



Assessing and controlling contaminated land risks: A guide to meeting the duty to manage for those in management or control of land

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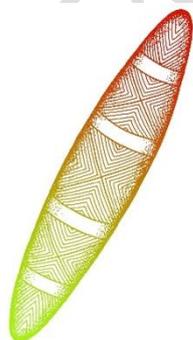
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As Victoria's environmental regulator, we pay respect to how Country has been protected and cared for by Aboriginal people over many tens of thousands of years.

We acknowledge the unique spiritual and cultural significance of land, water and all that is in the environment to Traditional Owners, and recognise their continuing connection to, and aspirations for Country.



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PROPOSED GUIDELINE

Glossary of key terms

Term	Summary	If appears in the Act, relevant Section
Background level	Refer to Contaminated land: understanding section 35 of the Environment Protection Act 2017 , (https://www.epa.vic.gov.au/about-epa/publications/1940) section 6.1.	36
Contaminated land	Land is contaminated if waste, a chemical substance or a prescribed substance is present on or under the surface of the land, and the waste, chemical substance or prescribed substance— (a) is present in a concentration above the background level; and (b) creates a risk of harm to human health or the environment. See Contaminated land: understanding section 35 of the Environment Protection Act 2017 (https://www.epa.vic.gov.au/about-epa/publications/1940) for information on this definition.	35
Environment	The physical factors of the surroundings of human beings including the land, waters, atmosphere, climate, sound, odours and tastes; the biological factors of animals and plants; and the social factor of aesthetics.	3
Groundwater (part of the definition of 'land')	Any water contained in or occurring in a geological structure or formation or an artificial landfill below the surface of land.	3
Harm	Means an adverse effect on human health or the environment (of whatever degree or duration) and includes amenity and certain changes in conditions.	4
Human health	Defined to include psychological health.	3
Land	Any land, whether publicly or privately owned, and includes any buildings or other structures permanently affixed to the land; and groundwater.	3
Non-aqueous phase liquid	Means an organic or inorganic liquid that— (a) is not miscible with water; and (b) can exist in soil or groundwater in various forms; and (c) is commonly present as a measurable thickness (phase-separated) or sheen; and	Regulations

	(d) may be identifiable analytically (in soil or groundwater) when solubility has been reached or observed to be present within the unsaturated soil, rock profile or aquifer matrix. Example: oil in water.	
Pathway	A 'pathway' through which contamination could spread. This means how people or the environment come into contact with the contamination. For example, chemicals leaking into groundwater, gas emissions through soil or air or both, or exposed contaminated soil.	
Receptor	A 'receptor' the contamination could impact. Receptors include children, workers, community members, residents, and the environment, such as animals, plants, and waterways.	
Source	A 'source' of contamination, where the contamination comes from. For example, a leaking oil drum or a landfill site. The original source may no longer be present, but the contaminant could still be.	
Waste	includes any of the following— (a) matter, including solid, liquid, gaseous or radioactive matter, that is deposited, discharged, emitted or disposed of into the environment in a manner that alters the environment (b) a greenhouse gas substance emitted or discharged into the environment (c) matter that is discarded, rejected, abandoned, unwanted or surplus, irrespective of any potential use or value (d) matter prescribed to be waste (e) matter or a greenhouse gas substance referred to in paragraph (a), (b), (c)	3

Acronyms and abbreviations

CSM	Conceptual site model
DQO	Data quality objectives
DtM	Duty to manage contaminated land
DSI	Detailed site investigation
DtN	Duty to notify of contaminated land
EES	Environment Effects Statement
EMP	Environmental management plan

ERA	Ecological Risk Assessment
ERS	Environment Reference Standard
GED	General environmental duty
HHRA	Human health risk assessment
HIL	Health investigation level
NAPL	Non-aqueous phase liquid
NEPM (ASC)	National Environment Protection (Assessment of Site Contamination) Measure 1999 (https://www.legislation.gov.au/Details/F2013C00288)
NEMP	National Environmental Management Plan (for PFAS)
PFAS	Per- and polyfluoroalkyl substances
PPE	Personal protective equipment
PSI	Preliminary site investigation
SMO	Site Management Order

1 Introduction

The *Environment Protection Act 2017* (the Act) aims to ensure that risks to human health and the environment from contaminated land are minimised so far as reasonably practicable. Achieving this aim will be supported by section 39, which creates a duty on persons in management or control of contaminated land (including groundwater) to minimise the risks of harm to human health and the environment from contamination so far as is reasonably practicable (**duty to manage**). If you are a **person in management or control of contaminated land** you must meet this duty.

Assessing and controlling contaminated land risks: A guide to meeting the duty to manage for those in management or control of land (this guideline) sets out how those with a duty to manage can fulfil their obligations. Specifically, this guideline expands on the framework to assess and control risks associated with contaminated land set out in section 39(2) of the Act.

In addition to the duty to manage, anyone engaging or proposing to engage in an activity associated with contaminated land must also meet their **general environmental duty (GED)** (section 25 of the Act). [Industry guidance: supporting you to comply with the general environmental duty](https://www.epa.vic.gov.au/about-epa/publications/1741-1) (publication 1741) (<https://www.epa.vic.gov.au/about-epa/publications/1741-1>) provides information about the GED, the 'state of knowledge' and the role of industry guidance in contributing to the state of knowledge. Activities that may disturb contaminated land and result in the generation of waste or pollution include excavation or altering groundwater conditions.

The duty to manage and GED are complemented by the duty to respond to harm caused by a pollution incident (section 31 of the Act), by that duty to respond preventing new contaminated land from being created.

EPA can use this guideline to communicate the duty to manage to stakeholders and, when appropriate (*upon finalisation*), as a basis for assessing compliance (for example to support requirements set out in remedial notices). This guideline may be used by multiple parties that share management or control over contaminated land or help inform a person proposing to take management or control of contaminated land.

1.1 The meaning of 'contaminated land'

The duty to manage applies to land and groundwater that is contaminated within the meaning of section 35 of the Act.

...land is contaminated if waste, a chemical substance or a prescribed substance is present on or under the surface of the land, and the waste, chemical substance or prescribed substance—

(a) is present in a concentration above the background level; and

(b) creates a risk of harm to human health or the environment.

[Contaminated land: Understanding section 35 of the Environment Protection Act 2017](https://www.epa.vic.gov.au/about-epa/publications/1940) (publication 1940) (<https://www.epa.vic.gov.au/about-epa/publications/1940>) provides further information on what EPA considers to be contaminated land within the meaning of the Act.

1.2 Duty to manage

Section 39 of the Act requires that:

A person in management or control of contaminated land must minimise risks of harm to human health and the environment from the contaminated land so far as reasonably practicable.

As per section 6 of the Act, minimising the risk of harm to human health and the environment requires consideration of

- **elimination of** risks of harm to human health and the environment so far as reasonably practicable; and
- if it is not reasonably practicable to eliminate risks of harm to human health and the environment, to **reduce** those risks so far as reasonably practicable.

To determine what is **reasonably practicable** for the minimisation of risks of harm, you must have regard to the following matters:

- the likelihood of those risks eventuating
- the degree of harm that would result if those risks eventuated
- what the person concerned knows, or ought reasonably to know, about the harm or risks of harm and any ways of eliminating or reducing those risks
- the availability and suitability of ways to eliminate or reduce those risks
- the cost of eliminating or reducing those risks.

Section 5.10 of this guideline provides further information on how to understand these factors in the context of contaminated land. See [Reasonably practicable \(publication 1856\)](https://www.epa.vic.gov.au/about-epa/publications/1856) (<https://www.epa.vic.gov.au/about-epa/publications/1856>) for further information.

To assist in understanding the actions that may be required to minimise the risks of harm to human health and the environment from contaminated land, section 39(2) of the Act sets out actions that a duty holder may carry out as part of their compliance:

- Identification of any contamination that the person knows or ought reasonably to know of (Section 4).
- Investigation and assessment of the contamination (Section 4).
- Provision and maintenance of reasonably practicable measures to minimise risks of harm, including undertaking cleanup activities where reasonably practicable (Section 5.5).
- Provision of adequate information to any person you reasonably believe may be affected by the contamination (Section 5.9).
- Provision of adequate information to enable any person who is reasonably expected to become a person in management or control of the contaminated land to comply with the duty to manage contaminated land (Section 5.9).

This guideline expands upon the elements in section 39(2) with information and examples on the standard of conduct EPA expects of duty holders to meet their duty.

1.3 Guideline scope

This guideline addresses the **management** of potential adverse impacts to human health and the environment associated with the presence of contamination in land and groundwater, including steps needed to identify and assess the risks of harm.

This guideline does not address:

- Requirements for seeking planning approval to develop a site. See <https://www.epa.vic.gov.au/for-business/find-a-topic/planning-guidance>
- Notifiable contamination (other than to assist with the management of that contamination) and how to meet your duty to notify. Separate guidance on the requirements and processes for notifications will be made available. This guidance once published will be available via www.epa.vic.gov.au.
- Notifiable incidents or pollution events. This guidance once published will be available via www.epa.vic.gov.au.

Where appropriate, this guideline incorporates reference to other EPA guidance that should be read in conjunction with this publication.

EPA will continue to release new information via epa.vic.gov.au to support duty holders in meeting their obligations under the Act, and update existing guidance as required.

1.4 Guideline audience

This guideline provides information to any person who manages or controls contaminated land (including land that potentially has contamination present), and also supports contaminated land consultants who are engaged to advise on such matters.

For guidance on engaging environmental consultant support services –see [Factsheet: Engaging consultants](#) (publication 1702) (<https://www.epa.vic.gov.au/about-epa/publications/1702>).

EPA has also published other information designed for a range of audiences available via <https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/manage-contaminated-land>.

1.5 Guideline objectives

This guideline is intended to help you make decisions around the level of action, appropriate to your circumstances, that is needed to meet the duty. It also seeks to link your obligations to existing information published by EPA and other bodies that supports identification, assessment and management of land and groundwater contamination risks.

This guideline cannot specify all actions required to meet compliance with your obligations. Instead, it describes the principles, supported with practical examples, to use when approaching your obligations and exercising judgment in a way that will enable the Act goals to be achieved.

This guideline supports the duty to manage by:

- setting out a standard of conduct that supports compliance with the duty with practical examples
- outlining how the principles of environmental protection apply to contamination issues
- identifying assessment methods EPA considers suitable for addressing contamination
- providing a framework to support the selection of management actions and risk controls
- showing how information sharing can help minimise risks of harm from contamination
- supporting duty holders to make decisions that are proportionate to the risks of harm.

1.6 Broader management of contamination in Victoria

The duty to manage is one of a range of obligations, decision-making processes, and other legislative schemes that together help to identify and manage risks of harm from contamination of land.¹

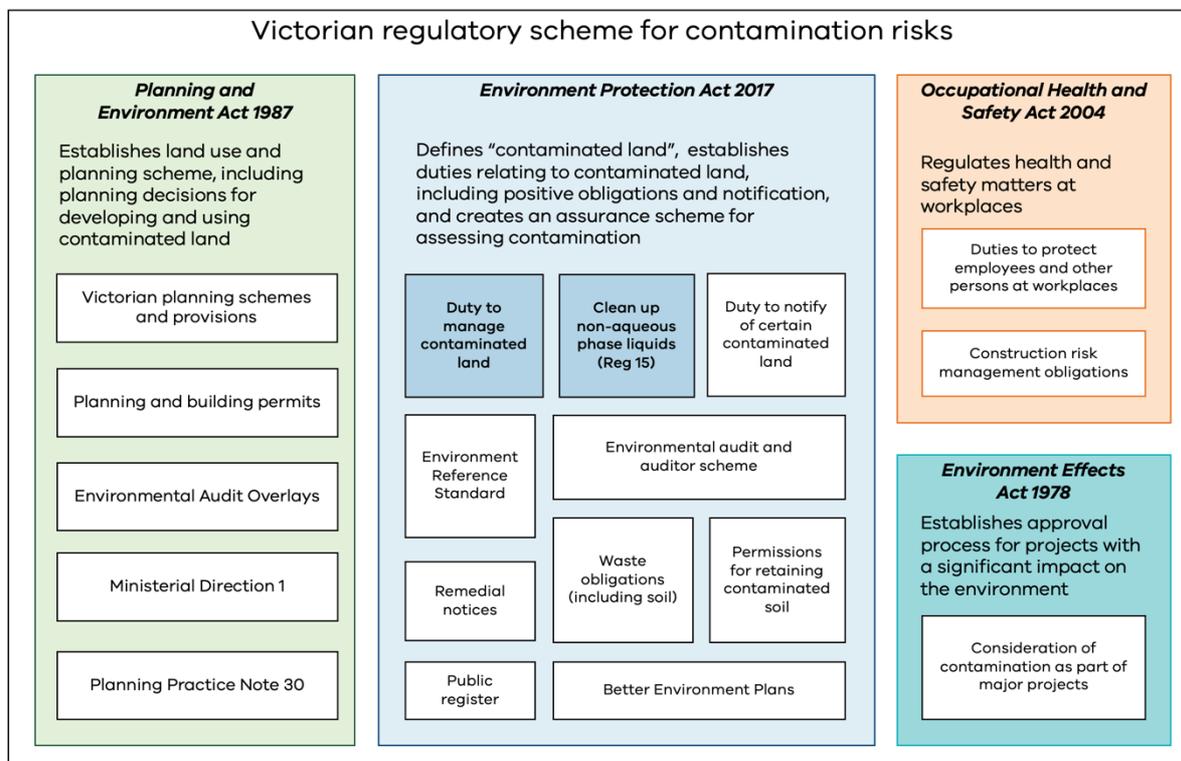


Figure 1 below shows where the duty to manage sits within Victoria’s contaminated land scheme. While this figure is not an exhaustive representation of all obligations relating to contamination, it does show the key components of the regulatory system that aims to protect human health and the environment from the harmful effects of contamination.

Further information on other contaminated land provisions in the Act and other key legislative schemes in Victoria is provided in Appendix A of this guideline.

¹ The management of risks of harm from contamination was previously regulated under a number of State environment protection policies (SEPPs), including clauses 17 18 and 21 of the SEPP (Prevention and Management of Contamination of Land and clause 54 of the SEPP (Waters).

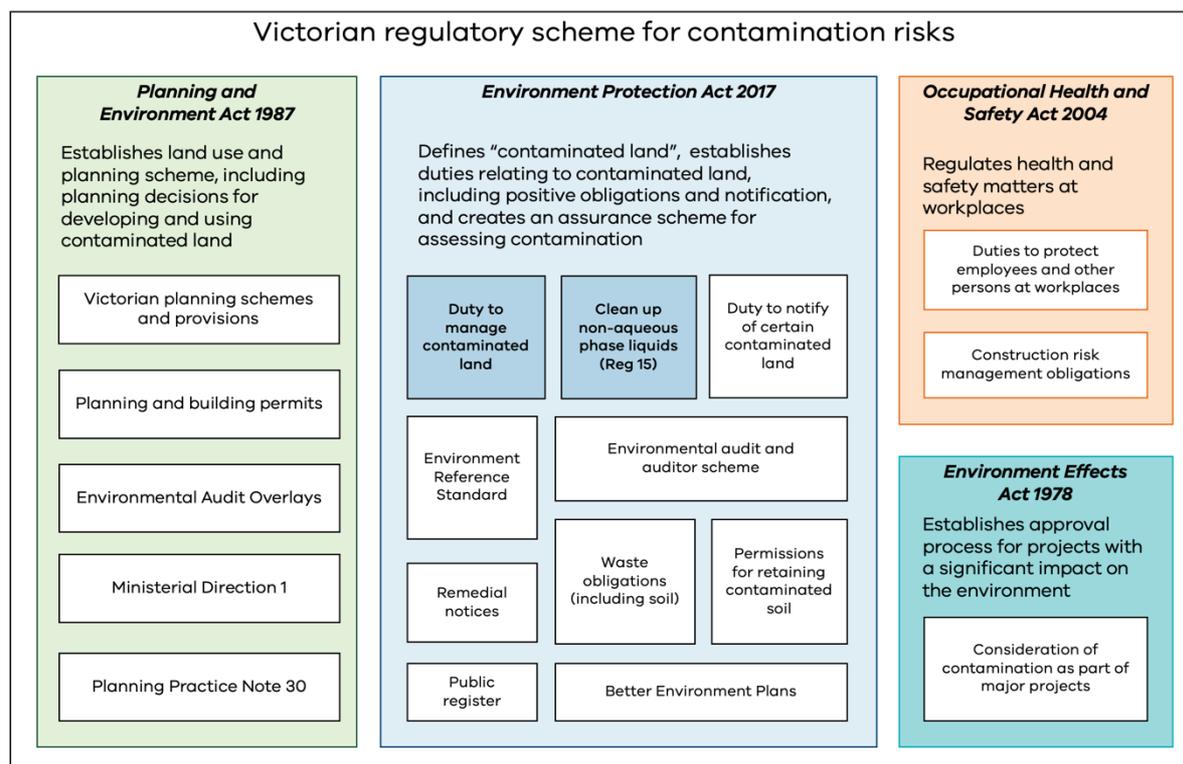


Figure 1 The context of the duty to manage (and duty to clean up non-aqueous phase liquid (NAPL)) set in the context of key components of Victoria's contaminated land scheme. The figure is not exhaustive of all legislation that may create requirements around contamination. For example, the Water Act 1989 sets groundwater licensing requirements. See Appendix A for further information on contaminated land regulation in Victoria.

The contaminated land provisions under the Act build on Victoria's existing approach to the management of contaminated land and groundwater by broadening the range of duty holders who have a stake in managing the risks.

For the past few decades, the Victorian community has been protected from risks of harm to human health arising from the presence of contamination through a combination of planning scheme controls (under the [Planning and Environment Act 1987 \(P&E Act\)](https://www.planning.vic.gov.au/legislation-regulations-and-fees/planning-legislation)) (<https://www.planning.vic.gov.au/legislation-regulations-and-fees/planning-legislation>), and through direct compliance and enforcement action by EPA under the 1970 Act.

EPA has supported a national approach to the assessment and remediation of contaminated land and groundwater through the [National Environmental Protection \(Assessment of Contaminated Sites\) Measure](https://www.legislation.gov.au/Details/F2013C00288) (<https://www.legislation.gov.au/Details/F2013C00288>) since 1999 (NEPM (ASC)). A range of environmental values is supported by indicators and objectives, which are based on the NEPM (ASC) and incorporated into Victoria's new [Environment Reference Standard](https://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standards) (<https://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standards>).

1.7 Applying the principles of environment protection

EPA may give regard to the **eleven principles of environment protection** set out in Chapter 2 of the Act when making regulatory decisions and fulfilling its functions. Section 8 of this guideline discusses how the principles may apply to matters involving contaminated land. These principles may assist you in understanding EPA's expectations on fulfilling your obligations under the duty to manage.

1.8 Role of this guideline under the Act

EPA's guidance is designed to provide information on what you ought reasonably to know in identifying risks of harm and how to manage them. Guidance plays an important part in establishing what may be needed to comply with the duties.

Adopting the approach set out in this guideline will help you demonstrate both to EPA and other parties with an interest (including other duty holders and other government agencies) how you are approaching compliance.

EPA may use the guideline to provide advice on compliance and support you to comply. It may also inform what, if any, action EPA requires of you; both voluntarily and, when appropriate, through remedial notices.²

² Guidance on how EPA will assess a duty holder's standard of conduct is set out in EPA's *Compliance & Enforcement Policy*, which can be found here: <https://www.epa.vic.gov.au/about-epa/what-we-do/compliance-and-enforcement/epas-compliance-approach>

This guideline is one of a suite of publications, issued or proposed for issue, by EPA to support the contaminated land scheme. **Figure 2** below, identifies the role this guideline (highlighted in light blue) is intended to fulfil in the context of the broad process for meeting your contaminated land duties. Other guidance that is intended to complement this guideline is shown in dark blue – some yet to be issued, but once issued to be available via epa.vic.gov.au.

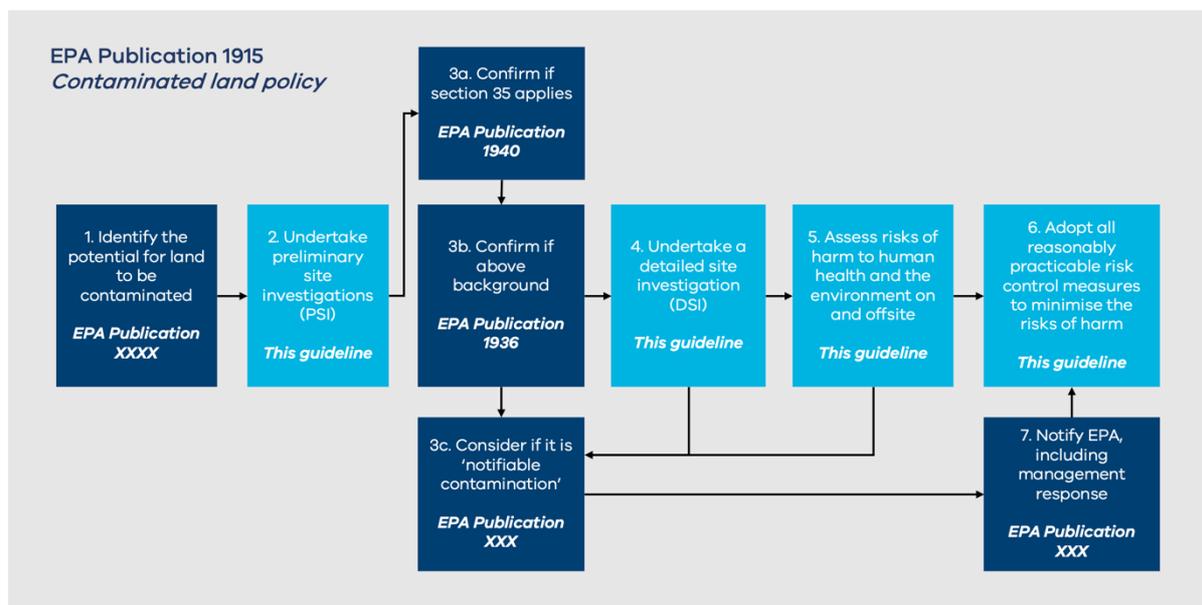


Figure 2 EPA's key publications supporting the duty to manage (boxes 2, 4, 5 and 6 shown in lighter blue) and associated guidance.

2 How to use this guideline

This guideline has been developed in line with EPA's [Assessing and controlling risk: A guide for business](https://www.epa.vic.gov.au/about-epa/publications/1695-1) (publication 1695) (<https://www.epa.vic.gov.au/about-epa/publications/1695-1>), and reflects the same steps to be taken, but here in the context of risks of harm from contaminated land.

A **preliminary step** before addressing risks of harm is to confirm whether or not the duty to manage applies to you. Section 3 takes you through a set of questions to assist in confirming if the duty applies and, if so, how your level of management or control over the land may affect your capacity to address risks of harm associated with the contamination.

Generally, the risk management cycle starts with identifying hazards and then assessing the risks associated with those hazards. The following figure shows the full risk management cycle:



Figure 3 Steps in controlling hazards and risks

EPA recognises that in the case of contamination hazards and risks, Steps 1 and Steps 2 are generally considered at the same time or may require a person to go back and forth between identifying potential hazards and assessing the corresponding risks of harm. This is because identifying the nature and extent of the contamination (hazard identification) may also be materially relevant to assessing the risks associated with that contamination.

The remainder of this guideline is structured to reflect this four-step risk management approach, noting that the first two steps (identify hazards and assess risks) have been combined, as indicated below.

Steps 1 and 2 – Identify hazards and Assess risks (Section 4)

Step 3 – Implement controls (Section 5)

Step 4 – Check controls (Section 6).

EPA recognises the significant body of guidance that is available to support the identification and assessment of contamination risks, most notably the NEPM (ASC). Rather than seeking to replicate that content here, this guideline aims to identify the key standards that EPA recognises as important for assessing and managing contamination risks. Figure 4 shows, for example, how this guideline overlaps with the NEPM (ASC) and, therefore, how the NEPM (ASC) can assist a duty holder to understand and meet their duty to manage.

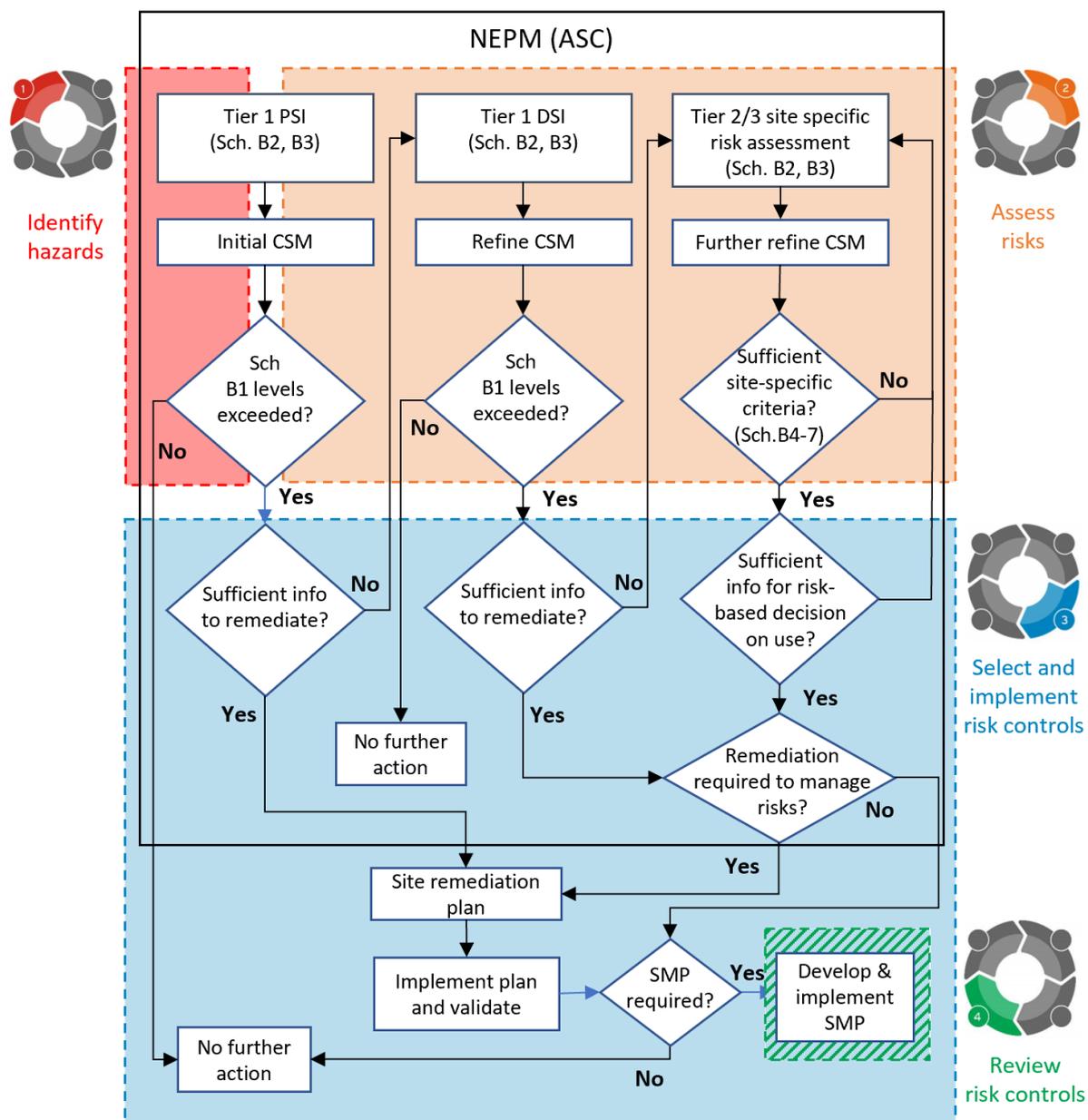


Figure 4 Conceptual relationship between the steps detailed in this guideline and the NEPM (ASC), using Schedule A—[Recommended general process for assessment of site contamination](#)

(https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_1)

Note: In the context of the duty to manage, references to 'remediation' in the NEPM (ASC) process should be read as 'risk minimisation'

3 Who has a duty to manage contaminated land?

3.1 Do you owe a duty to manage?

Contamination of land and groundwater is often challenging to identify and confirm. Where there isn't already conclusive evidence of contamination, a person has to make assumptions around the potential for contamination to be present based on indirect factors, such as land use history.

For a person to be required to comply with the duty to manage, **all** the following circumstances must apply:

1. You are a person in management or control of land
2. The land or groundwater is contaminated within the meaning of section 35 of the Act
3. There are reasonably practicable actions that can be taken to minimise the risks of harm associated with the contamination.

Where circumstances 1 and 2 apply is explored in sections 3.2- 3.3. Circumstance 3 is explored in section 5, although section 4 is also relevant to understanding the risk of harm to be managed through those actions.

3.2 Who is a person in management or control of land?

The duty to manage may apply to any person in management or control of land. Whether a person is in management or control of land is a question of fact determined in the circumstances. These include any powers or control that a person can exercise over the land and any decision-making authority the person has in respect of the land.

A person in management or control of land can include:

- the registered owner of the land
- a person with a proprietary right to occupy the land, such as a tenant under a lease agreement or a licensee under a licence agreement
- a person holding a right of way or entry onto land (for example a utility company with buried infrastructure)
- a person who is authorised to occupy the site under a construction agreement, e.g. a principal contractor.

Sometimes management and/or control of land may be shared by more than one person. This means that the duty to manage contaminated land may be held *concurrently* between two or more duty holders.

A person can only be responsible for matters that are within their level of management or control in respect of that land. For example, if a tenant is only permitted under their lease to undertake repairs on the inside of buildings on a contaminated site, then the scope of their duty to minimise risks of harm from contamination may be limited to actions relating to the inside of the building.

In certain circumstances, a person in management or control of land may discharge their duty to manage by negotiating with another person also in management or control of the land to undertake risk management measures that benefit both duty holders. For example, a landlord may limit a tenant's level of management or control of the land to help minimise risks of harm from contamination, such as prohibiting the use of a basement area as a habitable space where there is a risk of harm from soil vapour should the space be occupied for extended periods.

A tenant may also be required, under a lease agreement, to maintain certain features of a site, such as vapour barriers, or be prohibited from disturbing soil, or extracting groundwater, as part of risk management measures for at that site. Complying with such contractual requirements would be reasonably practicable actions that are within the tenant's management or control in respect of land.

A tenant's duty may also include providing access to the site to enable the owner to address a contamination issue that is otherwise outside the tenant's management or control of the land (for example where it relates to subsurface contamination that is unrelated to the tenant's activity and not part of the permitted use of the site), or to provide access as part of reviewing risks and controls expected under Step 4 of this guideline.

Assigning management or control of land: Example of appointing a principal contractor

A person in management or control of land may assign a level of management or control over the land to another party to assist in discharging their duty to manage. For example, a landowner may engage a principal contractor to develop a site, granting them sufficient management or control over the site to address contamination present. This does not mean the land owner has delegated the duty to manage, but instead it means they have authorised the principal contractor to assist in discharging the duty on their behalf. If the landowner does not adequately resource the principal contractor to enable them to meet the duty, or the landowner fails to provide material information about the presence of contamination on the land, then the landowner may not have adequately fulfilled their duty to manage despite the purported assignment of management or control.

Where the duty to manage is shared by more than one person, EPA recommends parties discuss and agree on how contamination will be managed.

Management or control may also be conferred through legislation. For example, under the *Crown Land Reserves Act 1978*, management or control of Crown land may be shared with committees of management to 'manage, improve, maintain and control' Crown land reserves set aside for the benefit of the people of Victoria. The scope of each committee of management's duty to manage will vary according to the level of management or control accorded to that committee.³

³ For example, section 15 of the *Crown Land (Reserves) Act 1978* sets out some of the powers that are held by committees of management, including to carry out works and improvements on the land once any necessary approvals are obtained and enter into contracts.

3.3 Is the land you manage or control contaminated?

A person who manages or controls land can only be expected to comply with the duty to manage where:

- they know the land to be contaminated; or
- the circumstance of their land makes it reasonable to assume the land or groundwater may be contaminated.

Knowledge of the presence of contamination includes information contained in environmental reports and site records. It is reasonable to assume the land is potentially contaminated based on indirect information, such as the past use of the land where contaminating substances may have been stored or handled, and records of incidents resulting in loss of containment of contaminating substances.

[Contaminated land policy](https://www.epa.vic.gov.au/about-epa/publications/1915) (publication 1915) (<https://www.epa.vic.gov.au/about-epa/publications/1915>) sets out EPA's expectations on when it is reasonable for a person in management or control of land to assume the presence of contamination, and what level of response may be required.

Further, a forthcoming EPA publication *Potentially contaminated land - a guide for business* provides advice on what information and observations may assist a person in management or control of land to conclude that the land is *potentially* contaminated.

Finally, [Contaminated land: Understanding section 35 of the Environment Protection Act 2017](https://www.epa.vic.gov.au/about-epa/publications/1940) (publication 1940) (<https://www.epa.vic.gov.au/about-epa/publications/1940>) provides information on what EPA regards as the evidence that confirms land or groundwater is contaminated.

This guideline is designed to support those who either know that they manage or control contaminated land or have assumed that contamination is present, based on what is known about the site history. It sets out the steps required to ensure all reasonably practicable steps are taken to minimise any risks of harm associated with the contamination.

If you are unsure about whether or not your land is contaminated, EPA recommends you consult these publications first before considering this guideline.

4 Identify hazards and assess risks

Steps 1 & 2: Identify hazards

Assess risks



4.1 Identifying hazards from contaminated land

To identify hazards associated with contamination, the history of a site's use needs to be understood. Site history can indicate the types of contamination that may be present, based on what is known about the practices associated with such activities.

EPA recognises a range of standards and guidance that can assist in identifying the types of contaminants that may be present based on past land use, including:

- The NEPM (ASC), in particular [Schedule B2](#) (Guideline on Site Characterisation) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_3) sets out a method for identifying the type of chemicals that may be present as soil or groundwater contamination and how to undertake a preliminary site investigation (PSI).
- EPA's webpage on '[What causes contamination](#)' (<https://www.epa.vic.gov.au/for-business/new-laws-and-your-business/manage-contaminated-land/about-contamination/what-causes-contamination>) provides a non-exhaustive list of potentially contaminating land activities.
- [Planning Practice Note 30 \(Potentially contaminated land\), DSE 2005](#) (https://www.planning.vic.gov.au/__data/assets/pdf_file/0027/97164/PPN30-Potentially-Contaminated-Land.pdf) (under revision by a joint DELWP-EPA group to ensure alignment with 2017 Act) also provides an indicative list (not exhaustive) of industries that may have either a high or medium risk of causing contamination of land.
- Appendix J in Australian Standard 4482.1 Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi volatile compounds) provides an indicative, non-exhaustive list of industries and the types of chemicals which are likely to be associated with those industries.
- The Western Australian Government provides information on contaminated sites in:
 - Appendix A of [Identification, reporting and classification of contaminated sites in Western Australia](#) (https://www.der.wa.gov.au/images/your-environment/contaminated-sites/Guideline_ID_Reporting_and_Classification.pdf) (June 2017). Includes example scenarios of known or suspected contaminated sites and recommendations for reporting; and
 - Appendix B of [Assessment and management of contaminated sites](#) ([21](https://www.der.wa.gov.au/images/documents/your-</div><div data-bbox=)

environment/contaminated-sites/guidelines/Assessment_and_management_of_contaminated_sites.pdf) (December 2014). Includes potentially contaminating industries, activities and land uses.

- The [VicUneearthed](https://www.environment.vic.gov.au/sustainability/victoria-uneearthed) (<https://www.environment.vic.gov.au/sustainability/victoria-uneearthed>) database and EPA's website may provide specific information related to land you manage or control and the land adjacent to your land.

EPA's forthcoming publication *Potentially contaminated land - a guide for business* provides further information on assessing whether or not land you manage or control may be contaminated.

CASE STUDY: How do you identify potential contamination?: Lennie's lot

Lennie is considering purchasing property in an industrial estate on the northern edge of Melbourne. The current owner has provided Lennie with an environmental report that includes the results of some soil and groundwater sampling and testing that has been undertaken in relation to the site. The assessment was based on the current and past land uses of the site, which included the chemical treatment of timber for preservation. Lennie was also aware from a report on past insurance claims that there had been several fires at the site. Further, the buildings on the site also appear to have been constructed at a time when asbestos cement sheets and lead paint were still permitted for use. Accordingly, Lennie asked the vendor for additional soil and groundwater sampling to be undertaken to determine if PFAS⁴ (based on the fire history), asbestos, and/or lead were present in soil or groundwater on the site.

Although the site is currently zoned industrial, Lennie is considering developing the site as it is located within one of Melbourne's growth corridors, and there is a reasonable chance that the land use zoning will change in the future to a more sensitive use. Accordingly, Lennie asks the environmental consultant she's engaged to advise her on the contamination status of the site to check whether the standards applicable for confirming if the land is contaminated within the meaning of section 35 of the Act are those that are protective of human health for the most sensitive possible uses (low-density residential – for example, the HILA values in the NEPM (ASC)). The consultant will also need to consider the protected environmental values of groundwater, and the applicable standards for each environmental value, as detailed in the [Environment Reference Standard](http://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standard) (www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standard). For example, as the site is located within Melbourne's Merri Creek catchment, the standards for evaluating the groundwater samples, and for soil contaminants that are capable of leaching into the groundwater or surface water, should be applicable to slightly to moderately modified ecosystems.

4.2 Contamination caused by diffuse anthropogenic activities

The definition of 'contaminated land' includes elevated levels of a substance that may have originated from diffuse sources (for example lead emissions from petrol vehicles) rather than the result of specific historical activities on site. This type of

⁴ Per- and polyfluoroalkyl substances

contamination may be referred to as 'diffuse anthropogenic contamination' or 'ambient background concentrations'.⁵ While the NEPM (ASC) considers that ambient contamination forms part of background contamination, the Act defines background levels as those that are naturally occurring. This difference is explained in: [Contaminated land: understanding section 35 of the Environment Protection Act 2017](https://www.epa.vic.gov.au/about-epa/publications/1940) (publication 1940) (<https://www.epa.vic.gov.au/about-epa/publications/1940>).

The fact that on-site contamination has arisen from activities that did not occur on the site does not exclude the duty to manage, as the duty is based on a person's management or control of the site irrespective of what may have occurred on or off the site previously. For example, in regions affected by historical mining where arsenic-impacted soil can be extensively distributed, then risk controls that minimise ingestion of that soil may be required (for example, by using raised vegetable beds filled with clean fill and maintenance of ground cover to suppress dust).

The origin of the contaminants may be relevant, however, in the assessment of what risk controls are considered 'reasonably practicable' to implement under the duty; in particular what is available and suitable for minimising the risks of harm. Ultimately, the transboundary nature of some types of contamination may mean that duty holders need to work cooperatively to address the contamination.

⁵ See 2.5.7 of [Schedule B1 of the NEPM \(ASC\)](#)

4.3 Guidance for contaminated land assessment

4.3.1 Overview

For those in management or control of land they know (or reasonably suspect) to be contaminated, the key question is what, if any, actions are required under the duty to manage. To answer this, it is necessary to understand the magnitude of risk of harm associated with the contamination.

Ultimately the purpose of characterising the nature of contamination on a site is to answer three key questions:

1. What, if any, risks of harm to human health or the environment arise on or from the site from the presence of the contamination?
2. What risk control measures (for example remediation, management measures) may be available to minimise those risks of harm?
3. What do we need to communicate to stakeholders and how?

This section sets out EPA's expectations on how to adequately assess the risks of harm to understand what, if any, reasonably practicable actions are required (actions to address the risk of harm are covered in section 5).

Section 39(2) of the Act identifies assessment of the contamination as one of the actions required to meet your duty. The purpose of assessment is to ensure that contamination is sufficiently understood to support reasonably practicable risk control measures, now or in the future as needed.

The Act does not prescribe the method for assessing contamination: this is to be informed by the state of knowledge on how to assess the risks of harm. A range of guidance and methods are available to duty holders to assist in meeting the duty.

EPA considers the documents set out in this section as examples of appropriate guidance to meet the duty to manage. This guideline provides only a high-level summary of the key concepts of assessment, which are set out in detail in the documents referred to in this section.

4.3.2 Role of the Environment Reference Standard

The primary importance of the [Environment Reference Standard \(ERS\)](https://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standard) (<https://www.epa.vic.gov.au/about-epa/laws/epa-tools-and-powers/environment-reference-standard>) is in identifying the environmental values the Victorian community want to achieve and maintain. Environmental values are uses, attributes or functions of the environment, such as land that can be used to produce food. Understanding the environmental values and their importance on a parcel of contaminated land (a contaminated site) sets the basis for determining the approach for assessment. The assessment of contaminated land is not, however, *limited* to the environmental values, indicators and objectives set out in the ERS alone.

[Contaminated land: Understanding section 35 of the Environment Protection Act 2017](https://www.epa.vic.gov.au/about-epa/publications/1940) (publication 1940) (<https://www.epa.vic.gov.au/about-epa/publications/1940>)

provides information on the relationship between the ERS and contaminated land and groundwater.

4.3.3 Role of the National Environment Protection (Assessment of Site Contamination) Measure 1999

EPA recognises the important role of the [National Environment Protection \(Assessment of Site Contamination\) Measure 1999 \(NEPM \(ASC\)\)](https://www.legislation.gov.au/Details/F2013C00288) (<https://www.legislation.gov.au/Details/F2013C00288>) as a guidance document for assessing the nature and extent of contamination, as well as for assessing the risks of harm from contamination.

The purpose of the NEPM (ASC) is to establish a nationally consistent approach to the assessment of site contamination. The NEPM (ASC) sets out:

- The general process for the Assessment of Site Contamination (Schedule A).
- General guidelines for the Assessment of Site Contamination (Schedule B, compiled across 22 volumes).

The NEPM (ASC) provides information to support each step of contaminated site assessment, including:

- site characterisation
- laboratory analysis
- Human health and ecological investigation and screening levels for soil and groundwater, their derivation, and methodologies for deriving investigation levels for other contaminants
- human health, ecological and groundwater risk assessment guidance
- community engagement and risk communication
- competency frameworks.

[Schedule B1](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_2) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_2) of the NEPM(ASC) sets out the most commonly encountered contaminants and provides a range of scenarios and concentration thresholds above which further investigation may be required to ascertain the risks of harm.

Schedule B1 is not an exhaustive list of all chemical substances and does not include standards or sources of information for all considerations for contaminated land and groundwater, including many of the environmental values set out in the ERS. The question of whether contamination creates a risk of harm to human health or the environment may therefore require considerations beyond the NEPM (ASC).

[Contaminated land: Understanding section 35 of the Environment Protection Act 2017](https://www.epa.vic.gov.au/about-epa/publications/1940) (publication 1940) (<https://www.epa.vic.gov.au/about-epa/publications/1940>) provides further information on evaluating contaminants not expressly addressed in the NEPM (ASC).

Key steps set out in the NEPM (ASC) discussed below are:

- The purpose of a conceptual site model is to describe how environmental values may be impacted by the contamination.
- Preliminary Site Investigation.
- Detailed Site Investigation.
- Risk Assessment (Human Health and Ecological).

Where the content of the NEPM (ASC) address matters that are also covered by Victorian legal requirements, then the Victorian requirements must prevail. For example, the approaches in the NEPM (ASC) in respect of asbestos contamination must take into account Victorian safety and dangerous goods laws. References in the NEPM (ASC) to ambient background concentrations must be adjusted in recognition of the definition of contaminated land under the Act.⁶

4.3.4 Role of other guidelines

Many national and international guidelines can be considered in the assessment and management of contaminated land.⁷ Several of these are referenced within the ERS and NEPM(ASC). The duty to manage does not place limitations on sources of guidance to fulfill obligations and EPA expects duty holders to consider relevant guidance in assessing the risk of harm on their land and taking action to address that risk. In considering the appropriateness of guidance, particularly from international sources, it is important to consider:

- the currency of the guidance
- the scientific veracity underpinning the guidance
- whether the guidance offers a comparable level of protection to standards set in Australia.

4.4 Preliminary site investigation

A preliminary site investigation (PSI) forms the initial stage of a site investigation, and usually involves a desktop study and site inspection to collect information on site characteristics such as location, current and historic land uses and activities, site layout, building construction, and geological and hydrogeological setting, as well as identifying potential sources and pathways of contamination. A PSI may also include limited sampling of soil, groundwater, surface water and sediment, as

⁶ EPA publication 1940 (<https://www.epa.vic.gov.au/about-epa/publications/1940>) addresses the concept of 'ambient background concentrations' of a substance. See also section 4.2 of this guideline.

⁷ For example, The National Chemicals Working Group of The Heads of EPAs Australia and New Zealand (2019) [PFAS National Environmental Management Plan Version 2.0 Consultation Draft](https://www.environment.gov.au/protection/publications/pfas-nemp-2) (<https://www.environment.gov.au/protection/publications/pfas-nemp-2>) (NEMP 2.0) provides PFAS-specific information designed to supplement the guidance provided in the NEPM (ASC).

appropriate, based on the understanding of site background information. Interviewing representatives of the site (such as those who have worked on site over many years) can also provide useful information.

The information collected during a PSI should be used to assess information gaps and prepare an initial conceptual site model (CSM) which will help both understand potential risks of harm from contaminated land and groundwater and plan a more detailed site investigation (DSI), if required.

PSIs do not necessarily need to result in standalone reports, and, under some circumstances, the work and findings may be included in a report produced following a DSI (see section 4.6 of this guideline for an overview of DSIs).

Section 2.1 of [Schedule B2 of the NEPM \(ASC\)](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_3) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_3) describes information recommended for inclusion in a PSI.

4.5 Developing a conceptual site model

The development of a conceptual site model (CSM) is an essential part of site assessment. A CSM provides the framework for identifying how the site may have become contaminated and how potential receptors may be exposed to contamination, either in the present or the future. It forms the basis of understanding sources of contamination, how users (people and ecological receptors) may be exposed and informs future sampling and analysis.

The CSM itself is a collation of site-related information about contamination sources, potential receptors and exposure pathways between those sources and receptors (see Glossary of Key Terms for a description of these terms).

A preliminary CSM constructed from the findings of the PSI will also identify data gaps and should continue to be developed and refined throughout the investigation process as new information becomes available through the Detailed Site Investigation (DSI) stage (see 4.6) and Risk Assessment stage (see 4.7).

A CSM generally includes:

- known and potential sources of contamination and contaminants of concern, including the transport mechanisms (such as 'top down' spills or subsurface releases from corroded tanks or pipes) and environmental fate (including degradation, transformation, etc.) of contamination
- nature and distribution of chemicals of interest
- potentially affected media (such as soil, sediment, groundwater, surface water, indoor and ambient air) and the likelihood of contaminated media providing an ongoing source of contamination
- the environmental setting including geological, hydrogeological and soil characteristics
- human and ecological receptors

- potential and complete exposure pathways, including direct contact, inhalation, and ingestion
- surrounding land, groundwater, and surface water use.

Conceptual site models (CSMs) can be presented in different formats including schematic or graphical, flow charts or tables.

[Section 4 of Schedule B2 of the NEPM \(ASC\)](#)

(<https://www.legislation.gov.au/Details/F2013L00768/a6ad1138-32ba-4acf-a1bc-4a5ade7a8bf7>) provides detailed guidance on developing and verifying a CSM.

4.6 Detailed site investigation

A detailed site investigation (DSI) aims to delineate the type, levels, and extent of contamination to inform risk assessment and risk management and, if necessary, provide the basis for the development of an appropriate remediation or management strategy (Section 2.2 of [Schedule B2 of the ASC NEPM](#)) (<https://www.legislation.gov.au/Details/F2013L00768/a6ad1138-32ba-4acf-a1bc-4a5ade7a8bf7>).

A DSI typically refines the preliminary CSM developed in the PSI, seeking to address data gaps identified in the PSI. Depending on site characteristics and the nature of the contamination, a DSI may involve sampling of soil, groundwater, surface water, sediment, biota (for example fish), soil vapour and/or indoor air. These investigations are generally conducted as part of a DSI to refine potential source-pathway-receptor linkages that were initially identified in the CSM. In some cases, the DSI and PSI stages may be combined into a single investigation. In others, several iterations for the DSI may be necessary to refine specific elements of understanding of a contaminated site.

A DSI may require various statutory approvals, including licences for monitoring groundwater well/bore installation and permits from the local council or other land managers for investigations on public land (to investigate offsite sources and impacts, understand groundwater flow and/or confirm the extent of a contaminant(s)). Where contamination has migrated off-site onto surrounding land, you may need to approach the person in management or control of that land to proceed with your investigation.

A plan setting out data quality objectives (DQOs) and a sampling and analysis quality plan will support the process of completing a DSI. A DQO process is outlined in Appendix B of [Schedule B2 of the NEPM \(ASC\)](#) (<https://www.legislation.gov.au/Details/F2013L00768/a6ad1138-32ba-4acf-a1bc-4a5ade7a8bf7>).

4.7 Risk assessment

Risk assessment is a staged process that starts with a comparison of measured or modelled site contaminant concentrations ('exposure concentrations') with relevant objectives, criteria, or benchmarks ('acceptable concentrations'). Typically, where exposure concentrations are below acceptable concentrations, risks are low and acceptable, and no further risk assessment is required.

Initially, a comparison is made between the concentrations of the indicators with objectives in the ERS, or other relevant guidelines and the results obtained from the target site. This is referred to as a 'Tier 1' risk assessment and enables the site data collected from a DSI to be used to support an *initial* assessment of the risk of harm.

Further risk assessment stages may be necessary where:

- exposure concentrations are above acceptable concentrations
- acceptable concentrations (for example objectives in the ERS) for a particular contaminant or site circumstance are not readily available, or
- where the data are not clear as to whether there is a risk of harm.

In these situations, risk modelling or further site investigation may be necessary to support a more detailed risk assessment. This is known as a 'Tier 2' risk assessment, or site-specific risk assessment. See [Schedule B4 of the NEPM \(ASC\)](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_5) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_5).

Human health risk assessment (HHRA) involves assessing risks to people under various exposure scenarios such as a residence, a commercial building, or a recreational area. Ecological risk assessment (ERA) typically assesses risks to groups of ecological receptors, such as aquatic organisms or terrestrial organisms. Occasionally, an ERA may assess risks to a single type of receptor, such as an endangered animal, or a particular domesticated or farmed animal.

Under the [NEPM \(ASC\)](https://www.legislation.gov.au/Details/F2013C00288) (<https://www.legislation.gov.au/Details/F2013C00288>), methods for evaluating risks to human health are set out in [Schedule B4: Guideline on Site-Specific Health Risk Assessment Methodology](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_5) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_5). Guidance on vapour intrusion investigation and risk assessment are also set out across [Schedule B2](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_3) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_3) and [B4](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_5) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_5). Risks of harm to ecological receptors are addressed in [Schedule 5a: Guideline on Ecological Risk Assessment](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_6) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_6). Risks of harm specifically in groundwater can be assessed using [Schedule B6: Guideline on the Framework for Risk-Based Assessment of Groundwater Contamination](https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_9) (https://www.legislation.gov.au/Details/F2013C00288/Html/Volume_9).

As noted previously, some risks of harm are not addressed directly by the methods set out in the NEPM (ASC). Where these scenarios arise, specialist support should be sought to ensure risks are adequately characterised.

4.8 Identifying imminent and immediate risks of harm from contamination

Some contaminants can pose imminent or immediate risks of harm due to their toxicity, pathogenicity, flammability, or explosivity, particularly when present at higher concentrations. In other scenarios, contamination may have resulted in long term exposures that may lead to the development of chronic health conditions and therefore needs an immediate response. These scenarios include significant vapour intrusion events, contamination in drinking water lines or in groundwater abstracted for drinking water.

In these instances, it may not be appropriate to follow the PSI, DSI and risk assessment process to fully characterise the risk before taking action, as this may result in delays in responding to realised risk scenarios. Instead, an 'outside-in' approach should be taken, where impacted receptors are identified and actions to mitigate exposure are prioritised.

Managing the imminent or immediate risk of harm includes contacting EPA as soon as practicable. In addition to meeting any mandatory notification obligations, EPA can assist by playing an important part in minimising significant or imminent risks of harm from contamination through its broader response powers, and collaboration with other agencies (for example water corporations, Department of Health, Emergency Management Victoria). This can potentially include isolation of systems that may be affected by the contamination, such as water supplies and stormwater.

Alerting EPA in such circumstances would represent part of a reasonably practicable means of minimising the risks of harm.

See EPA's information on responding to emergency and urgent situations:
<https://www.epa.vic.gov.au/about-epa/what-we-do/emergency-information-and-support>

5 Implement risk control measures

Step 3: Implement risk control measures



5.1 Overview

Having assessed the risk of harm to human health and the environment concerning your site's circumstances, the next step requires you to identify and undertake all reasonably practicable measures to minimise the risks of harm associated with the contamination.⁸

The required response to meet your duty to manage will be proportionate to the level of risk associated with the contamination. Risk controls should be proportionate to the risk and appropriate to the specific circumstances at the site. While extensive remediation works may be required at some sites, other risks can be managed effectively by restricting access or limiting exposures.

Several parts of the Act should be considered to understand what will achieve compliance with the duty to manage in relation to minimising risk. These are:

1. The hierarchy of risk management controls (supported by section 6(1)).
2. The factors that help determine what is "reasonably practicable" in your circumstances (section 6(2)).
3. The principles of environment protection in Chapter 2 of the Act (outlined in section 8 of this guideline).

This section of this guideline also broadly expands on the actions listed under section 39(2) of the Act that may be taken to meet your duty to manage.

⁸ Where the contamination is moving off-site, you must identify and undertake reasonably practicable measures that are within your management or control (for example, removing or reducing the source if it is on your site) and working with the adjacent duty holder or duty holders to address contamination risks arising from an instance of contamination shared across a boundary (for example where a plume straddles more than one parcel).

5.2 The order of preference for selecting risk controls

Section 6(1) of the Act states that

A duty imposed on a person under this Act to minimise, so far as reasonably practicable, risks of harm to human health and the environment requires the person —

- (a) *to eliminate risks of harm to human health and the environment so far as reasonably practicable; and*
- (b) *if it is not reasonably practicable to eliminate risks of harm to human health and the environment, to reduce those risks so far as reasonably practicable.*

We note that this section addresses the possibilities for minimising the risk of harm in line with section 6(1) of the Act, by outlining an order of preference in the selection of general risk control options. Having considered the options, however, a duty holder must then consider what is *reasonably practicable* in their circumstances to adopt a specific control or controls that are proportionate. Section 5 of this guideline (this section) guides on making that selection, with section 5.3 below guiding on explaining your selection.

Section 6(1) of the Act creates the basis for recognising a 'hierarchy' when selecting risk control measures that are preferred and must be considered in the order of *most effective to least effective* to achieve compliance. A duty holder cannot simply select one or more measures without considering the effectiveness of that approach: the rationale for selecting or discounting a particular risk control measure must be justified and undertaken in accordance with section 6(1).

This means that risk control measures that tend to *eliminate* the risk or *remove* the need for human actions to manage the risk, must be favoured over risk control measures that rely on human actions to be effective. Where more than one option is available to minimise the risks of harm, then the 'higher order' measure is to be preferred.

Risk reduction must only be considered where risk elimination is not reasonably practicable. In selecting risk reduction measures, all reasonably practicable options must be considered and the most effective at minimising risk of harm considered before those that are less effective.

Risk reduction of contaminated land should reflect the order of preference set out in the waste hierarchy that is, treatment and reuse on-site is preferred to treatment and reuse off-site (provided an equivalent environmental outcome is achieved) and where long-term containment off-site is least preferred, including through disposal.

EPA has developed guidance that provides businesses with a risk management framework, including a description of the hierarchy of risk controls – see figure 3 in [Assessing and controlling risk: A guide for business](#) (publication 1695) (<https://www.epa.vic.gov.au/about-epa/publications/1695-1>).

5.3 Explain your rationale for selecting and timing risk control measures

Adopting a clear order of preference when selecting between risk control options will help demonstrate that the standard of conduct required to fulfil your duty to manage has been met, as well as demonstrating the reasons why you have not adopted higher-order risk control measures.

An assessment of the risk from contamination will help inform what risk control measures are adopted to minimise the risks of harm to an acceptable level. In practice, a combination of risk control measures will likely be needed to achieve minimisation of the risk so far as is reasonably practicable.

Depending on the risks identified, the relevance of timeframes for implementing selected risk control measures must be factored into your rationale. For example, where there is an immediate significant risk to human health, short term interim controls may be required to secure a site or ensure appropriate public health interventions are enabled. Once the immediate risks are addressed, a more detailed analysis of risk control measures can be undertaken, with a focus on targeting the highest order risk controls.

5.4 Interim controls

Where a site is suspected of being contaminated, preliminary steps can be taken to achieve a level of interim risk control while an investigation is being undertaken to understand the longer terms risks or controls that may be required for the site.

As a precautionary approach, managing potential risks and mitigating against further contamination while further assessment is being completed could be reasonably practicably achieved through measures such as signage, alerts, putting fencing in place, providing advice on use of groundwater. Where leakage from a source (for example a tank or pipeline) is still occurring, urgent action should be taken to prevent further contamination. It may also be necessary to require workers and other persons on site to wear personal protective equipment (PPE) or avoid contact with areas where contamination is suspected, while further investigations are underway to understand and eliminate or reduce the risk of harm.

Reliance on PPE is considered the least effective or 'lowest order' of risks controls. It is only a temporary solution and relies heavily on people adhering to the protocols on the use of the equipment. PPE should be regarded as a last line of defence if individuals could be directly exposed to hazards from contamination (for example, P2 and dust masks, or respirators). In addition, PPE can only address human health risks; it cannot mitigate risks to the environment.

Erosion and sediment controls may need to be implemented before finalising an assessment or during construction activities that are taking place at the same time. Ongoing controls should be in place to prevent incidental soil being washed off the site and onto surrounding areas during normal occupancy conditions.

As many contaminated sites will also be workplaces within the meaning of the *Occupational Health and Safety Act 2004*, any person undertaking work on a contaminated site must also meet their obligations under that Act, which may

include the use of PPE. WorkSafe Victoria and EPA have partnered to publish guidance on managing workplace hazards arising from contaminated land in [Industry Standard: Contaminated construction sites](https://www.worksafe.vic.gov.au/resources/contaminated-construction-sites) (<https://www.worksafe.vic.gov.au/resources/contaminated-construction-sites>).

5.5 Eliminating risks of harm

Eliminating risks of harm means destruction or removal of:

- the primary and secondary sources of the contamination (for example, underground storage tanks and NAPL) and
- in some instances, the entire area of affected soil or groundwater.

Risk of harm elimination may also be achieved by reducing the concentration of the contaminants by cleanup activities (that do not include dilution) to a level below what EPA would regard as meeting the definition of 'contamination' under section 35 of the Act. Some of examples of risk of harm elimination in the contaminated land context include in-situ and ex-situ treatment, some bioremediation and phytoremediation techniques and chemical reduction/oxidation.

Where the level of contamination cannot be reduced below the level at which it is considered 'contamination' under section 35 of the Act, then EPA does not regard this as 'elimination', but it may, in the circumstances, satisfy an adequate minimisation of the risks of harm to an acceptable level such that the duty to manage is discharged (see the next section for further detail).

5.6 Risk of harm reduction through treatment of the contamination

Treatment (including active and passive remediation where risk is not eliminated) as a risk reduction option offers a means by which the magnitude of the risk of harm associated with the contamination is reduced rather than eliminated, for example by focussing on the areas of the highest concentration of contamination (sometimes called hotspots)

Often this will mean considering different options that are suitable and available for the site and then considering the degree of risk reduction that can be achieved by each option. It is appropriate to consider cost as part of this process, but only as a means of comparing the relative effectiveness between technology choices – cost cannot be used to justify a less effective treatment option – it must always be compared to the level of risk reduction that can be achieved. Guidance of the factors relevant to comparing these factors is provided in section 5.10.

The consideration of *on-site* treatment of contamination may need to be balanced against other potential environmental impacts, such as the impact on local amenity that may arise from the on-site treatment in sensitive areas (for example residential zones) and the indirect impacts arising from the process of treatment – such as energy use, waste production and air emissions. Again, in selecting a risk reduction approach, consideration must be given to the principles of environment protection (refer to section 8).

Contaminated material may also be treated off-site and brought back onto site for reuse where the risks of harm have been reduced to an acceptable level.

Dilution and mixing contaminated soils with other materials to reduce contaminant concentrations is an **unlawful practice**. Chapter 4 of the Regulations prohibit the mixing, blending or diluting of contaminated soils (when classified or classifiable as priority waste) and such practices can attract fines and prosecution. More generally, such activities cause a spreading of contamination and an increase in the area of contaminated land, which is inconsistent with the environment protection principles of the Act, and the requirement to minimise risks of harm so *far as is reasonably practicable*.

In situations where the total removal of the contamination source is not reasonably practicable (for example certain NAPL source(s)), risk reduction actions are necessary to cease any detrimental contribution the contamination source is making to the condition of the groundwater (for example *in situ* decommission of underground infrastructure that cannot be removed due to building stability constraints).

5.7 Risk of harm reduction through the disposal of contaminated materials

Where *in situ* impacted materials are removed and cannot otherwise be used at that site (either due to the level of contamination or because the site or project cannot accommodate those materials) the industrial waste duties may apply.

Physical removal of the contaminated soil or groundwater does not *eliminate* the risk entirely, as the removal from one location to another effectively transfers the *hazard* posed by contamination to another part of the environment. However, transferring contaminated materials to another location that is less sensitive or better able to control the risks (for example a permissioned landfill) can represent a genuine reduction in the level of risk. Importantly, contaminated materials must only be transferred to a place or premises that can lawfully receive the waste material. Premises that are authorised to receive contaminated materials are required to be designed in a way that can safely contain the hazardous aspects of the contamination.

In some circumstances, treatment may be required before contaminated materials are removed from a site and/or at the site that is receiving those materials.

A person looking to transfer contaminated materials (including soil) from their site as part of the duty to manage will also be subject to various waste duties relating to the management or control of the waste materials, as well as the GED regarding the activities associated with the waste transfer. EPA has published a range of guidance to assist duty holders subject to those duties at epa.vic.gov.au.

In some instances, both a combination of treatment and disposal may be a way of achieving risk reduction at the site, where any transferred material is received at a lawful place. Section 8 below explains the principles of environment protection that must also be considered when EPA makes decisions around compliance with the Act as a whole, including how the waste management hierarchy is to be considered.

Disposal of contaminated soil off-site to comply with the duty to manage needs to be balanced against the negative impacts, both direct and indirect, of transporting, disposing of, and managing the waste elsewhere.

5.8 Engineering controls to reduce risk

The next level in the hierarchy of risk controls is the use of engineering solutions to reduce the risks of harm without removing the contamination itself. An engineering solution is one that, once established, removes, or at least reduces, reliance on human actions to be effective in minimising the risks of harm. Consideration should always be given to the potential for engineering controls to fail at some point in the future, and preference should be given to robust, passive systems that do not rely on extensive maintenance and human action to perform adequately.

There is a wide range of engineering solutions that may be appropriate for managing contamination risks (the choice of which should be informed by a site specific CSM). Examples of engineering controls may include containment, encapsulation and use of barriers (for example encasing under tarmac or a slab), fencing off, soil stabilisation and venting (for example to facilitate safer methane off-gassing).

The advantages that engineering controls can offer include:

- a reduction in waste disposal requirements
- they may remain effective for long periods
- they may be incorporated into the design or development of a site.

There are many examples in Victoria where contaminated materials have been retained on site either as part of the reconfiguration of the site (for example entombed in embankments required as part of the development) or, where not specifically required for the site development, encased in a way that enables the area to be safely used (for example creating a mound in a public park).

While EPA will regard on-site retention of contaminated materials as *potentially* fulfilling the duty to manage, any intention to retain contaminated material must be fully justified and documented to be regarded as a legitimate risk control measure. Further, in some instances, EPA must be notified of the intention to retain the waste (see section 9.4.2 below) or a development licence may be required to complete the approach (see Item 74 in Schedule 1 of the Regulations *L02—Contaminated sites—on-site soil retention*).

The downside to using engineering controls is that they do not *eliminate* the risk of harm and so a level of ongoing management will be required for the life of the engineering control (for example through an adequate monitoring and maintenance program). If it becomes apparent that the engineering control is not adequately minimising the risks of harm to an acceptable level, then additional action will be required. Consideration should also be given to the intergenerational impact that retention of contamination raises, as per the principles of environment protection.

Any changes to the site conditions that may disrupt the engineering control and create a new exposure pathway (for example cutting into a slab or disturbing a buried barrier), or where the sensitivity of the receptors changes (for example a sparsely unoccupied site becomes used more frequently) will require the person in management or control to review the effectiveness of the engineering controls. See Step 4 (section 6) for more discussion on this.

5.9 Risk of harm reduction through administrative controls

5.9.1 Overview

Administrative controls generally include the implementation of protocols, procedures, and information as a means of changing the behaviours of people on a site to ensure they do not expose themselves to the risks of harm. While they may be less reliable than higher-order risk controls (due to reliance on human behaviour), they can still be quick to implement, effective when well-managed, and will often complement other risk control measures⁹.

Examples of administrative controls may include:

- Site access restrictions and signage (for example indicating the presence of contaminated soil).
- Communicating / advertising that groundwater use without treatment should be restricted (for example through a groundwater quality restricted use zone (GQRUZ)).
- Monitoring programs (for example groundwater monitoring, monitoring for natural attenuation).
- Policies and procedures addressing:
 - handling disturbed soil (for example where underground services are needed)
 - preventative work practice controls, such as equipment maintenance and improved housekeeping.
- Adequate training procedures, policy, supervision or shift design that reduces risks, such as induction processes, permitting systems and competency training, and responding to incidents or identifying 'unexpected finds' and buried waste.
- Community consultation, including the various ways a duty holder can inform potentially affected individuals about the nature of the hazard and any steps they can take to reduce exposures, thereby minimising resulting risks (see further in section 5.9.2).

⁹ Site Management Orders (SMOs) issued by EPA are a form of risk control. However, compliance with SMOs and the duty to manage represent distinct requirements under the Act. See section 9.7 for further information on SMOs.

An important type of administrative control is the sharing of information on the risks of harm from the contamination to those who may come into management or control of the land and others who may be affected by the contamination (for example adjacent properties). EPA's expectations on sharing information are detailed below in section 5.9.2.

Typically, administrative controls will be documented in a site or environmental management plan that sets out what the range of controls are and the requirements of each to remain effective in minimising the risks of harm from the contamination.

There are many limitations on the effectiveness of administrative controls, such as:

- unpredictable human behaviour
- changes in staff and management over time and a loss in skills or corporate knowledge
- changes in site occupancy
- loss of information over time.
- inadequate allocation of responsibility.

Further, reliance on administrative controls can prove a more costly option in the long term because of the time and effort required to ensure they remain effective (for example retraining, updating management plans, transferring information).

Ultimately, reliance on administrative controls will only be acceptable where proportionate to the risks of harm, to complement other controls and address residual risks, or where there is no other reasonably practicable risk control measure.

5.9.2 Sharing information as a risk of harm control measure

The Act includes two specific administrative controls for minimising risks of harm from contamination in section 39(2):

- (d) *provision of adequate information to any person that the person in management or control of the contaminated land reasonably believes may be affected by the contamination, including—*
 - (i) *sufficient information to identify the contamination; and*
 - (ii) *the results of investigation and assessment referred to in paragraph (b); and*
 - (iii) *the risks of harm to human health and the environment from the contamination;*
- (e) *provision of adequate information to enable any person who is reasonably expected to become a person in management or control of the contaminated land to comply with the duty to manage contaminated land.*

The sharing of information is required where it can reduce risks of harm from contamination present on a site or migrating offsite to those who may otherwise be exposed.

For example, by sharing information on the contamination with a person who may come into management or control of the site, that person is then able to make informed decisions about their activities proposed for that site. Similarly, if another person off-site may be affected by the contamination where it has moved off-site, such as through the installation of a bore on their site, then they can make decisions around how to minimise exposure to that contamination.

The purpose of sharing information is comparable to the current occupational health and safety requirements around sharing information on the presence of hazards in workplaces, such as the presence of asbestos, lead, and other hazardous substances, to employees, contractors and visitors attending the site.

A duty holder that determines sharing information will reasonably reduce the risks of harm further, cannot then rely solely on disclosure as a risk control measure, where there are other reasonably practicable risk controls higher up in the hierarchy that could help reduce the risk of harm to human health and the environment. Section 6(1) of the Act requires that all reasonably practicable risk controls that are more effective in eliminating or reducing the risks of harm must also be taken. For many situations sharing of information will be one of a few actions taken to meet the duty to manage.

Any provision of information must be thoughtfully made to ensure it is effective in helping the recipients to understand the significance of the information and what it may mean for them. It may be more effective to directly engage with affected persons to share information in a manner that enables them to understand the purpose of the exercise and what, if any, steps they may need to take to protect themselves.

The role of groundwater quality restricted use zones

Under the 1970 Act, groundwater quality restricted use zones (GQRUZs) referred to an area where existing levels of pollution of groundwater, usually a result of previous industrial activity, precluded one or more beneficial uses that would otherwise apply to that groundwater.

Typically, a GQRUZ signified the circumstances of such locations after all practicable steps had been made to clean up the groundwater. To address residual risk, EPA would determine a GQRUZ outlining that restrictions remained on how the water could be used without further treatment. For example, a GQRUZ may have been used to indicate that the use of groundwater for drinking is not suitable, but the use for irrigation was acceptable. GQRUZs determined under the 1970 Act will remain in place. A GQRUZ, therefore, signifies the presence of 'known' contamination in the context of the contaminated land scheme.

The legislative basis for determining that an area is subject to restrictions under a GQRUZ has not been retained in the Act. However, one of EPA's statutory functions under the Act is to provide information and education to the Victorian community about environmental quality and risks of harm to human health and the environment; this includes contaminated groundwater. Therefore, the utility of existing GQRUZs remains relevant through sharing

information relevant to minimising risks of harm from that groundwater. The broader objective of ensuring information such as that previously established under GQRUZs will remain a role for EPA.

5.9.3 Sharing information is required when doing so will reduce the risks of harm

Sections 39(2)(d) and (e) of the Act are not simply for the sake of disclosure and should not be regarded as standalone requirements: they are requirements when to do so will help *minimise the risk of harm* to human health and the environment. Whether or not sharing information will be effective in minimising risks of harm must be evaluated in the context of the duty in section 39(1) and also in the context of all other risk control actions being taken to minimise the risks of harm. If the risks of harm are being adequately managed onsite and sharing of information to offsite persons would not result in any further reduction of the risks, then such sharing is not required.

Information on contamination must be shared with a person who may reasonably be expected to come into management or control of the land to enable them to meet their duty to manage once they take management or control. The scope of a person's duty is influenced by the level of management or control they will have over the land and is discussed in more detail in section 3.2. For some persons, such as tenants that are not permitted to disturb the soil or use the groundwater, there may be no reason to share information on the presence of contamination if there are no further actions required to minimise risk of harm (for example the site owner has capped the contamination or removed borehole access).

Where the impact of the contamination is occurring offsite, then information may need to be shared with those who have responsibilities for managing and protecting the environmental values of those areas. For example, where contamination is migrating into the Yarra River, it may be appropriate to provide information to Melbourne Water, the Yarra River Keeper and other conservation groups, the Traditional Owners of the Yarra and significant users of the river (for example recreational fishers). Again, the purpose of sharing such information is to support further risk of harm reduction, it is not intended to be a mere disclosure of facts. The information must be targeted towards any action the recipients must consider to protect themselves, and the part of the environment over which they have some responsibility.

5.9.4 Shared information may need to be updated

For the provision of information to be an effective risk control measure, it may be necessary to provide updates to the recipients of the initial information when circumstances change, or new information is made available. Again, the scope of the information that must be provided is to be guided by considerations of how that information can help reduce the risk of harm to the offsite receptors.

5.9.5 Communicating information on risks of harm

Clear and timely communication on potential risks of harm is essential when undertaking investigations, building and maintaining trust with community, and managing expectations. For example, frequently the actual risks of harm are low due to the way individuals currently use their property. In this case, the community information should outline why and how the risks of harm are low in a clear and accessible manner.

Sometimes risk assessments identify the potential for unacceptable risks to human health from prolonged exposure to contamination. In these cases, it is important to consider the needs of the individuals or community receiving the information and ensure it is tailored to meet their concerns, is easy to understand, and available via multiple communication channels.

Where your investigation identifies a need to communicate with potentially impacted parties, EPA expects that appropriate communication and engagement strategies are developed that support open, transparent and timely communication. These plans may include information such as:

- Key stakeholders, including government and community. Consideration should be given to influencers such as respected and trusted members of the community or spokespeople.
- Proposed methods of communication at key milestones throughout the investigation, risk management and remediation phases
- Details for key contacts.
- Communication channels for providing information and data to impacted parties where necessary.
- Avenues for questions / requests for further information from affected stakeholders.
- Contingency planning for scenarios requiring additional support for example health impact assertions, communicating with different language groups.
- Documentation and record keeping ensuring that queries are responded to and closed out.

5.9.6 Record of information sharing

A duty holder that relies on sharing information as a risk control measure will need to keep a record of who the information has been shared with, to demonstrate how this measure has been effective. It may also be necessary to take steps to ensure recipients have understood the information provided to them. By maintaining such records, the duty holder should also be able to determine what, if any, updates may be needed in the future should circumstances change in relation to the contamination, or new knowledge is obtained.

5.10 Minimising risks of harm so far as reasonably practicable

Having identified risk minimisation options in line with the hierarchy of risk controls, a duty holder must select, and implement, all controls that are reasonably practicable to minimise the risks of harm and fulfil the requirements of the duty to manage.

Duty holders must consider the five factors set out in section 6(2) of the Act (indicated in Table 1, below), to determine what actions are reasonably practicable in their circumstances. To assist in understanding 'reasonably practicable' more generally, refer to [Reasonably Practicable](https://www.epa.vic.gov.au/about-epa/publications/1856) (publication 1856) (<https://www.epa.vic.gov.au/about-epa/publications/1856>).

To assist in demonstrating compliance with the duty to manage, duty holders should document the following, taking into account the matters listed in Table 1:

- the various risk controls they have considered to address the risk of harm
- the comparison between them that was conducted before deciding which action to undertake
- the action taken to eliminate or minimise the risk of harm.

This will demonstrate to EPA, or a person to whom management or control of the land will be shared or transferred, that the duty holder:

- has considered the alternatives
- has decided on the most appropriate control measures at this point in time
- is complying with the duty to manage, so far as reasonably practicable.

Information addressing the questions listed in Table 1 will inform evaluations of whether the proposed risk controls are reasonably practicable.

Table 1 Factors to account for when evaluating which risk control measures are reasonably practicable

Factor	Questions to consider
Likelihood	<ul style="list-style-type: none"> • How well do you understand the nature and extent of the contamination and how likely is it that receptors will be exposed? • How frequently will the land be disturbed (e.g. during maintenance, redevelopment of the site etc.)? • How likely is it that people will be exposed for the duration required for impacts to occur (acute or chronic)? • Where are the sensitive receptors in relation to the contamination and any predominant direction in which the contamination is moving or is likely to move?
Degree of harm	<ul style="list-style-type: none"> • Is the receiving environment already impacted by diffuse anthropogenic concentrations of the contaminants of concern? • What would the consequence of short- and long-term exposures be in the absence of risk controls?

Factor	Questions to consider
	<ul style="list-style-type: none"> • What would the consequence be of any failure in the proposed risk controls? • Are the contaminants present on the site highly toxic, persistent, bioaccumulating or possess any other property that makes them highly hazardous? • Can the contamination result in environmental impacts that are serious or irreversible? • What is the ecological significance of the receiving environment?
Knowledge about the risks of harm	<ul style="list-style-type: none"> • How well are the potential risks understood (based on your state of knowledge and what you should reasonably know about the risk)? • How well have risks from contamination been characterised? • What works were carried out to evaluate the risks and develop adequate risk controls? • What types of practices are being adopted in eliminating or reducing those risks on comparable sites? • What information exists in the public domain on this matter? • What guidance or compliance advice has been provided by EPA? • What is known about historical incidents?
Availability and suitability	<ul style="list-style-type: none"> • What technologies, processes and equipment are available to control the risk • What risks to the available technologies create? It is not uncommon for a remedial approach to mitigate a specific risk while creating another one.
Cost	<ul style="list-style-type: none"> • What is the cost of the risk control measures available in comparison to the degree to which the risks of harm would be reduced? • What would be the cost per unit reduction of risk for each control option?

Where more than one person is in management or control of the land, what is considered reasonably practicable may vary between the parties depending on the scope of their management or control of the land. A comprehensive environmental management framework (EMF) or environment management system (EMS) (for example accredited or in accordance with AS/NSZ ISO 14001) may provide one way of demonstrating how reasonably practicable risk control measures are being implemented where there is more than one person in management or control of the land, particularly where the levels of management or control change over the life of a project. Such an EMF or EMS can provide an opportunity for a duty holder to demonstrate how risks of harm have been eliminated or otherwise reduced so far as reasonably practicable at a point in time, as well as in the long term.

CASE STUDY: Selecting reasonably practicable risk controls to minimise risks of harm from contamination: Kinsella Chemicals Pty Ltd

Kinsella Chemicals operates several manufacturing facilities across Australia and New Zealand. Ju-Lin is the environment manager for Victorian operations. Having been briefed on the new Environment Protection Act 2017, Ju-Lin evaluates Kinsella Chemicals' operations to propose a compliance plan she will take to the company's CEO to approve.

Ju-Lin identifies one site of Kinsella Chemicals' sites where contamination is known to be present based on the due diligence assessment the company conducted before purchasing the site as a working site they intend to continue to operate. The due diligence assessment identified site records that indicate a number of large spills have occurred.

She ascertains that risk elimination in this case is not reasonably practicable in the circumstances based on the level of risks the contamination poses and the location of the contamination in relation to the established infrastructure. She then looks at how the risks of harm could be reduced so far as reasonably practicable based on the hierarchy of risks controls.

Ju-Lin identifies several hotspots that are suitable for onsite treatment of the soil, several areas where barriers can be used to minimise access to low-level contamination, and she writes a site management plan establishing policies and procedures, including training, on how contamination risks must be managed on the site. All this information can be made available to any future occupant or owner of the site should Kinsella Chemicals relinquish management or control of the site in the future.

5.11 Risk management recommendations in audits

Since the early 1990s, around 3,000 contaminated site audits have been completed in Victoria under the *Environment Protection Act 1970*. Around 75 per cent of these resulted in a statement of environmental audit being issued for the site.

Statement conditions provided in audits under the 1970 Act and recommendations in audits under the 2017 Act into the future will form part of the actions required to meet your duty to manage. The audit findings and conditions/recommendations form part of the knowledge base which your compliance approach must include. Where conditions were identified through an audit and remain relevant to the circumstances of the site, these need to be accounted for as part of your duty to manage.

Examples of the types of recommendations (previously conditions) in audit statements include:

- A note that groundwater is polluted and is not suitable for certain uses without prior testing for the suitability of intended use.¹⁰
- Ongoing future groundwater monitoring required to demonstrate contamination plume stability or assesses the potential changes of groundwater usage and hydrogeology altering the risk.

¹⁰ This may also be by a Groundwater Quality Restricted Use Zone.

- Requirements to install a vapour barrier to mitigate the risk of vapour intrusions.
- Developing and maintaining an environment management plan for the site.
- Maintaining a physical barrier, for example concrete, clay capping, clean fill covering over residual contaminated soil, to prevent access.
- Linking the audit outcome to a specific development plan and requiring any changes to development to be reviewed by an environmental auditor.

An environmental auditor may also present information in an audit report that does not form part of the audit decision and statement recommendations (or conditions) but that is relevant to the ongoing use of the site. For example:

- A requirement to appropriately decommission groundwater monitoring bores once no longer required.
- Reference to background/diffuse levels of contaminants in groundwater that are not attributed to the site, but may prevent some uses.
- Considerations around aesthetic aspects, including odour, minor residual asbestos fragments or inert material that is not considered to pose a risk to human health.

It is important to note that while the outcome of audits is based on the best available knowledge and ensuring appropriate action at the time of completion, knowledge surrounding contamination and industry assessment and remediation practices continue to evolve. Therefore, some of the older audits do not address all risks of harm to a level consistent with the current state of knowledge. For example, prior to the year 2000, audits did generally not include groundwater investigations; vapour intrusion risks emerged as a matter for audits around 2010; and consideration the presence of PFAS began around 2015.

Therefore, when relying on environmental audit recommendations as part of your compliance approach with the duty to manage, some consideration is required of the age of audit report and recommendations and whether some additional inquiry is needed.

6 Review controls

Review risk control measures



6.1 Overview

The final step in fulfilling the duty to manage is to undertake periodic review of the selected risk control measures to ensure they remain effective in reducing the risks of harm so far as is reasonably practicable. In the context of contaminated land management, this also includes ensuring that any remedial works undertaken to minimise risks are properly validated. For example, where *in situ* treatment has been adopted – checking that it has worked; where engineering controls have been adopted – periodically checking to ensure they are operating effectively.

This step cover two main themes:

1. Ensuring risk controls measures are and remain effective; and
2. The circumstance that may trigger the need for further action (for example starting back at Step 1 – identify hazards).

6.2 Validating risk control measures

Checking risk controls (and being able to effectively demonstrate that risk controls have been checked) is a key regulatory requirement. Depending on the nature of the controls, different types of checks will be required, and the frequency of control checks will likely also vary.

When risk controls involve the treatment or removal of contamination, the key control check is validation sampling, which is to be carried out in a manner consistent with a recognised sampling method (for example AS-4482 for soil). In some cases, validation sampling occurs over a period of time (or example ongoing groundwater sampling after remediation).

When risk controls involve engineering controls (refer to section 5.8), there is often a requirement to monitor the performance of the system, which may include the development of an ongoing monitoring and maintenance plan. A record of conducting such monitoring needs to be documented and stored if it is to form part of your compliance approach and should be available to share any time EPA asks to see a copy.

For administrative controls (refer to section 5.9) checking the effectiveness of the controls is particularly important. Internal systems must be developed to ensure that the administrative controls are followed. When relying on administrative controls to demonstrate compliance, keeping a written record will support you to demonstrate how the controls are working, for example under a site or environment management plan.

In some circumstances, it is appropriate to monitor the fate and transport of groundwater contamination as part of *both* assessments of groundwater contamination and implementing management controls. Monitoring can also provide information on the contamination that may be appropriate to share with others who may be affected by the contamination.

6.3 Changes in circumstances

There are five general circumstances in which a review of your risk control measures will be required:

- if you become aware that the risk control measure is not operating as intended or is not as effective as you initially assumed
- before any alteration is made to the site that could change the risk profile of the contamination that remains on the site
- if new or additional information about the nature, extent, or mobility of the contamination becomes available
- if any incident or unexpected event that involves the contamination takes place or occurs in an area where contamination remains on the site
- if, for any other reason, the risk control measures do not adequately control the risks.

Having a documented control measure option analysis will also be beneficial for the duty holder when reviewing control measures in the future. For example, a control measure that is not practicable now may become feasible for implementation in the future.

6.4 Frequency of conducting reviews

Evaluating risk controls is a dynamic process. Regular evaluation helps to identify whether risk reduction measures are still appropriate. It also helps to determine if measures can be improved upon to comply with the duty to manage in a way that is reasonably practicable.

Generally, the higher up the risk control hierarchy from which the risk control measure has been selected, the less frequent the need to review those controls, with actions that eliminate the risk requiring no further review. The review of controls such as engineering and containment actions will need to be undertaken in line with any recommendations made around the implementation of those measures, including reference to any relevant standards.

Administrative controls will require much more frequent review to verify that they are working and remain effective, and whether there are any new (and/or more reasonably practicable) controls available. For example, training as a control measure must be conducted as often as new people commence at the site, and refresher training may be required periodically to ensure those who have already received training can recall the policies and procedures and demonstrate their understanding and adherence to them.

7 Documenting your compliance with the duty to manage

EPA expects that on request, duty holders will be able to provide evidence of their compliance with the duty to manage. While there are references throughout this guideline to that expectation, EPA plans to provide further details on expectations of documentation in a future version of this guideline.

8 Applying environment protection principles to contamination

Chapter 2 of the Act sets out **eleven principles of environment protection**. These principles are intended to guide the administration of the Act and may assist you in anticipating what EPA's expectations are for meeting your duty to manage.

This section provides an outline on how each principle may be applied in relation to contamination to help guide your compliance response.

8.1 Integration of environmental, social and economic considerations

Environmental, social and economic considerations should be effectively integrated

Land and groundwater play an important role in supporting a healthy and vibrant environment, economy and society. In many contexts, land and groundwater may be considered scarce resources. Both arable land and urban land proximate to infrastructure and services are finite. As climate change impacts threaten access to water, groundwater may become an increasingly important resource for communities.

Maximising the availability of land and groundwater will be enhanced by understanding and addressing contamination issues that threaten the environmental values of land and groundwater.

The disruptive impact of risk elimination or reduction (risk management) actions themselves, however, can come with corresponding adverse social and economic impacts that must also be considered. Risk management actions may increase environmental risk for a period or in the final outcome if the range of adverse impacts is not considered and addressed. For example, topsoil can take hundreds of years to develop and represents a vital resource for maintaining biological functions. Wholesale removal of topsoil as a means of addressing minor contamination may result in a poorer overall environmental outcome. Similarly, a largely intact ecosystem may be sufficiently resilient to allow levels of contamination, whereas invasive remediation to remove the contaminants may unreasonably disrupt that ecosystem.

Similarly, there needs to be due consideration for the social and economic wellbeing of people being affected by decisions around contaminated land.

A disproportionate response to contamination risks – such as completely shutting down an operation on site due to some contamination – may not justify the adverse impact on the livelihood of the occupants.

8.2 Proportionality

A decision, action or thing directed towards minimising harm or a risk of harm to human health or the environment should be proportionate to the harm or risk of harm that is being addressed.

The principle of proportionality is embedded within the duty to manage through the factors making up what is 'reasonably practicable'. This phrase creates a five-factor framework for identifying risk control measures that balance the magnitude of the risk of harm with the costs of reducing those risks (refer to section 5.10).

The principle of proportionality is fundamental both to how you are expected to identify and implement risk control measures under the duty and how EPA will determine remedial action (for example through notices) where the risks of harm are not being adequately addressed.

8.3 Primacy of prevention

Prevention of harm to human health and the environment is preferred to remedial or mitigation measures.

In the context of the Act, prevention means stopping something from happening in the first place, such as avoiding the activities or circumstances that lead to harm, including contamination of land and groundwater. The primary objective of the general environmental duty is to eliminate risks of harm to human health and the environment by avoiding activities that give rise to the risk that such harm may occur. A consequence of meeting the general environmental duty will be the *prevention* of more contaminated land and groundwater.

The duty to manage, on the other hand, creates a duty that aims to identify when remedial and mitigating actions are required to minimise the risk of harm, that has been caused by *previous* decisions, actions or activities. Therefore, in the context of the broader contaminated land scheme, prevention of harm, and the risks of harm, to land and groundwater in the first place should always be considered a priority over the use of remedial or mitigating measures after harm has occurred.

8.4 Shared responsibility

Protection of human health and the environment is a responsibility shared by all levels of Government and industry, business, communities and the people of Victoria.

The duty to manage itself provides an example of how the principle of shared responsibility is translated into practice. By making it a duty applicable to those in management or control of land, which may be more than one person, the duty aims to spread the responsibility as widely and fairly as possible, given the constraints imposed by property and access rights.

The right to seek reasonable costs incurred from the person who caused or contributed to the contamination also embodies the principle of shared responsibility. Finally, risk management actions that include sharing of information

represent a way in which responsibility can be effectively shared across the community by ensuring people have access to reliable information upon which to make their own decisions.

In areas with widely dispersed contamination, for example in the Goldfields region of Victoria, all members of the community must play a role in minimising the risks of harm from the presence of arsenic and mercury, through their management or control of land and by moderating their activities to minimise exposure to themselves and others.

8.5 Polluter pays

Persons who generate pollution and waste should bear the cost of containment, avoidance and abatement.

The polluter pays principle continues to be an important principle for contaminated land and groundwater. The principle informs the regulatory decisions made by EPA when taking remedial and compliance action. Regarding the duty to manage, it has a more specific application as the principle is embodied in the right to recover reasonable costs from a person who caused or contributed to the contamination.

One of the purposes of this guideline is to set out a clear standard of conduct for meeting the duty to manage to help inform what reasonable costs may be recovered by a person who must meet this duty from those who caused or contributed to the contamination.

EPA retains powers under sections 273 and 274 of the Act to issue remedial notices directly against a person who has caused or contributed to contamination that poses on or off-site risks to human health or the environment. This includes any person EPA reasonably believes caused or permitted the contamination, or the owner or occupier of the land at the time the contamination first came into being.

8.6 Waste management hierarchy

Waste should be managed in accordance with the following order of preference, so far as reasonably practicable: (a) avoidance; (b) reuse; (c) recycling; (d) recovery of energy; (e) containment; (f) waste disposal.

As outlined in section 5.7, the waste management hierarchy places waste disposal as the *least preferred action* in relation to waste. When applied to the duty to manage, duty holders should seek to manage waste generated from a contaminated site by applying the hierarchy in its correct order: avoiding the generation of waste in the first place (for example through *in situ* treatment), reusing contaminated soil onsite when appropriate to do so, recycling soil (for example through treatment) as an alternative to disposal, and retaining waste soil on-site as an engineering control to meet the duty to manage.

EPA recognises that there is a wide range of drivers that are important to making decisions around development of a contaminated site. Consideration of the waste management hierarchy should be included in the decision-making process as part of such actions.

8.7 Evidence-based decision-making

Actions or decisions under this Act should be based on the best available evidence in the circumstances that is relevant and reliable.

The assessment of contaminated land and the process of identifying risk control measures under the duty to manage must be based on the best available evidence. Duty holders should seek to avoid decisions made on the *perception of risk* alone and be clear on the evidence that supports one or more risk management options.

8.8 Precautionary principle

If there exist threats of serious or irreversible harm to human health or the environment, lack of full scientific certainty should not be used as a reason for postponing measures to prevent or minimise those threats.

Contaminated land risks by, their nature, carry a large degree of uncertainty: pollution sources are often not known, or poorly understood, and significant amount of assessment is required to really understand the nature and extent of the contamination.

Assessing the full extent of an impacted site or aquifer, or at least completing a reliable assessment, can take long periods of time – sometimes in the order of years and decades – before the true extent and risks can be appreciated.

When there is reason to believe that contamination creates a risk of **serious** or **irreversible** harm then you must need start mitigating the risk *before* you complete your multi-year assessment. Waiting until a more complete understanding of the extent of the contamination is known or the degree of risk fully understood must not be used as an excuse for taking reasonable and proportionate action giving regard to the degree of seriousness and irreversibility of the contamination.

Section 5.4 of this guideline provides information on what types of preliminary measures must be taken when embarking on a longer-term assessment of contamination. This may also include avoiding new or the enhanced exposure pathways in circumstances where there is uncertainty about the contamination context (for example installing habitable basements in areas where the presence of vapour risks is higher).

The precautionary principle may also inform our approach to managing risks of harm arising from *emerging contaminants* and for well-understood contaminants in situations where changing circumstances mean new exposure pathways are being created (for example the increased addition of basements in inner-city areas).

Emerging contaminants are those where there is reasonable cause to believe that a risk of harm may arise from those substances, but where the scientific understanding has not yet reached a state whereby clear standards can be determined. As information increases for a given substance, EPA's expectations on how the risks of harm are assessed and responded to under the duty to manage will also increase (that is the state of knowledge informs expectations).

The first step to addressing an emerging contaminant is by engaging in monitoring to understand the nature and extent of the substance of interest. Emerging contaminants, as well as contaminants where the longer-term effects are not fully understood, need to be actively managed, exposure avoided, and containment pursued in line with the precautionary principle.

8.9 Equity

(1) All people are entitled to live in a safe and healthy environment irrespective of their personal attributes or location.

(2) People should not be disproportionately affected by harm or risks of harm to human health and the environment.

(3) The present generation should ensure the state of the environment is maintained or enhanced for the benefit of future generations.

Contaminated land and groundwater can represent an intergenerational issue. Reference to contamination as a 'legacy' issue refers to this intergenerational dimension because some contaminated sites have the potential to generate a risk to human health and the environment for decades or even hundreds of years.

The primary goal of the duty to manage is to ensure the environment and the community, both its current and future members, are protected from risks of harm arising from the presence of the contamination, however it may have arisen.

Management of contaminated land and groundwater also plays an important role in securing a safer and healthier environment for future generations. Risk control decisions made under the duty to manage should be regarded as delivering a benefit to the community as a whole.

When creating strategies to minimise risks so far as reasonably practicable, it is not sufficient to only think of the next few years. Persons in management or control of contaminated land need to pay due regard to the legacy issue that they are addressing and whether what they are doing now is appropriate in terms of addressing risks for future generations. When EPA provides advice or requires remedial action, it must give regard to the long-term impact of contamination, including how current circumstances may change and impact future generations.

8.10 Accountability

Members of the public should—

(a) have access to reliable and relevant information in appropriate forms to facilitate a good understanding of issues of harm or risks of harm to human health and the environment and of how decisions are made under this Act; and

(b) be engaged and given opportunities to participate in decisions made under this Act, where appropriate to do so; and

(c) have their interests taken into account in decisions made under this Act.

The duty to manage embodies the principles of accountability – both in terms of ascribing accountability to those in management or control of land, as well as setting out expectations on sharing information regarding the presence of contamination to enable an affected person to make informed decisions.

8.11 Conservation

Biological diversity and ecological integrity should be protected for purposes that include the protection of human health.

Meeting your duty to manage must consider both human health and environmental impacts when identifying appropriate risk control measures. All land and groundwater is intricately linked to the environment and the functioning of ecosystems.

Decisions around managing contaminated land risks must recognise these links. Aspects of biological diversity and ecological integrity may be incorporated into a conceptual site model as part of assessing the risks of harm that may arise from contamination present on, or migrating from, your land.

PROPOSED GUIDELINE

9 Appendix A: Overview of the contaminated land provisions in the Act and the role of this guideline

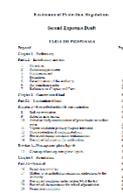
9.1 Role of this guideline in supporting the duty to manage:

The key documents of the contaminated land scheme that help set compliance standards are:



Environment Protection Act 2017

- Establish legal obligations regarding contaminated land, including the duty to manage contaminated land.
- Defines 'contaminated land'.
- Establishes remedial powers for EPA.
- Establishes the environment audit and auditor scheme.
- Creates rights for third parties to address contaminated land matters.
- Specifies compliance requirements in relation to non-aqueous phase liquids.
- Sets out the principles of environment protection.



Environment Protection Regulations 2021

(<https://www.legislation.vic.gov.au/as-made/statutory-rules/environment-protection-regulations-2021>)

- Extends the roles of environmental auditors.
- Specifies compliance requirements in relation to non-aqueous phase liquids.
- Define 'notifiable contamination'.



Environment Reference Standard (ERS)

(<http://www.gazette.vic.gov.au/gazette/Gazettes2021/GG2021S245.pdf>)

- Provides a reference standard to assist in characterising what is important and valued in the environment and for human health.
- Lists indicators and associated objectives for four environmental elements: ambient air, ambient sound, land, and water.
- Environmental auditors that are engaged to assess contamination must have regard to the reference standards for land and groundwater set out in ERS.



Contaminated Land Policy (<https://www.epa.vic.gov.au/about-epa/publications/1915>)

- Sets out the principles and purposes of the contaminated land scheme.
- Outlines EPA's approach to administering the scheme.
- Provides stakeholders with an understanding of how EPA will approach contaminated land matters.



EPA position statements, positions and interim positions

- EPA can propose a formal opinion on how a provision of the legislation would apply in specified circumstances or how EPA will exercise a discretion under the Act. These are formal legal instruments known as 'position statements' and require public consultation.
- EPA may also publish general information on its position on any relevant matter, including contamination risks and controls, including interim positions.



Assessing and controlling contaminated land risks (this guideline)

- Sets out practical guidance on how to meet the duty to manage for persons in management or control of contaminated land.
- Sets the standard of conduct expected by EPA to meet the duty to manage.



Other EPA guidance

- A range of EPA guidance addresses foundational concepts that apply to a number of duties, such as the expression 'reasonably practicable'.
- Such guidance may be of assistance when developing a compliance approach to the duty to manage for circumstances not specifically covered by this document.



Other guidance

- For topics or circumstances not covered by EPA's guidance it may be appropriate for duty holders to look more broadly for information that represents the current state of knowledge on those matters.
- From time to time, EPA may incorporate reference to other sources of information to assist duty holders.
- Where relying on non-EPA guidance it is important to note that where any inconsistency arises between the non-EPA guidance and the Act, the Act prevails.

9.2 Duty to notify of certain contaminated land

Some circumstances of contamination must be reported to EPA under the duty to notify of contaminated land (section 40). While this duty *complements* your duty to manage it does not replace it.

Importantly, where you are required to notify EPA, you must provide information on your management response, or proposed management response, in relation to that contamination. This guideline can assist you in preparing that response.

In some instances, a duty holder may only become aware that they have notifiable contamination as a result of having taken steps to meet their duty to manage. As part of meeting your duty to manage, you should include consideration of how you will determine whether or not your contamination meets the criteria under Chapter 2 of the Regulations for 'notifiable contamination'.

For more information on the duty to notify (DtN), refer to *Notifiable contamination: duty to notify of contaminated land*, to be released by EPA before 1 July 2021 and

made available via www.epa.vic.gov.au, and [Contaminated Land Policy](#) (publication 1915) (<https://www.epa.vic.gov.au/about-epa/publications/1915>).

9.3 General environmental duty

While the Duty to Manage is the primary obligation for addressing risks of harm from contamination, those who engage in an activity that involves contaminated land must also comply with the GED. Where an activity involving contaminated land may give rise to a risk of harm, then the person engaging in that activity must minimise the risks of harm so far as is reasonably practicable.

While this guidance helps to identify the risks of harm and how they might arise, it is recommended that risks that could arise from an activity involving contaminated land (for example developing an old industrial site) are integrated into broader compliance with the GED. In particular, the risk identification and management actions set out in section 25(4) of the Act should include consideration of contamination risks as part of your compliance approach to activities you engage in on contaminated land.

In particular, EPA's sector guides should be consulted to help identify risks of harm that are commonly associated with these different sectors, with the aim to also prevent contaminated land.

<https://www.epa.vic.gov.au/for-business/find-your-industry>

You should also consider including your approach to minimising risks of harm from activities involving contaminated land in accordance with [Assessing and controlling risk: A guide for business](#) (publication 1695) (<https://www.epa.vic.gov.au/about-epa/publications/1695-1>).

9.4 Environment Protection Regulations 2021

9.4.1 Non-aqueous phase liquids (NAPL)

Regulation 15 of the Regulations requires that:

A person in management or control of land where a non-aqueous phase liquid is present in soil or groundwater must, so far as reasonably practicable—

- (a) clean up the non-aqueous phase liquid; and*
- (b) if the source of the non-aqueous phase liquid is located on the land, remove or control the source of the liquid.*

Compliance with regulation 15 forms a mandatory obligation as part of your duty to manage under section 39, meaning that it should form part of your actions under that duty.

The key aspect of regulation 15 is that it **prescribes** that part of your compliance approach **must** include the cleanup of the NAPL and removal or control of the source of the NAPL on your land where reasonably practicable.

For example, you cannot rely solely on natural attenuation of the NAPL as a risk control measure where it remains reasonably practicable to directly remove the NAPL, including its source.

See [The cleanup and management of polluted groundwater](https://www.epa.vic.gov.au/about-epa/publications/840-2) (publication 840) (<https://www.epa.vic.gov.au/about-epa/publications/840-2>) for more information on what EPA expects in relation to NAPL. This publication is currently under revision to reflect the new legislative framework. It will be released soon. Further guidance is being considered on this aspect of compliance.

9.4.2 Retention of soil sourced on-site from contaminated land

An option for managing the risks of harm from contamination may be to relocate soil sourced from on-site to another area of the **same site**¹¹, in such a way that minimises the risks of harm to human health and the environment.

If you elect for on-site retention, then regulation 12 of the Regulations requires you to notify EPA of this approach to managing risk of harm from onsite retention in your management response (refer to the Duty to Notify guideline, which once published will be available at epa.vic.gov.au), as this approach will meet the definition of 'notifiable contamination' in Chapter 2 of the regulations.

A development licence under EPA's Permissions scheme may be required for retention of more than 1,000 m³ of soil sourced from contaminated land as this activity is identified under Schedule 1 of the Regulations as a development licence activity (see Item L02).

9.4.3 Contaminated land management and waste management

The Act establishes distinct waste and contaminated land obligations. Depending on the circumstances one or both may apply.

Where there is no opportunity to safely reuse the soil as part of site development, then it will meet the definition of 'waste' as it will be regarded as 'surplus'. Once excavated from the land from which it was sourced, then the waste duties in Chapter 6 of the Act and Part 4 of the Regulations will govern what obligations apply. Further, waste duties of the Act apply when the soil also fulfils the definition of 'industrial waste' (for example if the soil is generated from commercial development of a site). For waste soils, this means that any waste soils arising from commercial, industrial or trade activities is considered an industrial waste. Any waste soil being transported for fee or reward is also industrial waste.

Where soils are sourced from contaminated land, and are a waste, they must be classified in accordance with regulation 62 as soon as practicable.

EPA has published a range of guidance to support compliance with each part of the Act. See www.epa.vic.gov.au.

¹¹ Site is defined in the Act to mean specified land or parcel of land.

9.5 Environment Reference Standard

The Environment Reference Standard (ERS) defines important qualities of the environment in Victoria, for the community, government, and industry. The ERS:

- identifies environmental values that the Victorian community want to achieve and maintain
- provides a way to assess those environmental values in locations across Victoria.

An environmental value means aspects of the environment and how we use it, that are important to us. It is an outcome Victorians want for human health and the environment.

EPA will use the ERS as a guiding reference in many situations. This includes when we:

- monitor and assess environmental quality
- identify and respond to threats to the environment and human health
- take opportunities to improve environmental quality
- provide advice and recommendations to other decision-makers.

Importantly, the ERS is a reference tool to help make decisions - it does not create specific obligations, set out compliance limits the law can enforce, or infer a level that is acceptable to 'pollute up' to.

The ERS may assist in interpreting the definition of contaminated land in section 35 of the Act for a particular location. [Contaminated land: Understanding section 35 of the Environment Protection Act 2017](#) (publication 1940) (<https://www.epa.vic.gov.au/about-epa/publications/1940>) provides information on how to consider the ERS in the context of the definition.

Environmental auditors **must** consider the ERS when carrying out their functions. This includes when doing preliminary risk screen assessments and environmental audits in relation to contaminated land. For auditors, the ERS is a reference tool to help identify potential risks of harm from the presence of chemical substances in the environment. In some circumstances, aesthetic aspects will also be relevant to the management of contaminated land. The ERS sets out various indicators and objectives relating to such environmental values.

In line with the scope of an audit, the ERS may help auditors to determine if they need to recommend further investigation, assessment, remediation, and management. However, the ERS is not exhaustive of all chemical substances and does not include standards or sources of information for all considerations for contaminated land. Some risks of harm may not be covered by the ERS and auditors will need to provide recommendations based on appropriate alternative guidance within the state of knowledge. Examples of circumstances that may require consideration beyond the ERS include:

- acute and physical risks to human health and the environment

- pathogenic materials and waste, radioactive substances, unexploded ordnance and explosive gas mixtures on and under land
- the potential for land contamination to impact water
- the presence of chemicals or exposure pathways other than those set out in the ERS
- criteria to support the assessment of indicators for agricultural land use, stock watering and irrigation
- the potential for or measurement of the accumulation of chemicals into food for the general population.

The ERS may also assist those who manage or control contaminated land to understand the risks of harm from contamination of land and groundwater, and to prioritise risk management actions.

9.6 Environmental audit

Environmental auditing remains an important element of Victoria's contaminated land regulatory framework by providing access to expert support and assurance in relation to contaminated land assessment and management.

Under the new approach, before commencing an environmental audit, auditors will be required under section 208(3) of the Act to submit a proposed audit scope, if not already provided by a prior preliminary risk screen assessment on the same parcel of land. It must include:

- the elements of the environment the audit assesses, such as land, water, air and/or noise
- consideration of the standards and reference documents in the audit and
- any exclusion from the audit and the reason for exclusion known at the time of scoping the audit.

When audits are specifically for land use considerations (such as under the planning scheme), the scope must also identify the current or proposed site use. This extra requirement is for audits that support land use planning decisions and aligns with the 53X audit requirements under the 1970 Act.

The outcome of an environmental audit will be:

- An environmental audit statement, which must include, amongst other things, the results of the audit and any recommendations; and
- An environmental audit report, containing a review of all relevant information the environmental audit collected and the reasons for the findings.

The information describing the nature and extent of contamination and the recommendations will help inform what, if any, actions (for example maintain a vapour barrier, groundwater monitoring) are expected of a person in management or control of the audited site, under their duty to manage.

Further information on the environmental audit scheme can be found at www.epa.vic.gov.au/for-business/find-a-topic/environmental-audit.

9.7 Site management orders

The Act provides EPA with the power to issue Site Management Orders (SMOs) under section 275 of the Act to ensure long-term management of contamination on a site. The effect of a SMO is to mandate specific management actions to minimise the risks of harm associated with contamination that remains on a site. The existence of the SMO is noted on the title of the property.

Where an SMO is in place, a duty holder should incorporate compliance with the SMO into their broader compliance with the duty to manage. For example, an SMO will generally include requirements to provide information on the SMO to any future owner or occupier of the site, which may parallel actions otherwise taken under section 39(2)(e).

Compliance with the SMO and the duty to manage represent distinct requirements under the Act, however, compliance with the SMO conditions will satisfy part, and in some cases all, of the requirements under the duty to manage.

Some of the measures recommended by an environmental auditor upon completion of an environmental audit under Part 8.3 of the Act may subsequently be translated into a SMO for that subject site. In all other instances, the recommended measures from an environmental audit should be incorporated into the compliance approach under the duty to manage (see section 5.11 for further details).

EPA's approach to the issue of SMOs will be set out in future guidance, to be released before the issue of any SMOs.

9.8 Other relevant legislation

Contaminated land is also regulated under other legislative schemes. This guideline contributes to the state of knowledge for contaminated land assessments conducted under those other schemes such as:

- environment effects statements under the *Environment Effects Act 1978*
- strategic and statutory planning proposals applications under the *Planning and Environment Act 1987* (P&E Act)
- work plans prepared under the *Mineral Resources (Sustainable Development) Act 1990*
- disclosures under the *Sale of Land Act 1962* (for example, disclosure of any notices, property management plans, reports or orders that have been issued in relation to livestock disease or land affected by contamination from agricultural chemicals as part of a sale of agricultural land).

The P&E Act, in particular through [Ministerial Direction 1](#), (https://www.planning.vic.gov.au/__data/assets/pdf_file/0018/101718/Ministerial-Direction-Section-12-No.1-Potentially-contaminated-land.pdf) has sought to ensure that before 'sensitive use' occurs on 'potentially contaminated land'¹², that a rigorous assessment and, if needed, clean up of the contamination must take place. Sensitive use means the use of land for residential purposes, primary and pre-schools and childcare.

Councils and other decision-makers under the P&E Act have played, and will continue to play, a critical role in protecting the community from contamination risks through the planning permit system and the zoning of land. For example, councils will continue to require assessment of potentially contaminated land before that land can be zoned for a sensitive use, or place Environmental Audit Overlays to ensure the assessments take place before sensitive uses occur.

¹² defined in the planning scheme as land previously used for industrial or mining purposes, or primarily used for the storage of chemicals, gas, wastes or liquid fuel.

'Potentially contaminated land' under the P&E Act

In this guideline, reference is made to the potential for land to be contaminated. This expression is in recognition of the fact that until sampling (of soil, water, groundwater) is undertaken, the presence of contamination can only be inferred by reference to historical land use and visible indicators of contaminating activities – such as old infrastructure.

The Planning and Environment Act 1987 establishes a system of land use planning and approvals, including through Ministerial Directions and the Victoria Planning Provisions. In the context of that scheme, the expression 'potentially contaminated land' has a specific meaning describing certain past land uses (such as mining and industrial) and activities (such as storage of chemicals), which once identified, may require additional processes to be performed before a planning decision can be made for such land and its future use. In that regulatory setting, land is presumed to be contaminated based on its history of use, until the planning decision-maker is satisfied otherwise (for example through completion of an environmental audit) or where zoning changes are accepted but only on the condition that development of the land for a sensitive use includes further investigation being undertaken. Planning General Practice Note 30 (Potentially Contaminated Land, June 2005) (under revision with an update to be released to align with the Environment Protection Act 2017) provides guidance on how to identify if land is potentially contaminated and includes indicative land uses and their potential risk of contamination.

The guidance that supports the planning scheme approach to considering contamination risks in planning decisions may be of assistance to meeting the duty to manage under the Environment Protection Act 2017. It is important, however, to recognise the different legislative intent of guidance supporting the planning scheme as compared to EPA-issued guidance on contaminated land (or other guidance specific to contaminated land referred to therein).

EPA continues to support the role of councils and decision makers in the planning scheme by maintaining the standards of the environmental audit scheme, which provides for consistent and high-quality assessments of potentially contaminated land. EPA's [environmental audit scheme](https://www.epa.vic.gov.au/for-business/find-a-topic/environmental-audit) (<https://www.epa.vic.gov.au/for-business/find-a-topic/environmental-audit>), in place since 1989, continues with some improvements under the 2017 Act.

EPA also continues to provide advice to councils and planning decision-makers on strategic land use decisions. Updated Victoria Planning Provisions related to contaminated land, and supporting documents, are published by the Department of Environment, Land, Water and Planning and EPA to accommodate the new Act.