

# Regulated structures—EIS information guideline

## Introduction

This guideline advises proponents in relation to *regulated structures* when preparing an environmental impact statement (EIS).

In Queensland, some commercial activities, such as resource or other *environmentally relevant activities*, require an approval under the *Environmental Protection Act 1994* called an environmental authority. Regulated structures are *dams* or *levees* on a site that is regulated by an environmental authority, and which if improperly constructed and maintained, could have a serious or damaging impact on the environment and human health. Additional guidance on this matter is available in the department's guideline [Structures which are dams or levees constructed as part of environmentally relevant activities](#) (DES 2019).

The following information must be provided in an EIS if regulated structures are proposed as part of the project. All locations related to regulated structures (including boundaries, spillways, discharge points, etc.) must be referenced to the Geocentric Datum of Australia 2020 (GDA2020) in decimal degrees of latitude and longitude.

For information about how the EIS should address the rehabilitation of regulated structures, including residual voids, refer to department's [EIS information guideline—Rehabilitation](#) (DES 2022).

## Dams

With regard to dams, provide the following in the EIS:

- details of all dams proposed to be constructed or maintained as part of the project—relevant dams could be wastewater dams, tailings dams, water supply dams, environment dams, decant dams, process water ponds, treatment ponds, sediment dams, holding dams, release dams, or diversion dams
- appropriately scaled maps and plans to show the locations of all dams
- details of the purpose of each dam and its proposed contents
- details about the total area of land covered by the dam(s) at full supply level, the maximum height of the dam(s) to the outside toe, the storage capacity at full supply level, and the total catchment area of the dam(s)
- details about the location of the spillway, and the spillway discharge capacity
- plans and maps with contours to show the layout of the site, the locations of any infrastructure, buildings, or residences, and features of environmental significance that could be affected by the construction, operation, or failure of the dams.

Assess the likely quality of water or wastewater in each dam. Assess the potential quality and quantity of contaminants in proposed controlled releases or uncontrolled discharges that might occur. Ensure that the water quality estimates are sufficiently accurate to be used as input into the consequence category assessment investigations.

Undertake a *consequence category assessment* for all proposed dams. Include the three different *failure event scenarios* (*seepage, overtopping and dam break*) that are described in the department's [Manual for assessing consequence categories and hydraulic performance of structures](#) (DES 2016). State whether each proposed dam is in the *low, significant, or high* consequence category. Provide consequence category assessment reports for all dams. All such reports must be certified in accordance with Appendix C of the manual.

Dams that have been assessed to be in either the *significant* or *high consequence* category will be regulated structures that are required to be designed by a Registered Professional Engineer of Queensland. The design, construction, and operation of regulated structures in Queensland must conform to the requirements in the department's [Manual for assessing consequence categories and hydraulic performance of structure](#) (DES 2016).

Tailings dams must be constructed and operated in a manner consistent with the principles as set out in the [ANCOLD Guidelines: Guidelines on tailings dams – planning, design, construction, operation and closure—Revision 1](#) (ANCOLD 2019), and *Guidelines on dam safety management* (ANCOLD 2003).

Where surface or groundwater environmental values might be significantly affected by seepage, assess the *failure to contain—seepage* scenario. Include the calculations of seepage rates with and without liners, volumes of seepage, and the total contaminant load potentially released in each case.

Describe how risks associated with dam or storage failure, seepage through the floor, embankments of the dams, and/or with overtopping of the structures would be prevented or minimised to protect people, property and the environment.

## Levees

With regard to levees (including bunds or banks) the EIS should:

- provide maps and plans showing the original and/or existing ground level contours across the site, and the floodable areas across the site for a range of Annual Exceedance Probabilities (AEPs) up to the Probable Maximum Flood (PMF) level
- list and describe all levees proposed to be constructed for flood control
- provide details about the purpose of the levees, and about the infrastructure or mining voids the levees are designed to protect
- provide details about the location and length of the levees, including appropriately scaled maps and plans
- provide details about the height and cross-section of the levees at significant points, including the maximum height
- provide maps and plans showing the proposed ground level contours across the site as it would be with the levees constructed, and the resulting floodable areas for a range of AEPs up to the PMF level
- provide details in maps and plans about the catchment areas and the runoff in the rivers, creeks, and drainage paths, whose flood events are retained or excluded from the site by construction of the levees
- describe and illustrate where levees would lie at the end of mine operations in relation to flood levels in adjacent streams, up to and including the PMF Level.

Provide a *consequence category assessment* for all levees in accordance with the department's [Manual for assessing consequence categories and hydraulic performance of structures](#) (DES 2016). State whether each proposed levee is in the *low*, *significant*, or *high* consequence category. Provide consequence category assessment reports for all levees. All such reports must be certified in accordance with Appendix C of the manual.

Describe how risks associated with failure or overtopping of the levees would be prevented or minimised to protect people, property and the environment.

## Voids

During mining, an excavated void might be a regulated structure (specifically a dam) if, for example, it accumulates mine affected water.

Provide a water balance for any proposed voids that might be regulated structures during mining. Describe how during operations the project will limit runoff to voids and prevent or minimise adverse impacts on groundwater, surface water and other environmental values from any contaminated water.

Demonstrate that any operational void will be protected from flooding, including the Probable Maximum Flood level.

## Definitions

**Consequence** in relation to a structure as defined, means the potential for environmental harm resulting from the collapse or failure of the structure to perform its primary purpose of containing, diverting or controlling flowable substances.

**Consequence category** means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for assessing consequence categories and hydraulic performance of structures*.

**Dam** means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

**Environmentally relevant activity** has the meaning defined in section 18 of the Environmental Protection Act.

**Failure to contain—seepage** means spills or releases to ground and/or groundwater via seepage from the floor and/or sides of the structure—see the department's [Manual for assessing consequence categories and hydraulic performance of structures](#) (DES 2016).

**Flowable substance** means matter or a mixture of materials that can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

**Levee** means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of water or flowable substances at any other times.

**Regulated structure** means any structure in the significant or high consequence category as assessed using the *Manual for assessing consequence categories and hydraulic performance of structures*. A regulated structure does not include:

- a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container;
- a sump or earthen pit used to store residual drilling material and drilling fluid only for the duration of drilling and well completion activities;
- a flare pit.

## 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](#) <[www.qld.gov.au](http://www.qld.gov.au)>.*

Department of Environment and Science 2016, *Manual for assessing consequence categories and hydraulic performance of structures*, ESR/2016/1933, Department of Environment and Science, Brisbane, Queensland, viewed April 2020, <<https://environment.des.qld.gov.au/assets/documents/regulation/era-mn-assessing-consequence-hydraulic-performance.pdf>>.

Department of Environment and Science 2019, *Structures which are dams or levees constructed as part of environmentally relevant activities*, ESR/2016/1934, Department of Environment and Science, Brisbane, Queensland, viewed December 2019, <[https://environment.des.qld.gov.au/\\_\\_data/assets/pdf\\_file/0031/89383/era-gl-structures-dams-levees-eras.pdf](https://environment.des.qld.gov.au/__data/assets/pdf_file/0031/89383/era-gl-structures-dams-levees-eras.pdf)>.

Department of Environment and Science 2022, *Rehabilitation—EIS information guidelines*, ESR/2020/5308, Queensland Government, Brisbane, Queensland, viewed April 2022, <<https://www.qld.gov.au/environment/pollution/management/eis-process/about-the-eis-process/developing-an-eis>>.

The Australian National Committee on Large Dams Incorporated (ANCOLD) 2003, *Guidelines on dam safety management*, ANCOLD, Hobart, Tasmania, viewed April 2020, <[https://www.ancold.org.au/?s=Guidelines+on+dam+safety+management+&post\\_type=product&per\\_page=12&product\\_tag](https://www.ancold.org.au/?s=Guidelines+on+dam+safety+management+&post_type=product&per_page=12&product_tag)>.

The Australian National Committee on Large Dams Incorporated (ANCOLD) 2019, *Guidelines on tailings dams – planning, design, construction, operation and closure—Revision 1*, ANCOLD, Hobart, Tasmania, viewed December 2019, <<https://www.ancold.org.au/?product=guidelines-on-tailings-dams-planning-design-construction-operation-and-closure-may-2012>>.