on the amenity of the surrounding area, and they temper the lay evidence of historical offensive odours persisting for many kilometres beyond the landfill boundary.

272 That said, the evidence before us indicates there have been odour impacts of an unreasonable nature beyond the landfill boundary. The evidence of Mr Selisky of odour events he experienced while working at the Remand Centre aligns with periods of time when management of the landfill operations appears to have been insufficient to control migration of offensive odour. This was a time when landfill cells 2A to 2M were being filled over extended periods and when more than one cell was active. Waste was being deposited across a series of cells, involving interim cover of waste then consequential re-opening of aged, putrefied wastes. This amounts to poor practice of waste management as an odour source.

273 Contextually, the Remand Centre is located within 1km to 1.5 kms of the current complex of landfill cells and downwind of some of the prevailing light wind conditions. The filling of these cells also occurred in a manner that involved large tipping faces of over 2,000m^2; some being upward of or approaching 5,000m^2 – facts not disputed by Landfill Operations. These tipping faces are clearly in excess of the BPEM recommendation for 30m by 30m (900m^2) tipping faces and the allowable face of 1,800m^2 in the landfill's licence.

274 It was also explained to us that the filling process has involved waste being tipped onto 'tipping pads' then moved onto the tipping face by bulldozers, while tipping from Columbia tippers and other vehicles also occurs from above the face. These are not practices that are accounted for in the BPEM.

275 The impacts of such operations and the fact that the tipping face areas exceed the recommended maximum, lead us to conclude that on the balance of probabilities offensive odours migrate well beyond the boundary; possibly as far as 1.5km from the active cell.

276 It is also apparent that deep burials of offensive odorous waste, assumed to be unusual events in the BPEM, are in fact a daily occurrence at this site and have not always been managed to best practice standards. The back installation of landfill gas extraction wells in this area is also likely to have been a source of particularly offensive odours from time to time.

277 When all these factors are considered, we conclude that what the evidence of the lay residents demonstrates is that, if not properly managed, the size of this landfill presents a real potential for offensive odours to be generated beyond the boundary, which would affect the amenity of nearby receptors.

278 However, we hold grave doubts that such historical odour events impacted residential amenity to the extent put to us by Stop the Tip. In some cases, evidence was given of offensive odours being detected more than 5km away. We consider it is unlikely that these odours emanated from the landfill. On the other hand, we consider the evidence does point to strong, unpleasant odours, i.e. offensive odours, persisting for sustained periods around the Remand Centre and general prison complex, and possibly the nearest residential areas to the east and north of the south-eastern corner of the landfill site (Cells 2), a distance of some 2kms from the eastern margins of the operating cells.

279 So far as the history of odour complaints is concerned, we find that the evidence demonstrates the type of potential impacts that may be caused if proper management of the landfill, in accordance with the BPEM and the SEPP (AQM), is not maintained. However, we do not agree with any suggestion by Stop the Tip or others that the evidence means the proposed new cells will, on the balance of probabilities, generate offensive odours beyond the site's boundary.

280 Our findings regarding the history of odour complaints and what they demonstrate must be understood in the context of our task in this proceeding. We are not undertaking an enforcement action against Landfill Operations regarding past operation of the MRL. Our role is a prospective one, requiring us to consider (among other things) whether the future use of the new cells will have a similar impact to past operations involving existing cells, and whether future impacts will be inconsistent with relevant policies or will be unreasonable.

281 In undertaking this task, we have given weight to the outcomes of the odour surveys commissioned by Landfill Operations and the odour monitoring undertaken by the EPA. We assess these surveys in the next section.

Odour surveys of landfill performance

Sources of odour

282 The air quality assessment by PEL,[83] which accompanied the works approval application, details the following possible odour sources from the MRL's operations:[84]

- Tipping of waste at the active face.
- Spreading of waste onto/across the active face.
- Compaction of waste (by passage of a waste compactor over the active face).
- Covering of active face with daily cover and uncovering of daily cover for additional waste placement.
- Fugitive emissions from the interim capping.
- Fugitive emissions from final capped waste.

283 There was general agreement between the odour experts that the dominant source of odour is the active face of the landfill.

284 All agree that additional emissions can occur from the daily covered waste, and from the interim capped areas. There was some disagreement over whether final capped areas will generate emissions, as we discussed earlier.

285 Analysis of meteorological conditions in the PEL report indicates that stable and very stable atmospheric conditions (i.e. those conditions least conducive to dispersion of odour) occur for 50% of any typical year. Stable conditions are most prevalent during the night (sunset to sunrise) period, whereas instability is most frequent during daytime hours. Analysis of atmospheric stability indicates instability is largely a solar convection driven response to ground heating during daytime, rather than wind driven. These conditions are consistent with an inland location with a preponderance for night time temperature inversions developing. Thus, a key outcome from this assessment is that the least dispersive conditions, and therefore the greater degree of poor dispersion of odour, will occur over the night time stable periods, early morning periods when stable conditions may be maximum, or will develop in the early evenings.

286 The coincidence of filling activities with these time periods of stable atmospheric conditions provides the highest likelihood of poor dispersion of migrating odour plumes. This is one aspect that all the experts agree on and

[83] PEL Report, 13 May 2016; Tribunal Book 3, Tab 49.
[84] Ibid, page 6. Tribunal Book 3, Tab 49, page 2257.

that the two models before us – by PEL and Dr Bellair – are said to demonstrate.

287 Curiously, notwithstanding this, Dr Bellair maintained that odour emissions from the tipping face are largely driven by the volume of waste being processed. He argues that limiting the volume will limit the impacts. The problem with this proposition is that it does not sit well with the facts nor did he provide any evidence to support his assumption of the linear relationship he assumed between throughput and emissions. The landfilling operations at the MRL, whilst undertaken 24 hours per day, tend to have relatively low rates of waste receipt during the night period, increasing in the dawn/early morning periods to peak tipping during the late morning and early afternoon. Dr Bellair's proposition would mean that the peak odour generation would occur at a time of day when atmospheric conditions are most unstable and greater dispersion is likely to occur, thereby resulting in less risk of off-site impact.

288 We do not consider this scenario accords with the evidence about when odour emissions are most commonly detected, which is during the early evening/night time/early morning periods when atmospheric conditions tend to be most stable and least dispersive.

289 We accept that throughput will have some influence, a matter we discuss shortly, but observe here that the evidence indicates that a range of other factors, such as the rate of compaction, coverage of waste and meteorological conditions, needs to be accounted for in estimating odour emission rates and ultimately, the odour impacts.

290 We therefore do not accept Dr Bellair's proposition about the relationship he assumes between odour generation and the volume of waste being processed. This is one of the aspects of his modelling that leads us to reject his modelling outcomes, as discussed earlier. Similarly, the failure to account for variations in odour emissions from the tipping face is one of the key reasons why we cannot accept Mr Todoroski's modelling either.

PEL surveys of 2014

291 The PEL report that accompanied the works approval application sets out results of odour surveys conducted around the landfill site over June 2014 to December 2015.[85] These results were referred to by Mr Todoroski and Dr Ross during their oral evidence. Dr Ross referred to them in support of his opinions about accounting for atmospheric stability factors in applying odour emission rates. We have found these results instructive in considering the lay and expert evidence about odour persistence.

292 Key observations from the 2014 surveys are as follows:

- 10 June 2014: rectification works to landfill gas extraction system appeared to be a source of landfill gas/waste intermittent odours detected approximately 1km downwind of the landfill with a moderate

[85] Tribunal Book 3, Tab 49, pages 2383 to 2395.

strength of 3,[86] corresponding to around 10 OU. Otherwise the odour at this distance varied between nil, very weak and weak, indicating ranges of less than 1OU up to 4 OU. [These ranges are based on data provided in the PEL report and referred to by Mr Todoroski in his supplemental evidence.[87] We have however rounded values rather than used the quoted odour level, as the PEL report refers to them as approximate or indicative levels and we think therefore an accuracy of values to the nearest decimal point would be over stating the degree of accuracy assigned to such surveys.]

- 11 June 2014: Waste odour intensities detected on the boundary ranging from 25 to 30 OU were assigned to active face waste, as works on the landfill gas system had ceased. This odour plume was tracked for some 2km downwind to a level of around 1 OU. This compared to odour from the Pinegro composting facility being tracked to a distance of some 4 kms downwind, where it was intermittent and very weak to weak, a level of 1 to 4 OU. [Reported as 1 to 2.6 OU, however the scale relied on by PEL indicates a weak odour may be up to 4 OU.]
- October 2014: An odour survey detected distinct to strong odours around the south-east corner of the landfill under light wind conditions (1m/s) when the tipping was occurring at the active face some 500-600m from the south-east corner boundary. The odour intensities scaled to odour levels of 10 to 26 OU. The waste odour, corresponding to a level of 1 to 4 OU (very weak to weak) and sporadically distinct (10 OU) was detected 2km downwind. Overlapping odours from the Pinegro facility were also detected and were inferred to have occurred sporadically due to the light wind and stable atmospheric conditions. An evening survey identified odours from Pinegro at distinct levels (10 OU) detectable to the west on the M80 ring road, while weak asphalt plant odours (4 OU) were detected close to that plant. Recognisable (distinct) odours (10 OU) of putrefied waste were reported on Christies Road near the entrance to the detention centre complex, while very weak to weak waste odours associated with a covered active cell face area were detected on the site boundary (1 to 4 OU). A further morning survey under moderate northerly wind conditions identified landfill gas/waste odours ranging from intensities that correspond to 10 OU (at the boundary) persisting to weak (4 OU) on Boundary Rd and very weak (1 OU) on Doherty's Road with distinct peaks (10 OU). Compost odours from Pinegro were detected at similar intensities at the same distances in a separate odour plumes, save for odours on Boundary Road, which had some distinct peaks, indicating peaks of 10 OU occurring.

[86] The 2014 survey applied the VDI 3882(1) scale in its assessment
[87] Exhibit LO83

- Odour surveys over October, November and December 2015 under stronger wind conditions observed only very weak odour (1 OU) at distances of approximately 1.2km downwind of the active tipping face.

293 The above survey results support the potential for waste odours to migrate upward of 1km at distinct levels (10 OU) during more stable weather conditions but disperse to weaker levels with further distance. The results also support what was put in evidence about impacts to the amenity of the detention centre complex, at least when stage 2 cells were being filled and had varying stages of cover over them and were subject to landfill gas collection works.

294 Finally, we observe that the results support Landfill Operations' submission that other odours from the composting activity and asphalt plant, all of which can correspond to descriptions in reports of acidic organic, rotting vegetation and acrid, sharp or burning, which are not normally associated with waste or landfills, were persisting in the air environment.

Tonkin and Taylor Odour Surveys – 2017 & 2018

295 Landfill Operations commissioned an odour survey over December 2017 and January 2018.[88] One day of the survey (15 February 2018) coincided with an assessment of odour generation from the working face of the landfill.

296 Applicant parties and their experts criticised the manner in which the surveys were undertaken, in particular that they did not adhere strictly to defined methodologies for tracking odour plumes. Landfill Operations submitted that given the surveys were limited to public roads and had no access over private property, it was not possible to complete such surveys to full compliance with the methodology.

297 We are satisfied that the VDI method in combination with the EPA method has been sufficiently applied to provide indications of landfill odour strength and persistence in areas downwind of the landfill over the survey times. We are not concerned about the lack of some precision in mapping the full extent of the plume. It is apparent to us from Dr Ross's modelling of the transect surveys that the odour plumes are generally of a narrow geometry consistent with poor dispersion conditions. It is also apparent from the public odour complaints that a high proportion of complaints came from individual locations rather than widespread areas, again an indication of the odour plume migrating in a relatively limited manner. We note that the one occasion of widespread odour complaint was explained by the EPA to have been an odour incident, which was unrelated to the landfill, under very unusual weather conditions.

298 We have concluded that these surveys provide an acceptably sound basis on which to assess general odour plume migration from the landfill's

[88] The Odour Survey Monitoring Plan – Summer 2017/18, Tonkin & Taylor. Tribunal Book 1, Tab 38.

operational areas. We have therefore considered and given weight to these survey results[89] and that of the odour monitoring from the tipping face.[90]

299 We have also considered the results of the tipping face odour assessment of 20 September 2017 and 15 February 2018, when boundary assessments of odour migration were completed concurrent with tipping face odour conditions.

300 We consider that these assessments and surveys have value in:

- Ground truthing of the odour dispersion modelling results;
- Providing a comparison against reported odour complaints and the lay evidence; and
- Assessing odour migration against various tipping face areas and varying waste volume processing.

The odour face and boundary monitoring

301 The 15 February 2018 monitoring event reported the following:

Face area	***Upwind odour***	***Downwind transect odour***	***Boundary odour assessment***	***Possible odour at boundary***
1620m^2 Approximately 960m from the face to the boundary	<30 OU	Peak 500 OU Range 350-500 OU	Very weak to weak, mildly unpleasant to unpleasant waste odour[91]	1 to 4 OU

302 The 20 September 2017 morning monitoring event reported the following:

Face area	***Upwind odour***	***Downwind transect odour***	***Boundary odour assessment***	***Possible odour at boundary***
2,000m^2 Approximately 800m from the monitoring boundary	50 OU	Peak – 1,100 OU Range 290 OU to 1,100 OU	Not perceptible to moderate rubbish odour– predominantly not perceptible	<1 to 10 OU

303 The 20 September 2017 afternoon monitoring event reported the following:

89 Tonkin & Taylor field report, Tribunal Book 2, Tab 39.
90 Ektimo Report, Tribunal Book 2, 28 February 2018. Tribunal Book 2, Tab 40.
91 Landfill gas odours were also detected at the boundary, which were assessed as a weak, unpleasant odour.

Face area	*Upwind odour*	*Downwind odour*	*Boundary odour assessment*	*Possible odour at boundary*
1,500m^2 Approximately 800m from the monitoring boundary	<30 OU	Peak – 300 OU Range 220 OU to 300 OU	Not perceptible to very strong waste/landfill gas odour – predominantly not perceptible, occasionally very weak to weak.	<1 to 70 OU Predominantly <1 to 4 OU

304 The overall survey and monitoring results point to the fact that control of the tipping face is fundamental to odour migration control, with the greater effect of odour being detected when the tipping faces exceeded 1,800m^2. In fact, the results demonstrate what impacts may be like under upset conditions rather than the normal operating conditions which the EPA seeks to impose, i.e. active tipping face of not more than 1,800m^2.

305 The results from 15 February 2018 and 20 September 2017 provide an indication of odour migration being detected at the boundary and further afield, up to 3km, from the active filling face.

306 Conversely, the results do not support Mr Todoroski' s assessment of a low persistence and limited migration of odours beyond the boundary. He indicated that his modelling should not be taken as absolute values but rather that the 1 OU values should be used as an indication of how far detectable odour might migrate under his modelled conditions. Even if we took this approach to be aligned with the intent of the SEPP (AQM), we consider that the survey results do not support Mr Todoroski's modelling.

Will offensive odour emissions occur beyond the boundary?

307 As we have concluded, the appropriate test under the SEPP (AQM) is whether there will be offensive odours emitted beyond the boundary. We conclude from the monitoring evidence of past activities that odours will be emitted at and beyond the boundary. Whether the odours will be offensive however, requires an assessment of FIDOL factors – frequency, intensity, duration, offensiveness and location. In this respect, we must treat the historical information with some caution.

308 We have little doubt that in the past, given our findings above, persistent and sufficiently frequent odours of a strength and character to be offensive are likely to have persisted at the Ravenhall Remand Centre and prison complex, as attested to in the evidence of Mr Selisky. This would have been likely for a number of reasons: the proximity of the stage 2 cell complex to this facility (being less than 1km); the prevailing light winds often pushing odours in this direction with limited dispersion; the operation of the Pinegro facility, which had a demonstrable ability to generate distinct

odours to a distance of 4kms; and the fact that inmates would have been subject to long term exposure not unlike a residential situation.

309 However, the new cells, which form the basis of this works approval application, are to be located further to the west of this facility; indeed, well over 2kms. The monitoring data indicates that at this distance, waste odours detected even during worst case scenarios dissipate to a level that is described as weak to very weak, if at all discernible. At a much lower level of intensity, we consider that when the deposition of waste is properly managed in accordance with the BPEM to minimise the emission of odours, waste odour emissions will not be offensive to the workers and inmates at the prison complex.

310 Similarly, the distance to residential areas to the north and west of the landfill site will be further from the active filling cells. Again, we consider that no offensive odours will migrate to these locations if the deposition of the waste is properly managed.

311 The new cells will be approximately 1.5km from the residential areas nominated under the Mt Atkinson and Tarneit Plains PSP and related UGZ9. The evidence from the odour experts is that migration of odours in the north-west direction is less frequent than other directions, as was demonstrated in all the numerical models. While we have discounted the modelling, we accept that this was one point of consistency which had an underlying logical basis. In short, stable atmospheric conditions conducive to low dispersion of migrating odour plumes in this direction were considered to be infrequent.

312 We find that the combination of distance from sensitive land uses and the low frequency of poor dispersion conditions means there will be a lesser risk of odours of sufficient character and strength to be offensive impacting these areas to the north-west.

313 Closer to the north-west and west boundary, future land uses are indicated to be less sensitive, being commercial and industrial. Whilst being closer to the cells, particularly cells 4 through to 7, again the evidence is that, as in other directions, distinct and offensive odours persisting beyond the boundary are infrequent and, when present, are intermittent. Coupled with the infrequent occurrences of odour migration in these directions, we are not persuaded that even distinct odours will occur often enough to be of an offensive nature in these less sensitive areas.

314 It is land to the south of the landfill site that is of most concern to us. Currently, the land immediately to the south is zoned Farming and beyond is Urban Growth zoned land. Impacts on farming land are not our main concern here. Such land is open grazing land and, as such, is infrequently visited by workers and land owners. The potential for frequent and distinct odour being experienced by such people is very low.

315 Further to the south, we are told that although there is no final determination, this land is likely to be developed for industrial and/or

commercial uses. That this may occur within 1.5 km of the early proposed cells (cells 1 to 3) is of some concern notwithstanding the lower sensitivity of these land uses.

316 The odour surveys and the evidence of the odour experts consistently indicates one of the prevalent directions of odour emissions in poor dispersion conditions is to the south. The evidence of the experts confirms that this is to be expected having regard to a conceptual understanding of the frequency of light winds and stable atmospheric conditions.

317 However, although we hold these concerns, none of the applicants have demonstrated to a reasonable level of certainty that such a preferred migration direction will translate to offensive odours in these areas. The areas are of low sensitivity; therefore it will be necessary to demonstrate that frequent, strong odours would impinge on the amenity of such areas for them to be considered offensive. At best, the surveying and monitoring events indicate that southward migrating odours may be distinct for a distance of 1km to 2kms, but they will be intermittent and infrequent by this distance. We consider it is difficult to conclude on such evidence that these areas will be affected by odours that will adversely impact the amenity of industrial or commercial areas.

318 Beyond the future industrial land, is the development of further residential areas. We do not find that the monitoring evidence supports claims that these residential areas are already impacted by offensive waste odours. At worst, the monitoring indicates the potential for intermittent, very weak to weak odours to travel to the northern fringes of these residential areas. At these odour strengths, infrequent, intermittent occurrences would not be sufficient to be offensive to residential amenity.

319 We are also satisfied that once landfill cells are closed and capped, the evidence points to emissions being considerably reduced in both strength and frequency. Given our conclusions about the potential impacts during operation, we are not persuaded that the closed landfill would generate more offensive odour emissions than during operations.

The control of odours as an operational matter

Tipping and covering the waste

320 Section 7.7 (waste cover) of the BPEM advises that:

> An essential part of landfilling operations is the placement of cover over wastes.
>
> The purpose of cover is to:
>
> - minimise landfill odours
> - control litter

321 This advice accords with the evidence of the odour experts and other expert material that has been tabled. Whatever may be made of Dr Bellair's evidence about the generation of odours being related to the volume of

waste coming onto a site, ultimately a key response in odour management is to cover the waste as soon as possible. In our view, Dr Bellair's focus on tonnages per hour misdirects him to consider that controlling tonnages is the key. Rather, a fundamental aspect of odour emission management is how any waste received to the site is managed in terms of the potential opportunity for odour emissions. This translates to understanding when the greatest potential will be for emission of odours and when the most likely time will be for migration of odours off-site. The evidence indicates to us that these two events do not necessarily coincide at the same time.

322 In terms of odour release, the evidence points to the time between discharge of waste from delivery vehicles to the time it is covered by daily cover and ultimately interim and final caps as being key. The most significant time for odour release is the discharge and movement of waste onto the active face before daily cover can be placed over it. To this extent, we consider that increasing tonnage will, if not properly managed, lead to increasing odour emissions and therefore the risk of off-site impacts. It is therefore imperative that the tipping face is properly managed in accord with the BPEM, including the expeditious covering of open waste faces.

323 We also consider the evidence demonstrates that the tipping face must be limited to an absolute maximum of 1,800m^2 in order to avoid unreasonable offsite odour impacts. We recognise that this may limit throughput at the landfill. There may also be a consequential impact on the life and service level of the MRL, given the forward projection for increasing tonnage to be received. It is nevertheless necessary to impose this limitation in order to achieve odour outcomes that are consistent with the BPEM, WMP and SEPP (AQM) for the reasons we have outlined earlier.

324 Similarly, other events may also release odour. The evidence indicates that the opening of waste for works, be it deep pits for burials of obnoxious waste or post fill works for landfill gas extraction, are common causes. Again, proper management of such events should minimise odour emissions.

325 Landfill Operations submitted that the proposed design and operation of the landfill cells seek to address these events. However, we are not persuaded that sufficient thought has been given to these matters. In particular, the location of the Columbia tippers and disposal of waste at the base and the top of the active face provide for two sources of odour emissions, whereas the BPEM generally recommends only one limited area of active tipping, at the base of the face. The BPEM outlines that waste is recommended to be deposited at the toe of the active face and the waste is then pushed up and compacted across the face.

326 Landfill Operations says that its operations rely on a tipping pad at the base of the face and that this is not part of the active face. A tipping pad is neither defined within the BPEM nor assumed to be part of the operation. However, Landfill Operations has not provided any risk assessment to demonstrate that its practices are an improvement on the BPEM.

327 EPA advised that it does not accept that the area of the tipping pad should be excluded from the tipping face.

328 Whilst it may be a matter of semantics, we consider there should be no differentiation between the area where waste is deposited from the vehicles and the area of what is the active face. Tipping, then spreading and compacting the waste are all part of the one operation, which is one of the most significant sources of odour. Both aspects must be managed and managed together.

329 The effect of Landfill Operations' proposed operations in this manner would be to increase the active tipping face or tipping area beyond 1,800m^2. We have concluded that such operations and enlarged tipping area are likely to lead to offensive levels of odour emissions beyond the boundary – a situation inconsistent with the SEPP (AQM), the WMP and the BPEM.

330 For these reasons, we consider it is necessary to ensure a condition is included in the works approval to ensure that the tipping areas are included as part of the active fill face and that all sources of odour arising from the tipping and compaction of waste across the face are accounted for in the estimation of the face area. In this respect, we consider it is necessary to ensure that the Columbia tippers are located and managed within this active face area.[92]

Size of the tipping area

331 A second critical factor in odour management is the timing of the covering of wastes. The evidence points to the greatest risk of offensive odours occurring when the exposed waste face is greater than 1,800m^2. In our view, the requirements of the BPEM for daily cover to be placed at least once a day over waste faces assumes that this face will not exceed 900m^2 for that period. In the present case, that assumption does not apply.

332 Notwithstanding this aspect of the BPEM, we are satisfied that in all the circumstances of this case, an exposed tipping area of 1,800m^2 is justified for various reasons.

333 Whilst in many respects, a lesser area might be preferable, particularly when the active face is within 500m of the site's boundaries, we recognise that the importance of this facility as a state hub and the volumes of waste it must manage are relevant considerations. Given that planning of land uses around the site has provided for a buffer of 1.5km of less sensitive land uses, balanced with the fact that the faces will progress rapidly toward the centre of the site, we consider the restriction of the tipping face to 1,800m^2 is sufficient to address the odour risk. However, this is provided that daily cover is placed on a continuous basis so that the exposure of waste to the atmosphere does not occur over an area of greater than 1,800m^2, as an absolute maximum.

[92] This is because the size of the Columbia tippers means that when the tray is elevated to release the waste, the volume of waste sliding down from this elevated height will release considerable odour.

Cell design and layout of the facility

334 We also recognise that the proposal provides for a logical and progressive flow of waste deposition from one cell to another. Past practices at the MRL have not had the benefit of such a layout. It is apparent that in the past, many cells have been in operation at once.[93] The effect of moving between cells in such a fashion will have resulted in re-opening faces and exposing putrefying waste to the atmosphere with the release of far more pungent and offensive levels of odour emissions than from filling with fresher waste. The cell layouts before us do not require such activity to occur in order to progressively fill across the designated cell areas.

335 Further, no one has suggested that the design, i.e. the cell layouts or sizes, construction of the cells and their eventual capping, will impede the placement and covering of the waste in an efficient manner. This supports our conclusions about minimising odour emissions and applying best practice management as required by the WMP and SEPP (AQM).

336 We are therefore satisfied that the cell design and layout represent sound and best practice in managing odour emissions.

337 In this respect, we conclude that if the works are constructed in accordance with the works approval this will not, of itself, lead to an inconsistency with the BPEM or give rise to unreasonable environmental hazards that affect the interests of the objectors.

Use of the works

338 The grounds within section 33B upon which an application for review may be based require that if the works are completed in accordance with the works approval, the use of the works will result in an unreasonable or adverse effect on the interests of a person or will be inconsistent with policy.

339 Having regard to the evidence and submissions about odour, and our assessment, it is evident that it is the use of the works which creates the potential for the generation of odour emissions and which underpins the applications for review, rather than the works themselves.

340 The link between the use of the works and the works approval, which authorises the construction of the works, is via the requirement in sections 19B(7) and 20(7) or (7C) of the *Environment Protection Act 1970* that on issuing a licence for the use of the works, such conditions must not be inconsistent with the works approval. We note that section 20(7C) applies to situations of part completion of the works under a works approval, which arguably applies to works for a landfill where a licence will be issued even though the cells that constitute the works will be progressively constructed rather than built all at once. Thus, by implication, the Act contemplates that

[93] See the dates of commencing and closing of cells in the 2010 Auditor's draft report.

a works approval may, and indeed should, contain conditions that can carry through into how the works will be used.

341 The format of the works approval conditions issued by the EPA follows this path.

342 Apart from the physical management of the waste as an odour source, the timing of odour release events is the other influential factor in terms of whether offensive odours may be emitted beyond the boundary. All the experts agree that the most critical time is when the lowest dispersion of emitted odours is likely to occur. Dr Ross and Mr Todoroski agree that the lowest dispersion occurs when the atmospheric conditions are stable, i.e. periods of light to no wind and no or limited vertical mixing. Their evidence was that this occurs from the evening through to early morning conditions. Occasional periods of low dispersion atmospheric conditions may occur during the daytime in spring, summer and autumn. However, the lay evidence about odours and the survey reports generally confirm that the most likely periods of odour emissions beyond the boundary occur in these evening/night and early morning periods.

343 Paradoxically, the evening, night and early morning periods generally correspond to periods of lower tonnages of waste being received at the site.

344 Therefore, we see that these are critical times to implement proper steps to minimise the exposure of waste to the atmosphere by minimising the open waste tipping area. It is also the time when preparation of new waste faces, particularly the moving of daily or interim cover should not occur. Again, the evidence points to the failure of properly managing waste odour sources at this time as very likely to result in offensive odours occurring beyond the boundary.

345 We see nothing that prevents this from occurring under the present works approval conditions or operational documentation from Landfill Operations. It is therefore appropriate to ensure that proper management over the night time period (from evening to early morning) is explicitly set out in the works approval conditions as a time for modified management regimes to minimise odour emissions by:

- Not allowing previously covered waste to be re-opened over these periods.
- Covering the active, open waste face to a size less than 1,800m^2 and preferably not more than 900m^2.
- Not opening the deep burial (obnoxious waste) pit until mid-morning and closing it before late afternoon (a situation which we understand occurs in any case, but one which we consider must be explicitly provided for in the works approval to ensure carry-through as a licence condition).

- Ensuring that construction of landfill gas wells and other works that intrude into placed waste are properly sealed over or covered during non-work periods, including night time periods.

346 None of the above conditions detract from the fact that odour emissions should be minimised regardless. What they reinforce however, is that as an operational matter, the management of the landfill to prevent odour emissions from impacting on off-site amenity will be dependent on covering waste as quickly as is possible to minimise the area of exposed waste and the release of odours into the atmosphere.

347 We accept the submissions of Landfill Operations and EPA that ultimately this outcome of minimising odour emissions from tipping and covering the waste during key periods can be achieved by way of best practice management of daily waste receival, placement and cover. As we conclude elsewhere, we also accept that the co-construction of sacrificial and permanent landfill gas extraction systems demonstrates a best practice approach to reducing odour from this source.

348 Nevertheless, we consider it is necessary to reinforce this outcome by including appropriate conditions in the works approval to ensure that a landfill of this size and capacity of daily throughput can only operate within the bounds of best practice and consistency with odour policy outcomes by minimising the size of the open waste tipping area during critical times when there is an increased likelihood of low dispersion conditions..

Our assessment of odour emissions and management

349 As we have explained earlier, the assessment of odour management in these proceedings requires us to consider:

- Whether the operational management of odour sources and emissions will be best practice (clauses 18 and 19 of the SEPP (AQM) and meet the requirements of the WMP and the BPEM.
- Whether odour emissions will have an adverse amenity impact on the air environment surrounding the landfill by way of offensive odours (SEPP (AQM) objectives and WMP/BPEM.
- Whether the interests of the applicants will be unreasonably and adversely affected by odour emissions.

350 In undertaking our assessment, it is important to remember it is not enough that occasionally some odours may be detected beyond the boundary of the landfill. Loss of amenity will arise where offensive odours are experienced to such an extent that the environment becomes unsuitable for its intended use, be it current use or reasonably foreseeable future use.

351 For the reasons we have set out above, we are satisfied that the operational management of odour sources and emissions will be best practice subject to the additional conditions we propose to include in the works approval and that odour emissions will not have an unreasonable and adverse amenity

impact on the air environment surrounding the landfill by way of offensive odours.

352 We have therefore concluded that if the works are completed in accordance with the works approval as we propose to be varied, the use of the works will not result in any emissions of odour to the environment that will unreasonably or adversely affect the interests of any of the applicants or that will be inconsistent with SEPP (AQM), the WMP or the BPEM.

LANDFILL GAS MANAGEMENT

353 It is trite to say, but nevertheless worth recalling as a starting point, that the breakdown of wastes (in particular, putrescible waste) generates a range of gases collectively termed landfill gas. The exact composition of the gas depends on the compounds that are degrading and the conditions of the degradation process (e.g. anaerobic or aerobic, temperature, moisture content etc). There is no contest that landfill gas contains potentially noxious, odorous and flammable compounds, and greenhouse gases. The major components of the gas are methane and carbon dioxide.

354 The design and management of landfill gas control systems within the landfill and the management of risks from landfill gas emissions is an important aspect of the BPEM, the WMP and related policies such as the SEPP (AQM).

Parties' positions

355 Melton and the developers challenge the decision of EPA in respect to the proposed management of landfill gas. While this is linked to a large degree with the matters raised about buffers, we here address specific matters about the management of landfill gas.

356 It is Melton's position that nothing put forward by Landfill Operations in the design of the cells negates the need for a 500m landfill gas buffer. It relies on its expert, Mr Nolan, to support a case that even with design matters that have been agreed in the expert conclave, the history of past landfill gas migration from the present landfill operations, the risk of future landfill gas migration and the nature of the underlying geology of the area still point to a risk of future landfill gas migration from the proposed cells. To address this risk, Melton says that a 500m buffer is required, a position that it says the EPA maintains. Melton says that such a buffer is not properly provided for and therefore the proposal fails to achieve the requirements of the BPEM and the WMP.

357 Specifically, Melton says the 500m buffer has not been properly provided for because:

- There are existing structures by way of underground services along Mt Hopkins Road and Middle Road, which lie within 500m of the proposed landfill cells.

- The Mt Atkinson and Tarneit Plains PSP provides for industrial land development to the west of and within 500m of the proposed landfill cells and therefore the 500m buffer – a situation that the landfill gas risk assessment contained in the works approval application did not address.
- The BPEM encourages buffers that are controlled or owned by the landfill operator. To do otherwise imposes a burden on the council and future developers or owners of land involved in the development of the Mt Atkinson and Tarneit Plains PSP land. This burden arises from the need to address landfill gas risks that would otherwise be managed if a 500m buffer were accommodated within the landfill site.

358 The developers pursue similar points to Melton but, in specifically addressing the risk of landfill gas migration, they say that EPA's assessment of the works approval application highlights that the proposal is not consistent with the BPEM and therefore the WMP. Their submissions highlight that:

- Past performance monitoring of landfill gas has shown non-conformances with landfill gas being detected offsite.
- EPA concluded that if the PSP industrial and commercial areas to the west of the landfill were advanced, these areas would likely be affected by landfill gas migration.
- The landfill gas risk assessment submitted with the works approval application did not account for development of the land under the PSP. It would need to be significantly reviewed and landfill gas controls and monitoring beyond best practice would need to be considered.
- The landfill liner system will retard but not prevent all landfill gas from escaping the cell.

359 To summarise this aspect of the challenge to EPA's decision, the applicants contend that if the landfill were constructed in accordance with the works approval, the management of landfill gas migration would be inconsistent with the BPEM and therefore the WMP. The construction of the landfill cells would result in outcomes that affect the interests of Melton, as the council administering the Melton Planning Scheme, and the owner/developers of land affected by these emissions by way of a burden on the land's future development.

What are the BPEM requirements for landfill gas management?

Site selection under the BPEM

360 The BPEM siting considerations[94] address the risks of landfill gas migration by setting out site characteristics matters, specifically:

- Site geology.

[94] BEPM Section 5.

- Capacity to meet the buffer distances specified in Tables 5.4 (operational periods) and 8.2 (caretaker or post-closure mode).

361 The relevant requirement for landfill gas matters, which should be considered at the site selection stage, is for a 500m buffer (as specified in the relevant tables) to be available for the life of the landfill and for a minimum of 30 years following closure or otherwise demonstrate that risks are mitigated to the same standard. What this standard is intended to be is not expressly articulated and was the subject of some contention between the parties. We address this point shortly.

362 The BPEM landfill design requirement to address landfill gas risk at the planning stage is to:

> Identify and rank sites that require the fewest engineering and management controls to meet the objectives of all State environment protection policies.

363 In our view, this requirement, while needing to be complied with pursuant to the WMP, is in fact one that is directed to the process of site selection where a multitude of sites are under consideration. This contrasts with the proceeding before us, which is dealing with an extension to an existing landfill that has been scheduled under the MWRRIP. As such, consideration of this aspect of the BPEM requirement lies with the historical selection of the site, not its extension. Nevertheless, the requirement for buffers remains a valid issue, as reflected under the BPEM's landfill design objectives and requirements, which are matters that we now turn to.

Buffers under the BPEM

364 We observe that when the MRL land was first selected for a landfill, the open farmland spaces around no doubt meant that the 500m buffer was easily achieved. In assessing the current proposal now, we recognise that this land use pattern has changed and will change even further in the future. Nevertheless, these changes have not occurred in a vacuum where the presence of the existing and future development of the landfill has not been accounted for, as we have discussed elsewhere in our reasons.

365 In our view, it is therefore more relevant in this proceeding to consider the design element of the BPEM.

366 It was submitted by the applicants for review that the size of the site could contain 500m buffers within the site boundary, albeit at the expense of landfill capacity. On the other hand, Landfill Operations submits that an internal 500m buffer is a preference, not a requirement. Subject to appropriate management of landfill gas risks, a reduction in the buffer distance, whether internal or not, can be considered. Whether the landfill gas migration risk has been appropriately managed is the focus of other BPEM landfill gas elements, which Landfill Operations says manage the

risk and allow reduced internal buffers and future land use and development as envisaged to the west of the site.

BEPM objectives and requirements for landfill gas

367 What is in contention in respect of the landfill gas migration risks, apart from the buffer distance issue, is whether other related BPEM objectives and requirements have been met, along with those that may be relevant under the SEPP (AQM).

368 Section 6 of the BPEM contains the design requirements for landfill gas management.[95] The relevant BPEM objective of this section is to:

> Ensure that no safety or environmental impacts are caused by landfill gas.

369 The BPEM requirements to meet this objective, which are relevant in these applications, call for:

- The undertaking of a site-specific landfill gas risk assessment.
- Taking all practicable measures to achieve the landfill gas action levels detailed in Table 6.4 of the BPEM.
- Developing and implementing an appropriate landfill gas management system.
- Implementing a landfill gas monitoring program in accordance with the Landfill licensing guidelines (EPA publication 1323).
- Implementing a landfill gas remediation action plan acceptable to the EPA if action levels in Table 6.4 of the BPEM are exceeded.

370 Suggested measures require a landfill operator or proponent to:

- Include landfill gas management systems in the landfill design; and
- Install the landfill gas management system progressively during the landfill's operations, to minimise landfill gas emissions.

371 As we have highlighted elsewhere, the structure of the BPEM includes not only the above objectives, requirements and suggested measures to 'comply with clause 15(3) and (4) of the Landfill WMP'. In addition, a considerable body of text is given over to discussion on topics and statements of an advisory nature, using terms such as 'require', 'should', 'should include' and 'must'. This structure somewhat clouds what are requirements and measures that meet the WMP clauses and what are to be taken as advisory guidance.

372 On a plain reading of the 'suggested measures', a landfill gas management system is to be designed and progressively installed in the landfill. The proposal that is before us does this through a combination of landfill gas extraction and liner barrier systems for source control, monitoring bores for migration pathway control and the adoption of a 100m internal buffer, with

[95] More specifically, section 6.7.1.

planning scheme provisions providing land use controls over the remaining external buffer area to support the management of potential sensitive receptors. The system of extraction and monitoring is to be progressively installed, as is required, to minimise landfill gas emissions. Accordingly, the suggested measures can be said to have been adopted, and so can be read achieving the requirements and the BPEM objective.

373 However, we think that the issue warrants deeper analysis than this, given the 'suggested measures' do not appear to cover all of the BPEM requirements. A notable omission is any reference in the 'measures' to undertaking a risk assessment. This is left to the body of the text within the BPEM. Nor is there a reference to whether the landfill gas management system design is to be in accordance with the BPEM. As we have observed, there is a looseness to the BPEM's presentation that requires us to take a less legalistic approach to the interpretation of this guideline than some parties advocated. We think it is necessary to consider the document as a whole and not, when considering whether the objectives, requirements and measures have been achieved, refer solely to what appears in the boxes at the end of each BPEM section or Appendix A of the BPEM. If we did not do so, many relevant aspects of the guidance located in the text of the BPEM would be superfluous. That cannot be the case, given that much of this text elaborates on and amplifies what are acceptable measures and standards to achieve 'best practice'.

374 When considered on this basis, we conclude that the BPEM seeks a landfill gas management system design that responds to a three limbed risk management approach of source control, migration pathway control and management of receptors for the express purpose of ensuring *that no safety or environmental impacts are caused by landfill gas*, which is the BPEM requirement.

375 The source control is achieved by engineering means. The migration control is through engineering means, e.g. a monitoring and engineering response in conjunction with a contingency for residual emissions through a buffer established between the source and receptors. The management of receptor risks can be achieved either by a suitable buffer distance internalised into the landfill site, or by management of land uses external to the landfill.

376 The BPEM requires that a reduced buffer distance achieve the same level of risk of a 500m buffer. It has been put to us that the BPEM does not articulate what that level or risk is. We disagree in part. At a conceptual level, the risk must be the same as that which a 500m buffer would achieve. We agree that the nature of this risk is not actually expressed in a quantified manner. Rather, it is a qualified risk objective that is expressed through the BPEM's objective, which we have articulated above, i.e. no risk of harm or adverse environmental impact. That said, we observe that the BPEM sets action trigger levels. We take these action trigger levels to be a quantification of when EPA considers the objectives are under threat. As

such, we would expect that a reduced buffer would only be acceptable when satisfied that these action trigger levels would not occur.

What does the SEPP (AQM) require for landfill gas management?

377 As we have discussed in the context of odour, the SEPP (AQM) sits beside the WMP and BPEM. As a relevant policy, a decision about this landfill must be consistent with the SEPP (AQM). We observe that the intent of this policy aligns with the air quality matters relevant under the WMP and the BPEM. There is nothing under the latter which contradicts or overrides the SEPP (AQM), including the adoption of risk-based decision making and use of separation distances for amenity management. Clauses 18 and 19 of the SEPP (AQM) require steps to:

- Avoid or minimise air emissions.
- Assess, monitor, control, reduce or prevent air emissions.
- Apply best practice to the management of emissions.

378 Nothing in the BPEM or the WMP detracts from these requirements.

379 It follows from the above, that while the landfill operation inherently involves the generation of landfill gas, the landfill gas management system design aims to minimise landfill gas emissions through the application of best practice containment and extraction systems, monitoring and remedial responses. Separation of the landfill gas sources, i.e. the landfill cells, is also intended to be achieved through the physical separation of the cells from the boundary and the implementation of land use buffers through the planning scheme.

380 Therefore, we find that the proposal is not inconsistent with the SEPP (AQM) in respect to landfill gas management.

The design response, experts' conclave and evidence about landfill gas management

381 The minutes of the conclave between the landfill gas expert witnesses record the following:

a The experts agree that the proposed liner and landfill gas extraction system would 'likely provide a high level of landfill gas source control' assuming that these elements were well constructed and operated.[96]

b The experts could not agree whether 'advance [sic] monitoring' would be sufficient to adequately inform audits for buildings or

[96] We assume, at least with reference to being well constructed, this will be the case given that any application for review under section 33B must be based on the works being completed in accordance with the works approval. The use however is more open, being the use of the works constructed in accordance with the works approval. This is a subtle but definable difference that goes to the fact the review is about a works approval not a licence, and the works approval is about constructing the works not its use. We discuss this difference elsewhere in our decision.

structures being proposed or located within 500m of the landfill's edge, such as in the PSP areas.

c The experts could not agree that 'close monitoring' would provide sufficient capacity to implement further mitigation measures in time to prevent offsite migration risks'.

d The experts did agree that the construction of a landfill gas migration pathway break within the site would improve certainty and for all practical sense eliminate potentially significant off-site landfill gas risks or decrease that risk to very low, no matter what form of development occurred west of Hopkins Road, including buried infrastructure, that had not been considered in the works approval application risk assessment.

e The landfill gas migration pathway break could take the form of an inclined, fully vented rock chimney drain along the wall of the quarry, outside the liner and landfill buttress, a loosened rock chimney in areas where the landfill liner is constructed on the quarry floor or some other form of engineered pathway break that extended at least two metres below the liner system.

f They agree that implementation of the pathway break would minimise the risk of an undetected landfill gas pathway being present.

g The experts agree that monitoring would still need to be sufficient to confirm the effectiveness of the source control and pathway break and to trigger implementation of additional contingency measures before off-site landfill gas mitigation occurred.

h Subject to these outcomes being included as conditions on the works approval, the experts agreed that the buffer could be limited to the landfill site as the risk to any off-site receptors would be minimal.

382 In evidence and in cross examination, the landfill gas expert witnesses confirmed these opinions.

383 We give great weight to Mr Kortegast's evidence. Of the three expert witnesses called to give evidence on landfill gas matters, it is Mr Kortegast who has the 'hands on' experience in the design and operation of landfill gas collection/control systems. Whilst not detracting from the expertise of Mr Nolan or Mr Mulvey, their expertise arises from auditing landfill sites, rather than demonstrating the same level of system design and operation experience of Mr Kortegast.

384 All the experts agree that the management of landfill gas risks relies on the source/pathway/receptor model. If one of these three factors is removed from the equation, then risks are effectively negated.

385 Mr Kortegast's evidence, largely supported by Messrs Nolan and Mulvey, is that the liner design and concurrent installation of landfill gas

interception systems controls and removes much of the source of landfill gas. His evidence is that, as a first step, this negates much of the risk.

386 Messrs Nolan and Mulvey suggest that the liner and extraction systems may be subject to failure. We recognise that no system may be perfect. However, we find that the level of consideration and design that is proposed is consistent with the BPEM and, as attributed by Mr Kortegast, represents best practice.

387 The progressive installation of horizontal sacrificial gas collection pipes is the first step in negating the build-up of landfill gas as a source. Mr Mulvey expressed caution over such a system because these pipes would be crushed by traffic and/or the weight of fill and therefore be ineffective in collecting landfill gas. We accept the evidence of Mr Kortegast that these horizontal, slotted pipes would be placed in trenches filled with permeable gravel. Thus, even if sections of the pipe were to be crushed, the gravel trench would provide the same pathway for preferential migration and hence extraction, just like off-site trenches about which there was much evidence of being pathways for landfill gas by the experts. Ultimately however, the horizontal pipes are deemed to be sacrificial. The landfill gas management plan details how these horizontal wells will be progressively replaced with vertical wells, penetrating the waste mass on a gridded system designed to recover 85% to 90% of the landfill gas generated in the waste pile. Mr Nolan acknowledged in evidence that the design of the vertical wells represented current best practice.

388 The second line of defence in the containment and management of landfill gas is the basal liner system. All the experts gave evidence that the basal liner design represents best practice. The typical design of this liner system is shown earlier in figure 4.

389 The design involves a multi-layer system of a sub-base material to raise the liner off the quarry floor; 0.5m thick layer of compacted clay;[97] a low permeability geosynthetic clay liner (a GCL);[98] a geomembrane liner; and a cushioning layer.[99] Above these low permeability liners is the aggregate draining layer for collecting leachate over which is a permeable geotextile layer to prevent waste from fouling the aggregate.

390 This design exceeds the BPEM type design for liners by adding the GCL into the basal liner system.

391 The wall liner adopts the same configuration of layers, save for the fact that the compacted clay layer is one metre thick.

---

97 With a minimum permeability of 10^{-9} m/s which is directed to leachate management but also presents a low permeability barrier to the migration of landfill gas.

98 A manufactured hydraulic barrier system comprising of a layer of bentonite or other very low-permeability clayey material layered between two geotextile or geomembrane layers.

99 Described by Mr Green as akin to carpet underlay designed to protect the underlying liners from punctures from traffic or overlying leachate draining aggregate layer.

392 In response to concerns raised about shallow groundwater within two metres of the base of the landfill cell, Mr Green provided additional design details demonstrating how a drainage layer can be placed under the compacted clay liner. This drainage layer would comprise of 300mm of drainage aggregate placed below 1.5m of engineered sub-base material and a protective geotextile layer. Beneath the drainage aggregate would be further engineered sub-base extending to the quarry floor.

393 Mr Mulvey acknowledged in questions from the Tribunal that this drainage layer would be likely to intercept landfill gas migration and provide a pathway for capture, if landfill gas migrated through a failing of the liner system.

394 We observe that the action of this drainage layer would be similar to that of the leachate draining layer above the impermeable liner system.

395 In terms of the basal drainage layer however, the evidence of Mr Green and Mr Ife is that this system would likely be considered on a cell by cell design and approval basis; driven by a review of groundwater levels at the time of the cell design stage. As we discus later, current data indicates the worst-case scenario is that the southernmost Cell 1 may require subbase drainage. We take from such evidence that we cannot assume the sub-base drainage layer, and its landfill gas interception benefits, would therefore be present under any of the cells. We therefore do not rely on or assume the sub-liner drainage layer will be constructed in evaluating the efficacy of the landfill gas management system.

396 Notwithstanding the possible absence of this sub-base drainage layer, we consider that the combination of the active extraction system being proposed, during and post cell filling, in combination with the better than BPEM cell liner design will materially reduce the risk of landfill gas migration.

397 Mr Kortegast's evidence is persuasive that the liner system forms a substantive barrier to the migration of landfill gas through the base and sidewalls of the landfill cells. The liner system goes beyond BPEM requirements with the GCL layer adding an extra barrier to migration if in the event the overlying geomembrane were to fail. If the GCL were also to fail, the third line of defence is the 500mm compacted clay layer.

398 Thus, for landfill gas to escape through the basal liner system would require a failure of three separate layers of very low to impermeable material. It would also require a failure of the extraction system of sufficient magnitude to allow for positive pressures to build up and drive migration. Mr Kortegast's evidence is that gas extraction pressures are routinely monitored at well heads in order to balance the system to deliver landfill gas to the power generating facility. A failure in the extraction system that could potentially lead to a build-up in positive pressures sufficient to drive landfill gas through the liner system would be readily detected and rectified.

399 His evidence highlights that where the cell is wholly constructed on the quarry floor (and not against the quarry wall) – i.e. cells 1, 2 and 3 – a failure of the side liner system would mean that landfill gas migration would be impeded by a considerable thickness of the compacted clay bund that will form the toe of these cells. The evidence of Mr Green has indicated that the void space between the clay bund and quarry wall is now planned to be filled with compacted clean fill. There will therefore be a further barrier to landfill gas migration. The combination of source removal/control by extraction and these barriers to lateral migration pathways are two important and demonstrative steps that Mr Kortegast says will significantly decrease the risk of landfill gas migration.

400 In the unlikely event that the basal liner system was to fail and sufficient pressure was to build to drive migration through the sub-base and then below the quarry floor, it is Mr Kortegast's opinion that landfill gas would likely migrate along pathways in the basalt that would lead to emissions proximate to the toe of the landfill cells rather than follow sub-surface flow paths 100m to the site's boundary. In his opinion, such migration would be detected by appropriate levels of surface monitoring and the two rings of monitoring wells that are proposed around the landfill.

401 Rectification of detected migration could occur through re-tuning of the extraction system, extraction occurring around the migration pathway or ultimately the construction of a venting trench or chimney as agreed in the expert conclave. All these steps proposed by Mr Kortegast are practical responses which none of the other experts challenged; their evidence was more about the overall efficiency of such responses; save that they all agree a perimeter trench would reduce off-site migration to negligible levels.

402 All the experts agree that where the landfill cells are to be built directly against the quarry walls, a failure of the liner system could see landfill gas migrate directly into the surrounding basalt formation. However, again the experts agree that an interception trench along this interface would negate this pathway, reducing the risk to a negligible level.

403 The evidence of the experts is that if landfill gas were to enter the underlying geological formation of basalt, migration could occur through fractures and or permeable scoria layers. The evidence of Messrs Nolan and Mulvey is that such features are difficult to isolate and track. We agree with such evidence. Accordingly, very closely spaced landfill gas monitoring wells would be required in such an environment. Appendix B of the BPEM provides for such scenarios, with well spacings varying according to the level of receptor risk that is based on the geology of the migration path and proximity of development. Bore spacings from 10m to 50m apply to a scenario of fractured or fissured dominated permeable strata in combination with development within 250m of the landfill cell. Here development could occur within 250m, albeit for the first 100m to the west of the landfill boundary[100] this will be limited to infrastructure such as

[100] And 200m from the cell boundary.

buried services, carparks and public open spaces, as controlled by the UGZ9.

404 The purpose of the monitoring wells is, of course, to detect whether the first two steps in the risk management chain, the reduction in landfill gas source by extraction and the containment by the liner system, has failed.

405 Mr Mulvey's evidence in chief was that all landfill liners are subject to failure, a matter of fact, he says, established in two papers he has authored. When challenged on this point by Landfill Operations, Mr Mulvey acknowledged that these papers were based on data and experiences in the 1990's. He could not say if such failures occurred with the lining systems proposed here, but he acknowledged that lining system design is now more sophisticated than it was in the period that was the subject of his two papers. Nor could he recall a situation where landfill gas migrated any further than 100m to150m in fractured basalt.

406 We consider that the issues raised in Mr Mulvey's evidence reflect past experience with less sophisticated landfill liner design and construction. We note that the BPEM is in its third iteration, published in 2015. It requires the construction of liners to be subject to strict quality control and testing. This includes the testing of the permeability of compacted clay using fresh and saline water, to reflect aggressive leachate. It also requires selection of composite and geotextile liners that are compatible with the wastes to be deposited and testing of the placed liner before covering. Under cross examination, Mr Mulvey and Mr Nolan acknowledged that sophisticated testing of composite liner systems is now part of the routine in landfill cell construction. Though not familiar with the finer technical details of such testing, they acknowledged that such testing would provide greater confidence about the integrity of the liner systems before waste was placed over it. It is also of some weight that Mr Mulvey acknowledged that the liner proposed for this landfill represents best practice.

407 Reference was also made in the evidence and submissions by Melton and the developers about the existing landfill's experience with landfill gas migrating off-site. This is not disputed by Landfill Operations and our review of a 2016 landfill audit[101] confirms this situation (at least as of 2016) and that a PAN was issued for rectification action.

408 The detection of LFG *outside* the landfill's boundary is limited to an area adjacent to historical cells, a number of which were constructed with a single, compacted clay liner. Other cells have a composite liner system of compacted clay and a HDPE geomembrane liner with leachate collection over the top.[102] As we have noted, the liner systems being proposed under this works approval include additional layers of impermeable or low permeability membranes and safeguards to protect the barrier liners from

[101] Tribunal Book 3, Tab 55, pages 2646-2647.
[102] Described in Mr Kotegast's statement of evidence at [82] to [85]; Vol 8, Tab 123, pages 7755-7756.

punctures. They will also be subject to a sophisticated levels of quality control and testing during construction.

409 Mr Kortegast's evidence highlighted that the landfill cells most likely associated with the landfill gas migration off-site were not subject to early landfill gas extraction or intensive extraction once completed. It was his evidence that early and ongoing extraction of landfill gas reduces the driving pressures that are required to support migration outside the cell if there were a liner failure. This is what is proposed under this works approval.

410 We therefore place little weight on the evidence about past landfill gas migration. We conclude that this works approval proposes best practice landfill gas management over the first two steps of the source and migration pathway controls required under the BPEM. This is a distinguishing difference to past practice.

411 In addition to source control and pathway monitoring, the third step in managing landfill gas migration risks is the management of possible receptors at the end of the migration pathway. Landfill Operations argues that this step has already been addressed through the planning scheme by management of land use and development on land that falls within the 500m buffer for the landfill cells. Landfill Operations argues that this is an outcome which is consistent with the BPEM requirement.

412 For reasons that we have set out in considering the planning context, we agree with this position. Planning authorities, in consultation with the EPA, have concluded that a 500m buffer area which is subject to controlled development addresses the landfill gas migration risk.

Landfill gas risk assessment and landfill gas management

413 The landfill gas management system does not stop with the source-pathway-receptor controls. The BPEM requires management of the extracted landfill gas, namely:

- The selection of an appropriate landfill gas management system (and associated monitoring program) that will be based on:
  - i the findings of a site-specific landfill gas risk assessment;
  - ii the landfill gas management hierarchy detailed in Figure 6.2.
- The highest practical order use of the collected landfill gas should be established by conducting an analysis of the relevant environmental and economic factors. This analysis should be regularly reviewed.

414 The BPEM intends that a landfill gas risk assessment therefore be undertaken at the earliest stage of the landfill planning phase. The BPEM articulates that:

> Due to the variable nature of landfill sites, the most appropriate way to evaluate the level of risk posed by landfill gas from an individual site is to conduct a site-specific landfill gas risk assessment (LGRA).

> Appropriate measures for monitoring and managing landfill gas can subsequently be determined based on the findings of the LGRA.

415 A LGRA is intended to be undertaken in accord with the Landfill Licensing Guidelines (EPA Publication 1323). This guideline in turn refers to and draws on the quantitative approach set out under the Environment Agency of the UK, Publication EP171 (the UK guideline).

416 We have reviewed this material. When considered in conjunction with the BPEM commentary, it is apparent that the landfill gas risk assessment process is intended to determine the level of landfill gas management that should be implemented based on the level of risk posed by the volume of landfill gas generation and the risk-based pathway of source-migration-receptor under the first instance scenario of uncontrolled emissions.

417 The LGRA in this application is embedded in the LFG Management Plan. Mr Green has also undertaken an additional risk assessment for risks posed by landfill gas migration to nearby services on Middle and Hopkins Roads.

418 Neither of these risk assessments has been undertaken with the intent set out in the BEPM to assess the risk at first instance. The landfill gas risk assessment in the LFG Management Plan and those completed by Mr Green are directed to the assessment of risks after implementation of the adopted landfill gas management systems. Unsurprisingly, the outcomes of these risk assessment are largely supplanted by the fact that the design of the landfill already incorporates landfill gas management elements that address the risks associated with this proposal. The assessments are therefore somewhat circular and of little value in identifying and ranking the key risks which the systems put in place are intended to address.

419 It is also apparent, particularly when the UK guideline is properly understood, that the quantitative risk assessment approach is directed toward surface migration of landfill gas and air quality impacts. This publication states that:[103]

> For those risks that cannot be quantified through air dispersion (i.e. sub-surface migration), a qualitative assessment is required.

420 We need not go into further detail about the LGRA approach set out under the chain of guidelines established under the BPEM, save for the following observations we have made about such requirements, the works approval application material and evidence of Mr Green.

- Mr Green agrees that the risk assessment he has undertaken of landfill gas on existing infrastructure does not follow the quantitative approach of EP171. It is qualitative. Given what we have said earlier about the guidance from EP171, we find Mr Green's qualitative assessment of sub-surface migration of landfill gas is acceptable.
- The LFG Management Plan in part contains some of the matters that parallel the EP171 approach, particularly the assessment of landfill gas

[103] Section 2.3.6 Dispersion of emitted gas – gas migration, page 27: UK EA PE171, September 2004

generation rates over the life of the landfill (including post closure), which in turn identifies that disposal via burning in engines for power generation is sustainable for much of this landfill's life cycle.

- The disposal by power generation is consistent with a higher order preferred means of disposal versus other lower order treatments such as flares, treatment and discharge or the least preferable, (uncontrolled) discharge.

421 Overall, we find the pursuit of issues by parties about the landfill gas risk assessment to be unpersuasive. Rather, we find that the landfill gas management system has been designed to address the risks by incorporating elements to contain and extract the landfill gas from the landfill cells for power generation purposes. The second-tier risk management is, in the event of a system failure, the liner system and the setbacks from the boundary. These setbacks provide enough space for a system of monitoring wells to detect fugitive landfill gas migration and the necessary space to implement recovery or interception works if detected above the BPEM action levels. Thus, we conclude that the intent and outcomes of the landfill gas risk assessment process have been achieved, albeit not in the way the BPEM has sought to structure this approach.

Our assessment of the landfill gas management system against BPEM requirements

422 It follows from the above that we are satisfied that the proposed landfill gas management system constructed in accordance with the works approval will acceptably address the relevant elements of the BPEM and so it will be consistent with the WMP.

423 Under the works approval, landfill gas will be controlled at its source through an extraction system that will operate during the placement and final cover and containment of fill. A composite liner system that exceeds the BPEM design requirements provides further source control and will be the first of multiple lines of defence in control over migration. The liner system will not operate in isolation. The sub-base material, side wall fill, floor cell-toe fill and infill along the southern boundary of Cell 1 add further multiple lines of defence against side wall and/or cell floor migration of landfill gas. For landfill gas to migrate beyond each cell will require multiple failures of the extraction system, liner and underlying sub-base material to all occur. In our view, this design considerably lowers the risk of landfill gas impacts. A considerable thickness of low permeability fill will also be placed against the outer faces of cells 1, 3 and 4.

424 Further, we find that the nature of the geological migration pathway provides opportunity to take direct action if landfill gas migration above trigger levels occurs. The fractured rock chimneys or vents and installation of additional extraction wells are practical and achievable outcomes. All the experts express a high degree of confidence that interception trenches or chimney vents constructed into the basalt will intercept subsurface

migrating landfill gas. The evidence satisfies us that the construction of such structures is not necessary for the outer (southern) faces of cells 1, 3 and 4. We consider that their use can be a contingency for these cells if trigger level values are detected in the inner ring of monitoring wells.

425 However, notwithstanding our finding that the landfill gas management system provides a high degree of confidence about a low risk of migration, we consider that the western interface of the liner system of cells 4, 5 and 6 directly against fractured basalt warrants further attention. This interface retains a residual risk that we think is marginally greater than the southern interface given the evidence about migration pathways though the fractured basalt. We also consider that the southern interface has the benefit of very low sensitivity farming land between the site and the UGZ land, which is a factor that plays into a lower consequence of impact in the very unlikely event of landfill gas migration beyond the landfill cells. We are also persuaded that the nature of the buried infrastructure along this southern interface is at a very low risk. This contrasts with the development planned to occur immediately to the west, which we discuss shortly.

426 Mr Green's evidence is that the interception trench (or vertical chimney) can be readily incorporated into the landfill cell's construction. We anticipate that retrofitting it may be more complex. As a proportionate response to the risk, albeit a low one, we conclude that it is appropriate to include the interception trench in the concurrent design and construction of the cells along this interface. In the words of the landfill gas experts, this will reduce the level of risk to a negligible one.

427 Accordingly, we will amend the works approval conditions to ensure the vertical chimneys or interception trenches are a contingency element that the landfill design and management documents provide for along the southern interfaces of cells 1, 3 and 4 but are included in the design of the interface against the western quarry wall of cells 4, 5 and 6.

428 We find the available internal buffer area within the landfill site provides enough room for the lines of monitoring wells. The final design of the landfill gas monitoring well network will be a matter of detailed design, which the BPEM accommodates through Appendix B.7 to address the level of risk. Nothing has been put before us to suggest that the level of monitoring required under the BPEM cannot be implemented within the internal buffers.

429 In summary, we therefore conclude that the proposal as amended will be consistent with policy.

Will landfill gas be emitted that will unreasonably and adversely affect the interests of the applicants?

430 As we have set out earlier, Melton and the developers say that their interests will be affected because of the burden of managing landfill gas migration risks on the adjoining land. These parties argue that the buffers should be internal and that the ESO planning requirements associated with the buffers

are unfair and have an unreasonable and adverse impact on the future development of industrial land. Further, they submit that the requirements of the buffer will have an unreasonable and adverse impact on new owners wanting to develop the industrial land because of the onerous requirements of the ESO.

431 We do not accept that there is an unreasonable and adverse effect on the interests of Melton or the developers for the following reasons.

432 Firstly, such a conclusion follows from our assessment of the proposal against the BPEM requirements for landfill gas management. Having been satisfied that the LFG Management Plan is acceptable, the more so with our amendment along the western interface, it follows that the risk of landfill gas migration beyond the boundary of the landfill site is so low as to not affect the future use of this land envisaged as under the PSP.

433 The conclusion that we have reached on this point to some extent parallels the decision of those authorities who assessed and approved the PSP. We say 'to some extent', because we recognise that DDO4 puts in place contingencies under which future developers of land in this overlay will need to assess and address landfill gas migration risks. Whether such a step constitutes a 'belt and braces' approach to the level of risk in light of our findings is not for us to say. What we can say is that when having regard to the planning scheme, if such requirements have been put in place by the relevant planning authority following an extensive PSP development process and panel hearing, it is difficult to reconcile claims of such planning controls being unreasonable with this outcome. A planning authority has decided that the controls are not unreasonable and has set about putting them in place. Melton and the developers, having participated in the PSP approval process, cannot now claim that this planning response manifests as a ground for opposing the works approval under section 33B.

434 Secondly, the WMP seeks to prevent land use conflicts and a reduction in the operational capability of planned landfills through land use separation techniques – i.e. buffers. In the situation before us, as well as the recently completed strategic land use structure planning process, which has approved the PSP and amended the planning scheme to allow development along the western boundary of the landfill, the landfill itself has been the subject of a separate planning permit process for the landfill.

435 The responsible authority in that application, the Minister for Planning, has considered the issues of planning land use conflict, along with other planning matters and concluded that a planning permit should be issued. As such, from a planning and land use perspective, we cannot interfere with that decision.

436 What that decision to issue a planning permit does, however, is to inform us that the responsible authority was satisfied that no land use or planning conflict exists, subject of course to the landfill being constructed and operated in the manner it evaluated. What is before us is the same proposal.

in respect to landfill gas migration risks, save for the inclusion of an additional level of landfill gas migration management through the construction of interception trenches or chimneys. This infrastructure is additional to the best practice landfill gas management regime being proposed and further advances the position that the landfill gas risk to adjoining land is in fact very low.

437 We therefore find that landfill gas will not be emitted that will unreasonably and adversely affect the interests of any of the applicants.

MOUND OR AREA LANDFILL

What does the BEPM say about landfill types?

438 Section 5 of the BPEM deals with best practice siting considerations for landfills. Section 5.1.2 of this section deals with landfill types (as opposed to classifications). The BPEM sets out the following:[104]

> An important aspect of screening for potential landfill sites is the type of landfill to be developed. The four basic methods of landfilling and the hierarchy of their preference for use are discussed below:
>
> - the area method, where an existing hole such as a former quarry is filled
> - the trench-and-fill method, where a hole is dug and backfilled with waste using the excavated material as cover
> - the mound method, where most of the landfill is located above the natural ground level
> - the valley or change of topography fill method, where a natural depression is filled.
>
> The most appropriate landfill type for a region will be determined based on local conditions as identified in the environmental assessment. The area method and the trench-and-fill method are, however, preferred.
>
> The area method is preferred, as it achieves an additional outcome of rehabilitating an existing hole. It is also generally easier to manage litter and leachate (contaminated water that has percolated through or drained from a landfill) within the site.
>
> …..
>
> Mound landfills are to be avoided as their exposed nature requires significant litter controls and present a significant visual impact on the landscape. Further difficulties attached to these landfills are leachate seeps from the side of the landfill and the stability of the landfill cap.

[104] BEPM Section 5.1.2.

Parties' positions

439 The submissions of the developers, relying on the evidence of Mr Mulvey, say that this proposal exhibits the characteristics of a mound landfill, which the BPEM seeks to avoid.

440 Such evidence and the pursuit of this ground was not raised in the initial or subsequently amended grounds of the developers. Nevertheless, EPA and Landfill Operations have responded in kind.

Our assessment of the type of landfill proposed

441 For the following reasons, we are not persuaded by the developers that the proposal before us is inconsistent with the BPEM on the ground that the type of landfill proposed is a mound landfill and therefore should be avoided.

442 Our first reason is a matter of context. The section relied on in the BEPM by the developers relates to 'best practice siting'. As we have identified earlier, this section should be read in the context of the introductory commentary, which identifies that amongst other matters:

- Appropriate siting of a landfill is the primary means of effecting environmental control.
- The objective of this section is to establish the means and criteria for identifying and ranking the more suitable sites for a landfill, i.e. this section is directed to a site selection process.

443 No such process is being applied here. The site was selected some time ago and is now identified in the SWRRIP and MWRRIP as a landfill of state and regional importance with capacity to operate to least 2046 and beyond.[105] As such, the process of site selection has already been undertaken. That the site's context has changed and will continue to change arises from a range of strategic planning processes that should have considered these waste management policies and plans.[106]

444 In any event, the change in site context is also a matter that is addressed under this section of the BEPM. The BPEM directs EPA to require that:[107]

> …this section of the guideline [is] to be implemented in each [SWRRIP or RWRRIP] at its next review. Where a landfill is not provided in a [SWRRIP or RWRRIP] or is to be developed before the next review of the [SWRRIP or RWRRIP], this section is to be implemented by the [SWRRIP or RWRRIP] in its assessment of the suitability of the proposed new landfill site.

---

105 The Metropolitan WRRIP identifies a planned landfill life to 2046 with capacity beyond this planning period (Tribunal Book 6, Tab 92, page5621). The State WRRIP for 2015 to 2044 identifies the landfill to have a capacity of greater than 30 years (Tribunal Book 6, Tab 89, page 5512).

106 See Clause 11(2) of the WMP and clause 19.03-5 of the Melton Planning Scheme.

107 BEPM Section 5 page 11.

445 It is thus a matter for the State and metropolitan waste management groups (Sustainability Victoria and the Metropolitan Waste and Resource Recovery Group) to consider whether the continued development of this landfill site is acceptable in the current form as proposed here.

446 To put this another way, in this application we are not dealing with a fresh selection of a site. We are dealing with how and whether an existing landfill site, as identified (and scheduled) in the MWRRIP can continue to operate, as expected and intended under that plan in the manner provided for under the works approval.

447 This situation demonstrates the approach outlined in *Dual Gas*[108] that a consideration of environmental management policies must be undertaken in a holistic manner, given the qualitative and quantitative mix of considerations. Compliance with a declared policy does not require a fine-tooth combed examination of compliance. A contextual approach is warranted.

448 Further, as highlighted in the submissions of EPA, the landfill does not set an objective or requirement to avoid a mound type landfill. There is only one objective for the whole of section 5 of the BPEM, which is to identify and rank landfills on the basis of engineering and management control requirements to meet all SEPP objectives. In respect to the selection of a landfill type, the requirement is to:[109]

> Consider the most appropriate landfilling type to meet the requirements imposed by local conditions.

449 The relevant suggested measures are to:[110]

> Consider natural features that will reduce the visual impact of the landfill.
>
> Avoid valley fill landfills.

450 The latter is achieved, and no party has raised visual impacts arising from the landfill's form.

451 We note that this issue was raised in *Western Region Environment Centre v Environment Protection Authority.*[111] In this proceeding, the Tribunal noted that in addition to the Wests Road landfill, this type of landfill (i.e. mound landfill) is well established on the west basaltic plains of Victoria including Deer Park, Brooklyn, Sunshine and Corio. The Tribunal found that being an area and mound type landfill was not troubling in light of its conclusion that the operation was and could achieve acceptable environmental outcomes.[112]

---

108 *Dual Gas Pty Ltd & Ors v Environment Protection Authority* [2012] VCAT 308.
109 BEPM Section 5 page 16.
110 *Ibid.*
111 [2018] VCAT 1174.
112 [2018] VCAT 1174 at [81]-[85].

452 Nothing put to us persuades us that the decision to pursue the design of these landfill cells, which reflects both area and mound types, is contrary to or inconsistent with the objective or requirements of this section of the BPEM. Indeed, as the objective of this section of the BPEM is directed to greenfield site selection, we consider it has little bearing or weight in this works approval application.

453 Even if we are wrong in terms of the weight to be given to this part of the BPEM, we note that the BPEM addresses the types of landfill in an order of preference. A mound landfill sits at the second to last level of preference. It is also stated that the mound landfill type is to be avoided. There is therefore a preference to avoid this form of landfill, but it is not a definitive prohibition. We have noted earlier that the BPEM contains much of its guidance in the text of the guideline. As such, we find that there will be circumstances where a mound type landfill is acceptable.

454 Such circumstances may be where the *mischief* associated with a mound landfill is avoided or can be managed. The reasons given for avoiding a mound landfill are litter control, visual/landscape impacts, management of leachate seeps from the side of the landfill and landfill cap stability.

455 Other than litter, no party has pressed matters about landscape or visual amenity impacts arising from the fact that the finished levels of the landfill will be above natural ground level. No expert has raised a concern with the proposed design about the management of leachate. No party has raised an issue about the geotechnical stability of the landfill's finished form and cap system. Additional information required by EPA has, in fact, identified the geotechnical stability of the cap with respect to slip failures to be within acceptable design parameters.[113]

456 Mr Mulvey's evidence did take issue with geotechnical stability, but only with the interim cap and its stability. He agreed in cross examination that these are matters which can be appropriately dealt with in the detailed design stage and licence conditions. It would also be a matter for auditor review and approval for each cell's design.

457 As such, we consider that these matters do not identify an inconsistency with relevant policy or demonstrate an unreasonable or adverse effect on the interests of any of the objector parties.

458 We consider that the landfill type has characteristics of a mound and an area landfill. It provides for the progressive rehabilitation of a quarry pit, which is approximately 10 metres below the surrounding land surface, with a mound and area fill, which is up to 40m above the surrounding ground level. The BPEM requires some fall across a landfill for drainage of rainfall off the cap in order to minimise infiltration and hence leachate generation. While some might argue that 40m above ground level is an excessive amount to allow for adequate stormwater drainage, it is not

[113] Tribunal Book 8, Tab 128, page 8079, at [47] and pages 8207 to 8220 (Appendix I to the statement).

unusual at similar landfills that are backfilling former quarry voids. For example, as we have noted earlier, the Wests Road landfill near Werribee, has an elevation which is approximately 20m above the natural ground level.

459 In respect to possible leachate seepage issues, which is identified as one issue for mound landfills, the design of the landfill liner system, inclusive of leachate and landfill gas controls, follows designs applied to area landfills. There is no risk of leachate seepage occurring at natural ground level or indeed posing a risk to Skeleton Creek, the local waterway, given the base of the liner and lower side walls sit within the pit and below the level of this shallow waterway.

460 The only material issue that arises from the raising of the landfill above the natural ground level is litter control. For the reasons we explain elsewhere, we conclude that litter control can be achieved in the circumstances of this landfill's site context. Hence, this issue does not give us cause to find that the construction or use of the works would be inconsistent with the relevant policies or would give rise to an unreasonable and adverse effect on the interests of any of the applicants.

GROUNDWATER

What are the WMP and BPEM requirements for groundwater?

461 Clause 16(2) of the WMP states:

> All new landfill sites must deposit waste at least two metres above the long term undisturbed depth to groundwater, unless the:
>
> (a) landfill operator satisfies the Authority that sufficient additional design and management practices will be implemented; and
>
> (b) the Authority determines that regional circumstances exist that warrant the development of the landfill.

462 The BPEM sets out the following requirements for siting of landfills:[114]

> Ensure that the landfill is sited to protect groundwater…
>
> ….
>
> All new landfills must deposit waste at least two metres above the long-term undisturbed depth to groundwater, unless the operator satisfies EPA Victoria that sufficient additional design and management practices will be implemented and EPA determines that regional circumstances exist that warrant the new landfill.

463 Under suggested measures, the BPEM outlines that the design of a landfill:[115]

> Provide an unsaturated attenuation layer under the landfill liner.

[114] BEPM Section 5 page 16.
[115] BEPM Section 5 page 16.

464 The text of the BPEM siting considerations, amongst other matters, highlights that landfills should not be located in areas where there is potable groundwater (not in issue here) or be below the 'regional watertable'. The BPEM goes on to discuss that: [116]

> …below-groundwater landfills are strongly discouraged due to the continual and additional operational requirements to:
>
> - maintain and operate pumps
> - manage an increased volume of groundwater or leachate
> - intensively monitor both groundwater and leachate quality and levels.
>
> New landfills must deposit waste at least two metres above the long-term undisturbed depth to groundwater unless:
>
> - additional design and management practices to protect groundwater quality will be implemented
> - regional circumstances exist that warrant the development of a landfill in this manner.
>
> If the most appropriate site for a landfill is in an area where regional groundwater is elevated, the base of the landfill should be raised to a level above the watertable using a sub-base material designed to attenuate contaminants.

465 Further matters about the form and benefits of attenuation layers follows this text with reference to Table 5.1, which contains recommended separation distances between waste and the watertable. A Type 2 landfill is recommended to have a two metre separation distance between waste and the watertable. The BPEM goes on to state:[117]

> The most preferred site for a landfill is one that minimises the risk of groundwater pollution by providing a natural, unsaturated attenuation layer beneath the liner for contaminants that may leach through the liner. This means that sites with naturally attenuating soils, such as those in clayey areas, are preferred to those that do not have such soils, such as in sandy areas.

466 Little additional guidance is provided in the design requirements of the BPEM (under section 6) save for a requirement to segregate any collected water from a groundwater interception system from leachate and stormwater and wherever practical to re-use the water on site. Measures include using interception drains to intercept shallow groundwater and assess the potential impacts of rising watertables.

Parties' positions and evidence

467 The developers contend that the location and design of the landfill has failed to establish what the long-term stable groundwater level is for the site. They say that EPA should not have been satisfied that the required two

[116] BEPM Section 5.1.3 page 12.
[117] BEPM Section 5.1.3 page 13.

metre separation under the WMP or BPEM will be achieved or, in the alternative, that sufficient additional design and management practices have been put in place to address higher groundwater levels. They submit that the proposed groundwater drainage blankets are only conceptual in design and no proper detail is provided about the long-term storage and management of intercepted groundwater. Therefore, they argue that the works approval is inconsistent with and fails to give effect to the WMP.

468 The developers rely on the evidence of Mr Mulvey. Landfill Operations in response relies on the evidence of Mr Ife. EPA similarly relies on the evidence of Mr Ife and evaluation of groundwater issues by its own officers and the ILEAP.[118]

469 Mr Mulvey's evidence in fact raises two issues about groundwater. It is his professional opinion that the assessment of groundwater conditions has not established the undisturbed groundwater level, which was the main point of contention argued by the developers. The other is that, in his opinion, the EPA and works approval application have failed to account for likely perched water tables that sit above the regional groundwater levels.

470 This latter point was not strongly pursued by the developers. We think that was appropriate because the terms of the BPEM and the WMP are quite clear. Both documents refer to the *long term, undisturbed* groundwater levels. This is a fact that EPA affirmed in a 2016 conclave undertaken as part of the 2016 planning permit panel hearing.[119] Further, we observe that the BPEM makes reference to not locating the landfill below *the regional watertable*,[120] a reference to larger scale groundwater systems.

471 In comparison, 'perched groundwater' is a term used to describe situations where groundwater occupies a limited volume or area of a geological horizon because of a low permeability layer that inhibits the downward percolation of moisture. Such occurrences are often intermittent, reflecting impeded drainage of recharge events, with vertical flow ultimately migrating to the underlying, regional groundwater (saturated layer or aquifer). Perched groundwater does not reflect the long-term undisturbed groundwater level nor a regional water table. Mr Mulvey's evidence on this point therefore misconceives the intention of the WMP and the BPEM to address the long-term, undisturbed groundwater levels. The intention of such a focus is clear to us. It is this system of groundwater that, if impacted by the leaching of waste, can result in impacts to beneficial uses, be they extractive uses or interactions with other water systems. Perched groundwater, by virtue of its intermittent and limited nature, does not present the same degree of risk.

472 In any event, we are not persuaded by Mr Mulvey's extensive oral evidence about the potential for perched water tables being present in the upper

118 The ILEAP [Independent Landfill Expert Advisory Panel] was convened by the EPA to assist it to evaluate the works approval application.
119 Tribunal Book 4, Tab 62, p3651.
120 BEPM Section 5.1.3 page 12.

levels of the geological profile. At best, it is a hypothesis based on selective matters. Mr Ife's evidence includes reference to data that has been gained from the extensive amount drilling undertaken across the site. The various bore logs, the depth at which groundwater inflows are intersected, and the nature of the geological profile itself are relied upon to draw his conclusion that perched groundwater has not been intersected during investigation of the site. The quarry floor to date has been established above the regional groundwater bearing basalt as is evidenced by the lack of sumps and the like, which would be needed to manage groundwater inflows. The quarry operations, in fact, rely upon extraction from three bores for industrial water supply.[121]

473 Given our understanding of the BPEM intentions to locate waste two metres above the long-term groundwater level, our focus is on this substantive matter rather than perched water tables.

474 Mr Mulvey says that it has not been possible to determine what the long-term undisturbed groundwater level is with the necessary degree of certainty to satisfy the BPEM. He says that past and ongoing groundwater extraction for the quarry will be influencing groundwater levels across the site; there has been no monitoring outside the possible influence of this extraction; and there is no data before the quarry operated. He says that once this extraction ceases and taking into account the fact the basalt aquifer is recharged by rainfall events, the groundwater levels are likely to rise above current levels. In doing so there is a risk the groundwater levels will recover (or rise) to be within two metres or less under the landfill or in fact rise above the landfill's base.

475 Mr Mulvey is also critical of the response to this eventuality, which is proposed by Landfill Operations and accepted by EPA. That response is to include a groundwater drainage layer two metres below the base of the landfill's leachate collection system. He says insufficient consideration has been given to the long-term management of such a system, including a failure to account for how collected groundwater would be extracted and disposed of.

476 Mr Ife does not dispute that it has been not been possible to determine the long-term undisturbed groundwater level with a high degree of accuracy. He acknowledges that there are a number of factors that will influence the long-term groundwater levels. Beyond just the groundwater extraction occurring for the quarry, the quarry operation itself, the landfilling, the landfill caps and liners, and changes to surrounding land uses will also have an influence. This is primarily because the groundwater level is linked with rainfall recharge events, a fact not in dispute. As a result, it is his evidence that while less or no extraction at the quarry may see groundwater levels rise, reduced rainfall recharge (because the quarry hole will be filled and capped with low permeability material) will reduce direct recharge to the

[121] Melbourne Regional Landfill – Hydrogeological Assessment, Tribunal Book 2, Tab 48, pp1495-1501, and Figure 2-3, p1483.

underlying basalt aquifer. This may result in a lower (deeper) groundwater level. He agreed with the Tribunal that urbanisation around the site may be another factor that reduces recharge to the aquifer, adding to a trend for lower groundwater levels.

477 Mr Ife's evidence before us is consistent with what he and Mr Nolan agreed in the 2016 conclave about a reasonable range of rebound in the groundwater levels being inferred from available data and knowledge of the basalt aquifer system, extraction activities being undertaken for the quarry operations, and changes in the land use itself.

478 However, in response to the grounds of the developers, Mr Ife oversaw a re-examination of estimates of groundwater level recoveries when quarry extraction of groundwater ceases and the landfill is capped. This modelling indicates recovery to be in of the order of 0.6m to 1.6m above present day levels, less than that agreed in the 2016 conclave.

479 For his part, Mr Nolan was not intended to be called to give groundwater evidence and when cross examined on these points, he explained that he had not had an opportunity to refresh his memory on these groundwater matters or review the relevant information. For this reason, our focus is on the evidence provided by Messrs Ife and Mulvey and information contained in the Tribunal books and other tabled material.

480 It remains Mr Ife's view that this uncertainty can be addressed with further monitoring and groundwater modelling to refine estimates of the long-term groundwater level in the basalt aquifer.

481 The position adopted by EPA, as supported by advice from the ILEAP, is to accept that there is some uncertainty about long-term groundwater levels. It has included requirements in the works approval to:

- Provide plans and specifications for a groundwater drainage layer[122] and groundwater monitoring network;[123]and
- Additional groundwater monitoring bores in the Upper Newer and Lower Newer Volcanic aquifers.[124]

482 The groundwater drainage layer is to be based on a drainage interception system that was set out in Mr Green's evidence (reproduced in figure 15).

483 This drainage layer is to be constructed two metres below the leachate collection layer in order to maintain the required two metre separation from groundwater, if not the natural long-term groundwater level. It includes placement of engineered compacted subgrade above it, which provides an additional attenuation layer below the compacted clay liner. The overall design is intended to achieve the same outcome as the two metre separation,

122 Works approval Condition WA_W1)(b).
123 Works approval Condition WA_W1(e).
124 Works approval Condition WA_W8(a).

i.e. separation of the waste from the groundwater, and so protect groundwater beneficial uses.

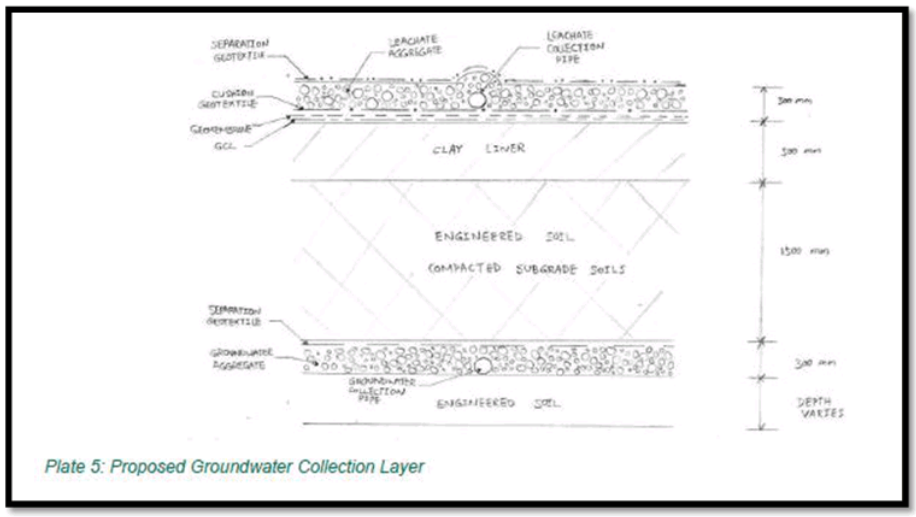


Figure 15 – Drainage interception system

Our assessment of groundwater against the WMP and BEPM

484 We accept the principle outcome of Mr Ife's evidence that the behaviour of the long-term groundwater level is uncertain for the reasons he cited and we have set out above. It is clear to us that present day estimates are based on a number of assumptions and variable inputs, including historic long-term climate inputs, such as rainfall, extending into the future, as well as land use patterns around the site not reducing natural recharge. Clearly some of these assumptions, such a land use around the site, will not hold true given long-term strategic land use plans. Consequently, we treat these estimates of future groundwater levels with a degree of caution, consistent with the evidence of Mr Ife. It is also apparent that limited reliance can be placed on historical levels given the future changes in land use around the site.

485 Accordingly, we accept his evidence that an appropriately cautious approach to take, as indicated by the assessments to date, is that shallower groundwater levels may develop under cells 1, 2 and possibly the southern portion of cell 3.

486 However, this outcome does not mean that the landfill will not be consistent with the BPEM or the WPM. Placement of fill within two metres of the long-term groundwater level is permissible subject to the conditions set out in the WMP and repeated in the BPEM being met. These conditions are that appropriate measures to manage this situation are put in place and that regional circumstances warrant the landfill's development.

487 Further, the BPEM recommends that if the landfill is in an area where the groundwater level is elevated, the landfill's base can be raised two metres using a sub-base material designed to attenuate contaminants.[125]

488 We find that the proposal achieves this through the contingency design relied on by Landfill Operations and has the added benefit and additional protection afforded by the inclusion of the underlying drainage layer.

489 Thus, in accepting that there is difficulty in determining the long-term groundwater level, we conclude that a suitable contingency plan is available to address the potential for groundwater levels to either rise in the future or to be managed if found to be within two metres of the base of the quarry floor.

490 Where we find the works approval to be deficient is that it has failed to include a requirement to provide further details about management of the groundwater that may be collected by such a system.

491 Mr Ife's evidence is that his order of magnitude calculations indicates capacity within the proposed stormwater retention system to manage the outflows. While he has not conducted a full water balance, it is his view that the outflows can be evaporated because the flows will not be large and local meteorological data shows that evaporation exceeds rainfall across most of the year.

492 We observe that the BPEM seeks to separate the management of stormwater, leachate and groundwater. This is said to be, in part, due to the problems that more saline groundwater may have on disposing of excess water. The groundwater here has a salinity which places it in Segment C under the SEPP (W). We will therefore modify the conditions of the works approval to ensure a separate system is designed to contain and dispose of the groundwater, either by evaporation as relied on by Landfill Operations or by use, such as by the quarry in its ongoing operations or even by Landfill Operations e.g. for dust suppression.

493 Subject to this additional condition in the works approval, we are satisfied that the proposal will meet the requirements of the WMP and the BEPM relating to groundwater and that it is consistent with all applicable policies.

SURFACE WATER AND DRAINAGE

What are the BPEM requirements for surface water and drainage?

494 Section 5 of the BPEM seeks to avoid the impact of leachate on surface water systems by specifying that landfills should not be sited in certain locations.[126] The location of the MRL generally, and more specifically the new cells proposed under this works approval, avoid these specified areas save for one aspect. This aspect is that the original works approval

[125] BEPM Section 5.1.3 page 12.
[126] BPEM, Section 5.1.0, page 16.

application located cell 4 within 100m of Skeleton Creek, contrary to the BPEM requirement to be set back at least 100m from surface waters.

495 Mr Green gave evidence that this requirement was also specified in planning permit PA2016/5118, issued at the direction of the Minister for the MRL works, which requires the plans to be modified to attain this 100m setback from Skeleton Creek. The revised plans he prepared to address the reduction in the approved cells in the southern portion (i.e. south of Riding Boundary Rd) included modifications to the proposal to achieve this setback.

496 In addition to this setback, the revised plans also address drainage matters raised by Melbourne Water in respect to the stormwater drainage strategy for the Truganina Development Service Scheme (Truganina DSS).

497 The result of these two factors is that stormwater and drainage plans under the amended plans now provide for:

- A 100m setback of cell 4 from the present alignment of Skeleton Creek.
- Servicing the Truganina DSS by piping Skeleton Creek under Hopkins Road (as envisaged under the services scheme) and a re-alignment of the bed of the creek, with provision for a 55m wide channel to connect from proposed service points west and south of the MRL and quarry land.[127]

498 The best practice design of a landfill under the BPEM requires consideration of the impacts to surface water environment.[128] The main focus of the BPEM is to avoid contamination of surface water by leachate.[129] BPEM requirements to comply with Clause 15 (3) and (4) of the WMP for water management emphasise these points:

> **WATER MANAGEMENT**
>
> **Relevant BPEM objectives**
>
> To protect beneficial uses of receiving waters and to avoid any adverse environmental impact on surface and ground waters.
>
> **Required outcomes of the BPEM**
>
> - Segregation of stormwater, leachate and groundwater.
> - Wherever practical, reuse of water onsite.
> - Management and treatment of leachate to:
>   - Prevent it from escaping into surface waters or groundwater
>   - Prevent offensive odours offsite
>   - Minimise human contact with the leachate.

127 We note in passing that the re-alignment of Skeleton Creek was necessary in any event if excavation of the quarry to its approved works area limits is to occur.
128 BPEM, Section 6.1, page 17.
129 BPEM Section 6.5.2, page 29.

- Assurance that waste discharges to surface waterways are minimised and do not cause water quality objectives to be breached.

Suggested measures of the BPEM

- Use drains or bund walls to direct clean stormwater away from the landfill activities.
- Design drainage measures to contain and control rainfall run-off for a 1-in-20 year storm event for a putrescible landfill or 1-in-10 for a solid inert landfill.
- Control erosion by minimising disturbed land, treating disturbed land as soon as practical, establishing flatter slopes or spreading the flow of water.
- Where sediment cannot be controlled at the source, install sediment control features.
- Manage water from vehicle-washing areas (manual or automatic) as leachate.
- Model leachate treatment facilities to ensure that they have sufficient capacity to store and treat all leachate generated over two consecutive wet years.
- Use interception drains to intercept surface water or shallow groundwater.
- Assess potential impacts of rising watertables.
- Prevent the discharge of turbid stormwater to the environment by maintaining turbidity levels within those outlined in Table 6.3.

499 The objectives align with those of the SEPP (W) and, for the sake of completeness, we note here that if found to be consistent with the BPEM we consider the proposed scheme for management of surface water issues will be consistent with the objectives of the SEPP (W).

Parties' positions

500 No party has raised any particular issue with the amendments made to the plans to accommodate the 100m setback from Skeleton Creek nor the re-alignment of the drainage scheme. Some aspects of the alignment of the waterway were queried, however no party pursued grounds that amendments resulted in inconsistencies with the WMP, BPEM or SEPP (W).

Our assessment of surface water and drainage

501 For our part, we observe that:

- The collection and management of leachate, a considerable focus of the BPEM, occurs within the quarry void well below the base level of Skeleton Creek or any other surface drainage system beyond the boundary of the landfill. As such, there is no real prospect of accidental

loss of leachate from the proposed leachate collection and treatment system impacting on these systems.

- Skeleton Creek, the substantive waterway, is an ephemeral, shallow waterway with no well-defined bed or banks. It flows only after rainfall and has no apparent connection to the regional groundwater system, a fact readily inferred from the hydrogeological conditions of the site. As such, there is no pathway for impacted groundwater, if it were to occur, to impact on the water quality and hence beneficial uses of this waterway.
- The proposed drainage scheme over the landfill area seeks to divert flows from capped areas into stormwater detention and evaporation ponds accommodated on the floor of the quarry, along the southern and northern flanks of the landfill cells. Mr Green's oral evidence is that these ponds are designed to contain up to a one-in-one-hundred year, 24 hour rainfall event. Water would be stored for re-use by the landfill and/or quarry operations, with losses also occurring through evaporation.

502 Conceptually, the stormwater and drainage design is consistent with the BPEM in achieving separation of possible contaminated surface water flows from entering external waterways. Storage capacities are planned to exceed BPEM requirements and it is apparent that there is sufficient capacity within the area of the landfill operations to accommodate the necessary detention capacity.

503 Our primary concern is that the stormwater system places two ponds on the southern side of the landfill cells where Mr Green's amended designs now show the void space between the toes of the landfill cells on the quarry floor and the quarry walls to be backfilled with clean fill. No outline has been provided about how or when this transition is to occur while accommodating the presently proposed stormwater detention and drainage systems.

504 We do not consider this to be sufficient reason to refuse the works approval, having been satisfied that within the land available to Landfill Operations there is sufficient area to accommodate a properly designed drainage system. It is a matter of detailed design that can clarify how this system will integrate with the filling and final capping of the landfill cells.

505 Accordingly, whilst we conclude that conceptually the design meets the BPEM and SEPP (W) requirements, it is necessary to refine the works approval conditions to revise the Stormwater Management Plan prepared by Golders not only to deal with the confinement of waste deposit to the southern portion of the quarry site, but also to deal with this change in the filling of the void space.

506 If this amendment is made to the works approval, we are satisfied that the proposal will be consistent with all applicable policies.

LITTER

What are the BPEM requirements for litter?

507 The BPEM deals with litter as a largely operational matter apart from:

- A reference to why an area landfill may be preferable in the selection of a site and landfill design (section 5.1.2); and
- The benefits of a buffer to manage a design or operational failure that may result in a discharge of litter (section 5.1.5).

508 Litter is recognised as an amenity issue and as having the potential to impact on ecological values of surrounding land. The latter was not raised specifically as an issue in the proceedings. The points raised against the emission of litter by the applicants were focused on amenity impacts and general nuisance. Mr Selisky's evidence pointed to possible security issues with the Remand Centre – an unusual matter in keeping with the unusual situation of the Remand Centre being proximate to the landfill and associated access road.

509 Section 7 of the BPEM deals with best practice operation. Sections 7.5, 7.6 and 7.7 of the BPEM make reference to various operational matters which may affect litter management. For example, under section 7.5, the shredding of waste is considered to increase litter management problems, whereas in section 7.6, bailing wastes is considered to provide a benefit to managing litter. Neither of these processes is proposed by Landfill Operations.

510 The aspects of litter control that are relevant to the proposal as put forward by Landfill Operations are:

- The placement of waste (section 7.6);
- Covering of waste (section 7.7);
- Litter control (section 7.8).

511 Our combined consideration of these sections is that:

- The relevant BPEM objective to meet clauses 15(3) and (4) of the WMP is to keep the landfill and the surrounding environment in a litter free condition.
- The required outcome is that no litter from the landfill operation reaches beyond the boundary of the premises.
- The range of suggested measures in the BEPM are:
  - 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.

512 In addition to the above, section 7.6 about waste placement relies on a range of strategies and recommended operations to minimise litter (amongst other outcomes). These include recommendations to:

- Place waste in lifts of not more than 0.5m with three to five passes of the compactor to maximise compaction;
- Minimise reliance on daily cover by keeping a tipping face to less than 30m in length;
- The height of a waste layer from combined lifts being less than two metres.

513 The above however are not required outcomes or suggested measures. The required outcomes under this section are:

- Maintenance of an active tipping area that is as small as possible.
- Compaction of all waste deposited in the landfill.
- Assurance that waste is placed so that all unconfined faces are mechanically stable and capable of retaining cover material.

514 The suggested measures are:

- Keep covering waste to maintain the active tipping area at less than 30 metres x 30 metres.
- Place wastes at the base of each lift and compact wastes in layers of less than 2 metres.
- Avoid unconfined waste slopes with gradients steeper than 2 horizontal to 1 vertical unit.

515 While directed in part to litter control, the above are also directed to the BPEM objective of maintaining a mechanically stable placement of waste while maximising compaction.

516 We note that the BPEM recommended maximum area for a tipping face is 30 x 30 m (900m^2). The EPA licence for the current landfill operation includes a condition limiting the maximum tipping face area to 1,800m^2. Landfill Operations' proposal for the additional landfill cells is to rely on this maximum tipping area. Landfill Operations says that this area is necessary to maintain operational flexibility given the volumes of waste it handles on a daily basis. EPA's decision to grant the works approval acknowledges this requirement.[130]

[130] Works Approval Application Assessment Report at [4.236] (Tribunal Book 1, Tab 3, pp 151-153).

517 Whilst we note the apparent disparity between this current and proposed practice and the recommendation in the BPEM, for reasons that we set out below, we do not find it necessary to reduce the tipping face to the BPEM recommendation of 900 m^2 in response to litter management requirements (although noting that this limit is required for odour management reasons over the night time period).

Parties' positions

518 Melton and Stop the Tip point to events of litter being blown over the boundary of the landfill site under present operations as evidence that this will continue under the proposed landfill operations.

519 It is apparent from the above that this is not the test for establishing a ground under section 33B. We must assess whether the management of litter will accord with the WMP and BPEM (as the only relevant policy) or otherwise affect the interests of the parties.

520 With respect to the latter, Melton and Stop the Tip members do not own or reside on land immediately around the site that has been or could be affected by litter. It is therefore difficult to see how any relevant interests of these parties are affected.

Landfill Operations response

521 With respect to the Remand Centre and other roadside litter, Landfill Operations and EPA suggested that the presence of litter at these locations could be the result of litter being released from trucks as they travel to the site along Christies Road.[131] Both these parties submitted that there is no evidence to support claims that Melton or Stop the Tip will be adversely impacted or otherwise have their interests affected by litter.

522 With respect to consistency with policies, the submissions and material from Landfill Operations highlight that:

- It is intended to minimise the active tipping area as far as operationally possible.
- Waste will be placed in 0.5m layers and compacted by four to eight passes of a compactor. This will occur repeatedly to form 4m to 4.5m high lifts.
- The waste is covered daily, generally on a progressive basis to minimise the area of open tipping face.
- The current combined height of lifts exceeds two metres, being up to four and a half metres, but this has proven to be mechanically stable and able to retain daily cover. It is intended to maintain this practice to deal with the volume of waste that the MRL receives.

[131] EPA closing submissions, EPA-94 at [230.2].

- Mobile litter screens are placed downwind of the active tipping face and 12m metre high litter nets have been constructed along the southern boundary of the existing tipping area. These litter nets are to be extended, as required under the Works Approval condition WA_W8, although we observe that this is not shown on any plans.
- A litter response procedure is being developed for the current operations.[132] This response includes the use of a trailer mounted litter vacuum system, additional portable litter panels and semi portable and 6m high litter nets.

523 Landfill Operations submits that it is therefore managing litter issues in a manner that is consistent with the BPEM.

Our assessment of proposals to manage litter against BPEM requirements

524 We agree with Landfill Operations and EPA that the above measures about minimising the active face, use of daily cover and compaction are consistent with BPEM measures which are designed to meet the required outcome. Thus, we find that the operational controls being proposed are consistent with the policy.

525 We note in particular that the BPEM measure does not adopt the 900m^2 area of active face recommended in the body of the BPEM text. It sets out a measure only to 'minimise' this area. We recognise that this landfill provides a particularly important service for Victoria, being designated as a waste hub to metropolitan Melbourne and more widely to Victoria. One of the reasons for this is its capacity to contain large volumes of waste. While litter is one reason to keep this area to a minimum, we consider that the factor of odour and its impacts is of far greater weight. For the reasons we set out about odour, we have concluded that the circumstances of this landfill can support an active filling face that is larger than the BPEM recommended 900m^2 during the daytime period of operations, but there is a need to reduce the maximum tipping area from 1,800m^2 to 900m^2 over the night period to address odour impact risks.

526 In view of the proposed improvements to litter management put forward by Landfill Operations, we do not see a need to reduce these maximum areas in order to achieve the BPEM objective for litter. We are satisfied that there are sufficient other operational measures which can control litter emissions. As we have stated already, we have found that the management of the actual landfill works, i.e. the cell design and its reliance on compaction of half metre layers etc, to be consistent with the measures set out in the BPEM.

527 However, we hold concerns that the management of litter has not been sufficiently addressed through the works approval conditions. It is evident to us, from the evidence of Mr Selinsky and other litter incident reports, that without sufficient directed action, there is a high likelihood of litter moving

[132] Landfill Operations closing submissions, LO-114 at [232].

beyond the boundaries of the landfill site. This would be an outcome that is inconsistent with the BPEM and hence the WMP.

528 The evidence persuades us that reliance on the development of an Environmental Management Plan, as per condition WA-R4, and the 12m high fencing, as per condition WA-W8, both of which are current measures, will not be sufficient. We consider that a specific Litter Management Plan should be developed as part of the reporting requirements set out under the works approval. We have directed that the works approval to be amended to accordingly.

529 This Litter Management Plan must include other additional measures such as those set out by Landfill Operations over the course of these proceedings, as well as others that may be applicable. These may include:

- Daily litter surveys around the boundary of the landfill site and instigation of litter removal actions.
- Monitoring of wind conditions and trigger points for litter control measures. The latter may include shifting operations to wind protected faces and/or implementation of litter control measures at and downwind of the active tipping face.

530 By incorporating these additional requirements, we are satisfied that litter management will be consistent with relevant policies and will not unreasonably and adversely affect the interests of the applicant parties.

ALTERNATIVE WASTE DISPOSAL OPERATIONS

531 Brimbank made submissions and led evidence by Mr Cocks in support of the development of more advanced waste technology and resource recovery infrastructure, and the development of the domestic market for recycled products. It seeks diversity in waste management options available to the community, allowing a substantial increase in the diversion of residual waste from landfill. To this end, it submitted that the works approval should be limited to 2028.

532 In our consideration of the strategic waste management framework, we have taken the view that the timing of the life of the MRL is a strategic matter that is addressed in the SWRRIP and the MWRRIP and there is no justification for this Tribunal to limit the life of the landfill through this works approval. Extension of the MRL is scheduled in the MWRRIP. We do not consider it is appropriate to take a different view about the time or scale of this landfill to that embodied in these strategic documents.

533 Brimbank also submitted that current industry practice of disposing of waste in cells as proposed is substantially less than best practice elsewhere in Australia and overseas. To mitigate amenity impacts on the community in terms of odour, litter and leachate generation, Brimbank advocated the segregation, compaction and baling of waste within a building under negative air pressure serviced by odour control equipment prior to disposal as a better means of meeting policy.

534 We have already rejected the arguments put by Brimbank, which encouraged us to include in the works approval a condition to compel the licence holder to recover recyclable materials from the waste prior to disposal. This is on the basis that it is not part of the proposal we must assess and any strategy to require this type of waste recycling prior to disposal to landfill should be implemented through the strategic waste management framework. Responsibility for this rests with Sustainability Victoria and the waste and resource recovery groups, not this Tribunal.

535 The BEPM notes that the pretreatment of waste prior to landfilling is intended to reduce the long-term risk posed by the waste and to improve general landfill performance. Approaches to pretreatment include:[133]

- Recovering fractions that have high calorific value, are recyclable or are compostable.
- Modifying the physical form or mix of wastes going to landfill through shredding, baling or compacting.

536 The BPEM acknowledges that shredding and baling may reduce some environmental effects of landfilling but do not in themselves reduce the putrescible fraction within the waste stream. Baling may reduce the amount of litter and demand for cover material. High-density balers can also increase the quantity of waste that may be deposited in a landfill.

537 These suggested measures are all steps advocated by Brimbank, which it says the proposal and EPA have failed to address, whether at first instance in the application or by way of works approval conditions.

538 Landfill Operations acknowledges that once waste is received at the site it will not be subject to pretreatment before being placed in the landfill cells. Nor does it have any immediate plans to do so. Its position is that pretreatment, such as waste separation, is better performed at the point of collection, as per kerb-side programs or though FOGO treatment processes. Landfill Operations' focus is on receiving and landfilling waste as efficiently as possible.

539 The relevant BPEM objective regarding waste pretreatment is:[134]

> To reduce the long-term risk posed by the waste and to improve general landfill performance.

540 We observe that the objective is a broad one, and there are no mandatory compliance requirements; only suggested measures. We accept that the objective can be met by other means, such as the design and management of the cells and, in particular, through landfill gas collection systems. While putrescible waste is a key source of odour, the focus of this objective is on longer term landfill gas risks rather than odour.

541 We conclude from the evidence before us, in particular from the testing of odour emissions rates, and the expert evidence that odour is a risk that

133 BEPM Section 7.5 page 43.
134 *Ibid.*

largely arises from the operations early in the use phase of the landfill cells; i.e. the delivery and placement of the waste and management of interim cover before the final cap is achieved. While landfill gas will also be a source of odour, the evidence, which we discuss elsewhere in our reasons, indicates that the emission of waste odours from properly capped cells is negligible.

542 In terms of meeting objectives for longer term risk management, particularly landfill gas, we rely on our reasons given elsewhere that such risks will be appropriately managed to reduce this risk.

543 Whilst we acknowledge that the type of pretreatment advocated by Brimbank in terms of baling may have some benefits, it is a significantly different type of operation to that proposed in the works approval application. Our task is to assess the proposal before us, not some alternative proposal. If, at a strategic level, it is ultimately decided that the types of waste pretreatment discussed in the BEPM should be implemented prior to waste being deposited to landfill, this is something that should be included in the relevant aspects of the Victorian Waste and Resource Recovery Infrastructure Planning Framework. In circumstances where this is not a requirement of the framework, it is not something that should be used as the basis for rejecting this proposal or requiring it to be transformed to a different type of waste disposal operation.

544 We therefore reject these submissions by Brimbank.

LANDFILL BUFFERS

Land uses within the Mt Atkinson and Tarneit Plains PSP

545 We have previously noted that decision making under the *Planning and Environment Act 1987* and the *Environment Protection Act 1970* must work in an integrated way. Decisions under each Act must have regard to issues arising under the jurisdiction of the other Act[135].

546 The line between issues legitimately arising under the planning and the environmental jurisdictions can be blurred; for example, with respect to buffers. Some people take the view that a buffer sterilises land whilst others take the view that a buffer simply means that land uses within an area adjoining a site such as this landfill, or other industry, should be controlled so that uses sensitive to the possible impacts of the industry's operation are not adversely affected in terms of health, environmental or amenity impacts.

[135] For example, under the *Planning and Environment Act 1987,* section 60(1A)(f) requires the responsible authority and section 84B(2)(e) requires the Tribunal to take account of and give effect to any relevant State environment protection policy declared in any Order made by the Governor in Council under section 16 of the *Environment Protection Act 1970.* Section 37A(a) of the *Environment Protection Act 1970* requires the Tribunal considering an application for review or declaration to take into account any relevant planning scheme.

547 The present case highlights the overlap between the two decision making regimes of the *Planning and Environment Act 1987* and the *Environment Protection Act 1970,* and the need for an integrated approach to decision-making under each.

548 Following the trail of references in the BPEM, the WMP and the *Environment Protection Act 1970*, a 500m buffer should be applied to a landfill.[136] The intent of the buffer is clear enough – to protect the amenity and useability of land for sensitive uses from the risk, whether realised or not, of fugitive emissions from permitted landfill operations. Where the issue becomes blurred is the differing positions of people as to what may occur in the buffer zone.

549 We acknowledge that the BPEM recommends that land forming the buffer be owned or at least under the control of the landfill operator.[137] However, this is not a mandatory requirement.

550 The intent of the recommended approach is to control the land use within the buffer. In our view, if another form of land use (and development) control can be implemented, then the intent is achieved.

551 Here we turn to the fact that a decision has been made to control land use and development within this buffer through the introduction of Amendment C162. This Amendment was prepared by the Growth Areas Authority[138], which was the planning authority for this Amendment. The Amendment was made at the request of the Growth Areas Authority and Melton City Council.

552 With the introduction of Amendment C162, the planning authority decided, in full knowledge of the MRL's proposed operation, that it is acceptable for the 500m buffer to extend beyond land not under the control of the landfill operator. It has done so by applying various zones, a development overlay and incorporated plans to control the use and development of this land. These zones comprise the Urban Growth Zone UGZ9, which currently applies to land within this buffer with the underlying intent for industrial and commercial zones to apply in the future. The overlay is DDO4, which provides for specific requirements for development proposals to address landfill gas risks. The incorporated plan is the Mt Atkinson and Tarneit Plains PSP.

553 With respect to the UGZ9, we have already noted that in addition to the DDO4, this zone contains requirements which limit the development of land within 200m of the edge of the quarry, and hence the western edge of the landfill, as a blast safety setback. Development that can occur within

136 BPEM Section 5.1.5, Table 5.2.
137 BPEM Section 5.1.5 page 14.
138 Which became the Metropolitan Planning Authority and subsequently the Victorian Planning Authority.

this setback is limited to services and carparking, roads and the like. No buildings are allowed.[139]

554 Whatever one may make of this planning situation, it is the one we must give due consideration to, as required by section 37A of the *Environment Protection Act 1970.* Taking account of the planning scheme requires us to consider whether the land use controls provide for and integrate with the proposed landfill and, conversely, whether the works approval will be compatible with the planning scheme controls. Looking at the landfill from both these perspectives is relevant to satisfying the purposes of both Acts.

555 In our view, and notwithstanding assertions by Melton and the developers about the proposed extension of the landfill placing an unreasonable burden on future developers of land to the west, the planning scheme intends to provide for the use and development of land within 500m of the landfill cells. The relevant provisions of the planning scheme have been determined by the planning authority in consultation with and in reliance upon advice from EPA. In the context of this proceeding, we cannot look behind the planning scheme. We must accept its provisions as we find them on the date we make our decision.

556 In any event, we are satisfied that when the Mt Atkinson and Tarneit Plains PSP was introduced, matters relating to the introduction of a buffer, namely odour and landfill gas, were adequately addressed from a land use point of view. We reach this conclusion based on the explanatory report to Amendment C162, noting the explanation for the amendment that we set out earlier in our discussion of Planning controls and the Melton Planning Scheme

557 Under the heading of the planning objective to '*secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria*' the explanatory report for the amendment states:

> A safe and high amenity working environment will be encouraged through zoning for employment uses in appropriate locations with respect to the railway line, quarry buffer, Melbourne Regional Landfill, and the high pressure [sic] gas pipeline measurement length.
>
> DDO4 will respond to the risk of landfill gas migration from the proposed putrescible landfill expansion to [sic] the Melbourne Regional Landfill (MRL). The DDO4 will apply to land in the Precinct within 500 metres of the proposed putrescible landfill cell contained within the planning permit PA2016/5118 for the MRL.
>
> The EPA Works Approval 138994 for the expansion to the Melbourne Regional Landfill contains requirements for monitoring of landfill gas migration west of the MRL.

[139] How this will translate into to a control once the UGZ9 is replaced by the IN1Z or CZ is not clear to us. However, at this time, which is when we must make our decision, the planning scheme applies the UGZ9 and its controls through the PSP.

558 Similarly, under the heading of the planning objective to *'protect public utilities and other assets and enable the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community'* the explanatory report sets out the following response to the quarry and landfill operations:

> The PSP and UGZ9 have responded to the existing quarry buffers established to protect the operation of the state significant Deer Park Quarry through the inclusion of a Quarry Blast Buffer and Quarry Sensitive Use Buffer, referenced in both documents. The Quarry Blast Buffer extends 200m from the approved quarry works authority and the UGZ9 prohibits most development within this area. The quarry sensitive use buffer extends 500m from the approved quarry works authority. The West Growth Corridor Plan identifies land with a width of approximately 500m from the western edge of Hopkins Road as the Hopkins Road Business Precinct, and the PSP proposes business uses in this area. The UGZ9 identifies restrictions on use and development within the quarry sensitive use buffer. Additionally, the UGZ9 outlines specific referral requirements to the Secretary to the Department administering the Mineral Resources Act.
>
> The applied zoning in the UGZ9 responds to the potential for adverse amenity from odour from the MRL by establishing a distance of at least 500m from residential uses to the Boral land (408-546 Hopkins Road. This is complemented by a 500m distance on the Boral land (408-546 Hopkins Road) containing no putrescible fill within the landfill to ensure 1km is established between any proposed putrescible landfill and residential uses. The applied industrial zoning to the south of the electricity transmission line negates the need for a specific response to potential odour from the landfill given the lower amenity expectations inherent in industrial areas and the ability of the responsible authority to exercise discretion when considering permits for potentially sensitive uses (other than Child care centre, which has been prohibited on applied IN1Z land).
>
> As previously noted, the Amendment will introduce a Design and Development Overlay – Schedule 4 (DDO4) to the planning scheme, requiring permit applications within the extent of the overlay to respond to the risk of landfill gas migration from the proposed putrescible landfill expansion to the Melbourne Regional Landfill.

559 In response to the question of compliance with the Minister's Directions, the explanatory report sets out the following response in relation to waste management infrastructure:

> **Policy 6.7.3 Protect waste management and resource recovery facilities from urban encroachment and assess opportunities for new waste facilities**
>
> As detailed earlier in this report, the Amendment responds to the MRL by providing separation between the proposed landfill and areas proposed for sensitive uses and implementing controls to manage the risk from landfill gas migration.

560 The explanatory report was prepared by the planning authority. It demonstrates that the planning authority had turned its mind to the relevant issues of land use separation and protection of urban amenity, whether it be residential or non-residential use of land, in formulating the PSP that has ultimately been approved for land around the landfill site.

561 In formulating the final version of Amendment C162, the planning authority and the Minister (for Planning) had the benefit of the C162 Panel Report. One of the issues raised and addressed in this panel proceeding was the future development of the landfill. At the time of the panel hearing and the preparation of the Panel's report, the planning and works approval applications for this landfill had not been determined.[140] Within this context, the Panel heard and made findings on a series of matters raised about landfill gas migration, odour, the location of buffers internal or external to the landfill site and land use planning. Landfill Operations, the developers, EPA and Melton were all parties to the panel proceedings, along with the planning authority.

562 We do not intend to detail all that the Panel heard or concluded about the amendment vis a vis the landfill operations, but we note the following relevant key points and conclusions:

- The C162 Panel considered a range of relevant waste management and landfill buffer policies.[141]
- The Panel identified four issues in respect to establishing buffers around the landfill and considered the submissions from Landfill Operations, waste management agencies, EPA, the planning authority, Melton and other parties including Mt Atkinson Holdings.[142]
- On the basis of the existing landfill operations being at least 1.5 kilometres from the 'nearest point' of the PSP, the Panel concluded that the amendment 'adequately responds to the existing landfill'.[143]
- In respect to the proposed expansion of the landfill (bearing in mind that what the works approval provides for is now limited to the southern half of the area initially proposed, which was what was being contemplated at the time of the amendment), the Panel concluded that :
  - '…the VPA [Victorian Planning Authority] should work with the EPA to determine:
    - - whether an external landfill gas buffer is required
    - - if so, the appropriate buffer distance, and what (if any) specific controls can be applied to allow use and development within the landfill gas buffer to occur -

140 This includes the ultimate decision of the Minister to issue a planning permit for the landfill and the decision of EPA to grant a works approval, both of which limited the landfill's future operations to south of Riding Boundary Road.
141 Section 3.3 of the C162 Panel Report dated 9 December 2016.
142 Sections 5.1, 5.2 and 5.3 of the Panel Report.
143 Section 5.4.1 of the Panel Report.

whether any adjustments are required to the landfill odour and amenity buffer

- In respect to buffer distances, the Panel concludes:
  - The odour and amenity buffer should be set at 1 kilometre (measured from the edge of the nearest proposed landfill cell), and only needs to apply north of the high voltage electricity transmission easement.
  - The landfill gas buffer/further investigation area should be set at the BPEM recommended 500 metres (measured from the edge of the nearest potential landfill cell), and may be adjusted in future should the EPA determine that a lesser buffer is required.

- In respect to whether the 500m buffer should be internal to or external to the landfill site, the Panel concluded that: "*The full capacity of the landfill should be protected. If the determination of the landfill expansion applications results in a landfill gas buffer of more than 200 metres being required, it is appropriate that the buffer extends into the PSP area*". It was therefore the Panel's recommendation and the position adopted by the planning authority that, to the extent that the 500m buffer could not be accommodated within the site, the remaining buffer distance be within the PSP area. The reference here to 200m reflected the evidence of Mr Kortegast at the panel hearing that a 200m buffer would be sufficient in light of the engineering of the landfill liners and the landfill gas extraction system designed for the landfill.[144]
- In respect to land uses within the buffer, the Panel concluded that the "*general land use allocation provided for in the PSP*" was "*appropriate to respond to the possible impacts of landfill*". It also concluded that if adjustments to the buffers were required by the determination of the landfill expansion applications, "*land use allocations within the buffers may need to be reconsidered*".

563 The Panel also drew several conclusions from the submissions of the parties about what land use controls may apply within the external buffer. These conclusions addressed the formulation of controls, such as triggers for permits, permit application requirements and EPA being a recommending referral authority, as well as advising the planning authority on appropriate controls.[145]

564 These conclusions were the basis of the Panel's recommendations, later translated into the finalised version of Amendment C162.

565 In our view, these matters demonstrate that the relevant planning authority and the planning process, which has resulted in the introduction of Amendment C162 and the planning controls along the western boundary of

144 Tribunal Book 1, Tab 5, pages 398 and 403.
145 Section 5.4.6 of the Panel Report.

the landfill site, have contemplated the ongoing operation of the landfill in the form now before us.

566 In the context of this proceeding, the developers seek to agitate similar matters about buffers raised in the panel process. We do not consider it is open to the developers to do this. Whether parties agree with it or not, the planning authority concluded that a 500m buffer, largely accommodated within the PSP land by applying land use controls, is sufficient to deal with the landfill's future operations under the planning scheme.

Are the proposed landfill buffers acceptable?

Landfill gas

567 It follows from the above analysis of the land use buffers imposed by Amendment C162 that any argument that a land use buffer creates a piece of sterilised land misconceives the concept. A buffer is land where land uses sensitive to fugitive emissions should not be located as a precautionary approach to risk management of potential hazards.

568 Section 5.1.5 of the BPEM provides:[146]

> Appropriate buffer distance must be maintained between the landfill and sensitive land uses (receptors) to protect those receptors from any impacts resulting from a failure of landfill design or management or abnormal weather conditions. These failures might constitute discharge from the site of potentially explosive landfill gas, offensive odours, noise, litter and dust. Features that could be adversely affected by landfilling operations include surface waters, buildings and structures and airports.
>
> Buffer areas are not an alternative to providing appropriate management practices, but provide for contingencies that may arise with typical management practices.

569 Thus, the purpose of the buffers is to protect sensitive land uses from failure events not emissions that might occur under routine management or operation of the facility.

570 Table 5.2 of the BPEM sets out the buffer distances for Type 2 and Type 3 landfills for:

> Siting buffer distances required for landfill gas migration, safety and amenity impacts

571 The table specifies that for a Type 2 landfill, a buffer distance of 500m is required. The BPEM goes on to state:[147]

> Subject to an evaluation demonstrating that the environment will be protected and the amenity of the sensitive areas will not be adversely affected, lesser buffer distances may be applied subject to a risk assessment that considers design and operational measures. As part of

[146] BPEM Section 5.1.5 page 13.
[147] BPEM Section 5.1.5 page 13.

> a risk management approach, additional design or operational measures will be required to ameliorate the risks associated with a reduction of the buffer distances identified in Table 5.2.

572 Given the above, we consider that:

- A decrease in the 500m buffer distance may be acceptable, subject to the same level of protection being afforded. Melton and the developers pose the question about what level of protection the 500m buffer is intended to provide, as there is no quantitative measure provided in in the BPEM or the WMP. They submit that the implied protection level should be equal to that of a buffer distance where any landfill gas, which may escape from a landfill, will dissipate to the extent that any offsite risk is mitigated to an acceptable level so that the use and development of such land is not encumbered by an unacceptable level of risk. Otherwise, they say, the statement in the BPEM about providing an equivalent level of risk is a nonsense as it would require reliance on a 500m buffer under all conditions.
- It cannot be assumed that the 500m is an absolute. It must have a factor of safety built in. Landfill gas won't stop migrating at 500m because of the BPEM. It is, however, the distance at which EPA considers no action is required to address the landfill gas risk under best practice management of the landfill.

573 We have concluded that a number of the landfill gas management elements proposed for this landfill exceed the requirements of best practice. Accordingly, we consider that a reduction in the buffer distance with respect to landfill gas could be contemplated on this basis.

Odour

574 However, we are not persuaded that the buffer distances can be reduced because of the potential amenity impacts that can arise from routine odour emissions. Indeed, it is EPA's view that a 1km to 1.5km buffer from sensitive land uses should be adopted to manage odour emissions.

575 We have concluded from our assessment of odour it is likely that odour emissions may occur at the boundary of the landfill facility which would be offensive to populations in sensitive land use settings, such as those listed in the BPEM. As such, a buffer between the boundary and sensitive land uses is appropriate to maintain a suitable separation from these boundary conditions.

576 We have also concluded that the risk of offensive odour impacting on surrounding land uses is likely to vary with direction.

577 The evidence indicates that poor dispersion of odours to the west would be infrequent and odours are unlikely to migrate beyond 1km. Thus, we find that the industrial and commercial land uses nominated to occur within 1.5km of the western boundary form a suitable buffer to more sensitive land uses beyond. As we have discussed elsewhere, the present planning scheme

prevents the establishment of possible sensitive land uses, such as childcare and some educational facilities, within these zones. We are therefore satisfied that the planning scheme controls effectively serve as an acceptable buffer, which meets the purpose of the BPEM requirements for buffer distances with respect to odour.

578 To the north and east, the existing quarry land and landfill areas will buffer the land uses in these directions. Again, from our assessment of odour migration, we conclude that these buffer distances are acceptable, being well above the nominal 500m, with cells being some 1.5km to 2km from sensitive residential areas and the prison complex.

579 The final form of land use controls to the south are yet to be finalised under the precinct structure plan process. The planning scheme currently provides for a 500m wide strip of land zoned for Farming with an Urban Growth Zone beyond. Farming is not a sensitive land use and we do not consider that the amenity of the Farming zoned land will be impacted by odour emissions expected to the south. It remains to be seen what controls are put in place further south. Submissions and evidence to date suggest industrial and commercial land uses in support of a major transport hub. These are not sensitive land uses.

580 We are satisfied that on the basis of the current planning controls they provide an adequate buffer to protect sensitive land uses from adverse odour impacts. Any change to these controls in the future must take into account the MRL and the expansion to its landfill operations proposed by this works approval. We note that the potential for odour impacts is highest to the south due to the prevailing atmospheric conditions. Thus, the preparation of a PSP for this area should carefully address the issue of buffer distances, both to protect future sensitive land uses, but also to ensure that allowing such uses does not compromise the continued role of the MRL as a hub of state significance in the context of relevant waste management policy. However, these are matters for the future and are not scenarios that we can speculate about in the context of this proceeding.

Our assessment of landfill buffers

581 Overall, we are satisfied that the need for appropriate buffer distances to be maintained between the landfill and sensitive receptors, as required by the BPEM, have been provided by way of the planning scheme controls that apply to land surrounding the MRL and the proposed works.

582 We do not consider that the developers, in particular, or Melton can use this proceeding to agitate for a different outcome in land use or development terms to that adopted by Amendment C162 in the guise of seeking to ensure that a 500m buffer is provided from the edge of the nearest cell to the boundary so that the buffer recommended by the BPEM is wholly contained within land owned or controlled by Landfill Operations.

583 We consider this ignores the evidence and the provision of section 37A of the *Environment Protection Act 1970* that in determining an application for

review of a works approval, the Tribunal must take into account any relevant planning scheme.

584 Therefore, we do not find that the interests of any of the applicants will be unreasonably and adversely affected by completion of the works in accordance with the works approval in terms of the location of the cells and the buffers between the landfill and surrounding land.

NATURE AND SCOPE OF THE TRIBUNAL'S JURISDICTION

What are the Tribunal's powers in a section 33B application?

585 Each of the applications for review in this proceeding are made by third parties under section 33B of the *Environment Protection Act 1970*. Section 33B(1) provides that:

> (1) If the Authority …
>
> (a) issues a works approval; …
>
> a person whose interests are affected by the decision … may apply to the Tribunal … for review of the decision.

586 No issue was taken by anyone with the standing of any of the applicants to bring an application under section 33B. We are satisfied that each of the applicants is a person whose interests are affected by the decision to issue a works approval within the meaning of section 33B(1)(a) and consequently have standing before the Tribunal.[148]

587 Section 33B(2) provides that an application for review under subsection (1)(a) is to be based on either or both of the grounds set out sub-paragraphs (a) and (b), which relevantly provide:

> (a) that if the works are completed in accordance with the works approval, the use of the works will result in … a discharge, emission or deposit of waste to the environment … which will unreasonably and adversely affect the interests, whether wholly or partly of that person;
>
> (b) that if the works are completed in accordance with the works approval, the use of the works will result in … a discharge, emission or deposit of waste to the environment … in the area which will be inconsistent with any relevant Order declared under section 16, 16A or 17A for the area …

588 The applicants variously relied on grounds under both sub-paragraphs (a) and (b) of section 33B(2). Much evidence was led in support of those grounds. We have considered that evidence and reached various conclusions about it and the grounds of review. In doing so, we have

[148] In this context we note the difference between what constitutes an interest within the meaning of section 33B(1), which has a very wide meaning, and what constitutes an interest within the meaning of section 33B(2)(a), which has a much narrower meaning, as recognised by Cavanough J in *Thirteenth Beach Coast Watch Inc v The Environment Protection Authority* [2009] VSC 53 at [12].

determined that some of the conditions in the works approval should be modified.

589 An issue raised by the EPA is whether the Tribunal has power to modify conditions if the Tribunal decides not to set aside the EPA's decision to issue the works approval, or whether we should remit the matter for reconsideration by the EPA, possibly with directions from the Tribunal.

EPA's position

590 In its opening submission, EPA submitted that:[149]

> The Tribunal is conducting a review of the EPA's decision. But it is not a typical or general merits review (where the Tribunal stands in the shoes of the original decision-maker and makes the correct or preferable decision on the material before the Tribunal). The review here is far more confined in its scope.
>
> Why? Because section 33B of the EP Act limits the grounds upon which a third party objector may seek a review of a decision to issue a works approval.
>
> It follows that the Tribunal must be satisfied that the matters upon which the Applicants rely fall within the ambit of the grounds available under section 33B(2) of the EP Act.
>
> …
>
> It is not enough for the Applicants to make general complaints or to point to possibilities or potentials. They must establish the matters under sections 33B(2)(a) or (b).

591 EPA put forward the following propositions with respect to these grounds of review:

- The Tribunal must assume that the works in question are completed in accordance with the works approval and, if there be a licence under the Act, that the use made of them will be in accordance with that licence.
- The Tribunal must be satisfied, on the balance of probabilities, that the use of the works "will result" – not "may result" – in a discharge or deposit of waste to the environment.
- The Tribunal must be satisfied, on the balance of probabilities, that the use of the works will result in a discharge or deposit of waste that will – not may – unreasonably and adversely affect the applicant's interests (in the case of an application under section 33B(2)(a)) or be inconsistent with policy (in the case of an application under section 33B(2)(b)). With respect to an inconsistency with relevant policy, a risk or possibility of inconsistency is not enough.
- Determining whether there will be an inconsistency with relevant policy is rendered more difficult when that policy has both qualitative and quantitative provisions. Nevertheless, inconsistency with a policy of

[149] Exhibit EPA-1 paras [45] – [49].

that kind must still be objectively assessed within the known regulatory and policy framework.

592 We do not disagree with these propositions. However, where we disagree with EPA is the point at which we must make the relevant assessment and when the power of the Tribunal to consider additional or varied conditions to those included in the works approval as issued may be exercised. We have reservations about EPA's bald assertion that in conducting a review of the EPA's decision to issue a works approval, "it is not a typical or general merits review (where the Tribunal stands in the shoes of the original decision-maker and makes the correct or preferable decision on the material before the Tribunal)", but that the review is far more confined in its scope.

593 It seems to us that EPA's literal approach to the statutory provisions of the grounds under section 33B being translated into the powers of the Tribunal under section 37 runs the risk of a 'chicken and egg' type situation developing. In other words, EPA seems to be saying that the Tribunal must be satisfied that the use of the works as proposed without any modification will be inconsistent with policy, and hence the applicant's ground of review must be made out, before the Tribunal has any power to modify the proposal or impose any additional or varied condition, which would then result in the proposal not being inconsistent with policy. It seems to be saying that the Tribunal cannot propose to modify the proposal or change a condition in order for the Tribunal to be confident in finding that, as modified, the use of the works *will not* be inconsistent with policy or *will not* unreasonably and adversely affect the applicant's interests, as the case may be.

594 In its closing submission, EPA addressed this point about the Tribunal's powers in a section 33B review more explicitly. It made the following submissions:[150]

> 30. By reason of section 37(a) of the EP Act, the Tribunal may determine these proceedings by directing that a works approval shall or shall not be issued. And if the Tribunal directs that a works approval shall be issued, it may direct that that works approval be issued subject to a specified condition (or conditions).
>
> 31. In proceedings such as these, the first step that must be taken is to determine whether any of the grounds of review are made out.[151] The course the Tribunal may then take turns on the answer to that question.
>
> 32. If the Tribunal were to conclude that a ground of review was made out, it may do one of three things.
>
> 32.1 **First**, the Tribunal may direct that a works approval shall not be issued.

[150] Exhibit EPA-94.
[151] *Norman v Environment Protection Authority* [2018] VCAT 1147 at [119].

32.2 **Secondly**, the Tribunal may direct that a works approval be issued subject to new conditions that address the ground that has been made out.[152]

32.3 Or **thirdly**, the Tribunal may exercise its discretion to refuse to intervene, and direct that an unchanged works approval be issued. But this discretion is limited. As Cavanough J observed in passing in *Thirteenth Beach*,[153] refusing to intervene once a ground has been established under section 33B should only be done "for some good reason".

33. If, however, the Tribunal were to conclude that a ground of review was not made out, it is clear that the Tribunal may direct that an unchanged works approval shall be issued. But it is not clear that the Tribunal can do anything else. In particular, it is not clear whether the Tribunal may direct that a works approval shall be issued subject to new or different conditions. In fact, there is a conflict in the authorities on this point.

33.1 In *Dee v Environment Protection Authority*,[154] the VCAT (at [101]) said this without the benefit of argument:

"We have found that the third party objectors have not made out their case for a review of the works approval in terms of the grounds open to them under section 33B(2) EP Act and we therefore propose to direct, under section 37(a) of that Act, that a works approval shall be issued subject to specified conditions. We propose to impose the conditions that appear in the works approval as issued by the EPA on the 3rd April 1998 save that we propose to correct two errors in the nature of slips which appear in the works approval as originally issued and we propose to update it to extend certain time limits specified in the conditions as they are now appear because such time limits have already expired."

33.2 By contrast, in the *Western Region (Lyndhurst)*[155] case, the VCAT – having concluded that the grounds of review under section 33B(2) were not established – relevantly went on to say this (at [57]-[58]):

"It was suggested by the parties that, if the application should fail we should direct that a works approval be issued subject to certain conditions being included in the works approval and the licence. The intended purpose of those conditions was to produce a better outcome in the

---

152 Ibid at [118]; *Dual Gas* at [15]. See, eg, *Western Region Environment Centre Inc v Environment Protection Authority* [2018] VCAT 1174 ("**Western Region (Wyndham)**".

153 *Thirteenth Beach* at [41]. Compare the Developers' outline dated 31 July 2018 (Exhibit D15) at [5]. That paragraph impermissibly ignores the concluding words of Justice Cavanough's observation in *Thirteenth Beach* at [41].

154 [1999] VICCAT 385.

155 *Western Region Environment Centre Inc v Environment Protection Authority* (2003) 13 VPR 223.

> *eyes of the parties and in particular, to allay the concerns of the Council in regard to [certain] matters… We do not think this is the correct approach…*
>
> *We have found that the limited grounds available to review the decision are not made out. If we were now to alter the decision or add something to it or substitute a new decision in order to improve it in the eyes of any of the parties, we would in effect be admitting further grounds of review beyond those permitted by the Act. We would be saying that parties are not confined to the permitted grounds but can add the further ground that the decision could be improved in some way. We do not think that is what the Act contemplates. The only order that will be made will therefore be that the application for a review is dismissed and the decision under review is affirmed."*

33.2 The EPA now contends that the position identified in *Western Region (Lyndhurst)* is correct for the reasons given by the Tribunal in that case. That being so, the Tribunal can only direct that an unchanged works approval shall be issued if no ground of review is made out. The Tribunal may, of course, make recommendations in its reasons as to what it considers to be appropriate changes to the conditions of the Works Approval. The EPA, when considering whether to exercise its power under section 19C of the EP Act to amend those conditions, can obviously be expected to give serious consideration to any recommendations of that kind.

595 By way of footnote, EPA stated:

> The EPA acknowledges that, in its opening, it suggested that the Tribunal may exercise the power under section 20C(3A) of the EP Act if no ground of review is made out. Having reflected carefully on the question, it was wrong to do so. The VCAT may not exercise the power under section 20C(3A) in that scenario. Whilst the Tribunal generally has all the powers of the decision-maker on review, that must yield to a contrary intention in the enabling enactment: see section 159 of the VCAT Act. Such a contrary intention exists here.

Is the Tribunal limited in its ability to amend works approval conditions in section 33B applications?

Summary of Tribunal's findings

596 We disagree with EPA's position about the limit of the Tribunal's powers on review. We do not consider this view is supported by a careful analysis of the statutory provisions for reasons that we shall set out. We find there is nothing in the legislation to justify a view that an application for review under section 33B of the *Environment Protection Act 1970* is any different in principle to other types of applications for review to which the *Victorian Civil and Administrative Act 1998* applies where the Tribunal stands in the

shoes of the original decision-maker and must make the correct or preferable decision on the material before the Tribunal. We do not agree with EPA that the review here is different or "far more confined in its scope".

597 In our view, we consider that EPA is blurring the distinction between:

- standing by a third party to apply to the Tribunal for review of a decision to issue a works approval, which must be established under section 33B(1);
- the grounds upon which such an application for review can be based, which are confined by section 33B(2);
- the powers of the Tribunal to consider such a review if properly made under section 33B, which are governed by section 32 (Jurisdiction of the Tribunal), section 37 (Powers of Tribunal), section 37A (Matters Tribunal must take into account), and section 51 of the *Victorian Civil and Administrative Act 1998* (Functions of Tribunal on review); and
- the functions of the EPA when considering an application for a works approval, which are governed by section 19B(7) (Works approval), and section 20C (Consideration of policy).

598 EPA appears to take the view that the Tribunal's powers are confined to making a finding whether either of the grounds set out in section 33B(2) are made out and making a decision to refuse to issue a works approval if they are made out, or to affirm the decision to issue a works on the conditions in the works approval if they are not made out. It allows no middle ground to vary the decision under review by including other conditions to ensure that none of the grounds in section 33B(2) are, in fact, made out, and that a works approval can be issued that is consistent with all applicable policies, as required by section 20C(2).

599 We find that the Tribunal is not limited only to:

- finding that the grounds of review set out in section 33B(2) are established; namely, that if the works in question are completed in accordance with the works approval as issued and used in accordance with a licence, the use of the works will, not may, result in a discharge, emission or deposit of waste to the environment which will unreasonably and adversely affect the interests of the third party or be inconsistent with policy; and
- deciding to affirm or set aside the decision.

600 We consider the Tribunal can also make a decision to vary the decision under review by including other conditions to ensure that none of the grounds in section 33B(2) are made out, and that a works approval can be issued that is consistent with all applicable policies, as required by section 20C(2).

601 We find that the terms of section 33B(2) do no more than frame the grounds of an applicant. They do not frame the basis of the decision that the Tribunal must make under section 20C(2) or (3) standing in the shoes of the Authority. In exercising the powers of the Authority when it stands in its shoes, the Tribunal is called upon to consider whether:

- There will be an inconsistency with applicable policy or an outcome that is contrary to policy; and/or
- Whether one of the other three outcomes under s20C(3)(a)(ii) to (iv) is *likely* to occur.

602 We now set out our reasons for this view.

Functions and powers of Tribunal on review

603 Section 32 of the *Environment Protection Act 1970* provides that:

> **32 Jurisdiction of Tribunal**
>
> (1) The Tribunal has jurisdiction to review decisions of the Authority … with respect to—
>
> (a) works approvals;
>
> …

604 Section 51 of the *Victorian Civil and Administrative Act 1998* sets out the functions of the Tribunal on review. It provides as follows:

> **51 Functions of Tribunal on review**
>
> (1) In exercising its review jurisdiction in respect of a decision, the Tribunal—
>
> (a) has all the functions of the decision-maker; and
>
> (b) has any other functions conferred on the Tribunal by or under the enabling enactment; and
>
> (c) has any functions conferred on the Tribunal by or under this Act, the regulations and the rules.
>
> (2) In determining a proceeding for review of a decision the Tribunal may, by order—
>
> (a) affirm the decision under review; or
>
> (b) vary the decision under review; or
>
> (c) set aside the decision under review and make another decision in substitution for it; or
>
> (d) set aside the decision under review and remit the matter for re-consideration by the decision-maker in accordance with any directions or recommendations of the Tribunal.

605 Section 97 of the *Victorian Civil and Administrative Act 1998* provides that:

> **97 Tribunal must act fairly**

> The Tribunal must act fairly and according to the substantial merits of the case in all proceedings.

606 There is a difference between limiting the standing of people who may lodge an application for review or limiting the grounds upon which an applicant may seek to review the decision of a decision-maker and limiting the powers of the Tribunal to consider an application for review properly made.

607 Any limitations on standing or the grounds upon which an applicant may rely will usually be set out in the enabling enactment. However, once an application for review is properly made to VCAT, the Tribunal's powers and procedures are governed by the provisions of the *Victorian Civil and Administrative Act 1998* unless there is a contrary provision in the enabling enactment. Thus section 159 of the *Victorian Civil and Administrative Act 1998* provides:

> **159 Dealing with inconsistencies**
>
> If a provision of this Act, the regulations or the rules is inconsistent with a provision of an enabling enactment, the provision of the enabling enactment prevails to the extent of the inconsistency.

608 Sometimes the enabling enactment will set out specific matters that the Tribunal must consider in certain types of applications for review. Thus, section 37A of the *Environment Protection Act 1970* sets out matters the Tribunal must take into account in determining an application for review or a declaration under Part III of the Act. Section 37A(c) includes that the Tribunal must:

> (c) take account of, and give effect to, any relevant State environment protection policy or waste management policy; …

609 An enabling enactment may also set out powers of the Tribunal on a review, including limits as to what the Tribunal may consider or as to its powers. Section 33C provides an example of the latter.

610 Section 33C provides as follows:

> **33C What matters can Tribunal consider in reviews of conditions of works approvals and licences?**
>
> (1) This section applies if—
>
> (a) the Authority or a delegated agency has amended a works approval or licence; and
>
> (b) a person has applied to the Tribunal for review of any of the conditions to which the works approval or licence is subject.
>
> (2) In a review referred to in subsection (1)(b), the Tribunal may only consider, and make orders in respect of, those matters directly related or consequential to the amendment of the works approval or licence.

611 Section 37 sets out the powers of the Tribunal relating to various types of reviews under the *Environment Protection Act 1970*. It provides as follows:

> **37 Powers of Tribunal**
>
> On a review under this Part the Tribunal, by order, may—
>
> (a) direct that a works approval shall or shall not be issued or transferred or be subject to a specified condition;
>
> (b) direct that a licence shall or shall not be issued, transferred, revoked or suspended or be amended under section 20A or be subject to a specified condition;
>
> (ba) in the case of a direction under section 19AG, confirm, amend or revoke the direction;
>
> (c) subject to section 33C, confirm, amend or revoke any amendment of a works approval under section 19C or of a licence under section 20(9);
>
> (d) in the case of an appeal under section 34(1), confirm, revoke or amend the notice as the Tribunal thinks fit;
>
> (e) in the case of an appeal under section 35(1), confirm, revoke or amend the notice as the Tribunal thinks fit;
>
> (f) in the case of an application under section 36AA—
>
> (i) if the Tribunal considers the provision to be oppressive, unjust or unreasonable, revoke or amend the provision as the Tribunal considers appropriate; or
>
> (ii) in any other case, confirm the provision;
>
> (g) direct that a permit shall or shall not be issued or renewed;
>
> (h) direct that a permit shall or shall not be issued subject to any specified terms or conditions;
>
> (i) in the case of an appeal under section 36B, confirm the fee or direct that the Authority re-calculate the fee and make any refund that is appropriate;
>
> (ia) in the case of an application under section 36BA, confirm, revoke or amend the notice as the Tribunal considers appropriate;
>
> (j) in the case of an appeal under section 36C, amend or discharge a financial assurance.

612 The powers of the Tribunal under section 37(a) in respect of a review of a works approval are very broad. They contain no restrictions that specifically apply to applications for review by third parties under section 33B, unlike the reference to applications under section 33C or other particular types of applications specified in section 37.

613 Thus, whilst the grounds upon which an application for review by a third party under section 33B are limited to those matters set out in section

33B(2), there is nothing in the *Environment Protection Act 1970* that purports to restrict the powers of the Tribunal upon review under this provision in the way, for example, that sections 33C(2) and 37(c) combined restrict the Tribunal's powers in respect of reviews of conditions of an amendment of works approvals and licences.

614 In our view, the powers of the Tribunal conferred by section 37(a) of the *Environment Protection Act 1970* must be read cumulatively with the powers conferred on the Tribunal under section 51 of the *Victorian Civil and Administrative Act 1998.* There is no justification in reading down the powers conferred by section 51 of the *Victorian Civil and Administrative Act 1998* or limiting them only to the powers conferred by section 37(a) of the *Environment Protection Act 1970.* Section 51 explicitly states that the Tribunal has any functions conferred by or under the enabling act and any functions conferred by or under this Act (i.e. the *Victorian Civil and Administrative Act 1998*). There would need to be a specific limit placed on the powers of the Tribunal in the enabling Act to oust any of the powers conferred by the *Victorian Civil and Administrative Act 1998* or a clear contrary intention expressed.

615 We consider that section 33C and section 37(c) combined represent an example of such a contrary intention to which the proposition in section 159 of the *Victorian Civil and Administrative Act 1998* would apply. However, we find that there is no similar limitation on the powers of the Tribunal to be found within the *Environment Protection Act 1970* with respect to an application for review under section 33B to which section 159 would apply.

616 Thus, we find that in a section 33B application the Tribunal has power under section 37(a) of the *Environment Protection Act 1970* to direct that a works approval shall or shall not be issued or be subject to a specified condition. It also has power under the *Victorian Civil and Administrative Act 1998* section 51(2)(b) to vary the decision under review and under 51(2)(c) to set aside the decision under review and make another decision in substitution for it.

617 The powers under both these Acts lead us to the conclusion that the Tribunal does stand in the shoes of the original decision-maker, namely the EPA, and is charged with the responsibility of making the correct or preferable decision on the material before the Tribunal. The Tribunal is not restricted to simply directing that a works approval shall not be issued if it concludes that a ground of review is made out; or, if it concludes that a ground of review is not made out, directing that an unchanged works approval shall be issued. Rather, we find it is open to the Tribunal, standing in the shoes of EPA as the original decision-maker, to direct that a works approval shall be issued with new or amended conditions where this will enable the Tribunal to be satisfied that the purpose of the *Environment Protection Act 1970* will be met and that the obligations and functions of EPA under the Act, will be complied with.

618 We turn now to consider what those obligations and functions of EPA are.

Functions and obligations of EPA

619 Section 19B of the *Environment Protection Act 1970* deals with works approvals. Many of its provisions deal with applications for a works approval and processes that EPA must follow in dealing with such applications. Section 19B(7) sets out the power of the EPA when making a decision about a works approval application. It provides:

> (7) The Authority shall not later than 4 months after receiving an application for a works approval—
>
> (a) refuse to issue a works approval; or
>
> (b) issue a works approval subject to such conditions as the Authority considers appropriate and which conditions shall be specified in the works approval.

620 Other sections of the Act provide guidance about the matters that EPA must consider and respond to.

621 Section 1A sets out the purpose of the Act, which is to create a legislative framework for the protection of the environment in Victoria having regard to the principles of environment protection. The principles of environment protection are set out in sections 1B to 1L. Section 1A(3) provides:

> (3) It is the intention of Parliament that in the administration of this Act regard should be given to the principles of environment protection.

622 Section 20C deals with consideration of policy.

623 Policy is a defined term:[156]

> **policy** means a State environment protection policy or a waste management policy;

624 Section 20C(2) provides that:

> (2) In considering an application for the issue, transfer or amendment of an authorisation [which includes a works approval], the Authority must have regard to policy so that the authorisation and any condition in, or relating to, the authorisation is consistent with all applicable policies.

625 Section 20C(3) provides that:

> (3) The Authority may refuse to issue, transfer or amend an authorisation—
>
> (a) if, in the opinion of the Authority, the issue, transfer or amendment would—
>
> (i) be contrary to, or inconsistent with, any applicable policy; or
>
> (ii) be likely to cause, or to contribute to, pollution; or
>
> (iii) be likely to cause an environmental hazard; or

[156] Section 4 of the *Environment Protection Act 1970*.

(iv) be likely to endanger public health; …

626 Thus, a primary obligation rests on EPA to ensure that the works approval is consistent with all applicable policies when deciding to issue a works approval and what conditions to apply. Conversely, if the issue of a works approval would be contrary to or inconsistent with any applicable policy, the Authority must refuse to issue the works approval. In considering an application for review regarding a works approval and what conditions to impose, the Tribunal is under the same obligation to ensure consistency with policy.

627 However, with respect to causing or contributing to pollution, causing an environmental hazard, or endangering public health, which are all ways in which a works approval and the use of the works may unreasonably and adversely affect the interests of a third person, the obligation resting on EPA is to avoid the likelihood of causing pollution, an environmental hazard or endangering public health.

628 For many years, in decision-making under the *Environment Protection Act 1970,* emphasis has been placed on the wording of the grounds of review set out in sections 33B(2)(a) and (b) to support the propositions that in such a review:

- The Tribunal must be satisfied, on the balance of probabilities, that the use of the works "will result" – not "may result" – in a discharge or deposit of waste to the environment;
- The Tribunal must be satisfied, on the balance of probabilities, that the use of the works will result in a discharge or deposit of waste that will – not may – unreasonably and adversely affect the applicant's interests (in the case of an application under section 33B(2)(a)) or be inconsistent with policy (in the case of an application under section 33B(2)(b)); and
- With respect to an inconsistency with relevant policy, a risk or possibility of inconsistency is not enough.

629 We agree that in order to support a decision to set aside the decision of the EPA to issue a works approval and direct that a works approval must not be issued, the Tribunal would need to be satisfied that these propositions are met.[157] However, sometimes it is not clear whether use of the works will be consistent with all aspects of a particular policy. As highlighted by the Tribunal in *Dual Gas,* evidence of the consistency with policy is sometimes a necessarily qualitative exercise, where some aspects may be 'more' consistent with policy than others. Indeed, there may be an inconsistency or risk of inconsistency with policy, but particular changes to the works proposed or the way in which they will be used would mean that the likelihood or risk of inconsistency would be removed.

[157] *Thirteenth Beach Coast Watch Inc v The Environment Protection Authority* [2009] VSC 53.

630 The whole notion of 'best practice', which is central to many aspects of the BPEM, can change (and improve) over time.[158] Often in reviews of works approvals, further evidence is advanced that was not before the EPA when it made its decision or more information is available about improvements that can be made to the works or their proposed use to improve compliance with policy, especially in circumstances where the policy provisions are qualitative rather than quantitative.

631 In exercising its powers under the *Environment Protection Act 1970* and having regard to the objectives of the Act and the principles of environmental protection, it would be appropriate for EPA to include as conditions in a works approval measures to improve the level of policy compliance for a proposal. Likewise, we consider it is open to the Tribunal on review, when standing in the shoes of the original decision-maker, to exercise the same functions and powers of the EPA in accordance with section 51(1)(a) of the *Victorian Civil and Administrative Act 1998.*

632 This matter of consistency with policy is couched in definitive terms. The Authority must be satisfied that there would not be an inconsistency with policy in issuing a works approval or including any condition under section 20C(2). Alternatively, if in the opinion of the Authority the issue of a works approval would be contrary to, or inconsistent with any applicable policy, it must exercise its power of refusal under section 20C(3)(a).

633 However, the Authority need only form the view that an authorisation *would be likely* to cause, or contribute to, pollution; or cause an environmental hazard; or endanger public health, in order to exercise that same power under section 20C(3). Conversely, if the Authority forms the opinion that issuing, transferring or amending the authorisation *would not be likely* to result in one or more of these specified outcomes in section 20C(3)(a)(ii)-(iv), it is free to issue, transfer or amend that authorisation.

634 Thus, in exercising its powers under the Act, the terms of section 20C(3)(a)(ii) to (iv) requires the Authority to form an opinion about what would or would not *be likely* to arise from its decision. When so read in its entirety, the terms of section 20C(3)(a)(ii) to (iii) require the Authority, and the Tribunal standing in its shoes, to consider the probability of the consequential outcome of its decision. It does not have to reach a definitive position that there will or won't be one of the specified outcomes. It need only conclude that something is likely or not (i.e. is more probable than not as distinct from something simply being possible). The likelihood, as distinct from certainty, of the consequences of issuing a works approval and the use of the works are relevant matters to be considered and about which an opinion must be formed in the context of an application for review under both sub-sections (a) and aspects of (b) of 33B(2).

[158] The Act specifically contemplates that EPA can revoke or amend any condition to which a licence is subject or attach new conditions to a licence (section 20(9)); or if a policy is declared or varied amend any licence so that it is consistent with the policy (section 20C(4).

635 We therefore consider that EPA's submission on this point overstates the limit on the Tribunal's powers because of the limited grounds of review. This is a different issue. We observe that the grounds of review available under section 33B in effect give an opportunity for third parties to test whether or not the EPA has exercised its decision-making powers correctly when the terms of section 20C are considered.

636 In effect, section 33B provides for parties to apply to the Tribunal to re-exercise the decision-making powers and processes of the EPA. In exercising such powers and processes, we think it would be a curious outcome to limit the Tribunal in the exercise of powers clearly vested in it under the provisions of section 51 of the *Victorian Civil and Administrative Act 1998* in a way that may result in a less than preferable decision – the more so when such power is not limited by express terms under section 37(a) of the *Environment Protection Act 1970* considering that the purpose of this section is to set out the powers of the Tribunal.

637 We agree the Tribunal must be satisfied that an applicant has standing under section 33B(1) and that the matters relied upon fall within the ambit of the grounds available under section 33B(2) for there to be a valid application for review. If those grounds are established, we consider it would not be open to the Tribunal to affirm the decision to issue a works approval. We consider that such a decision would be contrary to both the purpose of the *Environment Protection Act 1970* and to section 20C(2). As we discuss below, we do not consider there is discretion to accept an inconsistency with policy or allow pollution, environmental hazard or any risk to public health in issuing a works approval. Rather, the Tribunal has an obligation (just as the EPA does) to ensure that any works approval and any condition is consistent with all applicable policies. The objective is to ensure consistency with policy.

638 The Tribunal has the power to vary a decision. It can do this to amend conditions or include new conditions so that the Tribunal can be satisfied that the Act will be complied with, that the works approval will be consistent with all applicable policies, and to ensure that none of the grounds relied upon by an applicant under section 33B(2) are established.

639 In short, we consider that the Tribunal does stand in the shoes of the original decision-maker (i.e. the EPA) and can make whatever changes to the works approval proposal that would have been open to the EPA when it made its original decision. An application for review to the Tribunal under section 33B is an application on the merits of a works approval, albeit on specified grounds. Section 97 of the *Victorian Civil and Administrative Act 1998* requires the Tribunal to act according to the substantial merits of the case.

640 Essentially, section 33B(2)(b) replicates the obligations of the EPA under section 20C, which are that in considering an application for the issue of a works approval, the Authority must have regard to policy so that the works

approval and any condition in, or relating to, the works approval is consistent with all applicable policies.

641 When EPA says with respect to the ground of inconsistency with relevant policy relied upon by an applicant under section 33B(2)(b), that a risk or possibility of inconsistency is not enough to invest the Tribunal with power to amend a condition or an aspect of a works approval proposal, we disagree.

642 The purpose of the *Environment Protection Act 1970* is to create a legislative framework for the protection of the environment in Victoria having regard to the principles of environment protection. The principles of environment protection are set out in sections 1B to 1L. It is the intention of Parliament that in the administration of this Act regard should be given to the principles of environment protection.[159]

643 One of the principles of environment protection is the precautionary principle. This is described in section 1C in the following terms:

> **1C The precautionary principle**
>
> (1) 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.
>
> (2) Decision making should be guided by—
>
> (a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and
>
> (b) an assessment of the risk-weighted consequences of various options.

644 In the realm of environment protection generally, and waste management in particular, standards of what constitutes best practice are continually evolving and becoming more stringent. For example, the standard of cell construction and the landfill gas system included in the works approval application exceed the standards of what was initially approved in respect of the cells and landfill gas system currently in use at the MRL. An important aspect of EPA's role is to monitor works approvals and licences, and to amend them from time to time to keep pace with changes to policy and what constitutes best practice.

645 If the Tribunal considers that there may be any risk of environmental pollution, then applying the precautionary principle, it ought to be able to impose conditions to ensure that there will not be any inconsistency with policy. We consider the Tribunal would be acting contrary to the purpose of the *Environment Protection Act 1970* to reach a conclusion that, whilst there might be a risk of pollution or inconsistency with policy, but no certainty, we should not exercise our powers to do anything to improve the

[159] Section 1A of the *Environment Protection Act 1970.*

proposal to ensure that there will not be any emission or discharge or deposit of waste to the environment inconsistent with any relevant policy, or to lessen the risk to a more acceptable level of improbability. Equally, we consider that we would be failing to exercise the function of the EPA under section 20C(2), which we are obliged to exercise in any application for review standing in the shoes of the original decision-maker.

Is there any justification for reading down the Tribunal's powers?

646 In our view, there is no justification for reading down the Tribunal's powers with respect to varying conditions. We are not persuaded that we should follow views expressed by the Tribunal in the *Western Region (Lyndhurst)* case. We prefer the approach taken by the High Court in *Shi v Migration Agents Registration Authority.*[160]

647 *Shi* was an appeal from a decision of the Commonwealth Administrative Appeals Tribunal (AAT) on an application for review of a decision by the Migration Agents Registration Authority (the Authority) to cancel registration of a migration agent. The High Court held that the Tribunal's task was to determine what was the correct or preferable decision. A particular issue in the case was whether the Tribunal should determine what was the correct or preferable decision when the Authority made its decision, or whether the Tribunal should determine the correct or preferable decision as at the time of its own decision. The Court held that there was necessity for close attention to the applicable legislative provisions. The applicable legislative provision included section 43 of the *Administrative Appeals Tribunal Act 1975 (Cth)* (the AAT Act), which is in substantially similar terms as section 51 of the *Victorian Civil and Administrative Act 1998*.

648 The Court said that the inter-relationship of the enabling legislation and the AAT Act determines the character of the "decision" that is under review and the "powers and discretions" that the Tribunal is to exercise pursuant to section 43(1) of the AAT Act.[161]

649 In considering the nature of the interlocking legislation in *Shi,* Kirby J considered several factors, including the nature of the Tribunal; the function of the Tribunal; the purpose of section 43 of the AAT Act; and the nature of the decision under review.

650 With respect to the nature of the Tribunal, Kirby J referred to "the radical objectives that lay behind the enactment of the AAT Act."[162] He referred to the intention to confer on the Tribunal jurisdiction to hear and determine an application by a person who is aggrieved or adversely affected by a decision on the facts and merits of the case.[163]

651 With respect to the function of the Tribunal, Kirby J referred to questions as to how, under section 43 of the AAT Act, the Tribunal should proceed with

160 [2008] HCA 31.
161 [2008] HCA 31 at [26], [28] and [93].
162 *Ibid* [30].
163 *Ibid* [31] – [32].

its functions of review and, where there was the grant of a power of decision "on the merits", according to whose view of the merits and at what point of time the "merits" are to be examined? On this point he said:

[35] Davies J pointed out that, already by 1981, there was established authority in the Federal Court of Australia, and in the Tribunal, on many of these questions[164]:

> "In *Drake v Minister for Immigration and Ethnic Affairs*[165], Bowen CJ and Deane J stated the function of the Tribunal as follows:
>
> > 'The question for the determination of the Tribunal is not whether the decision which the decision-maker made was the correct or preferable one *on the material before him*. The question for the determination of the Tribunal is whether that decision was the correct or preferable one *on the material before the Tribunal*.'
>
> In *Collector of Customs (NSW) v Brian Lawlor Automotive Pty Ltd*[166], Smithers J said:
>
> > 'It is important to observe that the Tribunal is not constituted as a body to review decisions according to the principles applicable to judicial review. In essence the Tribunal is an instrument of government administration and designed to act where decisions have been made in the course of government administration but which are in the view of the Tribunal not acceptable when tested against the requirements of good government.'"

[36] Responding to a submission that the word "may" in s 43 of the AAT Act implied an element of discretion such as to authorise the Tribunal to limit its function as it saw fit, Davies J concluded[167]:

> "[T]he provision 'For the purpose of reviewing a decision, the Tribunal may exercise all the powers and discretions that are conferred by any relevant enactment on the person who made the decision …' is not concerned to confer upon the Tribunal authority to limit its function but rather to confer upon it an amplitude of powers so that the Tribunal may exercise, if it is convenient and useful to do so, not only the decision-making power upon which the decision-maker relied, but all relevant powers and discretions which were conferred by the enactment upon the decision-maker. The provision extends the authority of the

164 (1981) 3 ALD 88 at 91-92.
165 (1979) 24 ALR 577 at 589 (emphasis added).
166 (1979) 24 ALR 307 at 335.
167 (1981) 3 ALD 88 at 92.

> Tribunal so that it may more adequately exercise its function of reviewing on the merits the subject decision."

[37] Davies J acknowledged that regard might be had to the decision of the primary decision-maker as part of the "material before the Tribunal", particularly where it involved special expertise or knowledge[168]. But ultimately, it was for the Tribunal to reach its own decision upon the relevant material including any new, fresh, additional or different material that had been received by the Tribunal as relevant to its decision. In effect, this was no more than a consequence of the Tribunal's obligation to conduct a true merits review[169].

652 In the context of considering the purpose of section 43 of the AAT Act, Kirby J referred to "the obvious purpose of having the Tribunal (as it is commonly put) 'step into the shoes' of the primary decision-maker, so as to make the decision that ought to have been made 'on the merits'."[170]

653 Further in *Shi*, in terms of the Tribunal's task, the other majority judges, Hayne and Heydon JJ, said:

[98] It has long been established[171] that:

> "The question for the determination of the Tribunal is not whether the decision which the decision-maker made was the correct or preferable one *on the material before him*. The question for the determination of the Tribunal is whether that decision was the correct or preferable one *on the material before the Tribunal*." (emphasis added)

…

[99] Once it is accepted that the Tribunal is not confined to the record before the primary decision-maker, it follows that, unless there is some statutory basis for confining that further material to such as would bear upon circumstances as they existed at the time of the initial decision, the material before the Tribunal will include information about conduct and events that occurred after the decision under review. If there is any such statutory limitation, it would be found in the legislation which empowered the primary decision-maker to act; there is nothing in the AAT Act which would provide such a limitation.

[100] The AAT Act provides for the review of decisions by a body, the Tribunal, that is given all of the powers and discretions that are conferred on the original decision-maker. As Brennan J rightly pointed out in an early decision of the Tribunal[172], not all of the powers that the Tribunal may exercise draw upon the grant of powers and discretions to the primary decision-maker:

---

168 (1981) 3 ALD 88 at 92-93.
169 See *Brian Lawlor Automotive* (1979) 24 ALR 307 at 335.
170 [2008] HCA 31 at [40].
171 *Drake* (1979) 24 ALR 577 at 589 per Bowen CJ and Deane J.
172 *Re Brian Lawlor Automotive Pty Ltd and Collector of Customs (New South Wales)* (1978) 1 ALD 167 at 175-176.

> "A decision by the Tribunal pursuant to s43(1)(a) to affirm the original decision leaves the original decision intact, and that is the only decision which takes effect under the enactment: the original powers are not drawn upon by the Tribunal's order. Equally, a decision to set aside the decision under review and remit the matter for reconsideration pursuant to s43(1)(c)(ii) requires the original repository of the powers and discretions to exercise them afresh: they are not exercised by the Tribunal. Section43(1) grants the original powers and discretions to the Tribunal, but it does not require the Tribunal to exercise them unless the Tribunal is making a fresh order the effectiveness of which depends upon their exercise."
>
> But subject to that qualification, the Tribunal's task is "to do over again"[173] what the original decision-maker did.

654 We consider that this commentary and these findings by the High Court about the role and powers of the Commonwealth Administrative Appeals Tribunal are directly apposite to the role and powers of the Victorian Civil and Administrative Tribunal. The powers of the Tribunal set out in section 51 of the *Victorian Civil and Administrative Act 1998* are the same as the powers of the Commonwealth AAT set out in section 43 of the AAT Act. The only difference is that in section 51, it is expressed that in exercising its review jurisdiction, the Tribunal "has all the functions of the decision-maker", whereas in section 43 of the AAT Act, it is expressed that for the purpose of reviewing a decision, the Tribunal "may exercise all the powers and discretions that are conferred by any relevant enactment on the person who made the decision". In this respect, the Tribunal's functions under the *Victorian Civil and Administrative Act 1998* are even more unequivocal than under the AAT Act.

655 Like the AAT, VCAT is required to consider the merits of the case. As previously discussed, we have found no inconsistency between the powers of the Tribunal under the *Victorian Civil and Administrative Act 1998* and the Tribunal's powers under the *Environment Protection Act 1970* in considering a review of decisions of the EPA with respect to works approvals under section 33B.

656 Therefore, we consider that *Shi* supports our conclusion that the Tribunal stands in the shoes of the original decision-maker, namely the EPA, and is charged with the responsibility of making the correct or preferable decision on the material before the Tribunal on the merits. It is open to the Tribunal to exercise any of the functions set out in section 51. It is not limited in the exercise of those functions. It is open to the Tribunal to direct that a works approval shall be issued with new or amended conditions.

---

[173] *Mobil Oil Australia Pty Ltd v Federal Commissioner of Taxation* (1963) 113 CLR 475 at 502 per Kitto J; [1963] HCA 41.

657 We do not consider that the decision of the Supreme Court in *Thirteenth Beach*[174] requires a conclusion otherwise.

658 In this case, Thirteenth Beach Coast Watch Inc (Coast Watch), was an incorporated association of some 20 or 30 persons formed for the purpose of trying to protect the coastal environment around Thirteenth Beach, near Connewarre in Victoria. It made an application to VCAT under section 33B(2)(a) to review EPA's issue of a works approval for the construction of a sewage sludge treatment facility at Connewarre. The Tribunal affirmed, on conditions, the decision of the EPA to issue a works approval. Coast Watch appealed the decision.

659 The Court held, in dismissing the appeal, that none of the interests that Coast Watch relied upon was an "interest" of a kind covered by section 33B(2)(a) of the *Environment Protection Act 1970.* Section 33B(2)(a) should be interpreted as referring to the financial, physical or other like personal interests of the particular applicant as an individual or as a corporation. Only interests of that kind could intelligibly be said to be capable of being "unreasonably and adversely affected" by the "use" of proposed works within the meaning and for the purposes of section 33B(2)(a). They did not include an intellectual, philosophical or emotional interest in the protection of the environment.

660 This was the *ratio decidendi* of the case. Nevertheless, Cavanough J made a number of observations about other aspects of the *Environment Protection Act 1970* in the context of applications for review under section 33B, in particular whether a mere *risk* of discharges, emissions etc could be sufficient to indicate that an objector's interests will be unreasonably and adversely affected or that a situation of inconsistency with a relevant order etc will arise. On this point, Cavanough J held that it was unnecessary to decide whether the Tribunal erred in holding that a mere risk of discharges, emissions or deposits of wastes to the environment could not be sufficient for the purposes of section 33B(2)(a)(i) or (b)(i) of the Act.

661 One particular passage that is often quoted in support of EPA's narrow view about the ambit of applications for review under section 33B is the following, which concerns the application of section 20C in a section 33B review application:

> [41] In these circumstances it is unnecessary to deal with Coast Watch's supporting submissions to the effect that VCAT's jurisdiction in s 33B applications is wide. However I would venture to say that s 20C of the Act has little or no application to VCAT in s 33B applications for review. In terms, s 20C is directed to the powers and duties of the EPA in considering applications for, among other things, works approvals at first instance. The nature, breadth and flexibility of the powers and duties so conferred on the EPA seems to be inconsistent with what I perceive to be the carefully limited role of VCAT under s

174 *Thirteenth Beach Coast Watch Inc v The Environment Protection Authority* [2009] VSC 53.

> 33B: compare especially s 20C(3) and (3A). Further, I doubt very much whether s 33B envisages that there should be a general, unconfined review once one of the grounds has been made out. Rather, it seems to me that, the statutory grounds being somewhat challenging in themselves, Parliament envisaged that where one or other of them was successfully made out, the review would be at an end, save perhaps for a limited discretion in the Tribunal to decline to intervene for some good reason. Finally, I note that s 37 of the Act provides, so far as relevant, that the Tribunal may direct that a works approval shall or shall not be issued or shall or shall not be the subject of a specified condition. In the present case, VCAT exercised this power so as to impose certain additional conditions. Section 37A required VCAT to take into account the relevant planning scheme. It did so.

662 The views expressed in this passage appear to be at odds with those of the High Court in *Shi* and do not follow from any detailed analysis of the Tribunal's powers upon an application for review. They are expressed as *obiter dicta* and as not being necessary to support the Court's dismissal of the appeal. For these reasons, we consider that this aspect of *Thirteenth Beach* can be distinguished. We do not consider that the remarks made about the application of section 20C necessarily constrain the type of decision that the Tribunal must make in the extremely complex context of the present proceeding for a large landfill of statewide strategic significance having regard to the full suite of statutory provisions under the *Environment Protection Act 1970* and the *Victorian Civil and Administrative Act 1998,* and in light of the High Court's rulings in *Shi*.

Is there discretion to accept an inconsistency with a policy or allow pollution in issuing a works approval?

663 A further issue that was canvassed during the hearing concerning section 20C(3) was that section 20C(3) afforded the EPA a discretion when considering compliance with policies. It was suggested that section 20C(3) might be seen to afford some discretion between a consideration of policy and ensuring consistency, because of the terminology used in this section, viz:

> (3) The Authority *may* refuse to issue, transfer or amend an authorisation—
>
> (a) if, in the opinion of the Authority, the issue, transfer or amendment would—
>
> (i) be contrary to, or inconsistent with, any applicable policy; or
>
> ….
>
> [Tribunal emphasis on 'may']

664 However this part of section 20C is to be contrasted with that set out above for 20C(2) where the EPA is directed to ensure that the works approval and any related conditions is consistent with all applicable policies.

665 This is the essence of the ground available under s33B(2)(b) of the *Environment Protection Act 1970* available to third parties and we think the link between the two leaves little room for discretion to be exercised. In our view, the decision to issue a works approval must result in an outcome that will be consistent with all applicable policies (here adopting the defined meaning of that word). The same applies to the Tribunal in exercising the same power as the EPA under sections 20C(2) and (3). This view is reinforced by the terms of section 37A(c) that in determining an application for review, the Tribunal must "take account of, and give effect to" any (or all) relevant SEPPs and waste management policies.

666 Whilst the term 'may' is used, when the *Environment Protection Act 1970* is read as a whole, Parts V, VI and VII make it clear in absolute terms that:

a. A discharge or deposit of a waste into waters, the atmosphere or onto land in Victoria shall (i.e. must) be in accordance with declared SEPPs or waste management policies (i.e. policies as defined under the *Environment Protection Act 1970*) and comply with any standard prescribed or applicable under the *Environment Protection Act 1970*;[175] and

b. A person shall not (i.e. must not) pollute any waters, the atmosphere or land that would make 'or reasonably be expected to make' the relevant segment of the environment:

   i. noxious poisonous or offensive, obnoxious or unduly offensive to the senses of human beings;[176]

   ii. harmful or potentially harmful to the health, welfare, safety or property of human beings;

   iii. poisonous, harmful or potentially harmful to animals, birds or wildlife;

   iv. poisonous, harmful or potentially harmful to plants or other vegetation; or

   v. detrimental to any beneficial use made of the relevant segment of the environment.[177]

667 These directives are made in absolute terms. There is no express allowance for pollution to occur under the auspices of some form of statutory authorisation to allow pollution that would or would likely lead to a condition of pollution or environmental hazard. As a matter of consistency in decision making under the *Environment Protection Act 1970*, we think it

[175] Sections 38, 40 and 44 of the *Environment Protection Act 1970.*
[176] The question of offensiveness is in fact limited to wastes being deposited into the atmosphere or on land.
[177] Sections 39, 41 and 45 of the *Environment Protection Act 1970.*

would be an illogical outcome for discretion to be able to be exercised to issue an authorisation, including a works approval, if it were contrary to these absolute, clearly expressed requirements of the *Environment Protection Act 1970*.

668 Thus, we disagree with any suggestion that the use of the word 'may' in section 20C(3) could be read to import a discretion to the EPA, and hence this Tribunal, in their respective decision making roles about compliance with policy or to allow any form of pollution.[178]

Is there discretion to require standards that are more stringent than required by policy in issuing a works approval?

669 Section 20C(3A) of the *Environment Protection Act 1970* provides:

> (3A) Despite anything to the contrary in subsection (2) or (4), in issuing, transferring or amending an authorisation, the Authority may impose conditions in relation to the authorisation that require the observance of standards that are more stringent than would be required by the applicable policy if the Authority is satisfied that—
>
> (a) local environment conditions require a higher level of protection than would otherwise be provided; or
>
> (b) the pollution control technology or noise control technology required to achieve more stringent standards is commonly available in the industry.

670 In line with our reasoning about the Tribunal's powers to amend works approvals conditions, we find that in considering the merits of an application for review under section 33B, the Tribunal enjoys the same powers as EPA with respect to imposing more stringent conditions than would normally be required by policy if the Tribunal is satisfied about the matters set out in section 20C(3A).

CONCLUSION

Parties' standing and grounds of review

671 We are satisfied that each of the applicants for review has standing to make an application for review under section 33B in terms that each is a person whose interests are affected by the decision to issue a works approval within the meaning of section 33B(1)(a).

672 We are also satisfied that each of the applicants for review appropriately framed their grounds having regard to the grounds available under section 33B(2).

Integrated decision-making

673 We have previously referred to the way in which decision making under the *Planning and Environment Act 1987* and the *Environment Protection Act*

[178] We also note that *Shi* assists in this interpretation of the word "may".

1970 must work in an integrated way.[179] We have also discussed the principle identified in *Shi* about the inter-relationship of the enabling legislation (the *Environment Protection Act 1970*) and the *Victorian Civil and Administrative Act 1998,* which determines the character of the "decision" that is under review and the "powers and discretions" that the Tribunal is to exercise pursuant to section 51 of the *Victorian Civil and Administrative Act 1998.*

674 The principle of integrated decision-making is also embodied in the principle of environment protection set out in section 1B of the *Environment Protection Act 1970.* This is the principle of integration of economic, social and environmental considerations. Principle 1B is embodied in the WMP, as is the precautionary principle.[180]

675 The principle of integration of economic, social and environmental considerations establishes a three-pronged approach for:

- Ecologically sustainable development that benefits all human beings and the environment through the adoption of 'sound environmental practices and procedures'.
- Balancing economic, social and environmental considerations with the need to improve community well-being and deliver benefits to future generations (i.e. intergenerational equity).
- Adopting cost-effective and proportionate responses to the environmental problems being addressed, i.e. the concept of a proportional responses to environmental hazards that minimise risks to an acceptable level.

676 The principle of integration of economic, social and environmental considerations therefore requires an integrated approach to decision-making. In practice, it means that a balance is required where there may be some negative economic, societal or environmental outcomes versus other positive economic, societal and environmental outcomes. Proportional responses to environmental hazards are a particularly important aspect of such a balancing exercise.

677 The policy principle for integrated decision making is particularly relevant to the substantive issue of odour in this proceeding. This is not to dismiss the other various issues raised about the landfill cells being proposed. However, it will be evident from our reasons that, save for the issue of odour, we are satisfied that other aspects of the design and use of the landfill cells deliver acceptable outcomes when tested against the range of requirements under the statutory framework. In respect to odour, the application of the principle of integrated decision making requires us to consider what is the real and substantive effect of the odour emissions and what is the appropriate, proportionate and cost-effective approach to adopt

179 For example, see *SITA Australia Pty Ltd and PWM (Lyndhurst) Pty Ltd v Greater Dandenong CC* [2007] VCAT 156.
180 WMP Clause 8.

while recognising other positive waste management outcomes that the ongoing operation of this landfill can deliver.

678 It will be apparent from our consideration of the odour issues that from time to time odour will be emitted beyond the boundary of the landfill site. It may be that sometimes the strength of the odour may be offensive to some of the population. However, we have also been satisfied that the conditions of the works approval (subsequently to be incorporated into a licence) achieve best practice management of the landfill to minimise the risk of these emissions occurring. This is an outcome that is consistent with relevant policy and, as a proportionate response to the harm being caused, is an appropriate balance of integrated decision-making given the other societal, environmental and economic outcomes achieved through the continued operation of the MRL.

Overall conclusion to issue a works approval

679 This works approval for an extension to the MRL is very important strategically and is strongly supported under the SWRRIP and the MWRRIP, which are key elements of the Victorian Waste and Resource Recovery Infrastructure Planning Framework. The MRL is identified in the SWRRIP and MWRRIP as a landfill of state and regional importance with capacity to operate to least 2046 and beyond. Its construction and the scale of its capacity are vital to the ability to manage waste for metropolitan Melbourne in the immediately foreseeable future.

680 Overall, we find that the proposal is consistent with all relevant aspects of the strategic policies governing landfills in Victoria. There is no strategic justification to reduce its scale or time frame.

681 The works proposed are significant, and the issues raised by the parties are numerous and extremely complex. As we have considered each issue, we have set out our findings in the context of impact on the interests of the applicants and compliance with policy.

682 Having regard to our findings about the nature and scope of the Tribunal's jurisdiction, and the principle of integrated decision-making, we have concluded that a works approval should be issued, but on amended and additional conditions. These conditions have been framed to ensure that there will not be any inconsistency with any applicable policy, and that the risks of any discharge, emission or deposit of waste to the environment that could unreasonably and adversely affect the interests of any of the parties will be properly and appropriately managed. On this basis, we do not find that any of the grounds of review have been established.

683 The amended conditions are set out in Appendix C – Works approval amended conditions.

Additional conditions

684 Some of the key changes we have made in the amended conditions relate to odour and requirements for operations at certain times to manage odour emissions in order to ensure that use of the works will be consistent with relevant policy, as we have discussed. We consider that these operations requirements are appropriate in the context of the principle of integrated decision-making. They include the following:

- The Odour Monitoring and Management Plan must specify the odour mitigation measures and procedures to manage off-site odour impacts from the identified potential odour sources so as to mitigate off-site odour impacts. This may include but is not limited to:
  - a management of works within active or capped landfill cells;
  - b management of the continuous cover of active tipping faces to ensure the areas of uncovered active tipping faces do not exceed the maximum areas specified in the Tipping and Daily Cover Management Plan required under WA_R4(k);
  - c management of cover over waste placed against or over cell batters;
  - d monitoring of interim and final capped cell areas; and
  - e responses to fugitive emissions detected from interim and final capped cell areas.
- A new condition for a Tipping and Daily Cover Plan, which details how the following requirements will be met:
  - a Except for burials in deep pits, ensuring that waste placed in a cell is:
    - Only placed within the area of active tipping face.
    - Between the hours of 7am and 10pm the active tipping face is no larger than 1,800m^2 in area.
    - Between the hours of 10:01pm and 6:59am the active tipping face is no larger than 900m^2 in area.
    - The area of the active tipping face is maintained by continuous covering of waste by means acceptable to and approved by the authority.
  - b Where waste is to be placed in a deep burial pit:
    - A deep burial pit (or pits) must not be constructed before 10am and must be permanently closed, sealed and capped by no later than 4pm on any given day.
    - At any other time of operation, unless waste is being placed in a deep burial pit any deep burial pit (or pits) must be

temporarily sealed so as to prevent the escape of odour emissions unless.

c No removal or stripping of daily cover, constructing gas extraction trenches, or otherwise excavating into wastes or penetrating intermediate or final caps unless for emergency purposes before 7:00am or after 10:00pm.

685 A new condition for a Litter Management Plan is included. Changes are made to details in the Landfill Gas Monitoring and Management Plan and the Groundwater Monitoring and Management Plan. Modifications are made to various aspects of the Works Conditions, in particular relating to groundwater assessments and interception systems; landfill gas management systems; surface drainage and infill earthworks; and environmental monitoring network.

686 Various other changes are also made, which reflect our assessment of different issues.

Helen Gibson AM	**Ian Potts**	**Greg Sharpley**
Deputy President	**Senior Member**	**Member**

APPENDIX A – WORKS APPROVAL 138994

EPA VICTORIA

VICTORIA State Government

ENVIRONMENT PROTECTION ACT 1970
SECTION 19B

WORKS APPROVAL

LANDFILL OPERATIONS PTY LTD

Holder of Works Approval:	138994
Issued:	24/03/2017
ACN:	603 300 358
Registered Address:	LEVEL 4 441 ST KILDA RD MELBOURNE VIC 3004
Premises Address:	1100-1152 CHRISTIES ROAD RAVENHALL 3023
Scheduled Categories:	A05 Landfills A01 Prescribed Industrial Waste Management
Description:	This proposal allows for the construction of a landfill for the deposit of solid inert waste, putrescible waste, pneumatic tyres shredded into pieces <250mm and contaminated soil (N121 Cat C).

NIAL FINEGAN
Chief Executive Officer

Delegate of the Environment Protection Authority

Issued under the *Environment Protection Act 1970*, Section 19B

VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL · VCAT

PREAMBLE

Works Approvals

Who we are: The Environment Protection Authority ("EPA") is an independent statutory authority established under the *Environment Protection Act 1970* ("the Act"). Our purpose is to protect and improve our environment by preventing harm to the environment and human health.

Why we issue works approvals: EPA is responsible for preventing or controlling pollution (including noise) and improving the quality of the environment. This responsibility includes regulating activities that may present a danger to the environment. One of the tools available to EPA is issuing works approvals for scheduled premises to prevent or minimise risk to the environment.

Section 19A of the Act requires the occupier of a "scheduled premises" to obtain works approval to construct or install plant and equipment in order to discharge, handle, treat or dispose of waste to the environment. These types of premises are defined in the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007* ("the Regulations").

When we issue works approvals: EPA will issue a works approval when satisfied that an applicant has put in place measures to protect the environment. Works approvals allow construction of works to occur and set control measures to minimise a site's environmental risk. EPA can amend a works approval in response to changes in standards and site activities. Works approval holders must submit reports if required by a condition of the approval.

Works Approval information and obligations

For the purposes of this works approval "You" means the works approval holder identified on the first page of this works approval at the "premises" identified on the first page and represented in Schedule 1.

If you object to any of the works approval conditions, you may have the decision reviewed by applying in writing to the Registrar, Planning and Environment Division, Victorian Civil and Administrative Tribunal ("VCAT"), 7th Floor, 55 King Street, Melbourne within 21 days of the date of issue. An application fee may be applicable when lodging an appeal with VCAT. Contact VCAT on (03) 9628 9777 for further details on fees associated with an appeal. A copy of the appeal should also be forwarded to the Manager, Development Assessments Unit, Environment Protection Authority, GPO Box 4395, Melbourne, 3001, within 7 days of lodgement of the appeal.

Interested (third) parties may also appeal against the works approval within 21 days of the date of issue. The Tribunal will notify you if such appeals are received. If an appeal is lodged, you must not go ahead with the works until the appeal is resolved.

Compliance: You must comply at all times with the Act and all policies and regulations administered by EPA. Strict penalties apply for non-compliance with any part of your works approval.

Works Approval structure

Structure: Your works approval has:
- Works conditions - setting out requirements for construction or installation;
- Schedule 1A - locality plan of your premises;
- Schedule 1B - plan of premises (provided by you).

Some types of works approvals also contain Schedule 1C - final landfill contour plan

EPA VICTORIA

SECTION 19B WORKS APPROVAL

CONDITIONS

General Conditions

WA_G1 Subject to the following conditions, this approval allows the construction of the following works and associated equipment - a landfill for the deposit of solid inert waste, putrescible waste, pneumatic tyres shredded into pieces <250 mm, and contaminated soil (N121 Cat C) as defined in EPA Publication 631, Industrial Waste Resource Guidelines, Solid Industrial Waste Hazard Categorisation and Management, dated July 2009.

WA_G2 The works must be constructed in accordance with the application accepted on 13 May 2016 comprising the application received on 29 February 2016 as augmented by additional information received on 13 May 2016, 23 September 2016, 30 November 2016 and 9 December 2016 as identified in the documents listed in Appendix A of this Works Approval restricted to the South Portion as shown on Schedules 1A, 1B and 1C ("the application") except that, in the event of any inconsistency arising between the application and the conditions of this approval, the conditions of this approval shall apply.

WA_G3 This approval will not take effect until any permit which is required under the Planning and Environment Act 1987 has been issued by the Responsible Planning Authority.

WAG4.1.1 This works approval will expire:
(a) on the issue or amendment of a licence relating to all works covered by the works approval; or
(b) on the issue of written notification from EPA confirming that all works covered by the works approval are complete and that no licence or licence amendment is required to operate the works; or
(c) eight years from the date of issue unless the works have been commenced by that date to the satisfaction of EPA

WA_G6 You must maintain a financial assurance calculated in accordance with the EPA method.

WA_G6.3 You must submit the financial assurance instalment determined by the EPA for each landfill cell prior to the addition of the cell to the licence.

Works Conditions

WA_W1 Before commencing construction of the following components of the works, you must provide to EPA a report or reports with the plans and specifications of those components, including details of:
(a) the geotechnical stability assessment including material characteristics and specifications, with supporting evidence, demonstrating total geotechnical stability for each landfill cell or leachate pond;
(b) the drainage layer for groundwater collection for each cell or leachate pond which shall be placed with minimum 2m separation from the top of the liner of the leachate sump of the cell or the top of the liner of the leachate pond;
(c) the plans, the technical specifications and a construction quality assurance plan (CQA plan) ("design documents"), assessed by an EPA-appointed auditor, in

Works Approval: 138994 Issued: 24/03/2017 Page 3 of 13

accordance with the procedures outlined in EPA Publication 1323.3 (Landfill Licensing Guidelines) (as amended from time to time), for the design and construction of each landfill cell and leachate pond prior to submission for EPA approval. The plans, technical specifications and CQA plan must comply with the Works Approval Application, the liner configuration given in Figure 27 (No 1528407) of Appendix B included in Doc 2, drainage layer referred to in condition WA_W1(b) and EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time);

(d) for each cell or leachate pond the name of the environmental auditor, appointed under the Environment Protection Act 1970, engaged by you to conduct the audit required under WA_R1; and

(e) designs of the environmental monitoring network infrastructure to include landfill gas, odour, dust, groundwater and surface water monitoring for the premises.

WA_W2 You must not commence construction of those parts of the works for which reports are required by condition WA_W1 until written EPA approval of those reports has been received.

WA_W3 Where any reports specified in condition WA_W1 and approved by EPA differ from the application, the works must be constructed in accordance with those approved reports.

WA_W4 You must notify EPA when the construction of the works covered by this approval has been commenced.

WA_W5 You must notify EPA when the construction of the works covered by this approval has been completed.

WA_W8 You must install:

(a) additional groundwater monitoring bores in both the Upper Newer and Lower New Volcanic aquifers;

(b) noise abatement and barriers as identified as being required to protect nearby receptors such as on Middle Road and as identified by the noise report required in condition WA_R4 below;

(c) fencing around the perimeter of the premise including 12m high litter fencing in key areas to prevent litter escaping the premise;

(d) litter traps on stormwater drains;

(e) mobile nets near the tip face;

(f) a wheel wash on the egress road;

(g) a leachate collection system and a leachate pond with a capacity sufficient to maintain leachate levels such that the depth of leachate above the lowest point of the drainage layer does not exceed 300 millimetres;

(h) a landfill gas collection system to a design approved by the EPA;

(i) a landfill gas detection bore network around the perimeter of the landfill cells and at the premise boundary to a minimum frequency that meets Table B2 of EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time) and identified in the approved Landfill Gas Management and Monitoring Plan;

(j) fire fighting equipment including on-site water trucks that must be available on-site at all times; and

(k) dust monitors detailed in condition WA_W1(e) and approved by WA_W2.

WA_W15 During construction, unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.

WA_W16 During construction, stormwater discharged from the premises must not be contaminated with waste.

WA_W17	All construction activities must be undertaken in accordance with EPA Publication 480 "Environmental Guidelines for Major Construction Sites", as amended from time to time.
WA_W18	During construction, you must undertake an environmental monitoring program that enables you and EPA to determine compliance with condition(s) WA_W15 and WA_W16.

Reporting Conditions

WA_R1 At least two months before the commencement of any commissioning, you must provide to EPA a report that include(s):

(a) the need for landfilling at the site, as demonstrated by the presence of the site on the landfill schedule in the Statewide Waste and Resource Recovery Infrastructure Plan and the Metropolitan Waste and Resource Recovery Implementation Plan (and any future successor or replacement policy documents);

(b) an environmental audit report, under S53V of the EP Act on the risk of harm and confirming construction compliance in accordance with EPA approved reports as set out in condition WA_W2 above;

(c) a report which details liner leak detection survey results for each cell liner and the person who conducts and reports the liner leak detection survey should be independent to the contractor who constructs the landfill cell or leachate pond;

(d) details of how you have informed the community through the Melbourne Regional Landfill Community Reference Group (MRLCRG) or alternative engagement activities of the progress regarding the construction of cells and leachate pond and the progressive rehabilitation of the landfill. This must include explanations about how any issues or concerns raised have been considered; and

(e) the environmental performance of the preceding cells as determined by the monitoring required in the monitoring and management plans identified in WA_R4.

WA_R4 Before the commencement of any commissioning, you must provide, to the satisfaction of EPA, a report that includes:

(a) a Dust Management Plan incorporating Air Monitoring Program & Dust Deposition including but not limited to;
  (i) Implementation of best practice airborne particulate and dust control measures that also includes adaptive operational practices to respond and control dust events on site;
  (ii) real time PM10 air monitoring that enables an assessment of air quality impacts and triggers reactive management practices to be implemented during dust events on site;
  (iii) dust deposition monitoring that enables an assessment of nuisance dust impacts;
  (iv) a review of the effectiveness of the particulate and dust control measures in light of the monitoring data produced from (ii) and (iii) above and the relevant standards for the control of airborne particulate and dust;
  (v) provision of surveillance or monitoring records to the MRLCRG, the Responsible Authority and the Authority; and
  (vi) the approved Dust Management Plan must be implemented to the satisfaction of the Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Authority.

(b) an Odour Monitoring and Management Plan which should detail the odour management controls and monitoring regime to be undertaken during the life of the landfill including but not limited to:
  (i) identification of potential odour sources and receptors;
  (ii) 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;
  (iii) comprehensive monitoring practices, including surveillance by independent and appropriately trained personnel;
  (iv) procedures for addressing the odour source if a complaint is verified, including consideration of any mitigation measures or operational changes that might be required;
  (v) provision of surveillance or monitoring records to the MRLCRG, the Responsible Authority and the Authority;
  (vi) incorporation of a requirement to assess new odour management technologies or tools on a regular basis; and
  (vii) the approved Odour Monitoring and Management Plan must be implemented to the satisfaction of the Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Authority.

(c) a Landfill Gas Monitoring & Management Plan including but not limited to:
  (i) details (numbers and locations) of landfill gas perimeter monitoring bores consisting of an inner and outer network located within the premises between the landfill cells and premises boundary to be monitored monthly. The inner network should be at least 20m distant from the edge of the waste and the outer layer should be at the premises boundary. The landfill gas perimeter monitoring bore spacings must meet the recommended spacings in Table B.2 of EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time) and on the western side should have a higher density of gas monitoring bores;
  (ii) the sequencing for the design and installation of the landfill gas extraction system in each cell;
  (iii) the sequencing for the design and installation of the horizontal gas wells in each active cell;
  (iv) the sequencing for the approval and installation of gas engines, gas flares and ancillary equipment including increases in the electrical interconnection for the gas engines;

(v) a program of inspection and maintenance of landfill gas extraction and monitoring infrastructure including provision of standby equipment; and
(vi) a schedule of landfill gas well balancing frequency and condensate management.

(d) a Groundwater Monitoring and Management Plan including but not limited to:
(i) updating the Conceptual Site Model to illustrate the hydrogeology, surrounding land uses and receptors more comprehensively;
(ii) completion of a groundwater bore network performance audit and undertaking of any remedial repairs, if required;
(iii) installation of additional groundwater monitoring bores in both the Upper Newer and Lower Newer Volcanic Aquifers;
(iv) preparation of and maintenance of a groundwater bore network register where a summary tabulation of groundwater bore construction, describing the condition of each bore, the aquifer monitored, and the registered bore ID that is recorded in the State Water Management Information System are kept;
(v) improved groundwater quality sampling, testing and monitoring to additionally include groundwater depth; and
(vi) setting of appropriate trigger points and actions, should exceedances occur.

(e) a Surface Water Monitoring and Management Plan including but not limited to;
(i) sampling of water at retention points prior to discharge to the environment and downstream of the site in Skeleton Creek;
(ii) visual inspection of sediment and erosion control facilities and other potential sources of contamination;
(iii) a sampling plan and methods consistent with those in EPA publication IWRG701; and
(iv) routine testing of stormwater for, but not limited to, the following physio-chemical parameters: total phosphorus and nitrogen, turbidity, electrical conductivity, pH, and dissolved oxygen with occasional testing for heavy metals and indicators of leachate. The sampling frequency and reporting is to be agreed with EPA as are the action levels for each parameter.

(f) a Noise Management and Monitoring Plan including but not limited to:
(i) an assessment of the current background noise levels;
(ii) a calculation of the permissible noise levels for operation and construction undertaken in accordance the techniques in State environment protection policy (Control of Noise from Commerce, Trade and Industry) No N-1 ("SEPP N1");
(iii) modelling showing noise from the landfill meets the permissible noise levels of SEPP N1;
(iv) an assessment showing that the equipment being used minimises the noise emitted as far as practicable;
(v) a monitoring program for assessment of the noise from construction and operation of the landfill, and effectiveness of the noise abatement (including barriers) being applied. This may include the definition of derived point(s) located in accordance with SEPP N1;
(vi) identifying and detailing the noise abatement measures proposed which are being relied upon to meet the permissible noise levels of SEPP N1; and
(vii) milestones to be used for updating and submitting any amendments to the monitoring, assessments and noise abatement required by the noise management plan. The noise monitoring data from each cell construction and operation to be used to confirm the assumptions in modelling and identification of any amendments to the plan and required noise abatement for subsequent cells.

(g) a Fuel Use Minimisation Plan to seek more efficient use of energy during construction and operation of the landfill including but not limited to consideration of alternatives such as:
(i) vehicle and equipment use;
(ii) LFG collection and treatment;
(iii) promotion of waste minimisation programs;
(iv) use of alternative fuels and engines; and

(v) improved driver training and fleet maintenance.

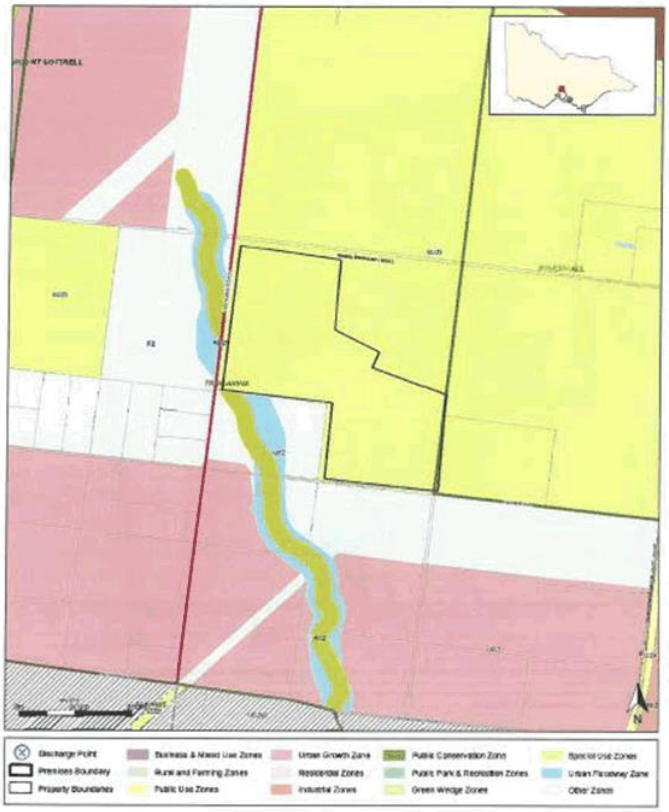
(h) an Environmental Management Plan detailing measures to manage potential environmental impacts. The approved Environmental Management Plan must be implemented to the satisfaction of the Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Authority.

(i) a Vermin Management Plan detailing 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 Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Authority.

EPA VICTORIA

SECTION 19B WORKS APPROVAL

SCHEDULE 1A – LOCALITY PLAN



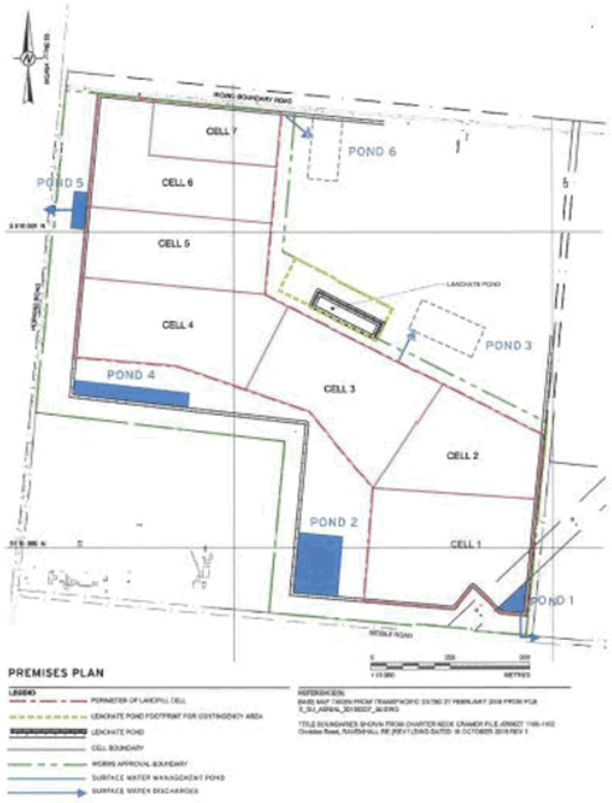
Works Approval:	138994
Company Name:	LANDFILL OPERATIONS PTY LTD
ACN:	603 300 358
Premises Address:	1100-1152 CHRISTIES ROAD, RAVENHALL VIC 3023
Issued:	24/03/2017

Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

EPA VICTORIA

SECTION 19B WORKS APPROVAL

SCHEDULE 1B – PREMISES PLAN



Works Approval:	138994
Company Name:	LANDFILL OPERATIONS PTY LTD
ACN:	603 300 358
Premises Address:	1100-1152 CHRISTIES ROAD, RAVENHALL VIC 3023
Issued:	24/03/2017

Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

EPA VICTORIA

SECTION 19B WORKS APPROVAL

SCHEDULE 1C – CONTOUR PLAN

PRE-SETTLEMENT TOP OF WASTE PLAN

Works Approval:	138994
Company Name:	LANDFILL OPERATIONS PTY LTD
ACN:	603 300 358
Premises Address:	1100-1152 CHRISTIES ROAD, RAVENHALL VIC 3023
Issued:	24/03/2017

Before relying on the information in this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

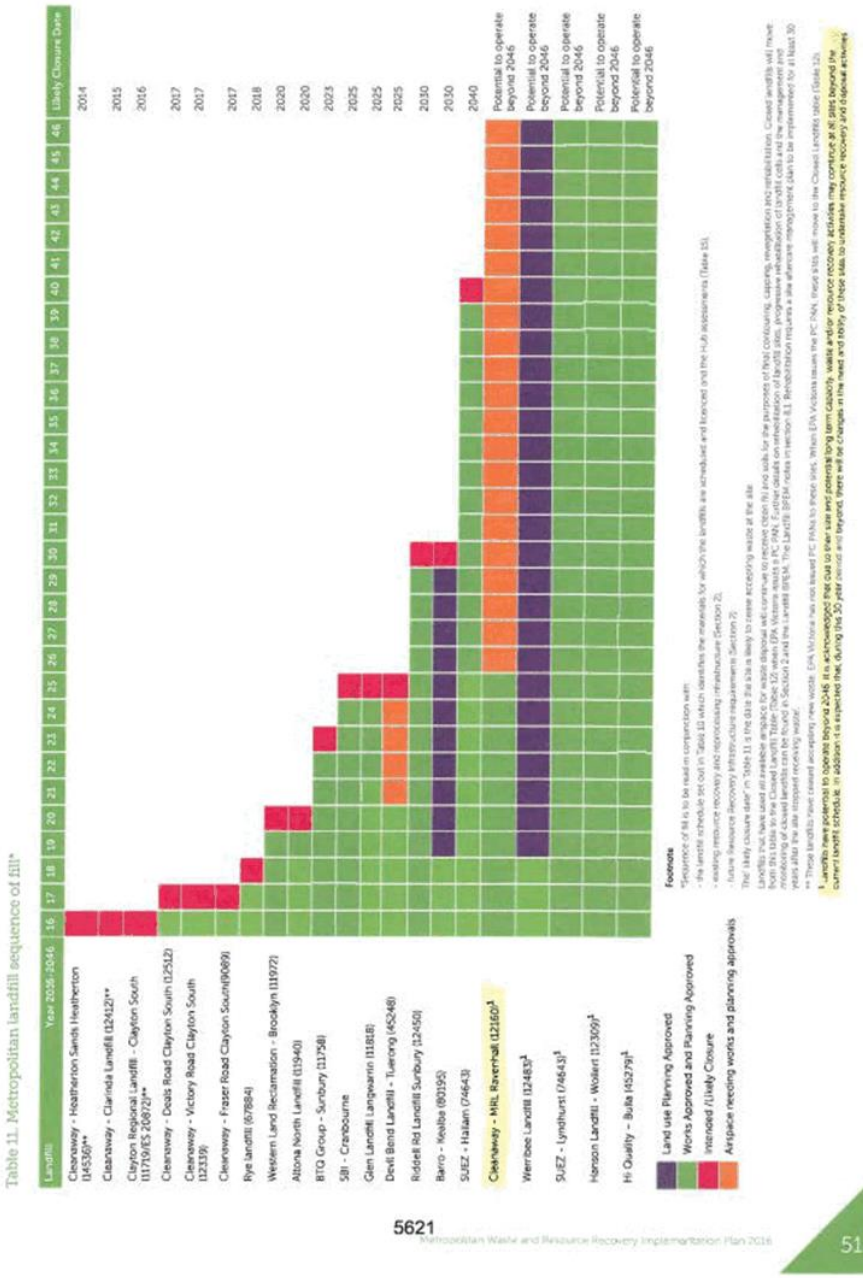
APPENDIX A

1. Works Approval Application, Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall, February 2016
2. Information to Support Works Approval, Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall, Golder Associates, February 2016 including:
   - Appendix A: Needs Assessment
   - Appendix B - Figures
   - Appendix C - Financial assurance - 'commercial-in-confidence' not provided
   - Appendix D - Hydrogeological assessment
   - Appendix E - Ecological assessment
   - Appendix F - Greenhouse gas estimate
   - Appendix G - Leachate management plan
   - Appendix H - Landfill gas management plan
   - Appendix I - Traffic impact assessment
   - Appendix J - Air quality assessment
   - Appendix K - Noise assessment
   - Appendix L - Stormwater management plan
   - Appendix M - Landscape and visual impact assessment, including Annex A: Parameters of human vision and Annex B: Photomontage VP01, VP02, VP05, VP07, VP10, VP13, VP16
   - Appendix M - Landscape and visual impact assessment Annex C: Rehabilitation Plan
   - Appendix N - Monitoring program
   - Appendix O - Aftercare management plan
3. Supplementary Information to Works Approval Proposed Melbourne Regional Landfill (MRL) Extension, Ravenhall, Golder Associates, May 2016 including an updated Appendix J Air Quality Assessment which replaces that provided in February 2016
4. Further information provided by Landfill Operations, 23 September 2016 in response to section 22 Notice of 7 September 2016, comprising:
   - Cover letter;
   - Tabulated response; and
   - Extracts from Cleanaway's Landfill standards operations manual on vermin and bird control.
5. Landfill Operations response to the written submissions, presented to the MRL Planning Panel comprising:
   - Landfill Operations response to submissions
   - Table of Landfill Operations response to submissions
   - Expert witness statement of Andrew Green (landfill)
   - Expert witness statement of Tony Kortegast (needs assessment)
   - Expert witness statement of Tony Kortegast (buffers and landfill gas)

- Expert witness statement of Alex Todoroski (odour)
- Expert witness statement of David Ife (hydrogeological assessment)
- Expert witness statement of Christopher Delaire (acoustics)
- Expert witness statement of Michael Barlow (planning)
- Expert witness statement of Stephen Hunt (traffic and transport assessment)
- Expert witness statement of Allan Wyatt (landscape and visual assessment)

6. Further information provided by Landfill Operations, provided on 9 December 2016 in response to section 22 Notice of 7 September 2016, comprising:
   - a cover letter
   - Appendix 1: 'Response to hydrogeological Issues Raised by EPA Section 22 Notice of 21st October 2016 in relation to Melbourne Regional Landfill'
   - Appendix 2: 'Letter to EPA - Section 22 Notice Additional Information -Groundwater Levels'
   - Appendix 3: 'Section 7 only of the DRAFT Environmental Audit of Landfill Operations (s. 53V) (
   - Appendix 4: 'Email to Cardno - Draft Audit Report - Melbourne Regional Landfill"
   - Appendix 5: 'MRL S22 Response letter - Geotechnical Stability of Sidewall batter and liner system'
   - Appendix 6: 'Memorandum - Further information re Section 22 Notice Additional Information, 1528407-057-M-Rev0

APPENDIX B –
TABLE 11 METROPOLITAN WASTE AND RESOURCE RECOVERY IMPLEMENTATION PLAN 2016



5621

APPENDIX C – WORKS APPROVAL AMENDED CONDITIONS

GENERAL CONDITIONS

WA_G1 Subject to the following conditions, this approval allows the construction of the following works and associated equipment - a landfill for the deposit of solid inert waste, putrescible waste, pneumatic tyres shredded into pieces <250 mm, and contaminated soil (N121 Cat C) as defined in EPA Publication 631, Industrial Waste Resource Guidelines, Solid Industrial Waste Hazard Categorisation and Management, dated July 2009.

WA_G2 The works must be constructed in accordance with the application accepted on 13 May 2016 comprising the application received on 29 February 2016 as augmented by additional information received on 13 May 2016, and as amended by the document "Summary of Works – Melbourne Regional Landfill Extension" prepared by Mr Andrew Green, Golder Associates Pty Ltd, Dated 9 July 2018, presented in VCAT proceedings P790/2017, P794/2017, P795/2017, P805/2017 and P877/2017 ("the Summary of Works"), which together form the application ("the application") except that, in the event of any inconsistency arising between the application and the conditions of this approval, the conditions of this approval shall apply.

WA_G3 This approval will not take effect until any permit which is required under the Planning and Environment Act 1987 has been issued by the Responsible Planning Authority.

WA_G4.1.1 This works approval will expire:

(a) on the issue or amendment of a licence relating to all works covered by the works approval; or

(b) on the issue of written notification from EPA confirming that all works covered by the works approval are complete and that no licence or licence amendment is required to operate the works; or

(c) eight years from the date of issue unless the works have been commenced by that date to the satisfaction of the EPA.

WA_G6 You must maintain a financial assurance calculated in accordance with the EPA method.

WA_G6.3 You must maintain a financial assurance instalment determined by the EPA for each landfill cell prior to the addition of the cell to the licence.

WORKS CONDITIONS

WA_W1 Before commencing construction of the following components of the works, you must provide to EPA a report or reports with the plans and specifications relating to those components as follows:

Geotechnical stability assessments

(a) for each landfill cell or leachate pond, the geotechnical stability assessment including material characteristics and specifications, with supporting evidence, to demonstrate the geotechnical stability of the earthen structures associated with each landfill cell or leachate pond;

Groundwater assessments and interception systems

(b) for each cell or leachate pond, an assessment of the phreatic groundwater under each of the relevant cells or leachate ponds and if required by that assessment, plans and technical specifications for a groundwater interception and drainage layer for each cell or leachate pond to achieve a minimum 2m separation from the top of the liner of the leachate sump of the cell or the top of the liner of the leachate pond from the phreatic level of the groundwater;

(c) a system for the collection and disposal of collected groundwater from any groundwater interception and drainage layer required under WA_W1(b) that complies with EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time);

Landfill gas management systems

(d) the plans and technical specifications for sacrificial and final landfill gas collection systems consistent with the application, the Summary of Works and EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time);

(e) the plans and technical specifications for the staged construction of a landfill gas interception trench (or system of chimneys) along any cell or sub-cell constructed directly against the quarry walls, including the interface of cells 4, 5 and 6 along the western quarry wall;

(f) the plans and technical specifications for a contingency landfill gas interception trench (or system of chimneys) between any cell or sub-cell being constructed internal to the quarry walls, including the perimeter of cells 1, 3 and 4 and the southern quarry walls;

Landfill cells and leachate ponds

(g) the plans, the technical specifications and a construction quality assurance plan (CQA plan) ("design documents"), assessed by an EPA-appointed auditor, in accordance with the procedures outlined in EPA Publication 1323.3 (Landfill Licensing Guidelines) (as amended from time to time), for the design and construction of each landfill cell and leachate pond prior to submission for EPA approval. The plans, technical specifications and CQA plan must be in accordance with the application, the liner configuration given in Figure 27 (No 1528407, Rev 3, Appendix F of the Summary of Works), the drainage layer referred to in condition WA W1 (b) and EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time);

Surface drainage and infill earthworks

(h) the plans and technical specifications for stormwater drainage / surface water and runoff management and surface water monitoring plan including the diversion of Skeleton Creek;

(i) the plans and technical specifications for any proposed filling between the southern face of cells 1, 3 and 4 and the southern quarry face and consequential amendments to stormwater drainage / surface water and runoff management controls;

Environmental auditor details

(j) for each cell or leachate pond the name of the environmental auditor, appointed under the Environment Protection Act 1970, engaged by you to conduct the audit required under WA_R1; and

Environmental monitoring network

(k) designs of the environmental monitoring network infrastructure to include landfill gas, litter, odour, dust, groundwater and surface water monitoring for the premises necessary to comply with the reporting requirements of WA_R4.

WA_W2 You must not commence construction of those parts of the works for which reports are required by condition WA_ W1 until written EPA approval of those reports has been received.

WA_W3 Where any reports specified in condition WA_WI and approved by EPA differ from the application, the works must be constructed in accordance with those approved reports.

WA_W4 You must notify EPA when the construction of the works covered by this approval has been commenced.

WA_W5 You must notify EPA when the construction of the works covered by this approval has been completed.

WA_W8 You must install:

(a) additional groundwater monitoring bores in both the Upper Newer and Lower Newer Volcanic aquifers identified as being required in WA-R4 below, and as specified in WA-W1(b) and approved under WA-W2;

(b) noise abatement and barriers as identified by the noise report required in condition WA_R4 below and as required to protect nearby receptors such as on Middle Road;

(c) fencing along the perimeter of the premise supplemented by 12m high litter fencing (or nets) as detailed in the litter management plan required under condition WA-R4 below;

(d) mobile litter nets adjacent to and positioned down wind of the tipping face at all times;

(e) litter traps on stormwater drains;

(f) a wheel wash on the egress road;

(g) a leachate collection system and a leachate pond as detailed under condition WA_W1(g) and approved under WA_W2;

(h) a landfill gas collection system as detailed under condition WA_W1(d) and approved under WA_W2;

(i) a landfill gas detection bore network around the perimeter of the landfill cells and at the premise boundary to a minimum frequency that meets Table B2 of EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time) and identified in the approved Landfill Gas Management and Monitoring Plan required under condition WA-R4 below and specified under conditions WA_W1(j);

(j) a surface water / stormwater / runoff management system as specified in WA_W1(h) and approved under WA-W2;

(k) a groundwater collection and disposal system as detailed under WA_W1(c) and approved under WA-W2;

(l) fire fighting equipment including on-site water trucks that must be available on-site at all times; and

(m) dust monitors detailed in condition WA_W1(j) and approved under WA_W2.

WA_W8.1 Before the construction of any cell against the quarry wall you must install:

(a) the initial stage(s) of the landfill gas interception trench (or system of chimneys) along the interface of the cell and any adjacent cells and the western quarry wall as detailed under WA-W1(e) and approved under WA_W2.

WA_W15 During construction, unacceptable noise (including vibration) must not be emitted beyond the boundaries of the premises.

WA_W16 During construction, stormwater discharged from the premises must not be contaminated with waste or sediment.

WA_W17 All construction activities must be undertaken in accordance with EPA Publication 480 "Environmental Guidelines for Major Construction Sites", as amended from time to time.

WA_W18 During construction, you must undertake an environmental monitoring program that enables you and EPA to determine compliance with condition(s) WA_WI5 and WA_WI6.

REPORTING CONDITIONS

WA_R1 At least two months before the commencement of any commissioning, you must provide to EPA a report that include(s):

(a) the need for landfilling at the site, as demonstrated by the presence of the site on the landfill schedule in the Statewide Waste and Resource Recovery Infrastructure Plan and the Metropolitan Waste and Resource Recovery Implementation Plan (and any future successor or replacement policy documents);

(b) an environmental audit report, under S53V of the EP Act on the risk of harm and confirming construction compliance in accordance with EPA approved reports as set out in condition WA_W2 above;

(c) a report which details liner leak detection survey results for each cell liner and or leachate pond prepared by a person who must be independent of the contractor who constructs the landfill cell or leachate pond;

(d) details of how you have informed the community through the Melbourne Regional Landfill Community Reference Group (MRLCRG) or alternative engagement activities of the progress regarding the construction of cells and leachate pond and the progressive rehabilitation of the landfill. This must include explanations about how any issues or concerns raised have been considered; and

(e) the environmental performance of the preceding cells as determined by the monitoring required in the monitoring and management plans identified in WA_R4.

WA_R4 Before the commencement of any commissioning, you must provide, to the satisfaction of EPA, a report that includes:

(a) A Dust Management Plan incorporating an Air & Dust Deposition Monitoring Program including but not limited to:

i. Implementation of best practice airborne particulate and dust control measures that also includes adaptive operational practices to respond and control dust events on site;

ii. real time PM10 air monitoring that enables an assessment of air quality impacts and triggers reactive management practices to be implemented during dust events on site;

iii. dust deposition monitoring that enables an assessment of nuisance dust impacts;

iv. a review of the effectiveness of the particulate and dust control measures in light of the monitoring data produced from (ii) and (iii) above and the relevant standards for the control of airborne particulate and dust; and

v. provision of surveillance or monitoring records to the MRLCRG, the Responsible Authority and the Authority.

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

(b) An Odour Monitoring and Management Plan which should detail the odour management controls and monitoring regime to be undertaken during the life of the landfill including but not limited to:

i. identification of potential odour sources and receptors;

ii. specifying the odour mitigation measures and procedures to manage off-site odour impacts from the identified potential odour sources so as to mitigate off-site odour impacts. This may include but is not limited to:

a) management of works within active or capped landfill cells;

b) management of the continuous cover of active tipping faces to ensure the areas of uncovered active tipping faces do not exceed the maximum

areas specified in the Tipping and Daily Cover Management Plan required under WA_R4(k);

c) management of cover over waste placed against or over cell batters;

d) monitoring of interim and final capped cell areas;

e) responses to fugitive emissions detected from interim and final capped cell areas; and

iii. comprehensive monitoring practices, including surveillance by independent and appropriate trained personnel;

iv. procedures for addressing the odour source if a complaint is verified, including consideration of any additional mitigation measures or operational changes that might be required;

v. provision of surveillance or monitoring records to the MRLCRG, the Responsible Authority and the Authority; and

vi. incorporation of a requirement to assess new odour management technologies tools on a regular basis.

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

(c) A Landfill Gas Monitoring & Management Plan including but not limited to:

i. details (numbers and locations) of perimeter landfill gas monitoring bores consisting of an inner and outer network located within the premise between the landfill cells and premise's boundary that are to be monitored monthly. The inner network should be at least 20m distant from the edge of the waste and the outer layer should be along the premise's boundary. The spacing of the landfill gas monitoring bore must meet the recommended spacings in Table B.2 of EPA Publication 788.3 Best Practice Environmental Management (Siting, Design and Management of Landfills) (as amended from time to time) with the spacings on the western side to be at a higher density (closer spacing) than along other interfaces. Consideration should be given to angling the landfill gas monitoring bores to maximise intersection with vertical fracture systems in the underlying basalt geology;

ii. the sequencing for the design and installation of the landfill gas extraction system in each cell;

iii. the sequencing for the design and installation of the horizontal gas wells in each active cell;

iv. the sequencing for the approval and installation of gas engines, gas flares and ancillary equipment including increases in the electrical interconnection for the gas engines;

v. a program of inspection and maintenance of landfill gas extraction and monitoring infrastructure including provision of standby equipment;

vi. a schedule of landfill gas well balancing frequency and condensate management; and

vii. the design and trigger concentrations for the installation of landfill gas interception trenches (or chimney systems) required under condition WA-W1(d).

(d) A Groundwater Monitoring and Management Plan including but not limited to:

i. installation of additional groundwater monitoring bores in both the Upper Newer and Lower Newer Volcanic Aquifers as necessary to provide coverage of groundwater conditions around and beneath the landfill cells;

ii. updating the Conceptual Site Model to illustrate the hydrogeology, surrounding land uses and receptors more comprehensively;

iii. completion of a groundwater bore network performance audit and undertaking of any remedial repairs, if required;

iv. preparation of and maintenance of a groundwater bore network register where a summary tabulation of groundwater bore construction, describing the condition of each bore, the aquifer monitored, and the registered bore ID that is recorded in the State Water Management Information System are kept;

v. improved groundwater quality sampling, testing and monitoring to additionally include groundwater depth; and

vi. setting of appropriate trigger points and actions, should exceedances occur.

(e) A Surface Water Monitoring and Management Plan including but not limited to:

i. sampling of water at retention points prior to discharge to the environment and upstream and downstream of the site in Skeleton Creek;

ii. visual inspection of sediment and erosion control facilities and other potential sources of contamination;

iii. a sampling plan and methods consistent with those in EPA publication IWRG701; and

iv. routine testing of stormwater for, but not limited to, the following physio-chemical parameters: total phosphorus and nitrogen, turbidity, electrical conductivity, pH, and dissolved oxygen with occasional testing for heavy metals and indicators of leachate. The sampling frequency and reporting is to be agreed with EPA as are the action levels for each parameter.

(f) A Noise Management and Monitoring Plan including but not limited to:

i. an assessment of the current background noise levels;

ii. a calculation of the permissible noise levels for operation and construction undertake in accordance with the techniques in State environment protection policy (Control of Noise from Commerce, Trade and Industry) No N-1 ("SEPP N1)";

iii. modelling showing noise from the landfill meets the permissible noise levels of SEPP N1;

iv. an assessment showing that the equipment being used minimises the noise emitted as far as practicable;

v. a monitoring program for assessment of the noise from construction and operation of the landfill, and effectiveness of the noise abatement (including barriers) being applied. This may include the definition of derived point(s) located in accordance with SEPP N1

vi. identifying and detailing the noise abatement measures proposed which are being relied upon to meet the permissible noise levels of SEPP N1; and

vii. milestones to be used for updating and submitting any amendments to the monitoring, assessments and noise abatement required by the noise management plan. The noise monitoring data from each cell construction and operation to be used to confirm the assumptions in

modelling and identification of any amendments to the plan and required noise abatement for subsequent cells.

(g) A Fuel Use Minimisation Plan to seek more efficient use of energy during construction and operation of the landfill including but not limited to consideration of alternatives such as:

i. vehicle and equipment use;

ii. LFG collection and treatment;

iii. promotion of waste minimisation programs;

iv. use of alternative fuels and engines; and

v. improved driver training and fleet management.

(h) An Environmental Management Plan detailing measures to manage potential environmental impacts.

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

(i) A Vermin Management Plan detailing 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 Authority and must be reviewed, and if necessary, updated every 5 years to the satisfaction of the Authority.

(j) A Litter Management Plan which should detail the litter management controls and monitoring regime to be undertaken during the life of the landfill including, but not limited to requirements for:

i. temporary litter fences to be placed down wind and adjacent to the tipping faces at all times;

ii. all litter fences including boundary litter fences along all adjacent boundaries to be properly maintained at all times;

iii. The means for monitoring litter movement; and

iv. Response to the detection of litter movement beyond the boundary which may include but are not limited to movement of internal litter fences, modifications to daily cover and compaction operations, litter pick up patrols or the cessation of tipping.

(k) A Tipping and Daily Cover Plan which details how the following requirements will be met:

i. Except for burials in deep pits, you must ensure that waste placed in a cell is:

a) Only placed within the area of active tipping face.

b) Between the hours of 7am and 10pm the active tipping face is no larger than 1,800m^2 in area.

c) Between the hours of 10:01pm and 6:59am the active tipping face is no larger than 900m^2 in area.

d) The area of the active tipping face is maintained by continuous covering of waste by means acceptable to and approved by the authority.

ii. Where waste is to be placed in a deep burial pit:

a) A deep burial pit (or pits) must not be constructed before 10am and must be permanently closed, sealed and capped by no later than 4pm on any given day.

b) At any other time of operation, unless waste is being placed in a deep burial pit any deep burial pit (or pits) must be temporarily sealed so as to prevent the escape of odour emissions unless.

iii. You must not remove or strip daily cover, construct gas extraction trenches, or otherwise excavates into wastes or penetrate intermediate or final caps unless for emergency purposes before 7:00am or after 10:00pm.

Unless otherwise specified. each of the above plans must be approved by the Authority prior to the commissioning of each new cell. Each approved plan must be implemented to the satisfaction of the Authority. Plans which have previously been approved by the Authority may be reviewed by the Authority prior to commissioning of each new cell, and updated plans must be submitted to the satisfaction of the Authority if required.