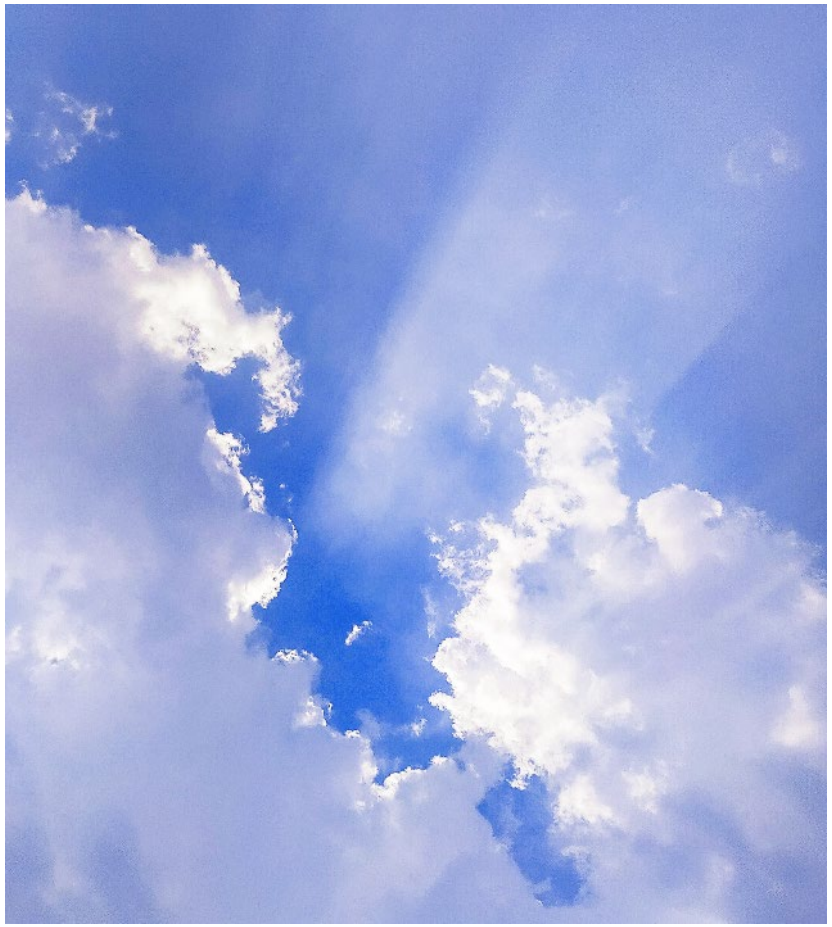


A Practical Approach to Assessment and Management of Potentially Contaminated Land

Key Considerations: the New Victorian Legislation

Peter Ramsay, Principal Consultant & Managing Director
and
Andrew Green, Associate

1 June 2022

Presentation Overview

- Review of the *Environment Protection Act 2017 (EP Act 2017)*
- General Environmental Duty (GED)/Duties Frameworks
- Overview of Low/Medium/High Risk Activities together with the Duties Framework as they relate to contaminated land
- Recommended steps to ensure compliance with the new Victorian legislation:
  - Identifying Hazards
  - Assessing Risk
  - Implementing Control Measures
  - Control Checks
- Part one of presentation presented by Peter Ramsay, part two by Andrew Green

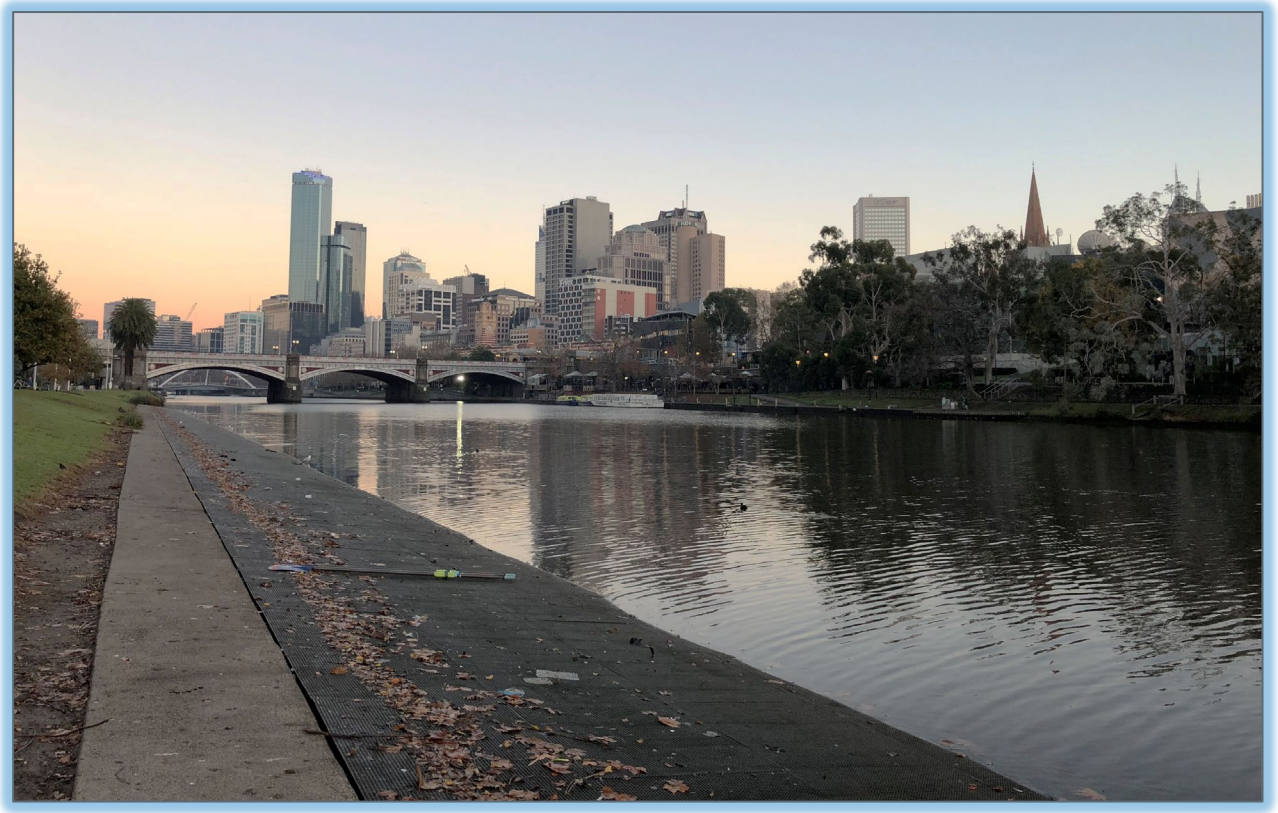
Note: This presentation is for information only and is not intended to present legal or consulting advice.

Company Background

- Commenced in 1988 – 34th anniversary this year
- Solve EHS challenges and build a more sustainable future
- Implement innovative, cost effective solutions
- Services include:
  - Site investigation and remediation
  - Environmental Auditing (Peter is an EPA Appointed Environmental Auditor for Contaminated Land and Industrial Facilities in Victoria and accredited as a Site Auditor in NSW)
  - EHS Auditing and regulatory compliance

Company Background

- Services Include
  - Air emissions assessment and management
  - Water and wastewater
  - Corporate EHS Due Diligence – Mergers and Acquisitions
  - ESG: Environmental, Social and Governance
  - Waste Reduction and Recycling
  - Water Stewardship and Conservation
- Servicing Melbourne, Sydney and Brisbane, with capabilities to deliver a wide range of projects nationally and internationally (particularly the Pacific region through the Inogen alliance)



Environment Protection Act 2017

- Focuses on **preventing** waste and pollution impacts rather than reacting to impacts after they have occurred
- General Environmental Duty (GED)
  - *'A person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as **reasonably practicable'***
- Reasonably practicable means putting in controls that are proportionate to mitigate or minimise the risk of harm (Refer to EPA Pub.1856 for additional guidance)

General Environmental Duty (GED)

- Under the GED, businesses must:
  - Assess risks of harm to human health and the environment;
  - Put processes in place to minimise risk;
  - Respond quickly and seriously to EPA's advice and suggestions;
  - Work to minimise environmental impact and repair damage; and
  - Answer questions and provide information to EPA when requested

Additional Information: *EPA* - https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/understanding-your-environmental-obligations

Key Duties of the New Act

- General Environmental Duty (GED) (preventative) – (*Part 3.2 of the EP Act 2017)*
- Duties relating to pollution incidents - (*Part 3.4 of the EP Act 2017*)
- Duties Related to Contaminated Land - (*Part 3.4 of the EP Act 2017*)
  - Duty to Manage Contaminated Land
  - Duty to Notify of Contaminated Land
- Duty to restore - (*Part 3.4 of the EP Act 2017*)
- Duty to manage industrial waste disposal (*Part 6.4 of the EP Act 2017)*
- Duties and controls relating to priority waste (*Part 6.5 of the EP Act 2017)*

Key Duties of the New Act

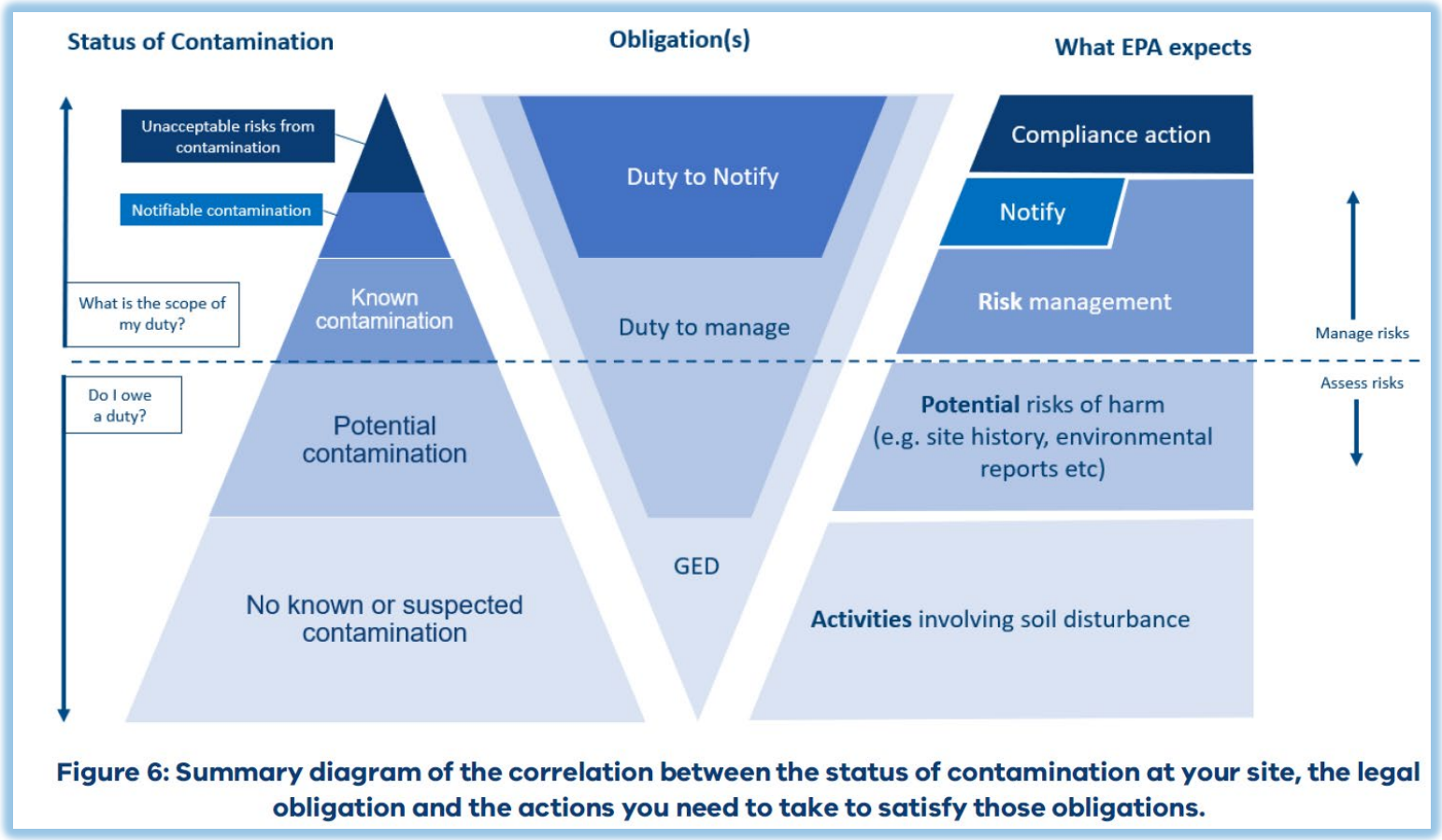


Figure 6: Summary diagram of the correlation between the status of contamination at your site, the legal obligation and the actions you need to take to satisfy those obligations.

Source: EPA Victoria, *Potentially Contaminated Land – A guide for business, Publication 2010,* July 2021

Permissions to Perform Prescribed Activities

- Three tiers of Permissions based on level of risk to human health/environment (*EPA Pub.: 1799.2*):
  1. Licences (three types) for high-risk prescribed activities
  2. Permits for medium-risk prescribed activities
  3. Registrations for low-risk prescribed activities
- The type of permission required for a particular activity is outlined in Schedule 1 of the Environment Protection Regulations.
- EPA has more regulatory oversight over many medium or low risk activities/businesses which were previously regulated in a reactive manner (i.e., service stations, motor mechanics, dry cleaners etc.)

Permissions to Perform Prescribed Activities

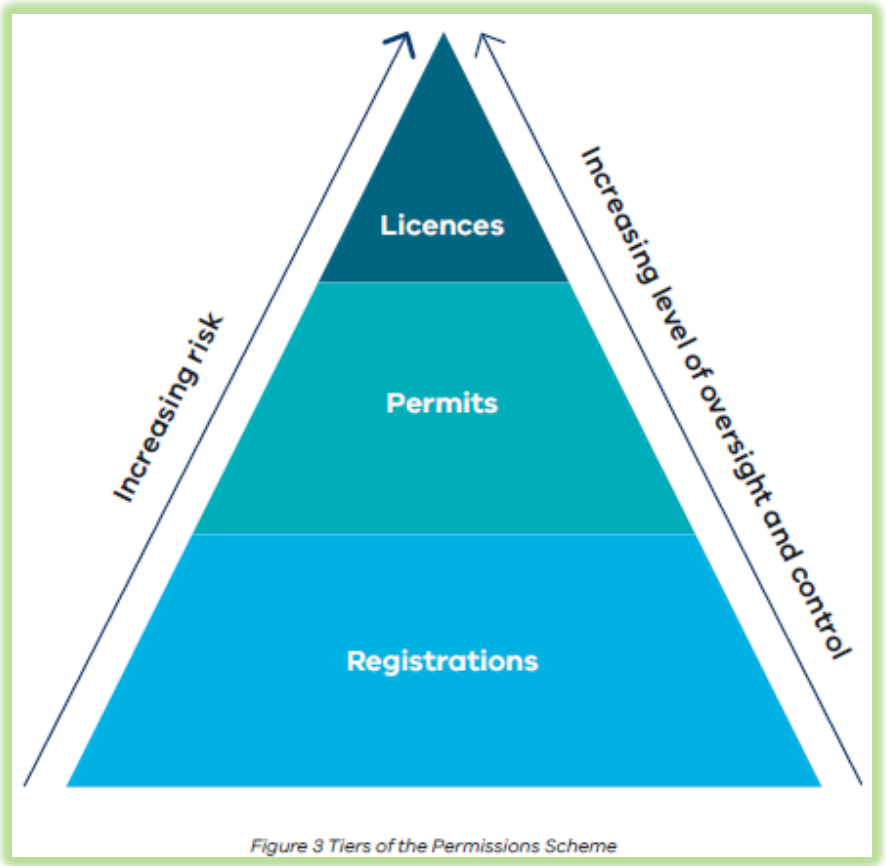


Figure 3 Tiers of the Permissions Scheme

Source: EPA Victoria, *Permissions scheme policy, Publication 1799.2,* June 2021

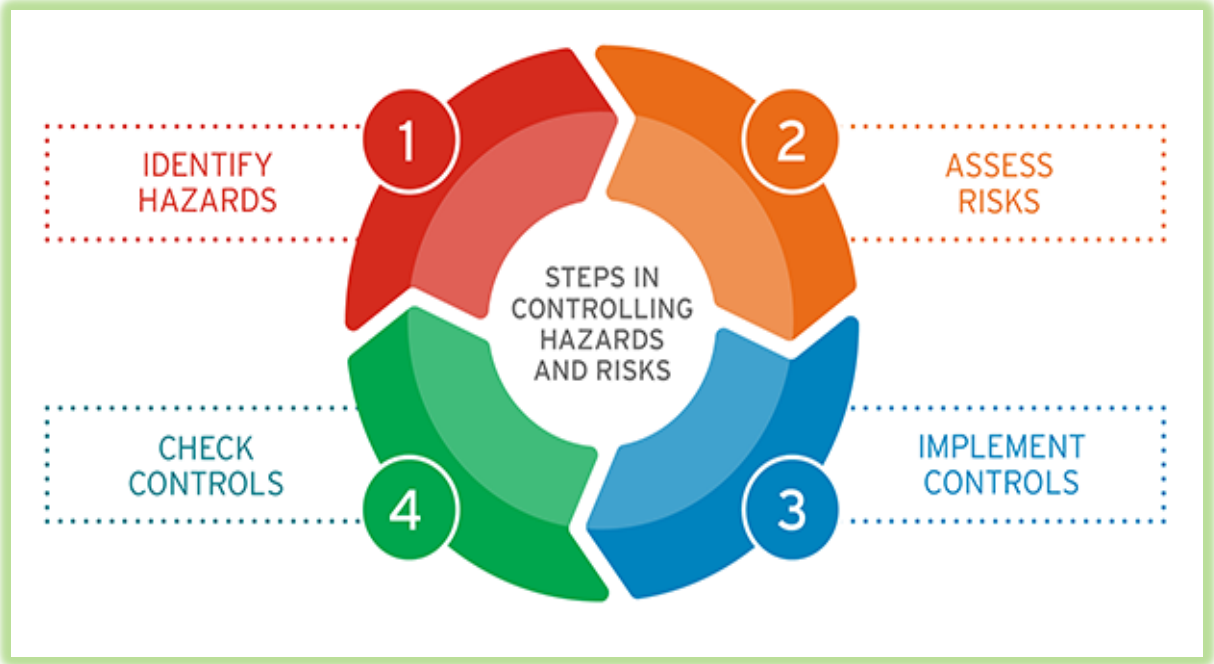
Managing ‘Low Risk’ Activities

- The GED is unlikely to impact your activities if your business:
  - Doesn’t cause pollution/contamination
  - Only produces small amounts of domestic-type waste
- ‘Low Risk’ activities may include:
  - Retail
  - Offices
  - Cafes/Bars/Restaurants
  - Pharmacies
- ‘Low Risk’ does not mean risk free!

Source: TimeOut, 2020

Medium to High Risk Activities

- Medium to high risk activities include:
  - Handling and storing liquids
  - Disposing of chemicals
  - Receiving, storing or treating waste
  - Discharging industrial wastes
- Risk rating, and level of permitting, is based on thresholds outlined in *EP (Scheduled Premises) Regulations 2017)*
- Businesses should follow a risk management process (as per the 'four step' approach)



Source: EPA Victoria, 2020

Licensed Sites

- High risk sites where licences have been issued will be subject to licence conditions
- Draft EPA Publication 1850.2 provides guidance for operating licences under the new legislation.
- The draft guidance outlines seven standard conditions applied to all licence holders to set up a framework for risk management, record keeping and reporting under the new legal framework
- A key standard condition is the requirement for a **risk management and monitoring program (RMMP)** to be developed.

Fulfilling Your Duty to Manage Contaminated Land

- Duty to **Manage** contaminated land
  - Requires investigation and assessment; and remediation/management (where necessary)
  - ‘Legacy’ contamination captured by the ‘polluter pays’ principal
  - Identify any contamination: a person in management or control of a site should reasonably know about and assess that contamination
  - Manage the contamination by minimising risks to human health and the environment so far as **reasonably practicable** (Refer to EPA Publication 1856 for ‘Reasonably Practicable’ definition)
  - Notify people who may be affected by the contamination

Fulfilling Your Duty to Notify of Contaminated Land

- Duty to **Notify** of contaminated land
  - Notify EPA as soon as practicable if contamination may pose a significant risk to human health of the environment
  - ‘Land’ includes groundwater and buildings/structures on the land
  - There is the potential that EPA will develop a publicly accessible database with site history, audit history and regulatory actions to document all Notified Contamination

Notifiable Contamination

- Section 37 of the *EP Act 2017*, Notifiable Contamination, in relation to contaminated land, means contamination that is —
  a) prescribed notifiable contamination; or
  b) if the regulations do not prescribe notifiable contamination by a particular waste, chemical substance or prescribed substance, contamination for which the reasonable cost of action to remediate the land is likely to exceed —
     i. $50 000; or
     ii. any other prescribed amount.

Notifiable Contamination

Chapter 2 of the proposed final Environment Protection Regulations defines prescribed notifiable contamination. The Regulations as they relate to prescribed notifiable contamination are summarised as:

Regulation 8 - Soil Contamination

a) the presence of a contaminant in or on soil on land under the management or control of a person if—
   i. a person is, or is likely to be, exposed to the contaminant; and
   ii. the concentration of the contaminant is, and is likely to remain, at a concentration that is—
      A. above the 'average threshold' (95% UCL > HIL for land use) for that contaminant; or
      B. equal to or above the 'localised elevated value threshold' (Max Conc. > 250% HIL for land use) for that contaminant

Notifiable Contamination

Regulation 8 - Soil Contamination (Cont.)

b) the presence of a contaminant in or on soil on land adjacent to land under the management or control of a person if—

   i. the contaminant has entered from, or is likely to have entered from, the land under the management or control of the person; and

   ii. the concentration of the contaminant is, and is likely to remain, at a concentration that is—

      A. above the 'average threshold' (95% UCL > HIL for land use) for that contaminant; or

      B. equal to or above the 'localised elevated value threshold' (Max Conc. > 250% HIL for land use) for that contaminant

c) the presence of a contaminant in or on soil on land under the management or control of a person—

   i. that is likely to enter and remain on land adjacent to that land; and

   ii. in a concentration that is likely to be above the HIL for that contaminant for the current use of the adjacent land, as specified in section 6 of Schedule B1 to the NEPM (ASC).

Notifiable Contamination

Regulation 9 - Asbestos in or on soil

The presence of friable asbestos in or on soil on land where a person is, or is likely to be, exposed to airborne asbestos fibre levels of above 0.01 fibres per millilitre by means of inhalation

Regulation 10 - Groundwater / Surface Water (Section 10 (1) b only)

The entry or likely entry of a contaminant into groundwater/surface water is prescribed notifiable contamination if—

a) the groundwater discharges, or is likely to discharge, to surface water, or is used, or may be used, for—
   i. human consumption or contact; or
   ii. stock watering; or
   iii. irrigation; and

b) the concentration of the contaminant in the groundwater / surface water —
   i. is, or is likely to be, above the default guideline value for that contaminant specified in the ANZG, or the guideline value for that contaminant specified in the ADWG; and
   ii. is likely to remain above that specified concentration.

Notifiable Contamination

Regulation 10 - Non-aqueous Phase Liquid (NAPL)

- The presence of any non-aqueous phase liquid in groundwater, surface water or an aquifer on or in land is prescribed notifiable contamination.

Regulation 11 - Soil Vapour

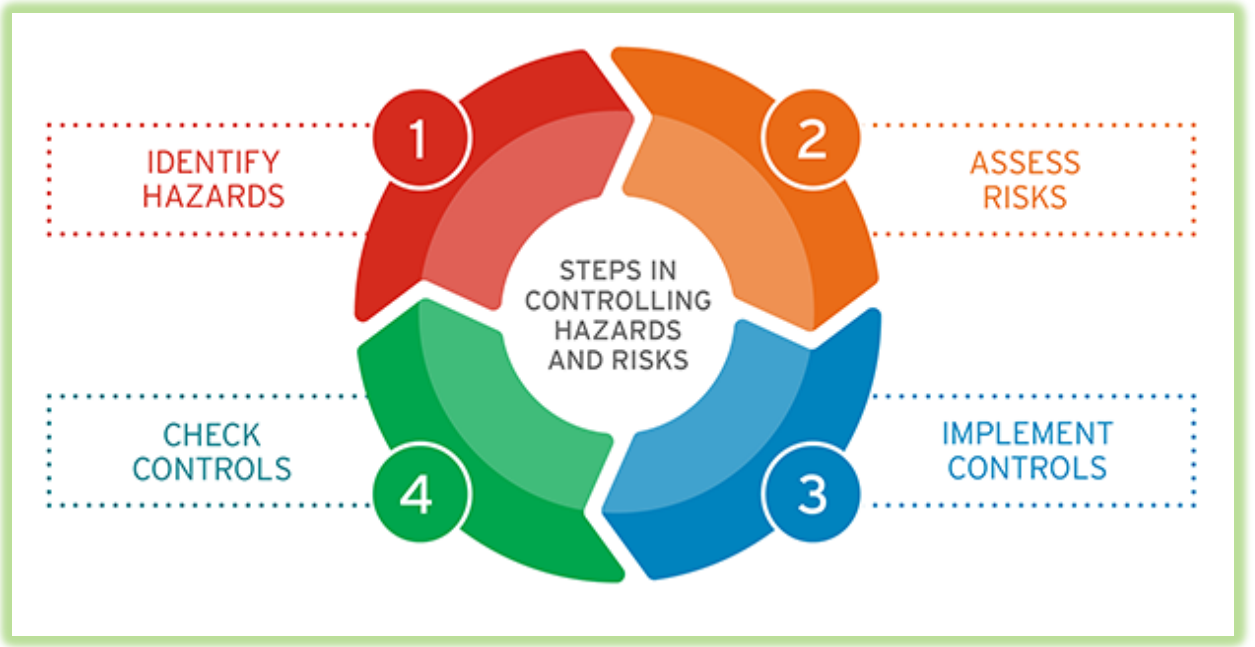
- The 95% upper confidence limit on the arithmetic average concentration of a contaminant in soil vapour samples from the land or is above the criteria specified in Section 6 of Schedule B1 to the NEPM (ASC) or an individual soil vapour sample is equal to or above 250% of the criteria specified in Section 6 of Schedule B1 to the NEPM (ASC).

Regulation 12 - On Site Retention of Contaminated Soil

- The on-site retention of soil (other than fill material) from contaminated land sourced on-site that is not an activity for which a permission is required, is prescribed notifiable contamination.

Risk Management Process

- EPA Guidance on Risk - Assessing and Controlling Risk: A Guide for Business (EPA Publication 1695.1)
- Information on hazards and risks is necessary to fulfil your duties with respect to the management and notification of contaminated land
- The 'implementation' and 'checking' of controls provides for a completed risk management process
- Use the four step 'risk management process' provided in EPA's 'Self Assessment Tool'
- Applies to all activity risk levels, however may be most applicable to 'medium' and 'high' risk activities
- Other aspects which may exacerbate hazards risk:
  - Where there are a large number of sites (even sites with 'low' risk activities)
  - The location of sites (i.e., inner city, near sensitive ecosystems/receptors)
  - The size of site (i.e., large landholdings)
  - Where there are varied activities across sites (where activities/risks may be flying 'under the radar')



Source: EPA Victoria, 2020

INOGEN ALLIANCE
CONSULT AUSTRALIA Member Firm

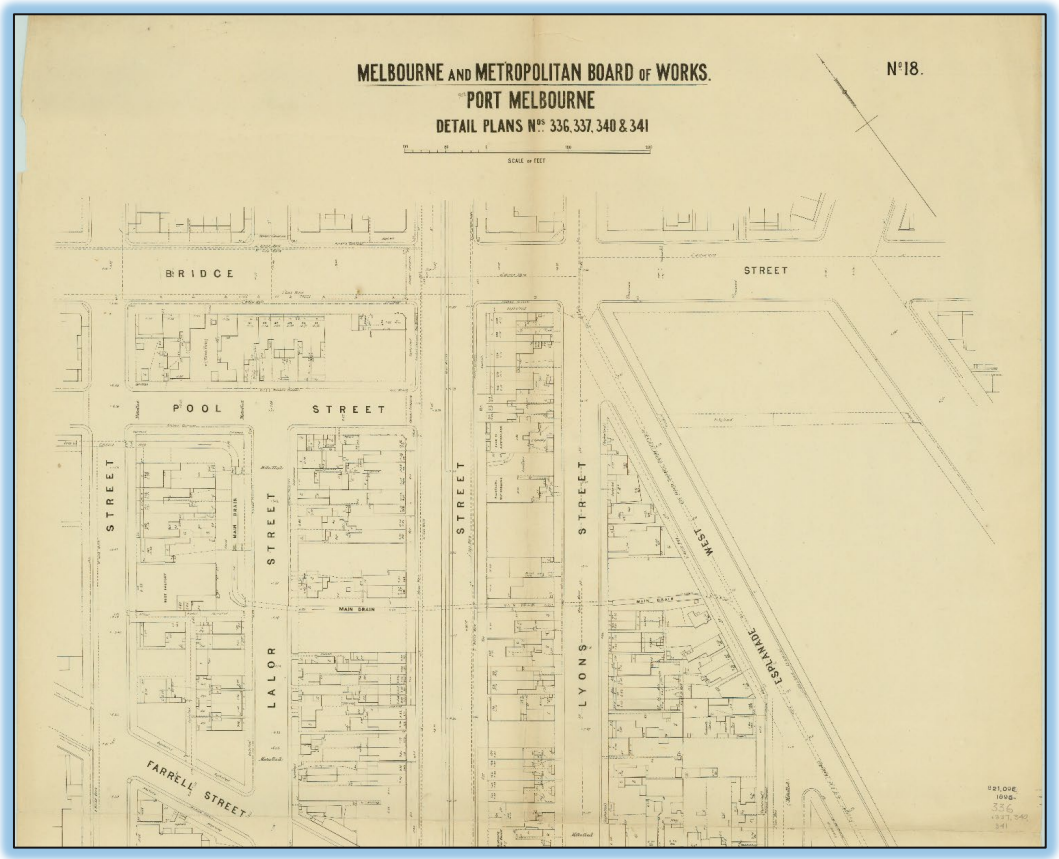
Identify Hazards

- Desktop review (initial review, often internal)
- Engagement of Environmental Consultants
- Planning phase
  - Determine scope
  - Set realistic timelines
- Investigation
  - Undertake investigation (PSI/DSI)
- Engagement of an Auditor
  - there may be a regulatory requirement for Auditor involvement/oversight, it is recommended that Auditor engagement be initiated at the outset of the process

Desktop Review

IDENTIFY HAZARDS 1

- Necessary for prioritisation of further investigation (PSI/DSI) where there are many sites and/or limited time/funds for further investigation
- May include the development of a risk matrix with key information on sites (i.e., location, geology, hydrogeology, site history, current activities/hazards, proximity to receptors, compliance history etc.)
- EPA's website includes guidance on key hazards by industry
- May be completed with or without the assistance of a consultant (i.e., consultant could assist with setup and review or complete entire exercise)
- Useful in the development of the scope for any further investigation



Source: State Library of Victoria, 2020

Engaging a Consultant

- Often necessary to provide specialist expertise to assist in identifying risks
- Ask for recommendations from colleagues, Auditors
- Typically, about the people involved in the project team, not necessarily the firm
- Focus the decision on someone who you can work with
- Essential to have trust – open collaborative relationship, particularly when problem solving
- Do not engage someone who tells you what you want to hear – when necessary, good consultants tell you what you don't want to hear
- Establish consistent scope – Auditor involvement can help
- Ensure you have pragmatic, skilled people who can deal with groundwater, soil vapour, risk assessment
- Be prepared to step in and manage Consultants if decision making is slow
- Do not focus on initial cost – only part of the equation
- If a quote is cheap, scrutinise it!
- Often costs blow out due to inadequate assessment
- Avoid having to repeat work – do it right the first time

Additional information regarding engagement of a consultant is provided in **EPA Publication 1702**, June 2018.

Engaging an Environmental Auditor

IDENTIFY HAZARDS 1

- Often the involvement of an Environmental Auditor is required by a Notice issued by EPA
- Same principles for engagement apply as with a Consultant
- Use the EPA Auditor List as a basis
- Meet the Auditor and their team at proposal stage (face to face, preferably on-site if possible)
- Ensure that the Consultant and Auditor have worked together before and will communicate effectively
- Ensure that the Auditor is accessible and will communicate with all parties
- Maintain a positive relationships with all consultants

Part Two: Presented by Andrew Green, Associate

Part Two: Presented by Andrew Green, Associate

Thank you

Contact details:

www.pjra.com.au

Site Investigation – Summary

- Staged Approach
  - Initial desktop review (optional depending on number of sites – good for prioritising on basis of risk)
  - Preliminary Site Investigation (PSI)
  - Detailed Site Investigation (DSI)
- Sufficient investigation will result in the identification of all key hazards and reduces uncertainty/liabilities
- Feed findings of investigations into master planning
  - Change land uses to minimize remediation
  - Divest less contaminated land to generate funds

Site Investigation - Guidelines

- All investigations need to be performed in accordance with the National guidelines:
  - *National Environment Protection (Assessment of Site Contamination Measure) 1999 (as amended 2013)*
    - Known as ASC NEPM or the 'NEPM'
  - Ratified by the State governments across Australia (i.e., through ERS in Victoria)
  - Provide guidance on investigation of contaminated land (including PSIs and DSIs)
  - Western Australia Department of Health – Asbestos (May 2009) is referred to in the NEPM and is relevant for the identification and management of asbestos in soil
- NSW EPA Service Station Technotes (April 2014)
  - These technotes provide detailed guidance on the investigation, remediation and validation of service station sites, and are often used nationally in the absence of specific guidance (note that the NEPM does not provide guidance on remediation/validation)
- PFAS NEMP
  - Provides National guidance for the assessment and management of per-and poly-fluoroalkyl substances (PFAS). Not included in ASC NEPM, however the guidance has been adopted by the heads of all state and territory EPAs
- Audit system guidelines (these are state based and can be very prescriptive)

Preliminary Site Investigation (PSI)

- Based on guidance in the NEPM
- Site history and documentation review – provide the consultant with all documentation you have
- Preparation of a Conceptual Site Model (CSM) – allows for strategic assessment
- Preliminary sampling (optional)
- Can only conclude site is suitable if no evidence of potential contamination, or contamination is localised
- Provides a ‘snapshot’ of the site – alludes to whether there are issues which need to be further assessed

Detailed Site Investigation (DSI)

- Based on guidance in the NEPM
- May be performed following a PSI (i.e., as a result of a recommendation of the PSI)
- Site history review
- Preparation / Update of Conceptual Site Model (CSM)
- Sampling Program (Soil, Groundwater, Vapour) - based on CSM
- May incorporate site specific human health risk assessment where elevated contaminant levels are identified
- Necessary to satisfy current 53X Environmental Audit requirements in Victoria

Soil Sampling for a DSI

- Soil sampling in accordance with Australian Standard 4482.1-2005:
  - Grid based sampling (to identify 'hot spots'
  - Targeted sampling (to investigate specific areas/structures)
- *"The provision in this Table of the number of sampling points does not imply that minimum sampling is good practice for a given site. The investigator should be prepared to justify the appropriateness of applying this Table or any other sampling rationale."*

  (AS 4482.1-2005)

TABLE E1

MINIMUM SAMPLING POINTS REQUIRED FOR SITE CHARACTERIZATION BASED ON DETECTION OF CIRCULAR HOT SPOTS USING SQUARE GRID

Area of the site, hectares	Number of sampling points recommended	Equivalent sampling density, points/hectare	Diameter of the hotspot that can be detected with 95% confidence, metres
0.05	5	100.0	11.8
0.1	6	60.0	15.2
0.2	7	35.0	19.9
0.3	9	30.0	21.5
0.4	11	27.5	22.5
0.5	13	26.0	23.1
0.6	15	25.0	23.6
0.7	17	24.3	23.9
0.8	19	23.8	24.2
0.9	20	22.2	25.0
1.0	21	21.0	25.7
1.5	25	16.7	28.9
2.0	30	15.0	30.5
2.5	35	14.0	31.5
3.0	40	13.3	32.4
3.5	45	12.9	32.9
4.0	50	12.5	33.4
4.5	52	11.6	34.6
5.0	55	11.0	35.6

Source: AS 4482.1-2005

Example of PSI & DSI Soil Sampling

IDENTIFY HAZARDS 1

PSI: 6 Targeted Locations

For a **PSI**:

- Targeted/Judgemental Sample Points
- Potentially samples for 'general site coverage'

For a **DSI**:
Per AS4482-2005 -

- Area of Site = 0.5 ha
- Number of Grid Based Sample Points = 13
- Targeted Sample Points Likely Still Required

DSI: 6 Targeted Locations
13 Grid Based Locations

Assess Risks

- EPA publication 1695.1 – Assessing and Controlling Risk: A guide for Business – internal assessment.
- Detailed risk assessment may be necessary where significant contamination is identified
- Site specific assessment of risk for the designated land use
- Must consider risks to both human health and the environment
  - Human Health Risk Assessment (HHRA)
  - Environmental Risk Assessment (ERA)

			Impact			
			0 Acceptable	1 Tolerable	2 Unacceptable	3 Intolerable
			Little or No Effect	Effects are Felt but Not Critical	Serious Impact to Course of Action and Outcome	Could Result in Disasters
Likelihood	Improbable	Risk Unlikely to Occur				
	Possible	Risk Will Likely Occur				
	Probable	Risk Will Occur				

Assess Risks

- Consider specific exposure scenarios:
  - Commercial workers
  - Residents (both acute and chronic exposures)
  - Maintenance workers in sub-surface excavations
  - Ecological receptors
- Perform further investigation based on results of the PSI/DSI to allow further understanding of risk:
  - Additional soil/groundwater sampling
  - Continuous monitoring (soil vapour/ground gases)
- Refine the Conceptual Site Model (CSM) based on findings
- Determine if contamination is 'notifiable' per *EP Act 2017* (see EPA Pub. 1940, February 2021)

Implementation of Control Measures

- Once assessment of the potential risks has been completed (i.e., following PSI>DSI>risk assessment), control measures must be implemented to address the identified risks
- Control measures may include one or a combination of the following (in order of preference):
  - Elimination of hazard:
    - Including soil and groundwater remediation
  - Engineering controls:
    - Capping and/or containment of contamination
  - Administrative controls:
    - Preparation of a Management Plan to manage contamination
    - Alternate land uses to manage contamination

Check Controls

- Once control measures have been implemented, a system of checking/auditing the control measures must be undertaken. This may include:
  - Fulfilling regulatory compliance obligations (i.e., EPA's current Annual Performance Statement/Permission Information and Performance Statement (PIPS))
  - Internal auditing of controls/systems
  - External auditing of controls/systems
- Involvement of an Environmental Auditor (this is not limited to any one stage in the cycle, and EPA may require Auditor involvement for all or particular stages).
- Where activities are subject to an EPA issued Permission (Licence, Permit, Registration), the permission holder will need to comply with the conditions of the Permission, which may include specific management, monitoring and reporting on the activity and the controls in place.
- Conduct regular internal compliance audits to identify gaps/areas of non compliance. Particularly for sites which are not currently subject to EPA Permissions in order to verify compliance with Australian Standards and State environmental regulations (GED).

Summary

1

Follow the four step risk management process outlined in this presentation and recommended by EPA to comply with Duty to Manage/Notify:

1) Identify hazards
2) Assess risks
3) Implement controls
4) Check controls

2

Approach consultant and Auditor engagement with due care and consideration

3

Provide the consultant and Auditor with as much background information as possible

4

Prioritise investigation and control measures based on risks

5

Start sooner rather than later, commencing now will assist in the long run

Questions?

Thank you

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