Department of Environment and Heritage Protection

Permit[1]

Environmental Protection Act 1994

This environmental authority is issued by the administering authority under Chapter 5 of the *Environmental Protection Act 1994*.

Permit[1] number: EPPG00869213

Project Name: Birdsville Organic Rankine Cycle Engine (ORCE) Geothermal Power Station

Environmental authority takes effect 21 September 2015

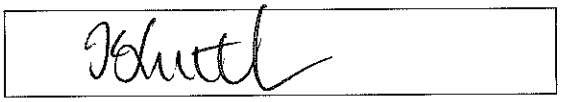
The anniversary date of this environmental authority is **9 August.**

An annual return and the payment of the annual fee will be due each year on this day.

The environmental authority is subject to the attached schedules of conditions.

Environmental authority holder(s)	Registered address
Ergon Energy Corporation Limited ACN: 087 646 062	22 Walker Street TOWNSVILLE QLD 4810

Environmentally Relevant Activity(ies)	Relevant Tenure
A resource activity which is a geothermal activity for the purpose of the *Geothermal Energy Act 2010*	Geothermal Lease (GL) 1



Signature

21 September 2015

Date

Kimberley Shaw
Delegate of the administering authority
Environmental Protection Act 1994

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[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Heritage Protection.

Additional Information for Applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority is issued is a restatement of the ERA as defined by legislation at the time the approval is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an environmental authority as to the scale, intensity or manner of carrying out an ERA, then the conditions prevail to the extent of the inconsistency.

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the environmental authority specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land and notifiable activities

It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

Responsibilities under the *Environmental Protection Act 1994*

Separate to the requirements of standard conditions, the holder of the environmental authority must also meet their obligations under the *Environmental Protection Act 1994*, and the regulations made under that Act. For example, the holder must be aware of the following provisions of the *Environmental Protection Act 1994*.

General environmental duty

Section 319 of the *Environmental Protection Act 1994* states that we all have a general environmental duty. This means that we are all responsible for the actions we take that affect the environment. We must not carry out any activity that causes or is likely to cause environmental harm unless we take all reasonable and practicable measures to prevent or minimise the harm. To decide what meets your general environmental duty, you need to think about these issues:

- the nature of the harm or potential harm
- the sensitivity of the receiving environment
- the current state of technical knowledge for the activity
- the likelihood of the successful application of the different measures to prevent or minimise environmental harm that might be taken
- the financial implications of the different measures as they would relate to the type of activity.

It is not an offence not to comply with the general environmental duty, however maintaining your general environmental duty is a defence against the following acts:

(a) an act that causes serious or material environmental harm or an environmental nuisance

(b) an act that contravenes a noise standard

(c) a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG.

More information is available on the Department of Environment and Heritage Protection website www.ehp.qld.gov.au.

Duty to notify

Section 320 of the *Environmental Protection Act 1994* explains the duty to notify. The duty to notify applies to all persons and requires a person or company to give notice where serious or material environmental harm is caused or threatened. Notice must be given of the event, its nature and the circumstances in which the event happened. Notification can be verbal, written or by public notice depending on who is notifying and being notified.

The duty to notify arises where:

- a person carries out activities or becomes aware of an act of another person arising from or connected to those activities which causes or threatens serious or material environmental harm
- while carrying out activities a person becomes aware of the happening of one or both of the following events:
    - the activity negatively affects (or is reasonably likely to negatively affect) the water quality of an aquifer
    - the activity has caused the unauthorised connection of 2 or more aquifers.

For more information on the duty to notify requirements refer to the guideline *Duty to notify of environmental harm (EM467).*

Some Relevant Offences under the *Environmental Protection Act 1994*

Non-compliance with a condition of an environmental authority (section 430)

Section 430 of the *Environmental Protection Act 1994* requires that a person who is the holder of, or is acting under an environmental authority must not wilfully contravene, or contravene a condition of the environmental authority.

Environmental authority holder responsible for ensuring conditions complied with (section 431)

Section 431 of the *Environmental Protection Act 1994* requires that the holder of an environmental authority must ensure everyone acting under the environmental authority complies with the conditions of the environmental authority. If another person acting under the environmental authority commits an offence against section 430, the holder also commits an offence, namely, the offence of failing to ensure the other person complies with the conditions.

Causing serious or material environmental harm (sections 437–39)

Material environmental harm is environmental harm that is not trivial or negligible in nature. It may be great in extent or context or it may cause actual or potential loss or damage to property. The difference between material and serious harm relates to the costs of damages or the costs required to either prevent or minimise the harm or to rehabilitate the environment. Serious environmental harm may have irreversible or widespread effects or it may be caused in an area of high conservation significance. Serious or material environmental harm excludes environmental nuisance.

Causing environmental nuisance (section 440)

Environmental nuisance is unreasonable interference with an environmental value caused by aerosols, fumes, light, noise, odour, particles or smoke. It may also include an unhealthy, offensive or unsightly condition because of contamination.

Depositing a prescribed water contaminant in waters (section 440ZG)

Prescribed contaminants include a wide variety of contaminants listed in Schedule 9 of the *Environmental Protection Act 1994.*

It is your responsibility to ensure that prescribed contaminants are not left in a place where they may or do enter a waterway, the ocean or a stormwater drain. This includes making sure that stormwater falling on or running across your site does not leave the site contaminated. Where stormwater contamination occurs you must ensure that it is treated to remove contaminants. You should also consider where and how you store material used in your processes onsite to reduce the chance of water contamination.

Placing a contaminant where environmental harm or nuisance may be caused (section 443)

A person must not cause or allow a contaminant to be placed in a position where it could reasonably be expected to cause serious or material environmental harm or environmental nuisance.

Some Relevant Offences under the *Waste Reduction and Recycling Act 2011*

Littering (section 103)

Litter is any domestic or commercial waste and any material a person might reasonably believe is refuse, debris or rubbish. Litter can be almost any material that is disposed of incorrectly. Litter includes cigarette butts and drink bottles dropped on the ground, fast food wrappers thrown out of the car window, poorly secured material from a trailer or grass clippings swept into the gutter. However, litter does not include any gas, dust, smoke or material emitted or produced during, or because of, the normal operations of a building, manufacturing, mining or primary industry.

Illegal dumping of waste (section 104)

Illegal dumping is the dumping of large volumes of litter (200 L or more) at a place. Illegal dumping can also include abandoned vehicles.

Responsibilities under Other Legislation

An environmental authority pursuant to the *Environmental Protection Act 1994* does not remove the need to obtain any additional approval for the activity that might be required by other State and/or Commonwealth legislation. Other legislation for which a permit may be required includes but is not limited to the:

- *Aboriginal Cultural Heritage Act 2003*
- contaminated land provisions of the *Environmental Protection Act 1994*
- *Fisheries Act 1994*
- *Forestry Act 1959*
- *Nature Conservation Act 1992*
- *Petroleum and Gas (Production and Safety) Act 2004 / Petroleum Act 1923*
- *Queensland Heritage Act 1992*
- *Sustainable Planning Act 2009*
- *Water Supply (Safety and Reliability) Act 2008*
- *Water Act 2000*

Applicants are advised to check with all relevant statutory authorities and comply with all relevant legislation.

An environmental authority for petroleum activities is not an authority to impact on water levels or pressure heads in groundwater aquifers in or surrounding formations. There are obligations to minimise or mitigate any such impact under other Queensland Government and Commonwealth Government legislation.

Environmental Authority Conditions

This environmental authority consists of the following Schedules and Appendices:

SCHEDULE A – Authorised Activities
SCHEDULE B – Protecting Environmental Values
SCHEDULE C – Operating Standards
SCHEDULE D – Monitoring and Reporting

APPENDIX A – Definitions
APPENDIX B - Map 1: GL1

SCHEDULE A – AUTHORISED ACTIVITIES

Authorised Activities

(A1) This environmental authority authorises geothermal activities that are authorised geothermal activities for the purposes of the *Geothermal Energy Act 2010* and are limited to:

(a) the geothermal groundwater well referred to as the **Birdsville Town Bore, RN14645** located at **25.8971°S, 139.3516°E**, including the incidental activities such as well pads, water pumps and generators associated with the well operations;

(b) the pipeline that delivers the geothermal water to the power station; and

(c) sewage treatment plant servicing < 21 EP.

Activities not authorised on GL1

(A2) This environmental authority does not authorise particular activities, including but not limited to the following:

(a) stimulation activities;

(b) blasting operations;

(c) injection testing or pilot testing for generating geothermal electricity;

(d) the injection of a waste fluid or gas for gas storage into a natural underground reservoir or aquifer;

(e) regulated dams;

(f) extracting earthen materials (other than drilling waste rock) of more than 100,000t/year;

(g) extracting by dredging of more than 1000t/year from the bed of naturally occurring surface waters; and

(h) the carrying out of specified relevant activities.

(A3) This environmental authority does not authorise a relevant act to occur in carrying out an authorised activity unless a condition of this environmental authority expressly authorises the relevant act to occur.

SCHEDULE B – PROTECTING ENVIRONMENTAL VALUES

Financial Assurance

(B1) Financial assurance must be given to the administering authority as security for compliance with the environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the *Environmental Protection Act 1994* by 1 November 2013.

Area of disturbance

(B2) The geothermal activities when combined must not cause a total significant disturbance to more than 1% of the total land area on GL1 at any point in time.

Environmental nuisance

(B3) Geothermal activities must not cause environmental nuisance from dust, odour, light, smoke or noise at a sensitive place, other than where an alternative arrangement is in place.

Contaminant release

(B4) Contaminants must not be directly or indirectly released to land or air except for those releases authorised by conditions (C11), (C15), (C23), (C24) and (C25).

Site planning

(B5) Prior to carrying out geothermal activities, the location of geothermal activities must be selected to:

(a) firstly, avoid, then minimise, then mitigate any negative impacts on areas of vegetation or other areas of ecological value;

(b) minimise disturbance to land that may otherwise result in land degradation;

(c) minimise isolation, fragmentation or dissection of tracts of vegetation that would lead to a reduction in the current level of ecosystem functioning or ecological connectivity; and

(d) minimise clearing of mature or hollow bearing trees.

(B6) Records must be kept to demonstrate compliance with condition (B5).

(B7) Prior to any significant disturbance to land:

(a) an ecological assessment of areas with native vegetation that are to be significantly disturbed, must be conducted in accordance with the Queensland Government's *Biocondition, a Condition Assessment Framework for Terrestrial Biodiversity in Queensland, Assessment Manual*; and

(b) an assessment of the impacts that will occur as a result of significant disturbance to land must be undertaken.

Resource activities in the designated precinct

(B8) Geothermal activities conducted in the former special floodplain management area within the designated precinct, as identified in Appendix B - Map 1, must be in accordance with conditions (B9) – (B20).

(B9) With the exception of activities carried out for specified works and temporary campsites/workforce accommodation, only geothermal activities are permitted in the designated precinct.

(B10) Specified works in the designated precinct must be co-located to the greatest possible extent.

(B11) Specified works must not be constructed across a watercourse in the designated precinct where an alternative watercourse crossing is already in existence and is within a reasonable distance.

(B12) Geothermal activities and temporary campsites/workforce accommodation in the designated precinct must not increase the natural movement of sediment beyond the work area and must not increase the delivery of sediment to water either during or following construction activities.

(B13) Geothermal activities and temporary campsites/workforce accommodation in the designated precinct must not:

(a) concentrate flood flows in a way that will or may cause or threaten an adverse impact on natural values of wetlands watercourses, lakes, and springs; or

(b) divert flood flows from natural drainage paths; or

(c) increase the local duration of floods; or

(d) increase the risk of detaining flood flows.

(B14) Within the designated precinct, geothermal activities and specified works carried out within the bed and banks of a watercourse, wetland, lake or spring, must:

(a) not result in disturbance to the bed and banks of a watercourse, wetland, lake or spring beyond the minimum area necessary for the purpose of the disturbance; and

(b) be designed and undertaken by a suitably qualified person taking into account the matters listed in the 'Planning Activities' and 'Impact Management During Activities' sections of the administering authority's 'Guideline—Activities in a watercourse, lake or spring associated with mining operations' December 2010, as amended from time to time.

(B15) Upon cessation of the works described above (Condition B14), rehabilitation must commence immediately.

(B16) The size of any temporary campsites/workforce accommodation in the designated precinct is limited to 2250m² and no more than 30 people are accommodated at any time.

(B17) Geothermal activities (other than activities carried out for specified works) must not occur within 200 lateral metres of a watercourse, lake or spring that is in the designated precinct.

(B18) For activities carried out for pipelines or flow lines in the designated precinct:

(a) any interference with overland flow and the potential for any interference with overland flow, must be temporary; and

(b) works must be planned in such a way as to minimise the potential for, and duration of, interference with overland flow;

(c) the activities must not interfere with water in a watercourse, lake or spring (other than activities that are of a temporary nature).

(B19) Temporary campsites/workforce accommodation and infrastructure necessary to support the geothermal activities are permitted within the designated precinct provided that they do not occur within 200 lateral metres of a watercourse, lake or spring in the designated precinct.

(B20) Specified works must not be constructed across a watercourse in the designated precinct, where an alternative watercourse crossing is already in existence and is within a reasonable distance.

SCHEDULE C – OPERATING STANDARDS

Documentation

(C1) All plans, procedures and reports must:

(a) be certified by a suitably qualified person; and

(b) be kept on record for a minimum of 5 years.

(C2) All plans and procedures required to be developed must be implemented.

Plant and Equipment

(C3) All plant and equipment reasonably necessary to ensure compliance with the environmental authority conditions must be installed.

(C4) All plant and equipment must be maintained and operated in their proper and effective condition.

(C5) All measures reasonably necessary to ensure compliance with the environmental authority conditions must be implemented.

(C6) Measures to prevent fauna entrapment must be implemented during the construction and operation of site infrastructure.

Contingency and emergency response

(C7) Where geothermal activities involve significant disturbance to land or have the potential to cause environmental harm written contingency procedures must be developed by 1 November 2013 to address the risks of non-compliance with Schedule B.

(C8) The contingency procedures must include, but not necessarily be limited to:

(a) environmental nuisance and complaint management procedures including:

i. a description of the geothermal activities that might result in non-compliance with conditions in Schedule B and what mitigation measures are required to be implemented; and

ii. the action that will be undertaken when a member of the public makes a valid complaint.

(b) management procedures including details of what actions will be taken to protect environmental values and minimise potential environmental harm from geothermal activities as a result of floods, severe storms and fires.

(c) environmental emergency management procedures including details of the response and mitigation measures that will be actioned to reduce negative impacts to environmental values in the event of a non-compliance with conditions in Schedule B.

Explanatory note: *The contingency procedures may incorporate other documents by reference.*

Activities in wetlands, lakes, springs and watercourses

(C9) Geothermal activities that require earthworks, vegetation clearing and / or placing fill, other than that associated with the construction of linear infrastructure, are not permitted in or within:

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(a) 200 metres of any wetland, lake or spring; or

(b) 100 metres of the outer bank of any other watercourse.

(C10) The construction and/or maintenance of linear infrastructure that will result in significant disturbance to a wetland, lake, spring or watercourse must be conducted in accordance with the following order of preference. Conducting works:

(a) firstly, in times where there is no water present;

(b) secondly, in times of no flow; and

(c) thirdly, in times of flow, but in a way that does not impede low flow.

(C11) Geothermal activities must not result in water turbidity increases of more than 10% in high ecological value waters outside contained construction or maintenance areas.

(C12) The construction and/or maintenance of linear infrastructure that will result in significant disturbance to a lake, spring or watercourse must be designed and undertaken by a suitably qualified person in accordance with the guideline *Activities in a watercourse, lake or spring associated with a resource activity or mining operations.*

(C13) The construction and/or maintenance of linear infrastructure that will result in significant disturbance to a wetland must be designed and undertaken by a suitably qualified person taking into consideration sections 5 and 6 of the guideline *Activities in a watercourse, lake or spring associated with a resource activity or mining operations.*

Soil Management

(C14) Measures to minimise stormwater entry onto significantly disturbed land must be implemented and maintained.

(C15) Sediment and erosion control measures to prevent soil loss and deposition beyond significantly disturbed land must be implemented and maintained.

Chemical Storage

(C16) Chemicals and fuels must be stored in, or serviced by, an effective containment system that meets Australian Standards, where such a standard is relevant.

Structures that are dams or levees

(C17) The hazard category of any dam or levee to be used in carrying out geothermal activities must be assessed in accordance with the Queensland Government *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.*

(C18) Low hazard dams must be:

(a) constructed, operated and maintained in accordance with accepted engineering standards currently appropriate for the purpose for which the dam is intended to be used; and

(b) designed with a floor and sides made of material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during both its operational life and including any period of decommissioning and rehabilitation.

(C19) All low hazard dams must be monitored for early signs of loss of structural or hydraulic integrity as specified in the initial hazard assessment.

(C20) When no longer required all low hazard dams must be decommissioned to no longer accept inflow from the geothermal activities and be either:

(a) rehabilitated; or

(b) agreed to in writing by the administering authority and the landholder to remain in situ following the cessation of the geothermal activity(ies) associated with the dam, with the contained water of a quality suitable for the intended ongoing use(s) by that landholder.

Waste management

(C21) Measures must be implemented so that waste is managed in accordance with the waste and resource management hierarchy and the waste and resource management principles.

(C22) Waste, including waste fluids, must be transported off-site for lawful re-use, remediation, recycling or disposal unless the waste is specifically authorised by conditions (C23), (C24) and (C25) to be disposed of or used on-site.

(C23) Green waste may be used on-site for rehabilitation and/or sediment and erosion control purposes.

Treated sewage effluent

(C24) Treated sewage effluent or greywater can be released to land provided it

(a) is released within a fenced and signed contaminant release area(s); and

(b) does not result in pooling or run-off or aerosols or spray drift or vegetation die-off.

Associated water

(C25) Associated water may be used for dust suppression and construction activities provided that it does not result in adverse effects on the composition and structure of soil or subsoils and can be demonstrated to meet the following qualities:

(a) pH between 6–9

(b) electrical conductivity (EC) not exceeding 3000µS/cm

(c) sodium adsorption ratio (SAR) not exceeding 8

(d) bicarbonate ion concentration not exceeding 100mg/L.

Decommissioning of buried pipelines

(C26) All buried pipelines must be decommissioned in accordance with the requirements of Australian Standard 2885, as amended from time to time.

Rehabilitation and Financial Assurance

(C27) Significantly disturbed areas that are no longer required for the ongoing conduct of the geothermal activities must be progressively rehabilitated within 6 months (unless an exceptional

circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) so that:

(a) the areas are reshaped to a stable landform

(b) the areas are re-profiled to contours consistent with the surrounding landform

(c) surface drainage lines are re-established

(d) top soil is reinstated.

(C28) All significantly disturbed land caused by the carrying out of the geothermal activity(ies) must be rehabilitated to meet condition (C27) and the following final acceptance criteria:

(a) any contaminated land is remediated and rehabilitated

(b) for land that is not being cultivated by the landholder:

i. groundcover, that is not a declared pest species is established and self-sustaining; and

ii. vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining

(c) for land that is to be cultivated by the landholder, cover crop is reinstated, unless the landholder will be preparing the site for cropping within 3 months of geothermal activities being completed.

(C29) Monitoring of performance indicators must be carried out on rehabilitation activities until the final acceptance criteria in condition (C28) have been met for the rehabilitated area.

(C30) Prior to any changes in geothermal activities which would result in an increase to the maximum disturbance since the last financial assurance calculation was submitted, the holder of the environmental authority must submit, and the administering authority must have approved, an application to amend the financial assurance.

SCHEDULE D – MONITORING AND REPORTING

Monitoring

(D1) All monitoring must be undertaken by a suitably qualified person.

(D2) If requested by the administering authority in relation to investigating a valid complaint, monitoring must be undertaken within 10 business days.

(D3) All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests, except as otherwise agreed to in writing by the administering authority.

(D4) Notwithstanding condition (D3), where there are no NATA accredited laboratories available to test for a specific analyte or substance, then duplicate samples must be sent to separate laboratories for independent testing or evaluation.

Sampling

(D5) The methods of surface water sampling must comply with that set out in the Queensland Government's *Monitoring and Sampling Manual 2009 – Environmental Protection (Water) Policy 2009*.

(D6) The methods of groundwater sampling must comply with the Australian Government's *Groundwater Sampling and Analysis – A Field Guide* (2009:27 GeoCat #6890.1).

(D7) Noise must be measured in accordance with the prescribed standards in the *Environmental Protection Regulation 2008*.

(D8) The method of measurement of ambient air quality or point source contaminant releases to air must comply with the *Queensland Air Quality Sampling Manual* and/or Australian Standard 4323.1:1995 *Stationary source emissions method 1: Selection of sampling positions*, whichever is appropriate for the relevant measurement.

Notification

(D9) In addition to the requirements under section 320A of the *Environmental Protection Act 1994*, the administering authority must be notified in writing within 5 business days of any event which has resulted in the contingency procedures required by conditions (C7) and (C8) being activated.

***Explanatory note**: Notification under condition (D9) should occur using the form,* Incident notification for resource activities other than mining (EM706) *available from the administering authority's website.*

Reporting

(D10) The annual return must include an Update Report detailing activities during the annual return period, demonstrating:

(a) significant disturbance during the period;

(b) rehabilitation undertaken;

(c) a list of all valid complaints relating to environmental issues made including the date, source, reason for the complaint and a description of investigations undertaken in resolving the complaint; and

(d) the results of all monitoring undertaken.

Appendix A: Definitions

accepted engineering standards, in relation to dams, means those standards of design, construction, operation and maintenance that are broadly accepted within the profession of engineering as being good practice for the purpose and application being considered. In the case of dams, the most relevant documents would be publications of the *Australian National Committee on Large Dams* (ANCOLD), guidelines published by Queensland government departments and relevant Australian and New Zealand Standards.

administering authority has the meaning in Schedule 4 of the *Environmental Protection Act 1994.*

alternative arrangement means a written agreement about the way in which a particular nuisance impact will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.

analogue site(s) means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass land use, topographic, soil, vegetation and other ecological characteristics. Analogue sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters.

analyte means a chemical parameter determined by either physical measurement in the field or by laboratory analysis.

annual return period means the most current 12-month period between 2 anniversary dates.**aquifer** means an identifiable stratigraphic formation that has the potential to produce useful flows of water.

associated water means underground water taken or interfered with from a geothermal well.

associated works in relation to a dam, means:

- any kind and all things associated with the construction and operation of a dam; and
- any land used for those operations.

Australian Standard 2885 means Australian Standard 2885.0:2008 *Pipelines – Gas and Liquid Petroleum General Requirements*, Australian Standard 2885.1:2007 *Pipelines – Gas and Liquid Petroleum Design and Construction* and Australian Standard 2885.3:2001 *Pipelines – Gas and Liquid Petroleum Operation and Maintenance*, or any updated versions that become available from time to time.

Australian Standard 4323 means Australian Standard 4323.1:1995 *Stationary source emissions method 1: Selection of sampling positions.*

bed of any waters, has the meaning in Schedule 12 Part 2 of the *Environmental Protection Regulation 2008.*

bed and banks for a watercourse or wetland means land over which the water of the watercourse or wetland normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed or banks that is from time to time covered by floodwater.

business day has the meaning in section 36 of the *Acts Interpretation Act 1954.*

certified in relation to any matter other than a design plan, 'as constructed' drawings or an annual report regarding dams means, a Statutory Declaration by a suitably qualified person or suitably qualified third party accompanying the written document stating:

- the person's qualifications and experience relevant to the function;
- that the person has not knowingly included false, misleading or incomplete information in the document;
- that the person has not knowingly failed to reveal any relevant information or document to the administering authority;
- that the document addresses the relevant matters for the function and is factually correct; and
- that the opinions expressed in the document are honestly and reasonably held.

clearing has the meaning in the dictionary of the *Vegetation Management Act 2000.*

cultivated means used for cropping or gardening.

dam(s) means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. A dam does not mean 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.

declared pest species has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a live animal or plant declared to be a declared pest under section 36 (Declaring Pests by Regulation) or section 37(2) (Declaring Pest under Emergency Pest Notice) of that Act and includes reproductive material of the animal or plant.

decommissioned in relation to pipelines means the action undertaken to prepare the pipeline and peripheral facilities for pending suspension or abandonment.

designated precinct is as defined in the *Regional Planning Interests Regulation 2014.*

documents has the meaning in section 36 of the *Acts Interpretation Act 1954.*

domestic purposes means irrigating a garden, not exceeding 0.25ha, being a garden cultivated for domestic use and not for the sale, barter or exchange of goods produced in the garden.

ecological connectivity is a measure of ecological condition and means the flow or connection of organisms and ecological processes across landscapes at multiple scales. Ecological connectivity has a positive relationship with landscape connectivity and habitat connectivity and effects vary between species. It includes connectivity by stepping stone or contiguous bioregional/local corridor networks.

ecosystem functioning means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of the vegetation community.

environmental harm has the meaning in section 14 of the *Environmental Protection Act 1994.*

environmentally relevant activity or ERA has the meaning in section 18 of the *Environmental Protection Act 1994.*

environmental nuisance has the meaning in section 15 of the *Environmental Protection Act 1994.*

environmental value(s) has the meaning in section 9 of the *Environmental Protection Act 1994.*

equivalent person or EP means an equivalent person under volume 1, section 2 of the *Guidelines for Planning and Design of Sewerage Schemes*, October 1991, published by the Water Resources Commission, Department of Primary Industries, Fisheries and Forestry.

fill means any kind of material in solid form (whether or not naturally occurring) capable of being deposited at a place but does not include material that forms a part of, or is associated with, a structure constructed in a watercourse, wetland or spring including a bridge, road, causeway, pipeline, rock revetment, drain outlet works, erosion prevention structure or fence.

financial assurance for an environmental authority, means financial assurance given for the authority under Chapter 5, part 12, division 2 of the *Environmental Protection Act 1994.*

floodplain has the meaning in the *Water Act 2000* and means an area of reasonably flat land adjacent to a watercourse that—

- is covered from time to time by floodwater overflowing from the watercourse; and
- does not, other than in an upper valley reach, confine floodwater to generally follow the path of the watercourse; and
- has finer sediment deposits than the sediment deposits of any bench, bar or in-stream island in the watercourse.

flowable substance means matter or a mixture of materials which 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.

foreseeable future means the period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptably low probability of failure before that time.

green waste means waste that is grass cuttings, trees, bushes, shrubs, material lopped from trees, untreated timber or other waste that is similar in nature but does not include declared pest species.

greywater means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.

hazard 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 *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, published by the Queensland Government, as amended from time to time.

high bank means the defining terrace or bank or, if no bank is present, the point on the active floodplain, which confines the average annual peak flows in a watercourse.

high ecological value waters means Queensland waters that are scheduled waters under the *Environmental Protection (Water) Policy 2009* as high value ecological waters.

hydraulic fracturing means a technique used to create cracks in underground coal seams to increase the flow and recovery of gas or oil out of a well. It involves pumping a fluid, comprised largely of water and sand, under pressure, into a coal seam. This action fractures the coal seam which provides a pathway that increases the ability for gas to flow through the coal.

hydraulic performance means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, published by the Department of Environment and Resource Management, as amended from time to time.

injection testing for a geothermal well, is defined in the Geothermal Energy Regulation 2012 and is the evaluation or testing of a geothermal reservoir to work out the rate at which geothermal fluid can be returned to the reservoir using the well.

lake means:

- a lagoon, swamp or other natural collection of water, whether permanent or intermittent; and
- the bed and banks and any other element confining or containing the water.

leachate means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of on-site which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

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.

linear infrastructure means powerlines, pipelines, roads and access tracks.

low hazard dam means any dam that is not classified as high or significant as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, published by the Queensland Government and which contains contaminants in concentrations which exceed or will exceed, during the dam's operational life, the values or range shown in Table 3 of the manual.

month has the meaning in s36 of the *Acts Interpretation Act 1954.*

NATA accreditation means accreditation by the National Association of Testing Authorities Australia.

outer bank has the meaning in section 5A of the *Water Act 2000.*

performance indicator(s) means a quantitative measure against which success can be assessed and audited in a consistent, objective and repeatable manner.

regulated dam(s) means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, published by the Queensland Government, as amended from time to time.

rehabilitation or rehabilitated means the process of reshaping and revegetating land to restore it to a stable landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land.

regrowth vegetation map means a map certified by the chief executive as the regrowth vegetation map for the State and showing for the State:

- areas of regrowth vegetation, identified on the map as high-value regrowth vegetation, that are any of the following:
  - (i) an endangered regional ecosystem;
  - (ii) an of concern regional ecosystem;
  - (iii) a least concern regional ecosystem; and
  - (iv) have not been cleared since 31 December 1989; and
- particular watercourses in the Burdekin, Mackay Whitsunday and Wet Tropics catchments, identified on the map as regrowth watercourses; and
- areas the chief executive decides under section 20AI of the *Vegetation Management Act 1999* to show on the map as high value regrowth vegetation.

release, releases or released has the meaning in Schedule 4 of the *Environmental Protection Act 1994.*

relevant act means:

(a) an act that causes serious or material environmental harm or an environmental nuisance;

(b) an act that contravenes a noise standard;

(c) a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG of the *Environmental Protection Act 1994.*

sensitive place means:

- a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel)
- a library, childcare centre, kindergarten, school, university or other educational institution
- a medical centre, surgery or hospital
- a protected area
- a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment
- a work place used as an office or for business or commercial purposes, which is not part of the geothermal activity(ies) and does not include employees accommodation or public roads
- for noise, a place defined as a sensitive receptor for the purposes of the *Environmental Protection (Noise) Policy 2008.*

sensitive receptor means an area or place where noise (including low frequency, vibration and blasting) is measured to investigate whether nuisance impacts are occurring and includes:

- a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel; or
- a library, childcare centre, kindergarten, school, university or other educational institution;
- a medical centre, surgery or hospital; or
- a protected area; or
- a public park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment; or
- a work place used as an office or for business or commercial purposes, which is not part of the geothermal activity(ies) and does not include employees accommodation or public roads.

significantly disturbed or significant disturbance or significant disturbance to land or areas means disturbance to land as defined in Schedule 12, section 4 of the *Environmental Protection Regulation 2008.*

species richness means the number of different species in a given area.

species diversity means the diversity within an ecological community that incorporates both species richness and the evenness of species' abundances.

specified relevant activity means an environmentally relevant activity that, but for being a resource activity, would otherwise be an environmentally relevant activity under section 18 of the *Environmental Protection Act 1994.*

specified works means:

(a) infrastructure and works prescribed under a regulation to be necessary for disaster management; or
(b) desnagging that is the minimum necessary to allow safe navigation of a marked navigable channel; or
(c) the following infrastructure and works—
  (i) roads;
  (ii) railways;
  (iii) jetties and boat ramps for use by the public;
  (iv) works for the rehabilitation of land, including, for example, rehabilitation of abandoned mines;
  (v) infrastructure for the transmission or distribution of electricity;
  (vi) pipelines;
  (vii) conveyor belts;
  (viii) cables;
  (ix) other infrastructure, prescribed under a regulation, that relates to the transportation, movement, transmission or flow of anything through a strategic environmental area including, for example, goods, materials, substances, matter, particles with or without charge, light, energy, information and anything generated or produced.

spring(s) has the meaning in Schedule 4 of the *Water Act 2000*

stable in relation to land, means landform dimensions are or will be stable within tolerable limits now and in the foreseeable future. Stability includes consideration of geotechnical stability, settlement and consolidation allowances, bearing capacity (trafficability), erosion resistance and geochemical stability with respect to seepage, leachate and related contaminant generation.

strategic environmental area is as defined in the *Regional Planning Interests Regulation 2014.*

stimulation means a technique used to increase the permeability of a natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing/hydrofraccing, fracture acidizing and the use of proppant treatments.

stock purposes means watering stock of a number that would normally be depastured on the land on which the water is, or is to be, used.

structure means a dam or levee.

suitably qualified person means a person who has qualifications, training, skills and experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature.

suitably qualified third party means a person who:

a. has qualifications and experience relevant to performing the function including but not limited to:
   i. a bachelor's degree in science or engineering; and
   ii. 3 years of experience in undertaking soil contamination assessments; and
b. is a member of at least one organisation prescribed in Schedule 8 of the Environmental Protection Regulation 2008; and
c. not be an employee of, nor have a financial interest or any involvement which would lead to a conflict of interest with the holder(s) of the environmental authority.

tolerable limits means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values (e.g. a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing damage and limiting infiltration and percolation).

top soil means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.

valid complaint means a complaint that is not considered by the administering authority to be frivolous, vexatious or based on mistaken belief.

waste and resource management hierarchy has the meaning provided in section 9 of the *Waste Reduction and Recycling Act 2011*.

waste and resource management principles has the meaning provided in section 4(2)(b) of the *Waste Reduction and Recycling Act 2011*.

waters means all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

watercourse has the meaning provided in Schedule 4 of the *Environmental Protection Act 1994*.

wetland means a wetland as defined under the Queensland Wetlands Program and are areas of permanent or periodic/intermittent inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed 6 metres. To be classified as a wetland, the area must have one or more of the following attributes:

- at least periodically, the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle; or
- the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers; or
- the substratum is not soil and is saturated with water, or covered by water at some time.

For the purposes of geothermal activities, wetlands do not include springs and watercourses and those wetlands that are defined in the *Wetland Mapping and Classification Methodology* (2005) published by the Queensland Government as:

- H2M1 Riverine or ex-riverine (lacustrine) water bodies associated with dams and weirs located in a channel
- H2M3p Ponded pastures
- H2M5 Palustrine/lacustrine water bodies where ecological character has changed due to gross mechanical disturbance (e.g. cropping)
- H2M6 Palustrine/lacustrine water bodies that have been converted, completely or mostly, to a ring tank or other controlled storage
- H2M7 Riverine water bodies that have been converted mostly to canals or irrigation channels
- H3C1 Artificial stand-alone water storages not within a natural water body or channel; or
- H3C2 Artificial Channel drain/canal – bore drains, swales, bores and irrigation channel overflows/ponding.

Explanatory note: *This definition has been amended from the Queensland Wetlands Program definition so that low value wetlands and man-made water bodies are excluded.*

Year(s) has the meaning in s36 of the *Acts Interpretation Act 1954*.

APPENDIX B

Map 1 – GL1