

Contaminated land—EIS information guideline

Introduction

This guideline advises proponents about the information and assessment requirements in relation to contaminated land when preparing an environmental impact statement (EIS). Some terms that are highlighted in italics in this guideline are defined or explained in the glossary at the end of the guideline.

Legislation and policy

The Queensland *Environmental Protection Act 1994* (EP Act), particularly Chapter 7, Part 8, regulates the investigation, reporting and management of contaminated land. When a statutory *contaminated land investigation document* is required, the document must be prepared by a *suitably qualified person*, and certified by an *auditor*.

However, the investigation of contaminated land for an EIS does not necessarily require the formal submission of a contaminated land investigation document to the department. Nevertheless, the proponent is advised to engage a suitably qualified person to prepare the contaminated land section of the EIS if any part of the project site is:

- listed on the [environmental management register](#) (EMR) or the [contaminated land register](#) (CLR)
- possibly contaminated
- a location that has been used for a *notifiable activity* listed in Schedule 3 of the EP Act.

The suitably qualified person would ensure that the investigation and any statutory notifications or reports that may result from the investigation are carried out as required by Queensland legislation and in accordance with the [National Environment Protection \(Assessment of Site Contamination\) Measure 1999](#) (contaminated land NEPM). If the proponent intends to formally submit a contaminated land investigation document to the department, they should also engage an auditor as soon as possible. Detailed information about the roles of suitably qualified persons and auditors is provided in the Department of Environment and Science's (the department's) [Queensland auditor handbook for contaminated land](#) (DES 2018).

The following sections explain how to assess potentially contaminated land for an EIS.

What should the EIS address?

The EIS must be sufficient to:

- identify the extent of existing potential contamination within the project footprint
- identify new potential sources of contamination that the project might cause
- determine potential contaminants of concern
- identify potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air)
- identify potential human and ecological receptors
- assess the risk of environmental harm that the project might cause due to disturbing existing contamination or causing new contamination
- assess whether there would be residual contamination after the project completes its operations
- assess the risk of environmental harm due to residual contamination
- propose practical measures to avoid or manage any risk of environmental harm due to contamination.

The investigation and assessment of existing contamination should proceed in stages. Progress from one stage to the next will depend on what is found, and be in proportion to the risks of environmental harm. For example, if the initial investigation stage indicates the site has never been contaminated, there would be no need to progress to soil and water sampling targeted at identifying contamination. Nevertheless, the EIS should establish the site's baseline soil and water conditions—see the department's guideline's [Land— EIS information guideline](#) (DES 2022) and [Water— EIS information guideline](#) (DES 2022) for further advice.

The contaminated land NEPM provides advice on how to investigate and assess in stages, but in one respect the process may be varied. In Queensland, investigation in accordance with the contaminated land NEPM usually

covers the whole land parcel because the process usually relates to whether the lot should be listed on the EMR or CLR. For very large grazing properties, investigating the whole lot could be onerous if a resource project would only disturb, and have control over, a small portion of the lot. Consequently, investigating and assessing contaminated land for an EIS can be limited to the project's footprint and any of its surrounds that the project might influence.

The following sections outline the staged investigations for an EIS. The *Initial investigation* section describes the minimum effort expected for the EIS even if the other stages of site investigations prove not to be required.

Existing condition of the site

Initial investigation

Search the CLR and EMR to see whether they list any land parcels on the project site or adjacent to it. If relevant land is listed, investigate and describe the reason(s) for the listing.

Use sources such as historical aerial and ground photographs, title deeds, local histories, trade directories, and interviews with current and past owners, operators and occupiers to develop and provide a history of the site's previous land uses and activities, particularly those that might have caused contamination, such as a notifiable activity.

Inspect the site, and identify its characteristics, including current land use(s), layout, topography, geology and hydrogeology. Look for indications of past activities that might have contaminated the land, particularly at any locations indicated by the site's history. Describe the project site's characteristics and assess whether the site has, or potentially has, contamination.

If the site's characteristics or history indicate or suggest that contamination has occurred, progress to a preliminary site investigation of the project site.

Preliminary site investigation

In accordance with the contaminated land NEPM, the preliminary investigation should be sufficient to:

- identify potential sources of contamination and determine potential contaminants of concern
- identify areas of potential contamination
- identify potential human and ecological receptors
- identify potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air).

Undertake preliminary sampling and analysis of soil, water and/or air. Develop an initial conceptual site model (CSM) that represents site-related information regarding contamination sources, receptors and exposure pathways.

If the site has, or may have acid sulfate soils, investigate the extent of the actual or potential acid sulfate soils as outlined in the department's [Land— EIS information guideline](#) (DES 2022), and integrate the assessment with the sections in the EIS that address land, soil and coastal issues.

Describe the results of the PSI and the initial CSM in the EIS. If the results demonstrate that the site is not contaminated, preliminary site investigations may stop. Otherwise, progress to a detailed site investigation.

Detailed site investigation

If the preliminary site investigation indicates that contamination is, or is likely to be, present, undertake a risk assessment to determine whether the contamination is likely to cause environmental harm due to the proposed activity.

If there would be a risk that contamination might migrate, or result in a risk to human health or the environment, undertake a detailed site investigation, over the area of the project's influence, in accordance with the contaminated land NEPM. Also, with reference to Module 6 of the [Queensland auditor handbook for contaminated land](#) (DES 2018), determine whether the project needs to submit a contaminated land investigation document to the department.

Describe and illustrate (with data tables, maps, diagrams and cross-sections at suitable scales) the location(s) of any existing contamination, and the quantities or concentrations of contaminants in all relevant media (soil, sediment, groundwater, surface water, air, etc.).

Refine and describe the CSM using the information gained in the detailed site investigation.

Potential impacts

Using information obtained by the site investigation(s), the EIS must assess the following matters:

- the risk of the project causing environmental harm by disturbing any existing contamination.
- the potential for the project to cause new contamination of land
- the risk of environmental harm due to new contamination
- whether the project would result in residual contamination of land after the operations cease
- the risk of environmental harm due to residual contamination.

Describe and quantify the project's potential sources of solid, liquid or gaseous contaminants. Include any activity that could have a detrimental impact on land contamination, not only those notifiable activities that could result in the land being entered on the EMR or the CLR.

Assess the extent to which proposed activities might cause new land contamination. Describe the baseline conditions of the various media (e.g. soil, sediment, surface water, groundwater, air, etc.) and assess the potential contaminating impacts on them. Identify likely dispersion pathways. Identify and describe the location of any *sensitive land use* within the area, both on and off the project site, that might be impacted by dispersed contaminants from the project and its proposed activities. For all media (soil, sediment, groundwater, surface water, air, etc.), assess the potential exposure of sensitive receptors to contaminants. Assess the risks that contamination generated by the project might pose to human health and the environment.

Assess, describe and illustrate whether the project's activities present the potential risk of contamination moving onto the relevant land from any offsite sources of contamination (e.g. due to changes in groundwater levels).

Assess how the levels of contaminants would impact on all current and foreseeable future land uses of the site, while taking account of the likely extent that the contamination can be remediated.

Determine whether there is *prescribed contaminated land* (see section 389(4) of the EP Act).

Assess the levels of contaminants against applicable criteria considering all relevant environmental values, including human health, amenity, and ecological values. Derive environmental values for water by considering such sources as the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP(Water and Wetland Biodiversity)), [Australian and New Zealand Guidelines for Fresh and Marine Water Quality](#) (ANZG 2018) and the Queensland water quality guidelines (DES 2009).

Assess the likely extent of residual contamination and the risks it might pose to human health and the environment.

Include the potential disturbance and management of acid sulfate soils if they are present at the site (refer to the department's [EIS information guideline—Land](#) (DES 2022) for guidance on acid sulfate soils).

Avoidance and mitigation measures

Describe all proposed measures and controls to avoid or mitigate the potential for land contamination. Propose management measures that would prevent the contamination of groundwater or surface water. Identify who would have responsibility for each measure, and propose a schedule.

Assess whether it is possible to avoid disturbing any pre-existing contaminated land during the project's development and operation. Where disturbance cannot be avoided, describe options to manage environmental harm from existing contamination.

Propose measures to avoid or minimise potential land contamination due to the project's activities. Where the project would necessarily contaminate land, demonstrate that the potential environmental harm could be managed in the long-term. Assess whether a soil disposal permit might be required to move contaminated soil to another site for disposal or treatment.

If the site would have residual contamination (e.g. because of a tailings dam), demonstrate that it would be feasible to manage the environmental harm that might be caused by the contamination after the project ceases.

Glossary

Auditor—an auditor for contaminated land prepares an auditor's certification for a contaminated land investigation document under chapter 7, part 8 of the EP Act. The [Queensland auditor handbook for contaminated land](#) (DES 2018) provides advice about how an auditor may obtain their approval to carry out an auditor's functions.

Contaminated land means land contaminated by a hazardous contaminant.

Contaminated land NEPM means the National Environment Protection (Assessment of Site Contamination) Measure, made by the National Environment Protection Council under the *National Environment Protection Council Act 1994* (Commonwealth).

Contaminated land investigation document means a document defined in section 387 of the EP Act.

Notifiable activity—notifiable activities (which have the potential to cause contamination) are listed in Schedule 3 of the EP Act.

Prescribed contaminated land means land contaminated in a way that is a risk of causing environmental harm to—

- (a) land other than the relevant land; or
- (b) human health; or
- (c) another part of the environment.

Sensitive land use—Schedule 24 of the Planning Regulation 2017 defines sensitive land uses. The list includes such uses as a dwelling house, health care service, hotel, educational establishment, etc.

Suitably qualified person—sections 564 to 566 of the EP Act regulate who can be a suitably qualified person, and what they do.

References

Note: These references were correct at the time of publication. Where more recent versions are available, these must be used. For all Department of Environment and Science publications, the latest version of a publication can be found by using the publication number as a search term at the [Queensland Government website](http://www.qld.gov.au) <www.qld.gov.au>.

ANZG 2018, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra, Australian Capital Territory, viewed April 2020, www.waterquality.gov.au/anz-guidelines.

Department of Environment and Science 2022, *Land—EIS information guideline*, ESR/2020/5303, Queensland Government, Brisbane, Queensland, viewed April 2022, <https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/developing-an-eis>.

Department of Environment and Science 2018, *Queensland auditor handbook for contaminated land (Modules 1–6)* Queensland Government, viewed April 2020, <https://www.qld.gov.au/environment/pollution/management/contaminated-land/auditors/auditor-handbook>.

Department of Environment and Science 2009, *Queensland water quality guidelines*, Department of Environment and Science, Brisbane, viewed April 2020, https://environment.des.qld.gov.au/management/water/quality-guidelines#document_availability.

Department of Environment and Science 2020, *Water—EIS information guideline*, ESR/2020/5312, Queensland Government, Brisbane, Queensland, viewed April 2020, <https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/developing-an-eis>.

National Environmental Protection Council 1999, *National Environmental Protection (assessment of site contamination) Measure*, viewed April 2020, <http://www.nepc.gov.au/nepms/assessment-site-contamination>.