

# Bajwa EnviroConsult Technical Seminar

## *Landfills and Compliance*

28 August 2024

# Welcome!

3.40 – 4.40pm Technical presentations

4.40 – 5.00pm Q&A discussion panel

5.00 – 6.00pm Networking and drinks

# Technical presentations

- Kapila Bogoda, Bajwa EnviroConsult – Brief history of the Landfill BPEM
  - Jess Sullivan, EPA – EPA Victoria’s Landfill management framework
- Edward Sorraghan, EPA – Landfill Regulatory Priorities and Compliance Assessment
  - Mathew Watts, EPA – General update on status of new guidelines
- Amelia Donato, Bajwa EnviroConsult – Waste determinations and new separation distance guidelines for landfills
  - Aya Salih, Bajwa EnviroConsult – Combined services for landfill CQA
    - Marissa Verberne, Bajwa EnviroConsult – BEC capabilities

# Submit your questions

Use the link on your invitation

OR

[www.slido.com](http://www.slido.com)

Event code: #3553 889



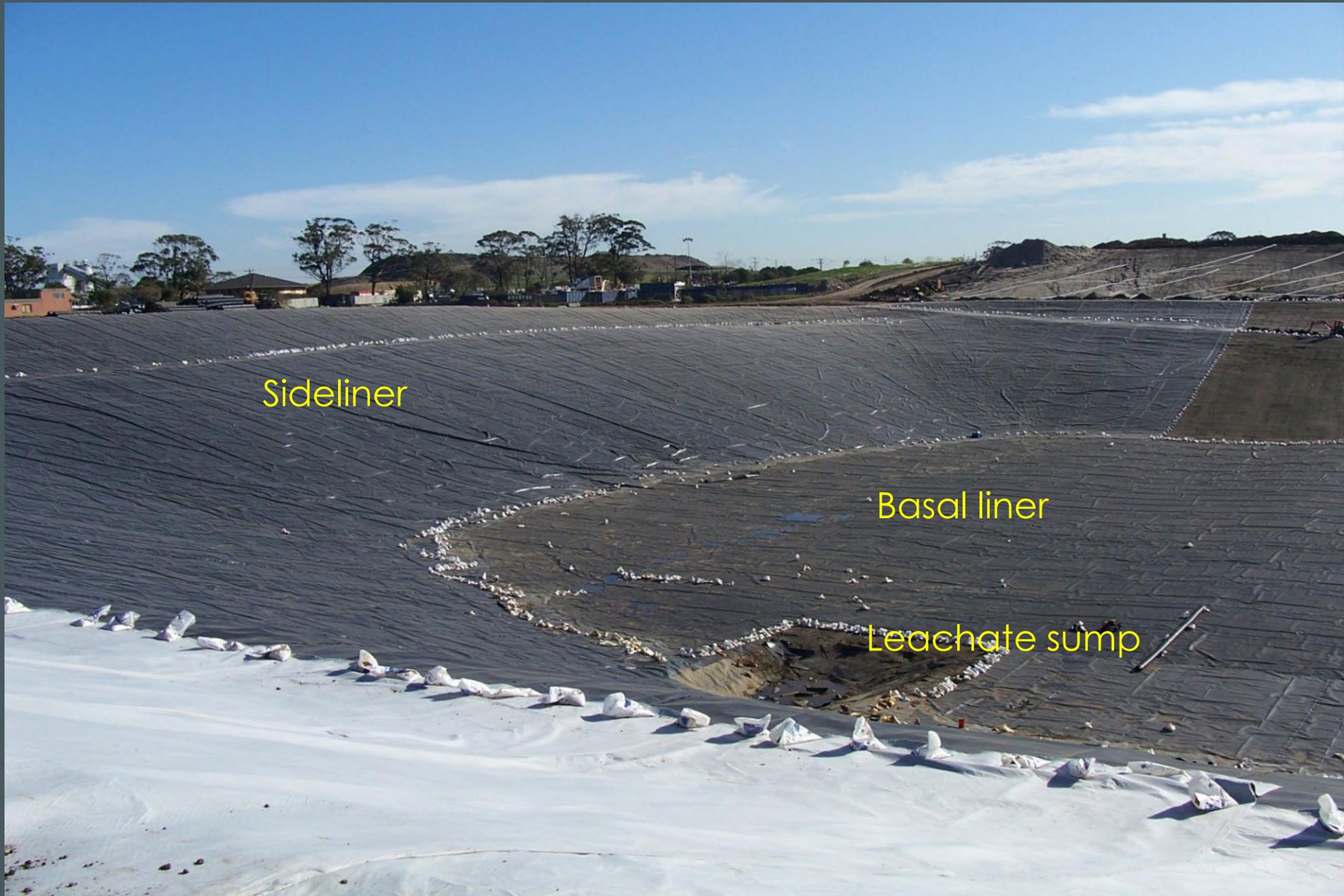
# Kapila Bogoda, Bajwa EnviroConsult

*Brief history of the Landfill BPEM*









Sideliner

Basal liner

Leachate sump

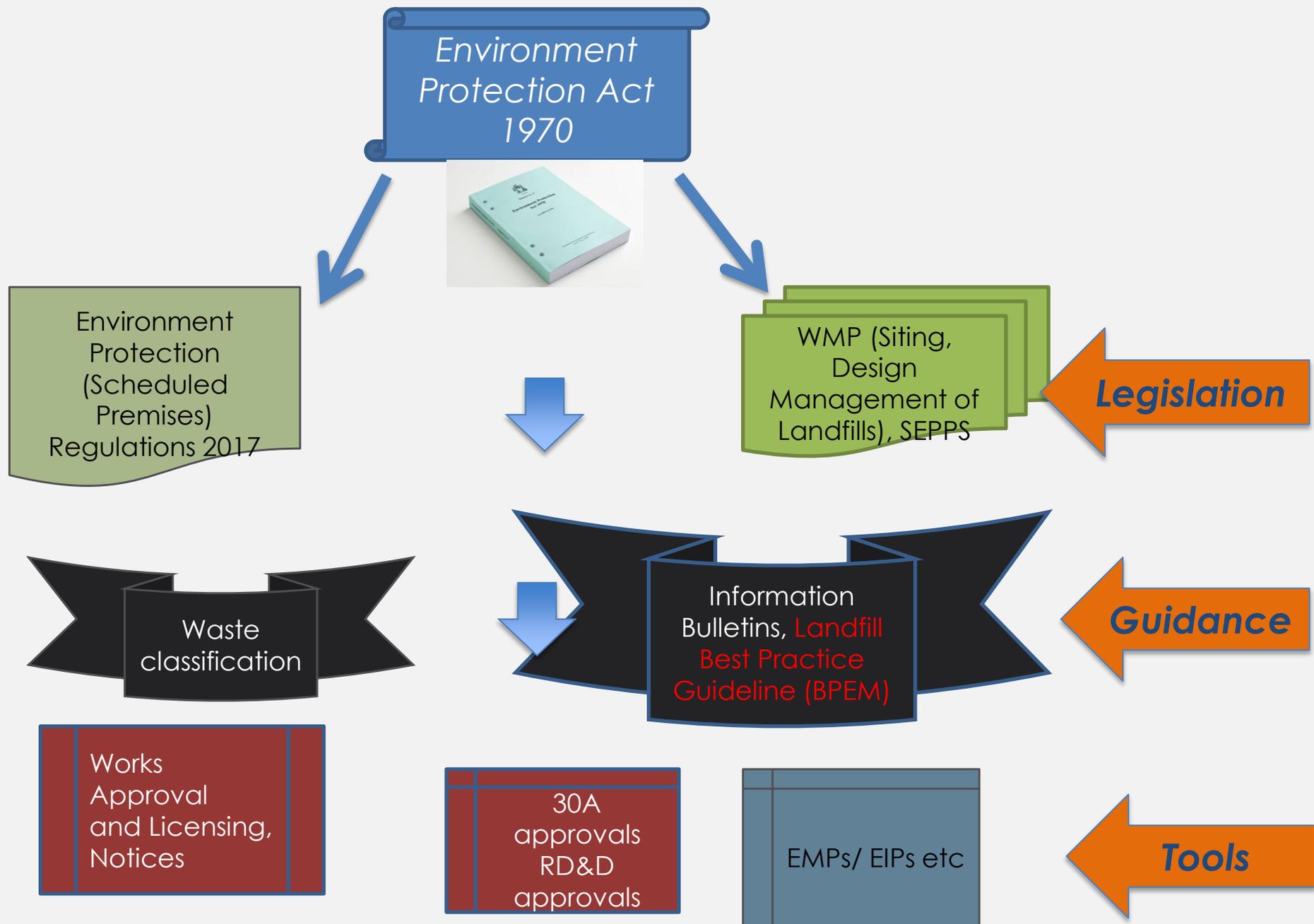














# Victoria Government Gazette

No. S 264 Tuesday 14 December 2004  
By Authority. Victorian Government Printer

## Environment Protection Act 1970

### WASTE MANAGEMENT POLICY (SITING, DESIGN AND MANAGEMENT OF LANDFILLS)

#### Order in Council

The Governor in Council under section 16A(1) of the **Environment Protection Act 1970** and on the recommendation of the Environment Protection Authority declares the Waste management policy (Siting, Design and Management of Landfills) contained in the Schedule to this Order.

Dated 14 December 2004

Responsible Minister:  
JOHN THWAITES  
Minister for Environment

DIANE CASEY  
Clerk of the Executive Council

**BPEM**

## Siting, design, operation and rehabilitation of landfills

Best practice environmental management



Publication 788.3\* August, 2015.

Authorised and published by Environment Protection Authority Victoria.

200 Victoria Street, Carlton, 3053.

\* This replaces publication 788.2, released October 2014. It incorporates the changes set out in the 'Variation to the Best Practice Environmental Management - Siting, Design, Operation and Rehabilitation of Landfills (EPA Victoria publication 788)', as published in the Victorian Government Gazette on 8 October 2014.

## Landfill licensing



Environment Protection Authority Victoria

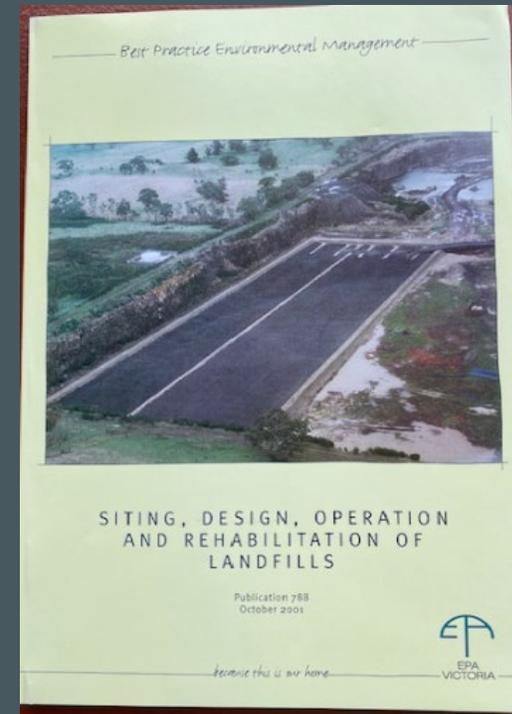
Publication 1323.3\* September 2016

\*This is the final to the draft review 1619 issued April 2016

Guideline

# BPEM

Introduced in 2001 (788)

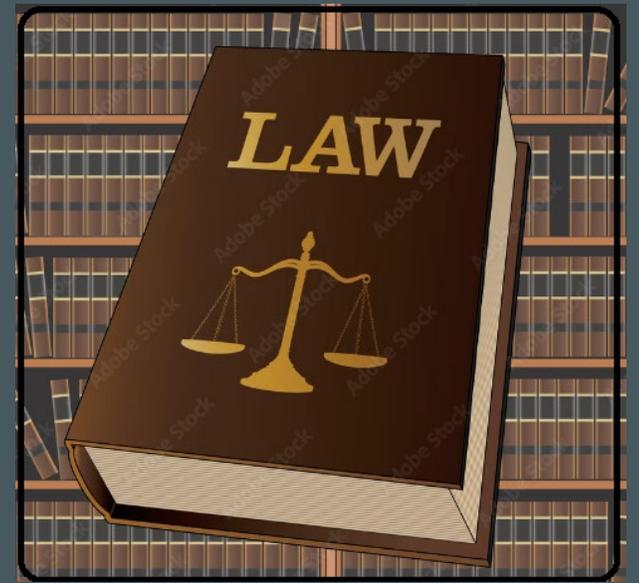


Revised in September 2010 (788.1)

REPORT ON OMBUDSMAN  
VICTORIA'S OCTOBER 2009  
**REPORT INTO BROOKLAND  
GREENS ESTATE —  
INVESTIGATIONS INTO METHANE  
GAS LEAKS**

Amended BPEM (788.3) August 2015

**New Act**



*Environment Protection Act 2017*

**Effective from 1 July 2021**

# Environment Protection Act 2017



Environment Protection  
Regulation 2021

**Legislation**



Reference Standards,  
Compliance Code,  
Waste categorisation

Information Bulletins,  
Publications

**Guidance**



Permissions  
(Development licence,  
Operating Licence,  
Registrations, Permits etc)

**Tools**

# Current situation

State of Knowledge

Best Available Techniques (BAT)

Best Available Technology (BAT)

As far as practically possible





# Jess Sullivan, EPA Victoria

*EPA Victoria's Landfill Management Framework*



Environment Protection Authority Victoria

Jess Sullivan 28 August 2024

# EPA Victoria Landfill Management Framework

Permissioning Unit



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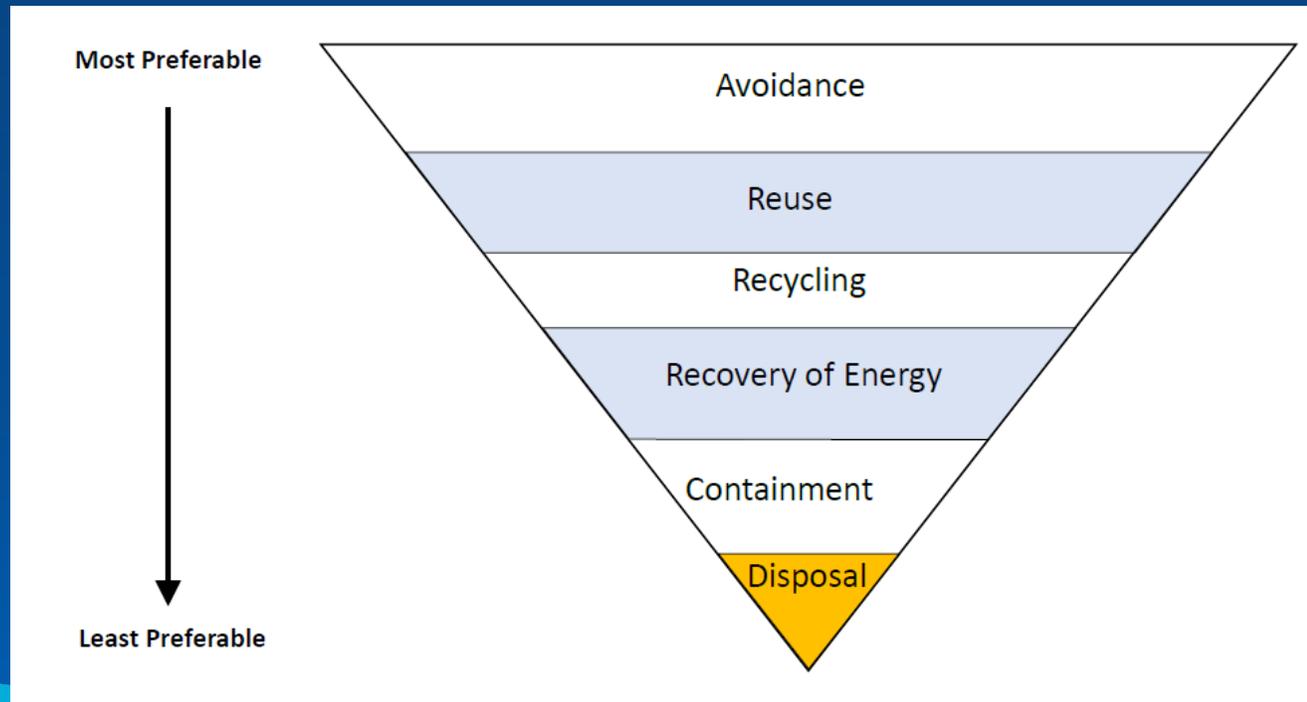
EPA acknowledges Aboriginal people as the first peoples and Traditional Custodians of the land and water on which we live, work and depend. We pay respect to Aboriginal Elders past and present and recognise the continuing connection to, and aspirations for Country.

# Environment Protection Authority Victoria (EPA) is Victoria's environmental regulator.

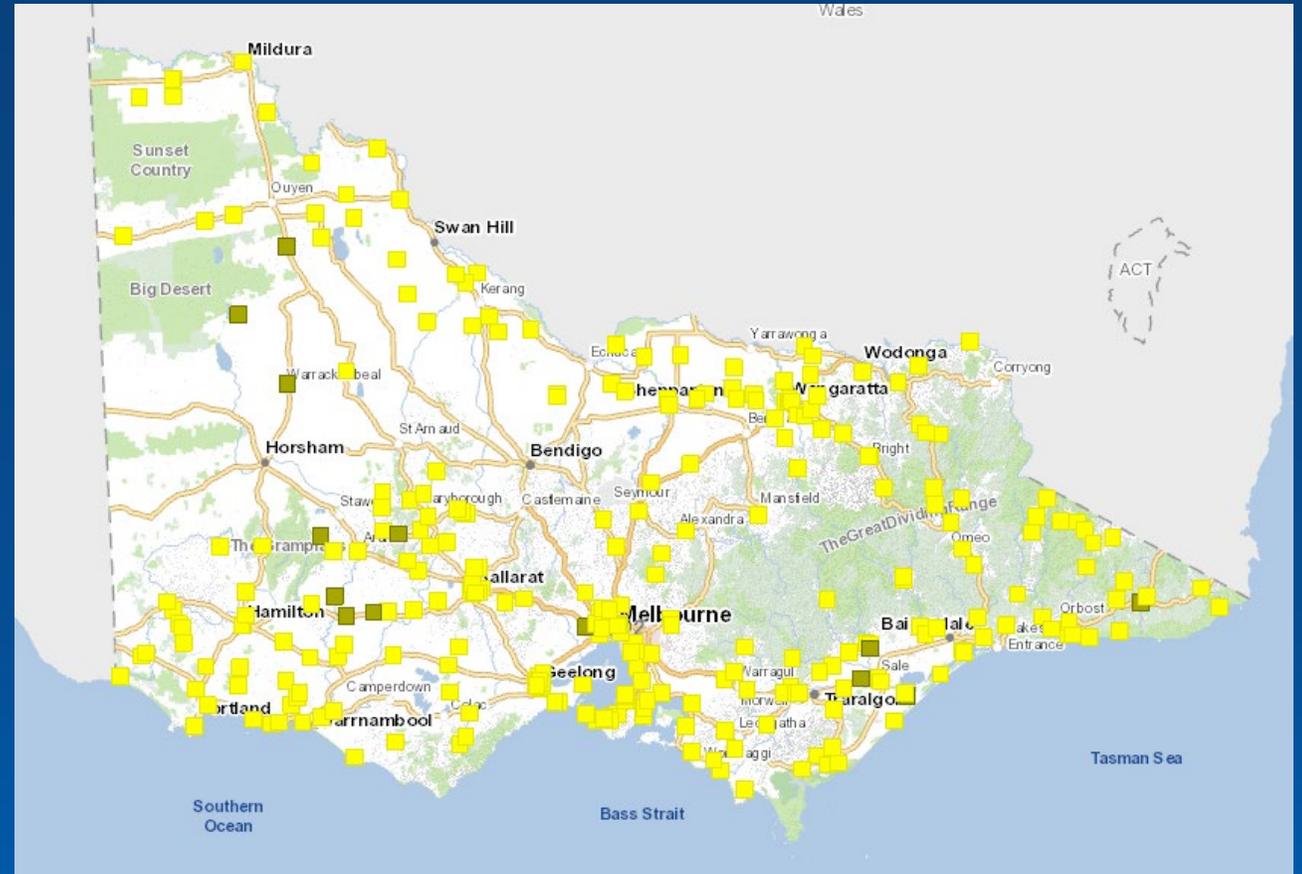
As an independent statutory authority under the Environment Protection Act 2017 (EP Act), our regulatory role is to prevent and reduce harm from pollution and waste.

A landfill is a specially designed and engineered facility for the disposal of waste.

Landfills are an important part of Victoria's waste management infrastructure by being the predominant disposal option under the EPA's Principle of waste management hierarchy for solid waste (s18 of the Environment Protection Act 2017).



There are currently 57 licenced operating landfills,  
11 permitted landfills, and  
100's of closed landfills of varying ages  
scattered around Victoria.



# Environmental Risks

Risks of harm to human health and the environment result from the degradation of waste within landfills- affects the water, land and air environments. The main risks are:

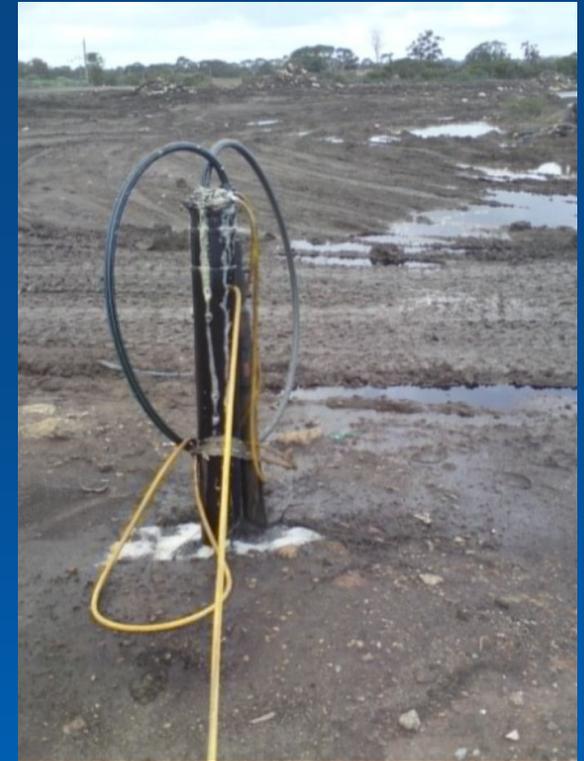
**Landfill gas (LFG)** due to biological decay of the waste. LFG can discharge:

- a) through the surface of the landfill as fugitive emissions causing offensive odours offsite (ie. residential areas) and greenhouse gas emissions which can contribute to disrupting climate systems, and
- b) through the land by lateral migration of the gas through the sides of the landfill, potentially causing risks of asphyxiation and explosion in the event the LFG accumulates within structures (like buildings, stormwater drains, underground electrical conduits etc), and may cause nearby vegetation to die.



# Leachate

Leachate is produced by the breakdown of organic wastes and rainwater percolation (and potential groundwater infiltration) through the waste material. It accumulates in cells and can discharge into the local groundwater and surface water environments causing contamination and loss of life of flora and fauna. High leachate levels also increase landfill gas generation and can block LFG extraction systems.



# Litter and Vermin

**Litter** and **vermin** can become a problem due to exposed waste on the surface of the landfill.

- a) Litter can easily move offsite in windy conditions
- b) Birds such as seagulls can become reliant on the exposed waste as a food source and cause population increases. They accumulate in the areas around the landfill and displace other birds in nesting grounds. Seagulls especially have been known to roost on neighbouring roofs during night times, resulting in fouling of the roof tops and complaints from neighbours.



## Exposed soils

- Dust due to exposed soils at the site can move offsite in windy conditions
- Trucking of dirt by trucks offsite
- Sediment contaminated stormwater



# Environment Protection Regulations 2021

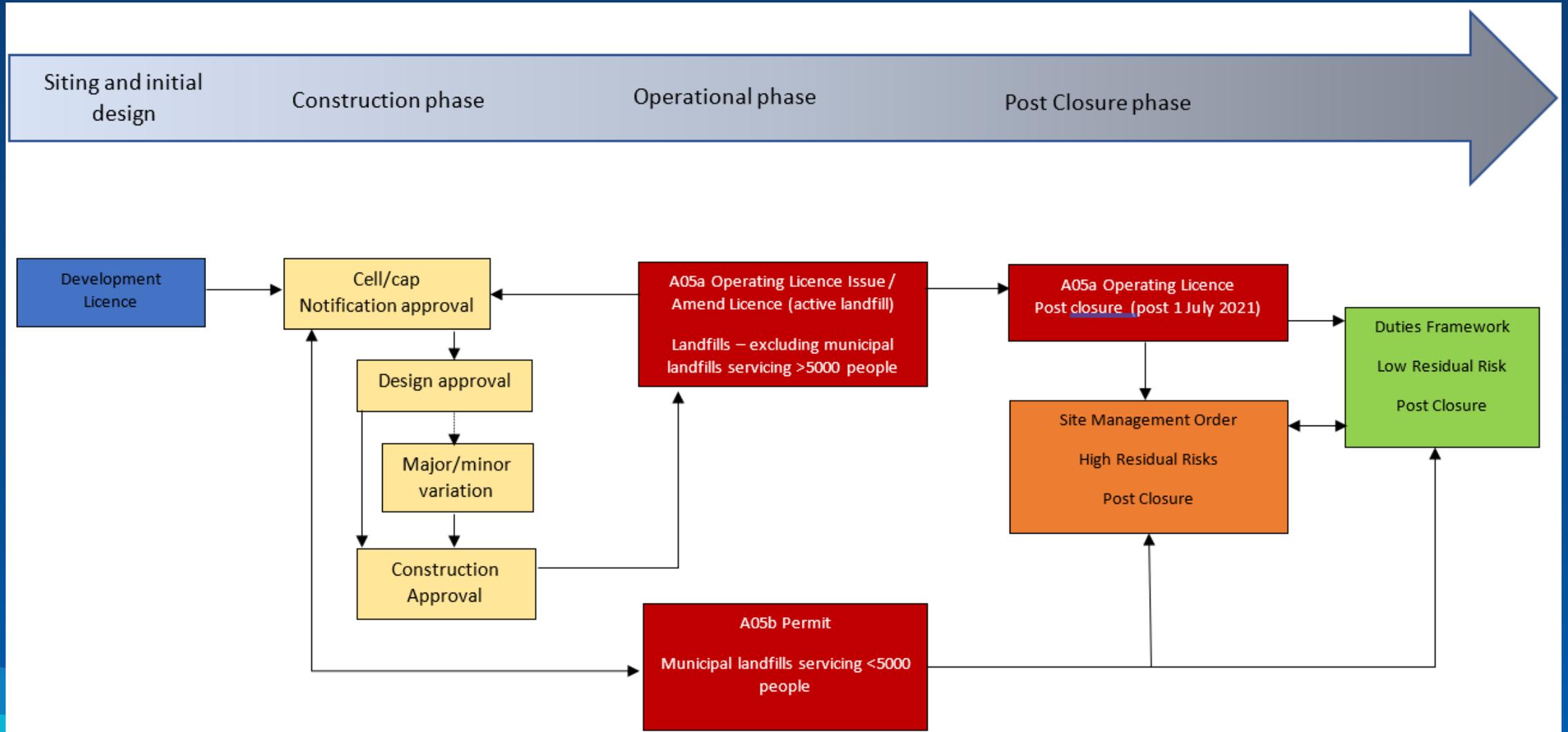
Landfills are a scheduled activity under Schedule 1 of the Environment Protection Regulations 2021

While all landfill operators are required under the General Environmental Duty (GED) (s 25(4) of the Act 2017) to minimise risks of harm to human health and the environment from pollution or waste so far as reasonably practicable (SRAFP), being a scheduled activity recognises:

- That the landfill operator is required to maintain the highest level of control to manage risk to human health and the environment, and
- A high level of oversight is required by EPA throughout the life of a landfill, resulting in a rigorous licensing and compliance assessment regime by multiple areas with EPA

Environment Protection Regulations 2021 S.R. No. 47/2021 Schedule 1—Prescribed permission activities and fees				
Column 1 Item	Column 2 Activity type and summary description	Column 3 Description of prescribed permission activity	Column 4 Type of prescribed permission activity	Column 5 Operating licence base fee in fee units (if applicable)
7	A05a (Landfills—excluding municipal landfills servicing <5000 people)	Operating a landfill that receives, discharges or deposits solid waste (including solid industrial wastes) to land, including waste containment and management operations after the landfill has ceased accepting new waste, but not including— (a) operating municipal landfill facilities occupied by a council servicing less than 5000 people; or (b) landfills previously licensed by the Authority that ceased depositing solid waste to land prior to 1 July 2021 and did not hold an operating licence on 1 July 2021; or (c) landfills used only for the discharge or deposit of mining or extractive industry wastes in accordance with the <b>Mineral Resources (Sustainable Development) Act 1990</b> that discharge or deposit waste solely to land; or (d) disposing of tunnel boring machine spoil in accordance with a permit that specifies an activity set out in item 80 (L09—Disposing of tunnel boring machine spoil) in this Table	• Prescribed development activity • Prescribed operating activity	
8	A05b (Municipal landfills servicing <5000 people)	Operating a municipal landfill facility occupied by a council servicing less than 5000 people that receives, discharges or deposits solid waste (including solid industrial wastes) to land, but not including landfills used only for the discharge or deposit of mining or extractive industry wastes in accordance with the <b>Mineral Resources (Sustainable Development) Act 1990</b> that discharge or deposit waste solely to land	• Prescribed development activity • Prescribed permit activity	

# The Lifecycle of a Landfill



# Landfill Siting and Initial Design

To open a landfill a Development Licence (DL) from EPA is required. The DL will assess:

- Siting of the landfill
- Consistency with the Victorian Recycling Infrastructure Plan (VRIP)
- Best Practice Design (cell liners and associated infrastructure including leachate storage and treatment)
- Financial Assurance

# Development Licence Applications –

Assessed in accordance with Section 69(3) of the Act:

- Consideration of the General Environmental Duty (s69(3)(a))
- Impact of the proposal on human health and the environment, including the impact on any environmental values identified in any relevant environment reference standard - s69(3)(b).
- Consideration of the Principles of environment protection (s69(3)(c))
- Consideration of Best Available Techniques or Technologies (BATT) - (s69(3)(d))
- Require referral to prescribed agencies (Councils, Recycling Victoria etc)

## Also need to consider

- Prohibited Person and Fit and Proper Person (s69(4)(b))
- Climate Change Act 2017
- Flora and Fauna Guarantee Act 1988
- Charter of Human Rights and Responsibilities 2006

# Development Licence Amendments / Exemptions

During the life of the landfill, you may likely need to modify the site which will require a Development Licence amendment or an exemption.

Generally a DL amendment/exemption may be required for:

- Changes to the footprint of the landfill/licence boundary, including adding new cells (at the least, if not a DL), and leachate ponds where the pond is located outside of the landfill footprint
- Changes to the pre-settlement contour plan
- Different waste streams (add additional waste codes to the licence)
- Adding a different scheduled activity to the site (A01, A13a/b, A07, A08 etc)

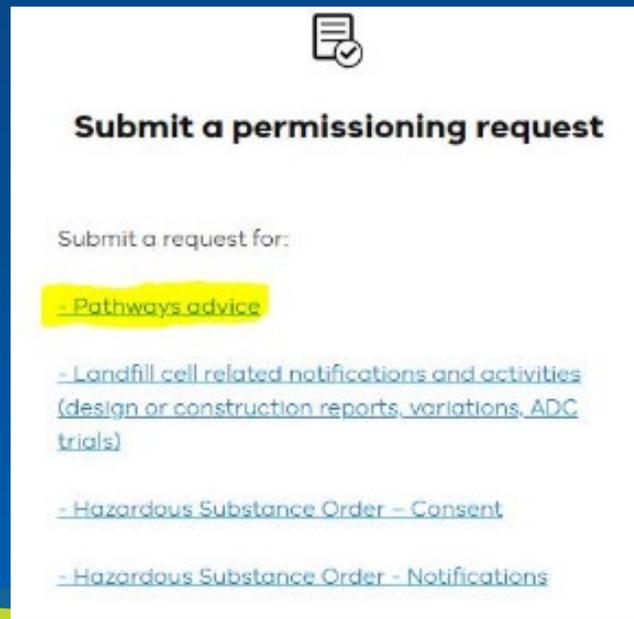
**A Development Licence amendment can be considered under s44 of the Act if the modification creates a risk of material harm to human health or the environment from pollution or waste.**

**A Development Licence exemption can be considered under s80 of the EP Act for low risk applications, taking into consideration r24 of the Environment Protection Regulations 2021**

## Development Licence Amendments / Exemptions

If you aren't sure what type of permission you need (DL, DL amendment, DL exemption, permit, operating licence, Pilot project licence), you can complete and submit a pathways advice request to EPA.

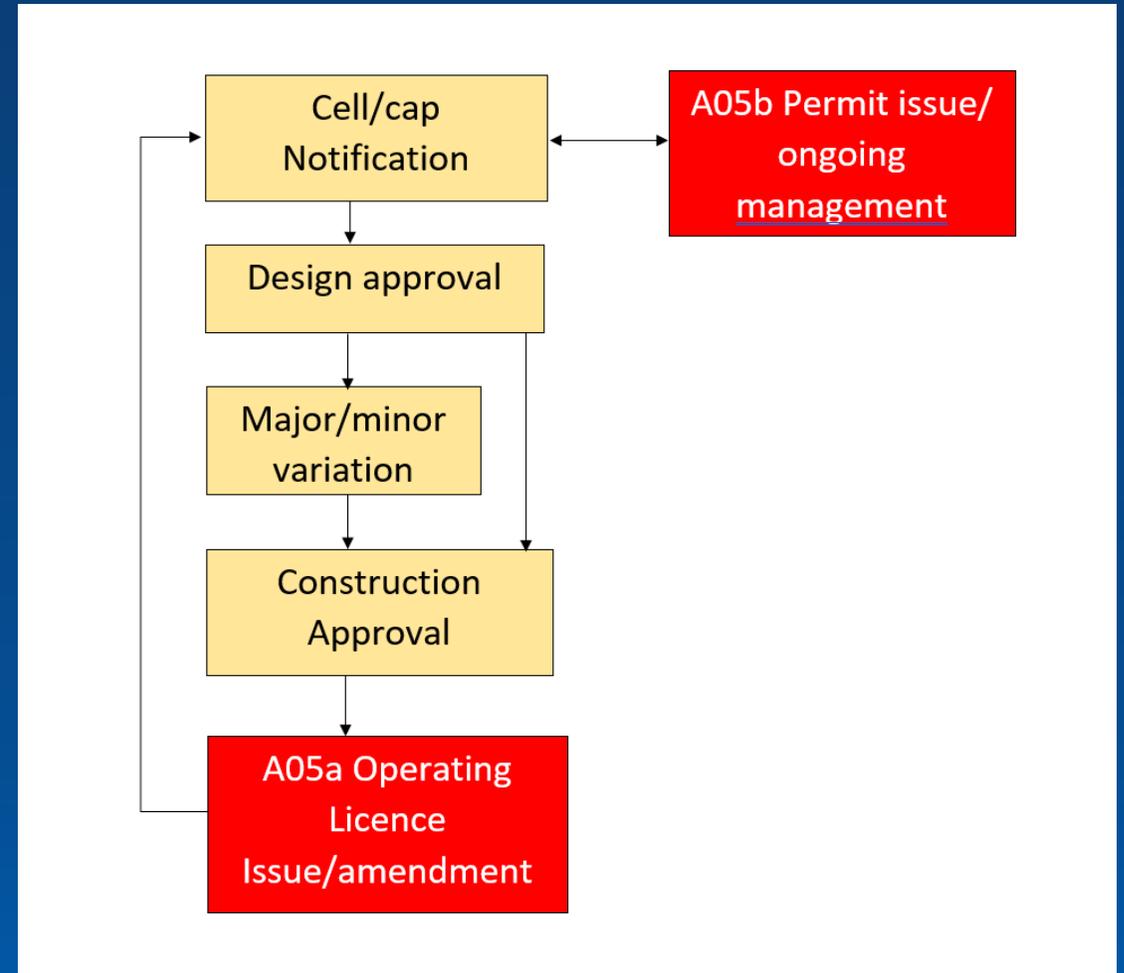
In order to submit this request, please login to the EPA portal and select the Pathways advice option.



# Construction Phase

All new landfill cells are required to have engineered liners that comply with Best Available Techniques and Technologies (BATT).

EPA uses EPA publication 788.3, August 2015, *Siting, design, operation and rehabilitation of landfills* (BPEM) as state of knowledge and the GED when assessing against BATT.



# Cell Notification

Written approval is needed from EPA for a landfill operator to start designing a new cell. The notification process requires the operator to:

- Identify the operational need for a new cell (this cell has already received a Works Approval/Development licence)
- The landfill classification (what type of cell and waste – Type 1,2 or 3 landfill)
- Evidence of rehabilitation of existing landfill cells
- Airspace and expected operating timeframe of the new cell (BATT requires 2 years as maximum opening time)

A cell notification application is submitted through the EPA portal by the operator.

For an A05a licensed site, an approval letter is issued to the landfill operator to allow the cell design documents to be developed.

For an A05b permitted site, the operator is then allowed to construct the cell in accordance with the notification. No further cell approvals are required for a permitted site. Once constructed, the operator is able to use the cell for waste deposition.



# Design Approval

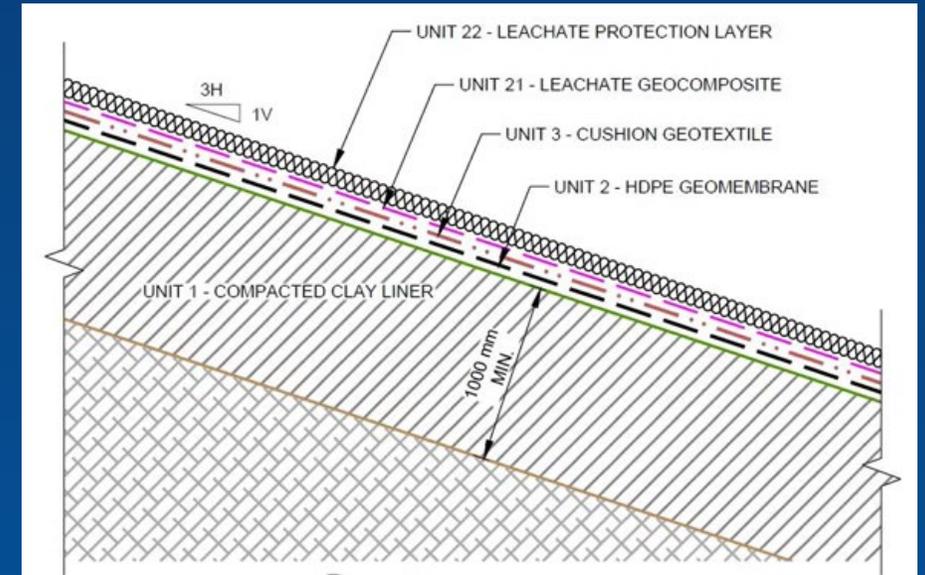
The operator (usually a consultant) prepares plans, technical specifications and a construction quality assurance plan in accordance with BATT.

The design documents are required to be verified by an auditor, who is appointed under the Act, that the design meets BATT requirements.

This is submitted through the EPA portal for assessment and approval.

If the application meets BATT requirements, an approval letter is issued to the landfill operator which allows construction of the cell to commence.

Often further information is required from the landfill operator or auditor to clarify deviations from BPEM. Conditions may be included on the approval letter to ensure BATT is being adhered to.



## Minor / Major Variation

During construction, sometimes deviations to the original approved cell design are required due to operational constraints.

Minor variation - the construction auditor can assess and sign off on minor variations.

Major variation - the construction auditor can establish that a deviation to the design is a major variation. The major variation application is required to be submitted through the EPA portal for approval.

Publication 1323.3 Landfill licensing outlines how to establish whether a variation is minor or major.



# Construction Approval

Once the cell has been constructed, a construction auditor verifies the cell has been constructed in accordance with the approved designs.

The audit verification report is submitted to EPA for approval through the Portal.

Further information may be needed if the construction report does not adequately address key requirements.

If the cell hasn't been constructed in accordance with the Design, EPA may require the landfill operator to do further works.

Addendums to the construction audit may be required to ensure works have been completed post initial audit.

If the construction verification meets the design criteria, an approval letter is issued, often with conditions including any recommendations from the auditor within the audit verification



# Operational Phase

Once the landfill cell and associated infrastructure (ie. leachate pond) has been constructed, an operating licence or a permit is issued, and the operator can start filling the cell with waste.

The type of permission for a landfill is based on the number of people a landfill services and is listed in Schedule 1 of EP Reg:

- Activity Type A05a – Landfills servicing over 5000 people, an operational licence is required.
- Activity Type A05b – Municipal Landfills servicing under 5000 people, a permit is required. (Under the 1970 Act, these landfills were referred to as low risk rural landfills and only required a Works Approval (now called a Development Licence) and no licence.)

The site will need to go through the cell approval process for every new cell. The operating licence will need to be amended after each cell is constructed to allow waste to be deposited in it.



# Permission Conditions

Conditions in Operating Licenses and Permits are aimed to reduce the harm to human health and the environment from specific high risks that the landfill poses. The permission is divided into 3 main sections:

- **General conditions** –general set of conditions required across all permits/operating licenses across Victoria regardless of activity type. They include conditions requiring
  - Permission Information Performance Statements,
  - Risk Monitoring Management Program, and
  - Financial Assurances.
  
- **Standard conditions** –standard set of conditions required at all landfills. Conditions include:
  - a) Environmental Audits under s208 of the Act 2017,
  - b) landfill gas management requirements,
  - c) leachate management requirements,
  - d) operational requirements (ie. tipping face size, daily cover etc),
  - e) amenity requirements for dust, litter, noise and odour (can be site dependent as amenity is largely governed under the GED),
  - f) cell construction requirements (permits are not required to go through the cell approval process however an operator is required to notify EPA of the intent to do so)
  - g) rehabilitation management measures, and
  - h) waste levy requirements
  
- **Specific conditions** – conditions related to the specific landfill that holds the permission. They include specific leachate levels that must be adhered to at that landfill site.

## Permission Information and Performance Statement (PIPS)

Condition OL\_G04a of a licence / PER\_G04a of a permit requires a PIPS to be provided to EPA within 2 months of receiving notification in writing from EPA. PIPS will be used to bring in information relevant to many EPA functions, such as for periodic licence reviews, preventative projects evaluation, waste volume data and landfill capacity data.

Licensed landfills will be sent a notification around the middle of each year.

# Risk Monitoring and Management Program (RMMP)

Under all Operating Licences and Permits, an RMMP is required to be developed and applied to the operations at the site. Condition OL\_G05 (G05) specifies the permission holder must develop an RMMP which:

- identifies all risks of harm to human health and the environment which may arise from site activities
- clearly defines their environmental performance objectives
- clearly defines their risk control performance objectives
- describes how those control performance objectives (above) are being achieved
- identifies and describes how they will continue to eliminate or minimise the risks so far as reasonably practicable
- describes how the information collated in compliance with this clause, is or will be used.

The RMMP must be fully documented, signed by a duly authorised officer of the permissioned entity and made available to the Authority on request.

Landfill licensed sites require the RMMP to be verified by and auditor appointed under the 2017 Act.

A permitted site does not require auditor verification

# Operational Audits

Operating Licence Landfills require a cycle of operational audits to be conducted at the site under s208 of the EP Act 2017.

The duty holder is required to engage an Environmental Auditor appointed under the Environment Protection Act 2017 to undertake regular audits of operating and closed landfills which have a permission (operating licence, notice, or site management order (SMO)).

The frequency of the environmental audit is site specific and depends on the risk posed by the site. Each environmental audit in the environmental audit cycle will contain a recommendation regarding how frequently environmental audits should be undertaken. This allows the environmental audit cycle to be proportional to the risk posed by the site which may change over the life-cycle of the landfill, with some periods of the landfill life-cycle being higher risk than others (and requiring more frequent environmental auditing at those times).

All environmental audit reports are submitted through the EPA portal.

EPA reviews the audit reports to identify any risks identified in the audit and ensure any recommendations are adhered to by the landfill operator. The landfill operator may be failing the conditions of their landfill licence if:

- the landfill operator fails to adhere to environmental audit recommendations,
- fails to complete environmental audits at the frequency required, or
- fails to get environmental auditor verifications completed at the landfill when required.

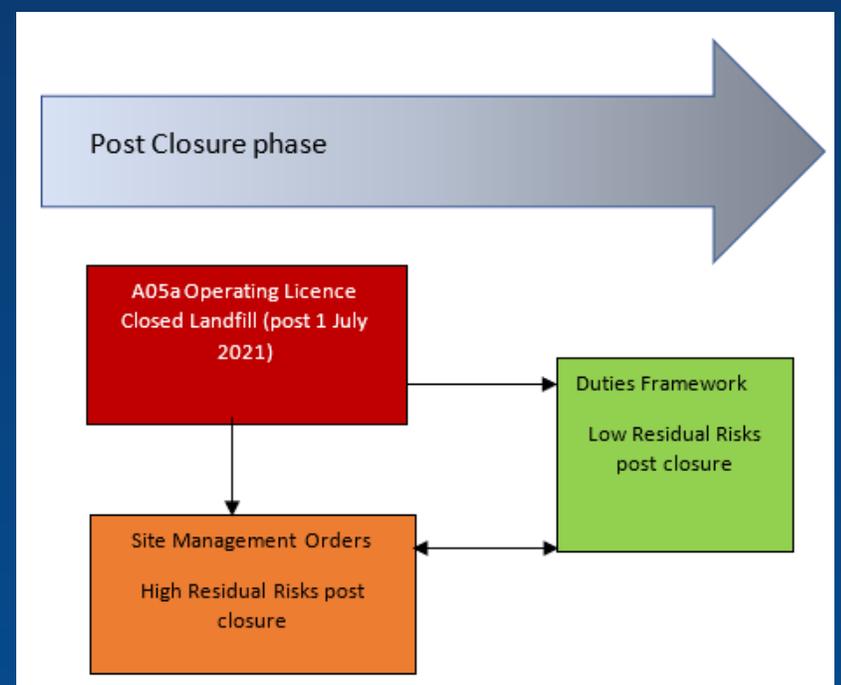
# Post Closure Phase

Waste continues to degrade for decades after it's been placed within a landfill, continuing to generate landfill gas and leachate which requires long term monitoring and management. The integrity of the cap also needs to be maintained to ensure waste is continually contained.

Closed landfills have 3 different regulatory tools to manage the aftercare period.

- A05a Operating Licence
- Site Management Order (transitioned from PCPANs pre July 2021)
- Duties Framework

Section 75(2) of the Act states that an operating licence may not remain in force... (a) in the case of an operating licence that specifies a waste management activity that is engaged in at a current of former landfill site, for a period of more than 99 years.



Environment Protection Authority Victoria

1300 372 842

[contact@epa.vic.gov.au](mailto:contact@epa.vic.gov.au)

[epa.vic.gov.au](http://epa.vic.gov.au)



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# Edward Sorraghan, EPA Victoria

*Landfill Regulatory Priorities and Compliance Assessment*



Environment Protection Authority Victoria

Edward Sorraghan 28 August 2024

# Landfill Regulatory Priorities and Compliance Assessment



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BEC Technical Seminar



EPA acknowledges Aboriginal people as the first peoples and Traditional Custodians of the land and water on which we live, work and depend. We pay respect to Aboriginal Elders past and present and recognise the continuing connection to, and aspirations for Country.

# Victoria's Landfill Picture

324 open or Close Landfill in Victoria (Vic Unearthed)

57 EPA licenced (A05a) Landfills

11 EPA permitted(A05B) Landfills

In the 2022/23 financial year, **5.3 million tonnes** of waste was landfilled in Victoria

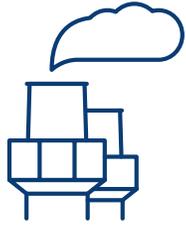
Recycling Victoria is currently developing the inaugural Victorian Recycling Infrastructure Plan (VRIP).





# EPA's Preventative Focus & Regulatory Priorities

# Key sources of harm



Ongoing point source generators of industrial pollution and waste



Potential catastrophic events and other major failures



Exposure to contaminants and legacy sites



Cumulative emissions from individual and diffuse sources



Spills and incidents from business and industry



Hidden and criminal activities creating new long-term risks



Conflicts between adjacent land uses and ongoing encroachment



## Last Year's Priority Harms (FY 23/24)

1. Preventing fires at high-risk waste and resource recovery activities
2. Disrupting illicit waste markets and strengthening legitimate waste markets
3. Reducing the impacts to waterways from discharges from wastewater treatment plants
4. Reducing the impacts from smoke and the burning of agricultural and organic wastes
5. Reducing the impacts of noise from commercial and industrial activities
6. **Reducing the impacts of odour from landfills and other commercial and industrial activities**

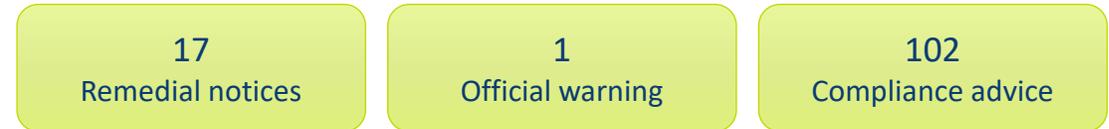


# Reducing the impacts of odour from landfills and other commercial and industrial activities



- In 2023-24, EPA proactively regulated odour pollution at priority areas to prompt increased action from duty holders to prevent and control odour, delivering:
  - ✓ 85+ inspections of priority sites, focusing on:
    - alleged sources from community reports
    - high-risk industries
    - odour report clusters
  - ✓ direct communications to 270+ duty holders
  - ✓ presentations to sector consultation groups (small business & manufacturing; agriculture)
- EPA also took significant regulatory action at landfills including SBI, Kealba, and Veolia Hallam Rd

- Across 85+ inspections, EPA issued:



Nb. Does not include enforcement activity at sites EPA actively regulates

- It was good to see many sites had:
  - odourous activities occurring within enclosed areas
  - quick turnover of odourous materials/feedstock
  - odour stacks with correct heights to disperse odour
- It was not good to see:
  - installed odour controls not properly maintained
  - unavailable maintenance and inspection records
  - improper waste management (e.g. uncovered waste outdoors)
- Duty holders not meeting their legal obligations will be held accountable in line with EPA's Compliance & Enforcement policy



## Light: Landfills 24/25

# This Year's Priority Harms and Strategic Projects

1. Disruption of illegal disposal of **End-of-Life Tyres**
2. Preventing fires at waste and resource recovery activities
3. **Reducing the risk of harm and impacts from landfills**
4. Disrupting the illegal dumping of asbestos
5. Managing the risks of harm from the causes and consequences of **climate change**
6. Enabling the safe and sustainable renewal of contaminated land
7. Enabling the safe reuse of waste



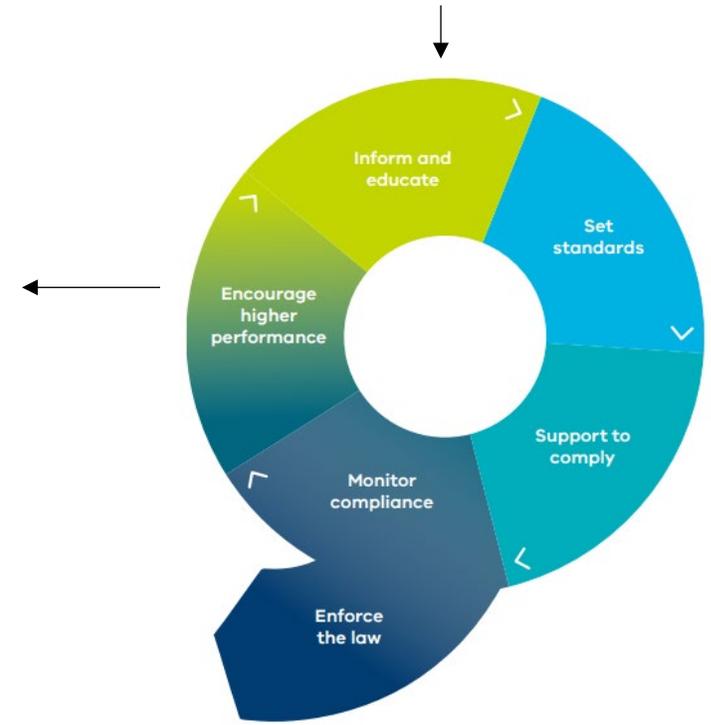
# Why is EPA Focusing on Landfills?

- Despite a high sector state of knowledge and a strong regulatory presence by EPA, we continue to observe unacceptable levels of non-compliance, which increases the risk of harm to human health and the environment.
- Key areas of non-compliance observed sector wide relate to:
  - Leachate and landfill gas management
  - Cell rehabilitation requirements
  - Hotspot/fire risk management
  - Development and maintenance of RMMPs
- As a result, EPA is focused on ensuring that operators are effectively assessing and controlling their activity risk to comply with their legislative obligations under the EP Act.



# EPA Landfills 24/25 Approach

- EPA will be delivering a focused regulatory approach to address some of the sectors biggest harms.
- Through this approach EPA will:
  - ✓ Continue to conduct consistent risk-based compliance monitoring via onsite inspections and RPAS surveys.
  - ✓ In line with the EPA Compliance and Enforcement Policy, and where there is an established state of knowledge, enforce the law.
  - ✓ Increase industry visibility of EPA's observations of the sector with regard to operators to reduce risks SFARP and EPA's role as a regulator.
  - ✓ Strengthen connections with industry leaders to enable greater compliance performance and behaviour change. EPA will do this by:
    - ✓ **Establishing the Landfill Sector Consultation Group in 24/25.**
    - ✓ Consistently engaging with landfill industry leaders and industry associations to provide updates on planned interventions and sector risk observations.



# What to expect when EPA officers inspect your landfill

- ❖ EPA officers will review your compliance history including
  - ❖ Previous inspection reports
  - ❖ Any compliance advice given
  - ❖ Any notices issued etc
- ❖ EPA officers will review your most recent landfill operations audit and target the biggest risk identified. They will ask about implementing any auditor recommendations.
- ❖ They will ask questions about implementing the **RMMP**.
- ❖ Check compliance with your **rehabilitation plan** including the LFG capture and treatment system. I.e. are cell capped within 2 years of full.



## What officers will look for when onsite:

- Adequately of waste cover;
- leachate containment;
- Stormwater controls
- Windblown litter
- Odours at boundaries
- Progressive landfill rehab
- Progressive installation of the LFG extraction system



# Key Messages

- ❖ EPA has a priority focus on landfills due to the realised and potential harm they can create to environment and human health from pollution and waste.
- ❖ EPA has observed repeated non-compliances associated with:
  - Leachate and landfill gas management
  - Cell rehabilitation requirements
  - Hotspot/fire risk management
  - Development and maintenance of RMMPs
- ❖ With an established State of Knowledge on how to meet legislative obligations, EPA will be regulating landfill sites in line with its Compliance and Enforcement Policy.
- ❖ If you think your site is meeting its obligations – we ask that you
  - **Review the efficacy of your RMMPs and risk controls**
  - **Look at your near miss & incident data to see if this backs up your observations**
  - **Look at your recent engagements with EPA – are we pointing to areas that need addressing?**



Environment Protection Authority Victoria

1300 372 842

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# Mathew Watts, EPA Victoria

*General update on status of new guidelines*



# Amelia Donato, Bajwa EnviroConsult

*Waste determinations and new separation distance guidelines for  
landfills*

# Waste Determinations

Waste determinations are made by EPA under Regulation 5(3)(a) of the Environment Protection Regulations 2021:

*(3) The Authority may make a determination that sets out the specifications acceptable to the Authority in relation to the following—*

*(a) receiving and using industrial waste under regulation 63(b)*

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## **63 Authorised to receive industrial waste**

*For the purposes of paragraph (e) of the definition of **authorised to receive industrial waste** in section 3(1) of the Act, a person, place or premises is authorised to receive a type of industrial waste—*

*(b) if the industrial waste is received and used in accordance with specifications acceptable to the Authority set out in a determination made under regulation 5*

## EPA Guidance

- The general environmental duty (GED) applies to the use of waste received according to a waste determination's requirements.
- Waste receivers who receive waste in accordance with a waste determination **must ensure they read and understand the waste determination**. To meet their waste duties, waste producers and receivers must comply with all waste determination conditions and limitations.
- EPA Publication 2005:



## Current Waste Determinations

Determination	Summary	Date approved
<b>Livestock manure and effluent</b>	This authorises a person or place to receive livestock manure and effluent in accordance with the determination's requirements. EPA has developed guidance to help primary producers understand this determination.	18 June 2021
<b>Fill material</b>	This authorises a person or place to receive fill material in accordance with the determination's requirements.	18 June 2021
<b>Recycled aggregates</b>	This authorises a person or place to receive recycled aggregates in accordance with the determination's requirements.	18 June 2021
<b>Processed organics</b>	This authorises a person or place to receive processed organics in accordance with the determination's requirements.	16 December 2021
<b>Digestate</b>	This authorises a person or place to receive digestate in accordance with the determination's requirements.	21 December 2023

## Current Waste Determinations

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<b>Digestate</b>	This authorises a person or place to receive digestate in accordance with the determination's requirements.	21 December 2023

# Fill Material Waste Determination

## 4. Application

- (1) This determination applies to industrial waste that is –
  - (a) fill material as defined in Regulation 4 of the Regulations; or
  - (b) any industrial waste classified as fill material in a designation issued by the Authority under Regulation 86 of the Regulations.
- (2) This determination does not apply to –
  - (a) any activity that requires a permission (as defined in the Act); and
  - (b) industrial waste that is soil that has undergone thermal treatment, unless subclause (1)(b) applies.

*fill material* is industrial waste that is soil—

- (a) with contaminant concentrations not exceeding the upper limits for fill material contaminant concentrations specified in the Waste Disposal Categories — Characteristics and Thresholds; and
- (b) that does not contain asbestos;

Check that other permissions are not required, e.g. any processing of the material required?

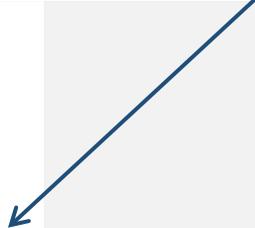
## Fill Material Waste Determination

### 5. Specifications

For the purposes of Regulation 63(b) of the Regulations, a person or a place or premises authorised to receive industrial waste that is fill material if –

- (a) all the conditions in Clause 6 of this determination are satisfied; and
- (b) the fill material does not contain, or the waste generator has removed as far as reasonably practicable, any wastes or physical contaminants that are not soil, including –
  - (i) concrete, bricks, ceramics, asphalt, plastics, glass, metal or wood; and
  - (ii) putrescible or organic wastes; and
- (c) the fill material is not malodourous, including from petroleum hydrocarbons, hydrogen sulphide or organosulfur compounds; and
- (d) the fill material does not contain discoloured chemical deposits or staining from chemical waste.

Must be removed before receiving at the site



Inspection procedures for incoming material are required



# Fill Material Waste Determination

## 6. Conditions

- (1) The waste receiver must inspect each consignment of fill material when received at the receiving site and –
  - (a) confirm the consignment meets the specifications in Clause 5 of this determination; and
  - (b) make a record of that inspection.
- (2) The waste receiver must not accept any waste soil classified as fill material excavated from contaminated land unless the waste generator has provided evidence of the soil classification, including any laboratory analysis, carried out in accordance with Regulation 62(1)(b) of the Regulations.
- (3) Any laboratory analysis required for the purposes of this determination must be undertaken by a National Association of Testing Authorities accredited laboratory.

Inspection procedures, including documenting records

# New Separation Distance Guidelines

- New EPA guidelines published on 12 August 2024:
  - Separation distance guidelines
  - Landfill buffer guidelines

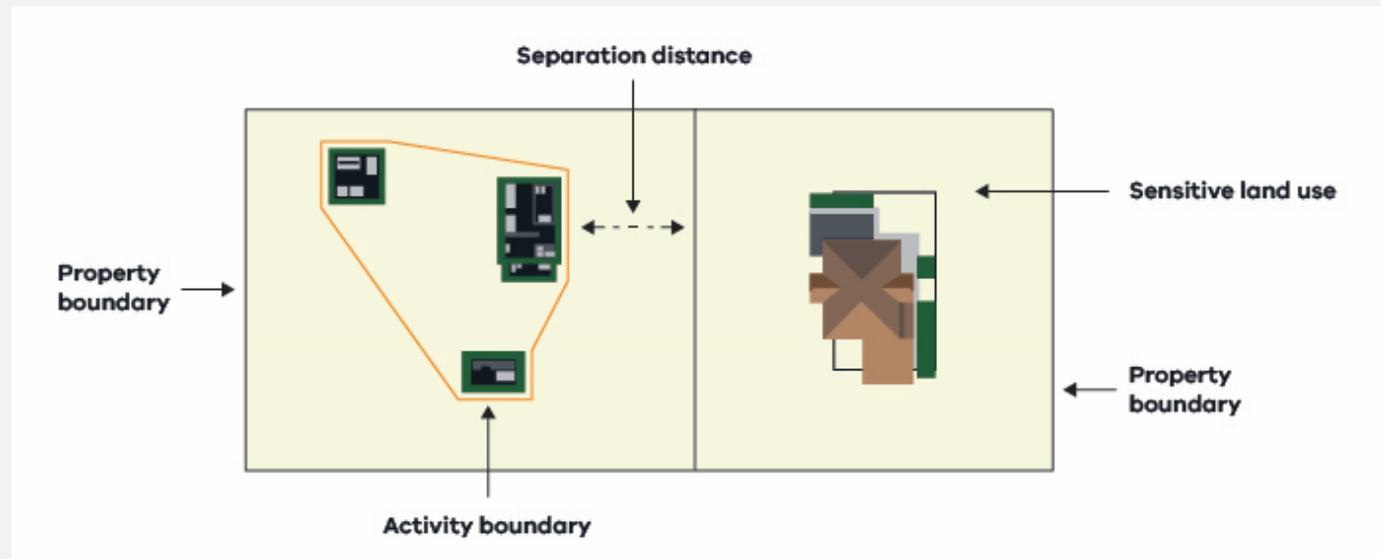


Figure 3. Measuring separation distances for odour and dust – the urban method (Source: EPA Victoria)

# New Landfill Buffer Guidelines

## Key points:

- EPA will consider this guideline when assessing applications for EPA permissions for landfills, including for development and operating licences and permits.
- The information in this guideline replaces sections 5.1.5, 8.2.1 and 8.2.2 of Siting, design, operation and rehabilitation of landfills (Landfill BPEM) (EPA publication 788).
- This guideline is not to be used retrospectively to require an existing landfill operating in accordance with all relevant statutory obligations to comply with a buffer. However, it may be used to determine a buffer to inform land use and development decisions surrounding an existing landfill, or to assess proposed changes to or expansion of an existing landfill where a permission is triggered.
- This guideline is not intended to be used to revisit decisions already made by planning decision-makers (for example, planning permits) and EPA (permissions).

# New Landfill Buffer Guidelines

Landfill type	Recommended buffers			
	Landfill gas	Human health and amenity impacts	Water quality	Bird strike (A lesser distance may apply subject to the approval of the relevant aviation authority)
Landfill accepting municipal (putrescible) waste (Type 2) Licenced tipping face up to 900 m <sup>2</sup>	500 m from buildings or structures	<div style="border: 1px solid red; padding: 2px; display: inline-block;">New requirement</div> 500 m from sensitive land uses.  This may be varied with an appropriate odour/landfill gas risk assessment or audit that demonstrates an alternative buffer is acceptable.	100 m from surface waters	<ul style="list-style-type: none"> <li>• 1,500 m from an aerodrome for piston-engine propeller-driven aircraft</li> <li>• 3,000 m from an aerodrome for jet aircraft</li> </ul>
Landfill accepting municipal (putrescible) waste (Type 2) Licenced tipping face equal to or greater than 900 m <sup>2</sup>	500 m from buildings or structures	1,500 m from sensitive land uses.  This may be varied to a minimum of 1,000 metres with an appropriate odour risk assessment that demonstrates an alternative buffer is acceptable (refer to Guidance for assessing odour (EPA publication 1883)).	100 m from surface waters	<ul style="list-style-type: none"> <li>• 1,500 m from an aerodrome for piston-engine propeller-driven aircraft</li> <li>• 3,000 m from an aerodrome for jet aircraft</li> </ul>
Type 2 landfill not licenced to accept putrescible waste	Case by case, supported by an appropriate landfill gas risk assessment (Refer to Sections 9 and 10 of the guideline)			

# New Landfill Buffer Guidelines

Landfill type	Recommended buffers			
	Landfill gas	Human health and amenity impacts	Water quality	Bird strike (A lesser distance may apply subject to the approval of the relevant aviation authority)
Landfill accepting solid waste (Type 3)	200 m from buildings or structures	<div style="border: 1px solid red; padding: 2px; display: inline-block;">New requirement</div> <ul style="list-style-type: none"> <li>• 500 m from uses sensitive to odour</li> <li>• 200 m from uses sensitive to dust</li> </ul>	100 m from surface waters	<ul style="list-style-type: none"> <li>• 1,500 m from an aerodrome for piston-engine propeller-driven aircraft</li> <li>• 3,000 m from an aerodrome for jet aircraft</li> </ul>

Note:

- For Type 1 landfills, EPA must be contacted for advice. Type 1 landfills are complex and are not covered in the guidance.



Aya Salih, Bajwa EnviroConsult

*Combined services for landfill CQA*



Combined Services for  
Landfill CQA

Presented by: Aya Salih

BEC Technical Seminar

28 August 2024

# Importance of CQA

- Construction quality assurance (CQA) verifies that landfill components are constructed to exact specifications. It safeguards the structural integrity of the landfill, avoiding potential costly future repairs.
- CQA is generally performed by a third-party firm independent of the Contractor and Owner/Principal to provide an unbiased evaluation of the liner construction.
- Geotechnical Inspection and Testing Authority (GITA) supervises earthworks and Third Party CQA Inspector (TPCC) supervises geosynthetics installation.
- Under Victorian Environmental Regulations, landfill construction is also required to be audited by an EPA Appointed Environmental Auditor.



BEC providing CQA and auditing services at a local Victorian site.

# Combined Auditing and CQA Services

Auditor and GITA/TPCC from the same company – one ‘Audit Team’

Landfill BPEM (EPA Publication 788.3) guidance:

- Section 6.3.3 “**The third party construction quality assurance consultant can be part of the geotechnical team for the environmental auditor.** However, if this consultant is part of the auditor’s team, that consultant can not provide advice to the owner or the contractor on any construction or design issues”.
- Section 6.4.1 “Because of the importance of the sub-grade and clay liner in the overall liner performance, construction of these components must be accompanied by Level 1 geotechnical testing as set out in Appendix B of AS 3798–2007, Guidelines on earthworks for commercial and residential developments. This entails, among other requirements, full-time testing and inspection of all earthworks by the geotechnical testing authority, a geotechnical engineer independent of the liner constructor..... If necessary, **this independent testing can be undertaken by the auditor’s geotechnical team.** However, this team can not provide any advice on construction or design issues”.

# Combined Auditing and CQA Services

Auditor and GITA/TPCC from the same company – one ‘Audit Team’

Landfill Licensing (EPA Publication 1323.3) guidance:

- Section C11 *“The environmental auditor must not act in a supervisory (or advisory) role at the subject landfill during construction. **Monitoring and testing activities conducted by the audit team as part of the construction audit are regarded by EPA as supporting work for the audit**”.*



BAJWA  
ENVIRO  
CONSULT

# Why Combined CQA Services?



## Greater oversight and confidence by Auditor

- Auditor is aware of all works as they occur and gets updates daily (e.g. access to daily site notes and photographs)
- All GITA/TPCC personnel and Senior support team are Auditor's own trained and qualified engineers, and GCI-ICP certified
- GITA/TPCC always has direct access to Auditor and Senior support team throughout the day so Auditor input can be provided directly to Superintendent and Contractor through GITA/TPCC
- GITA/TPCC act as Auditor's Representative and undertake daily inspections
- Audit Report contains comprehensive details, all testing results and daily site observations



# Key added benefits



## Response time

Quicker responses to hold point releases, RFIs and variations, given the GITA/TPCC has direct access to the Auditor.



## Parties involved

Reduced number of parties involved and one main contact onsite to streamline communication.



## Auditor inspections

Eliminates the need for multiple Auditor site inspections, as the Audit team is onsite full time.



## Project management

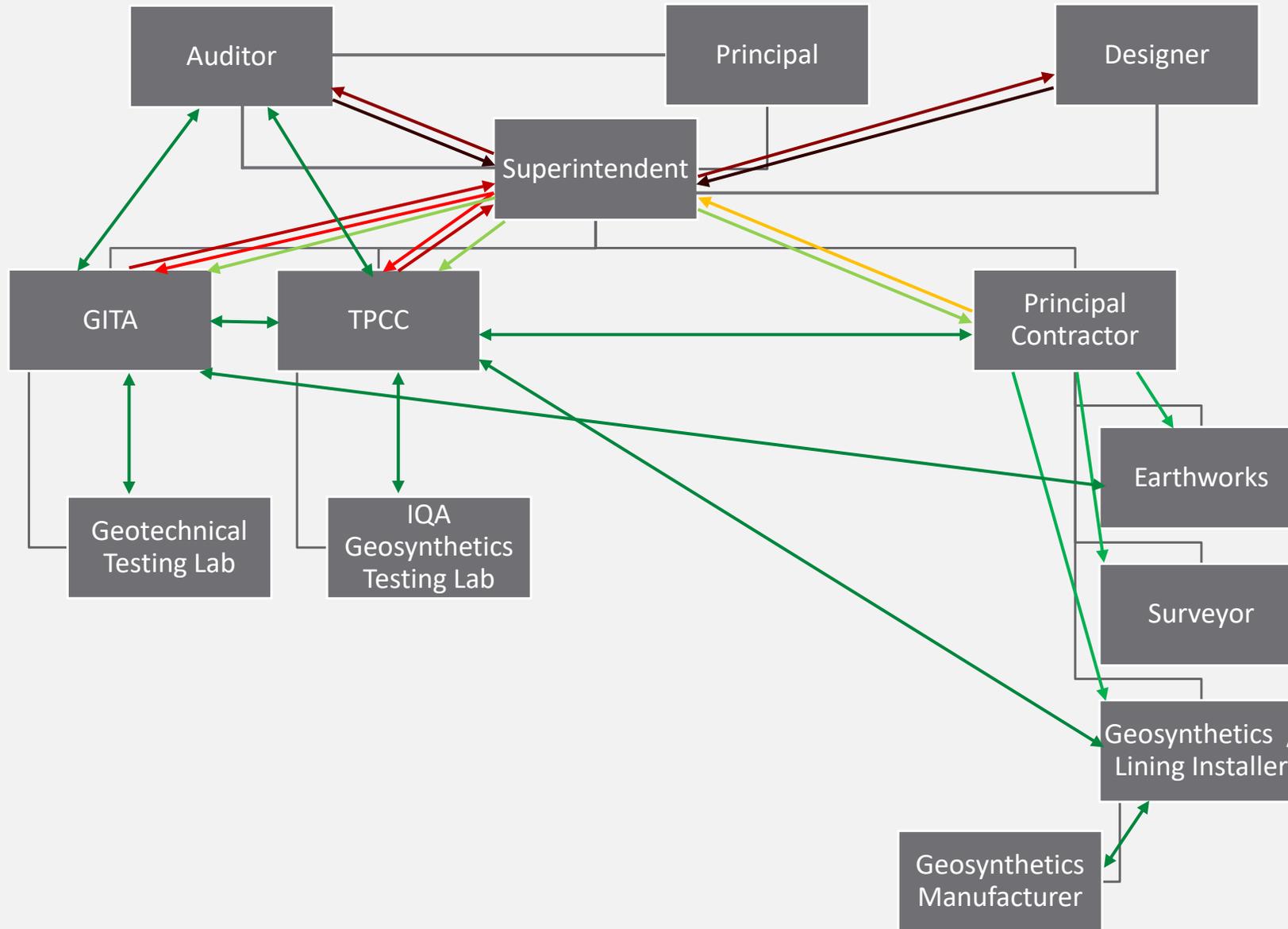
Reduced project management and coordination required, allowing for greater efficiencies.



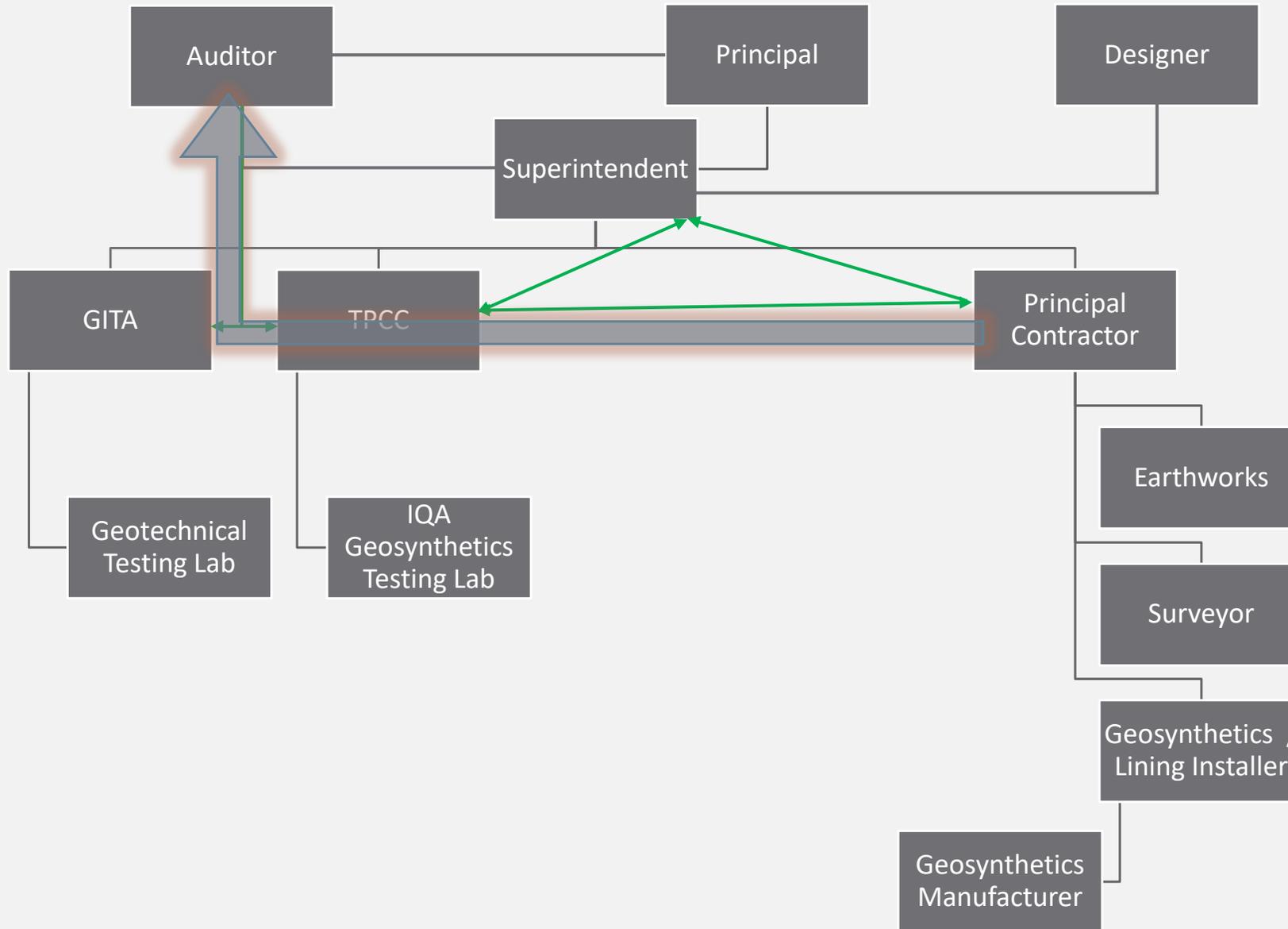
## Reporting

Reduced reporting requirements given all information is captured within the Audit Report.

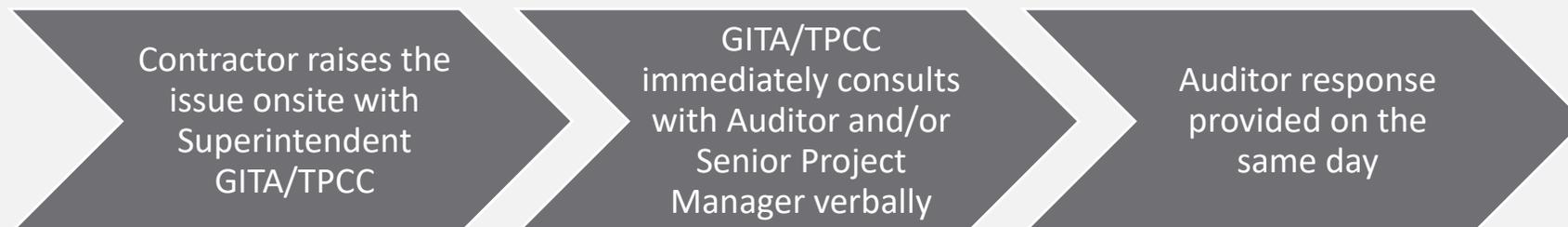
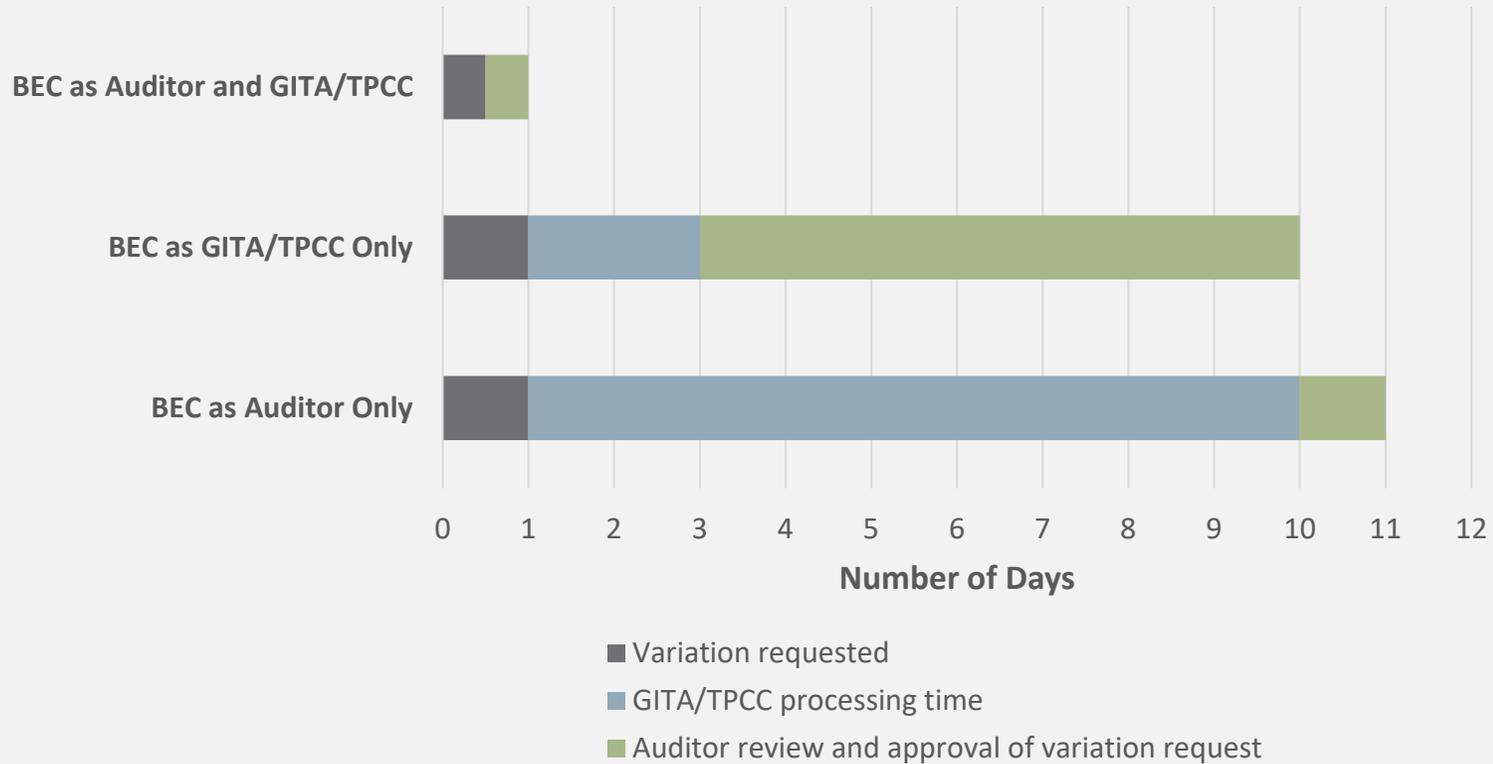
# Typical lines of communication



# Combined Services lines of communication



# Proven record for quicker responses



# Key takeaways

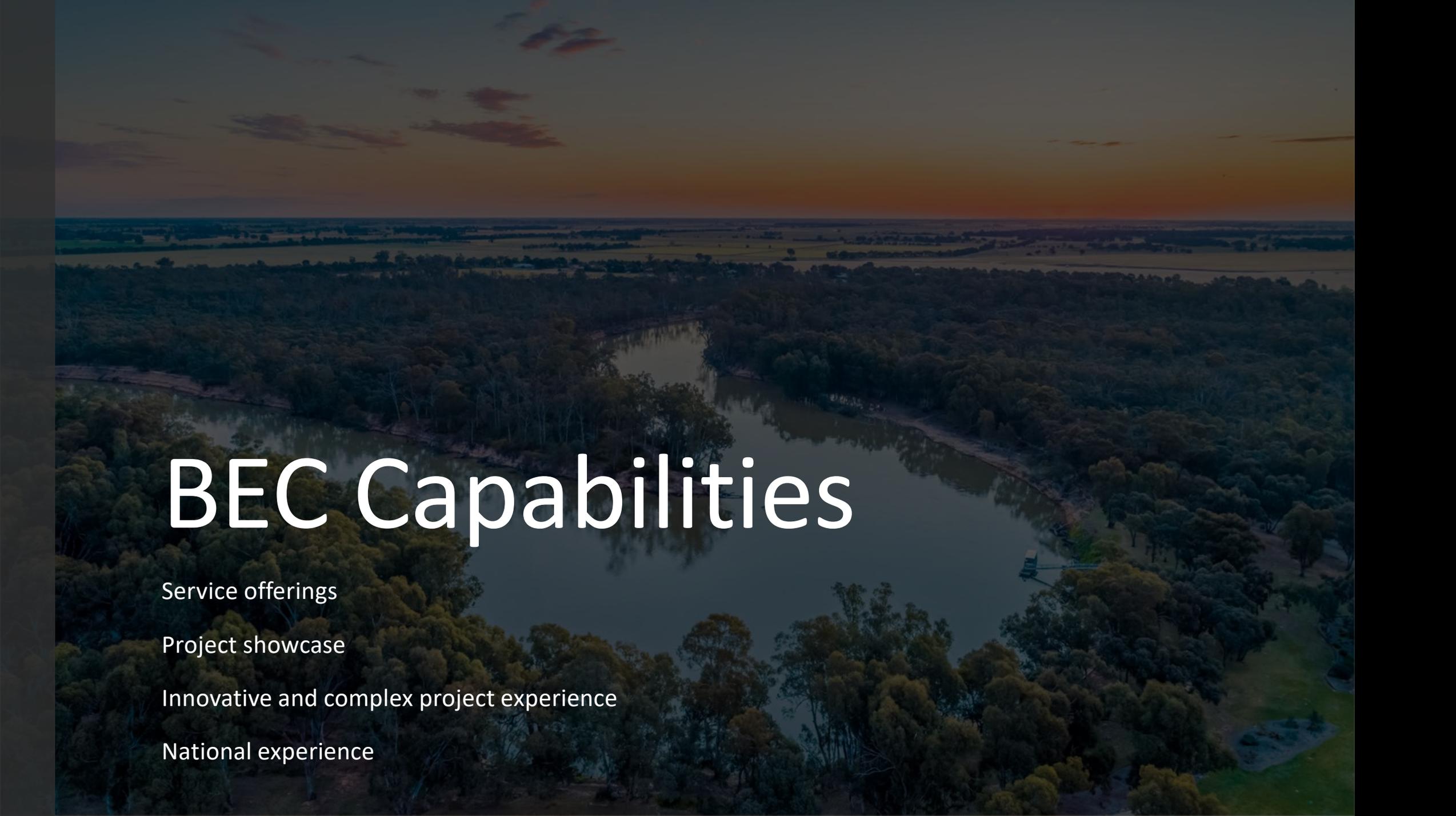
- Combined CQA and Auditing Services widely accepted under EPA VIC Regulations
- Greater Auditor oversight
- Auditor's involvement on a daily basis and quicker approvals
- Communication and cost efficiencies





Marissa Verberne, Bajwa EnviroConsult

*BEC capabilities*

An aerial photograph of a wide river meandering through a vast, dense forest. The scene is captured at sunset or sunrise, with a warm, orange and yellow glow on the horizon and a dark, silhouetted sky. The river's surface reflects the light from the sky. The forest is thick with trees, and the overall atmosphere is serene and natural.

# BEC Capabilities

Service offerings

Project showcase

Innovative and complex project experience

National experience

# Our solutions will be tailored to you

## Regulatory Knowledge

We have a depth of experience in delivering local, State and Commonwealth environmental approvals, for complex and unique projects, including major infrastructure projects. This is complemented by our other services which enable us to provide end-to-end environmental support for projects, from the design and approval phase right through to delivery and verification



## Client Focused

We want to help de-risk and de-stress. We work collaboratively with our clients and understand their key issues / risks such as fulfilling regulator requirements, adherence to project budgets and timelines, HSE/Safety in Design risks, communication between multiple parties and contractor management. We ensure projects are delivered cost-effectively and in a safe and sustainable manner



## Innovative Design Solutions

Our design & construction team specialises in providing turn-key solutions in landfill and other containment systems. We are intimately familiar with national and international EPA regulations and understand that landfills are not 'one size fits all'. We deliver innovative and individualised design solutions with a focus on constructability



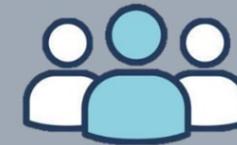
## Reliable Field Staff

We provide field personnel who are highly skilled, communicative, proactive, and well supported by specialists with waste management, contaminated land and EPA approvals experience. We provide timely and succinct reports to empower our clients to make decisions when it counts most



## Specialised Team

We have a streamlined and adaptable team with an extensive network of specialised sub-consultants for input on complex technical issues



## Adaptable Site Engineers

We understand that landfill construction is a reactive, time critical environment. We pride ourselves on our practical and efficient approach to construction verification auditing and supervision, and the preparation of credible audit reports



# BEC Service Offerings



## Landfill Design

- New landfill cells including piggy back lining systems.
- Leachate pond and leachate infrastructure.
- Site specific lining system design, including the design of geomembranes, GCLs, geocomposites, geotextiles and compacted clay liners.
- Capping (conventional capping and phytocapping) and rehabilitation, including landfill gas infrastructure.
- Landfill masterplanning.
- Construction design support.
- Safety in Design risk assessments.
- Assessments and designs to maximise airspace (e.g. steep sidewall lining systems).
- Ancillary services, including:
  - Geotechnical investigations
  - Slope stability assessments
  - Stormwater management system design
  - 3d modelling
  - Leachate modelling and water balance
  - Material cost/benefit analysis
  - Bill of Quantities



## Construction Supervision

- Onsite GITA and geosynthetic CQA supervision services.
- Several certified GCI-ICP CQA Inspectors for clay and geosynthetics.
- Project management and superintendent services.
- Efficient Hold Point release utilising proforma templates.
- Preparation of CQA Reports documenting construction works in a succinct and logical manner.
- Access to a wide pool of technical staff to provide construction input.
- Combined GITA/TPCC and auditing services.



## Construction Verification Auditing

- Cap, cell and leachate pond CQA auditing.
- Dedicated EPA Appointed Auditor and CQA audit support team.
- Efficient Auditor Hold Point release utilising proforma templates.
- Streamlined CQA audit reporting.
- Record of key construction issues to refer to for approval of variations based on experience.



## Contaminated Land Management

- Liaison with State and Commonwealth regulators regarding compliance matters.
- Site history assessment to establish the potential for contamination.
- Soil and groundwater investigations.
- Due diligence assessments.
- Soil assessments for offsite disposal or reuse.
- Preliminary Site Investigations (PSI).
- Detailed Site Investigations (DSI).
- Acid Sulphate Soil investigations and Acid Sulphate Soil Management Plans (ASSMP).
- PFAS management.
- Pre and post lease assessments.



## Environmental Approvals

- EPA development and operating licence applications.
- EPA permit applications.
- Specific experience in all types of approvals for landfills and other waste management facilities (i.e. waste resource recovery, soil treatment, composting, waste to energy etc.).
- Support services for Environmental Effects Statements.
- Support services for Commonwealth approvals under the Environment Protection and Biodiversity Conservation Act 1999.



## Environmental Auditing

- Statutory and voluntary environmental audits under the VIC EPA audit system.
- Internal EMS auditing for compliance with ISO 14001.
- Verification of implementation of Construction and Operational Environmental Management Plans.



## Environmental Management

- Preparation and review of Environmental Management Plans.
- Preparation and review of Environmental Management System documentation.
- Preparation of whole-of-site or whole-of-project environmental management framework documentation.
- Preparation and delivery of environmental inductions and training.
- Preparation of financial assurance proposals.
- Preparation hydrogeological assessment reports.
- Preparation rehabilitation and aftercare management plans.
- Preparation of environmental risk management and monitoring programs.



## Environmental Compliance

- Assessment of compliance with regulatory requirements.
- Gap analysis to determine compliance with new regulatory requirements (i.e. the VIC *Environment Protection Act 2017* and *Environment Protection Regulations 2021*).
- EPA licence and remedial notice compliance.
- Preparation of Annual Environmental Reports.
- Liaison with State and Commonwealth regulators regarding compliance matters.



## Environmental Monitoring

- Environmental monitoring (groundwater, surface water, soil, soil vapour).
- Environmental site inspections.
- Review and interpretation of monitoring reports.
- Environmental site assessments.

# Project Showcase

Combined Construction  
Supervision and CQA  
Auditing



Melbourne Regional Landfill Cell 2 and Stage 3 cap, *Cleanaway*



Ballarat Regional Landfill Cell 1, *City of Ballarat*



Mitchell Landfill Cell 6, Cell 7, Cell 8, leachate pond and cap  
*Mitchell Shire Council*

Hi Quality Landfill Stage 1 and Stage 2 cap, *Hi Quality*



Hi Quality Landfill Cell 5, Site B cell, Type 1 Cell, Cell 6, Cell 7 and  
leachate pond 2, *Hi Quality*



Rye Landfill Cell 2 cap design, *Mornington Peninsula Shire*



Anglesea Landfill Stage 4 cap design, *Surf Coast Shire*



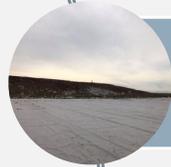
Landfill Design

# Project Showcase

CQA Auditing



Hyland Hwy Landfill Cell 6, leachate pond and cap,  
*Latrobe City Council*



Patho Landfill Cell 4 Stage 2, *Veolia*



Kilmany Landfill Cell 3 and Stage 1 and Stage 2 cap,  
*Wellington Shire Council*



Dooen Landfill Cell 2 and 2B leachate risers, *Horsham Rural City Council*

Hi Quality Landfill Cell 4, Site B and leachate pond,  
*Hi Quality Sales Victoria*



Construction  
Supervision of  
geosynthetics and  
earthworks

# Project Showcase

## Environmental Approvals

-  L09 Permit for Bulla Spoils Processing Facility, *Hi Quality Sales Victoria*
-  EPBC Approval for Runway 16-34 Overlay, *Melbourne Airport*
-  Environmental Offsets for Melbourne Airport's Third Runway, *Melbourne Airport*
-  Environmental Approvals Strategy, *Skye Quarries*

RMMP and Decommissioning Plan, *Skye Quarries*

Operational Environmental Management Plan for Planning Permit, *Hi Quality Sales Victoria*

Hydrogeological Assessment, Stormwater Management Plan, Leachate Management Plan and RMMP, *Ballarat City Council*

## Environmental Management

# Project Showcase

Environmental  
Auditing



Devilbend Landfill Multiple Operations Audit & RMMP verification, *Grosvenor Lodge*



Cobram Landfill Operations Audit and RMMP & LFGRA Verification, *Moira Shire Council*



Ferris Road Landfill Aftercare Management Audit, *Harness Racing Victoria*



Auditor Verification of Action Plan, *Alpine MDF Industries*

Hi Quality Landfill groundwater, surface water and leachate monitoring, *Hi-Quality Sales Victoria*



Ballarat Regional Landfill groundwater, surface water leachate, landfill gas monitoring, *City of Ballarat*



Glen Landfill groundwater, surface water leachate, landfill gas monitoring, *Glen Landfill Pty Ltd*



Environmental  
Monitoring

# Innovative & Complex Project Experience



## Innovative detailed design and construction supervision

- Steep sidewall design to increase cell airspace while reducing overall footprint
- Steep capping design to prevent the need to relocate waste
- Retaining wall design as part of PSCP development to tie-in to natural ground surface
- Construction supervision (GITA/TPCC) of the above

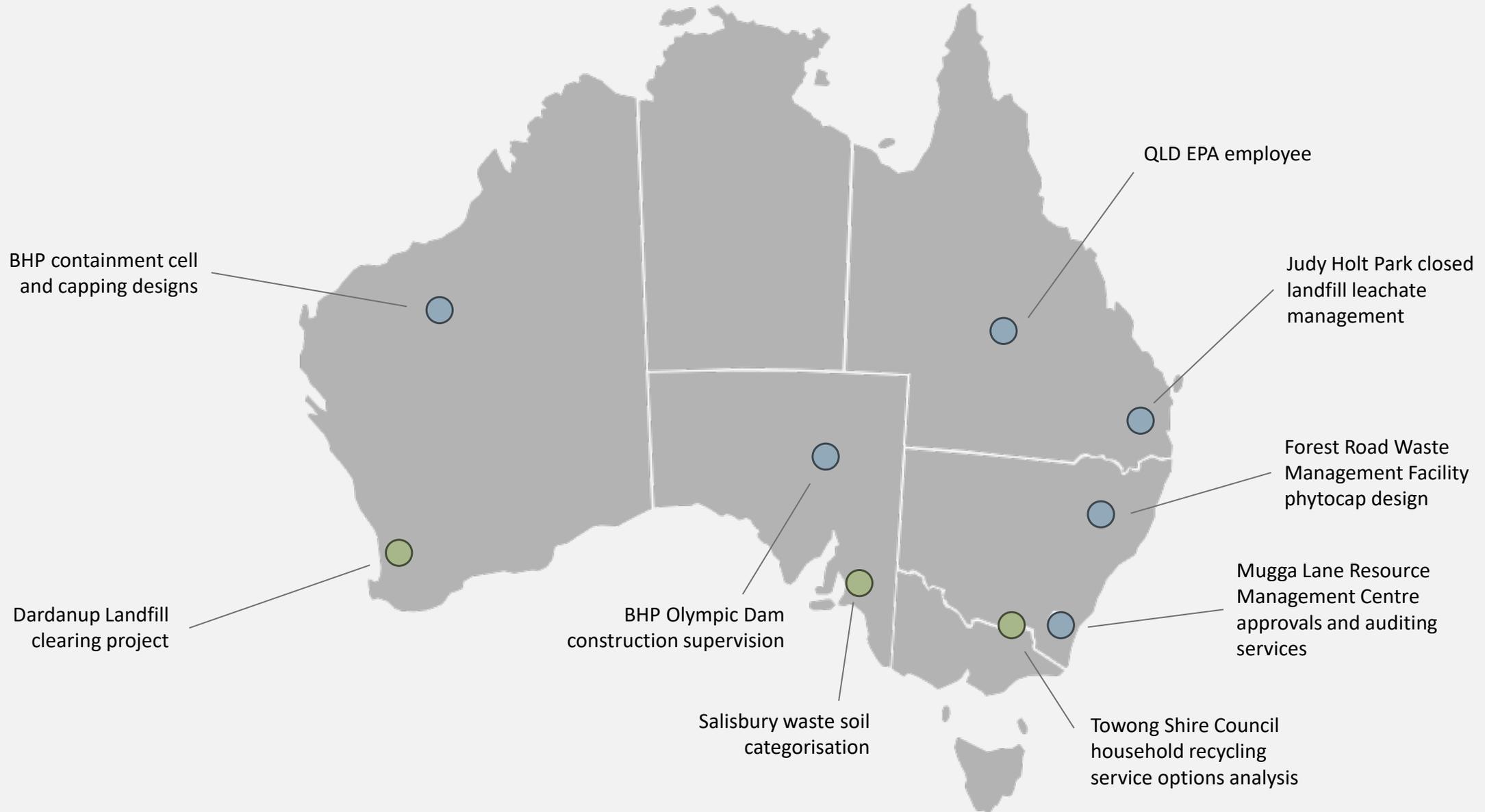


## Environmental approvals and assessments

- EPBC approval for Melbourne Airport Runway
- Construction EMP for Melbourne's Airports Third Runway
- Environment Asset Management Plan for Melbourne Airport
- Environmental approvals strategy for quarry site
- RMMPs for large metro Melbourne sites, quarries and recycling facilities

# National Experience

- Current or completed BEC project
- BEC team member past experience





# Q&A discussion panel

Thank you for attending!



[www.beconsult.com.au](http://www.beconsult.com.au)