Permit

Environmental Protection Act 1994

Environmental authority EPPG00913513

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

Environmental authority number: EPPG00913513

Environmental authority takes effect on 23 November 2017

Environmental authority holder(s)

Name(s)	Registered address
KEY COOPER BASIN PTY LTD	Level 2 47 Stirling Highway NEDLANDS WA 6009

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
Resource Activity, Non-Scheduled, Petroleum Activity, Authority to Prospect - ATP	ATP924

Additional information for applicants

Environmentally relevant activities

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

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

It is a requirement of the EP Act that an owner or occupier of contaminated land give written notice to the administering authority if they become aware of the following:

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the contaminated land (notice must be given within 20 business days);

that is causing, or is reasonably likely to cause, serious or material environmental harm.

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term ‘duty to notify’.

Department of Environment and Heritage Protection
www.ehp.qld.gov.au ABN 46 640 294 485

Queensland Government

Take effect

Please note that, in accordance with section 200 of the EP Act, an EA has effect:

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority-on the nominated day; or
b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or
c) otherwise-on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the Sustainable Planning Act 2009 or an SDA Approval under the State Development and Public Works Organisation Act 1971), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.

Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Date issued: 23 November 2017

Enquiries:
Petroleum and Gas Unit
Department of Environment and Heritage Protection
Phone: 3330 5715
Email: petroleumandgas@ehp.qld.gov.au

Legislative Requirements and Conditions of Environmental Authority

SCHEDULE A – GENERAL

Significant disturbance

Condition 1 Petroleum activities must not cause more than 0.1% of the total land area on the relevant petroleum authorities (excluding pipeline licences) that constitute the petroleum project to be **significantly disturbed** any one time.

Financial assurance

Condition 2 Petroleum activities that cause significant disturbance to land must not be carried out until financial assurance has been 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.*

Condition 3 Prior to any changes in petroleum 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.

Environmentally sensitive areas

Condition 4 The holder of the environmental authority must not:

(a) conduct petroleum activities within a **Category A** or **Category B environmentally sensitive area;**
(b) cause any **significant disturbance to land** within 1km of a **Category A environmentally sensitive area** or within 500m of a **Category B environmentally sensitive area**; or
(c) conduct petroleum activities in a **Category C environmentally sensitive** area unless there is a written agreement to enter the area for those activities from the relevant administering authority.

Condition 5 If the relevant administering authority imposes any conditions on undertaking petroleum activities within a **Category C environmentally sensitive area**, the holder must comply with those conditions.

River Trust Asset Areas

Condition 6 Petroleum Activities must not be carried out in River Trust Asset Areas without the approval of the relevant River Trust.

Heritage places and archaeological artefacts

Condition 7 The holder of the environmental authority must take all reasonable and practicable measures to avoid impacting upon places of known or potential cultural heritage significance whilst carrying out petroleum activities.

Wild river areas

Condition 8 The holder of the environmental authority must ensure that any petroleum activities carried out within a wild river area comply with the conditions in the relevant **Wild River Declaration** for the area that state they are for petroleum activities.

Clearing vegetation

Condition 9 **Clearing** vegetation must be minimised and only be undertaken where necessary to carry out the authorised petroleum activities. Where viable alternatives exist, clearing vegetation must not be undertaken:

(a) in, or within 50 metres of, the **high bank** of a **watercourse**;
(b) in, or within 100 metres of a **wetland** or **spring**;
(c) in a way that dissects large tracts of vegetation resulting in a reduction in the current level of **ecosystem functioning**, an increase in **threatening processes**, or dissection of corridors of vegetation that provide connection between contiguous tracts of vegetation;
(d) in a way that damages adjacent live vegetation;
(e) in an **'of concern' regional ecosystem;**
(f) on slopes greater than 6° (-10%);
(g) on **dispersible soils** or **highly erodible soils**; or
(h) in **discharge areas**.

Condition 10 Cleared vegetation must be stockpiled in a manner that facilitates respreading or salvaging and does not impede vehicle, stock or wildlife movements.

Topsoil management

Condition 11 Except in areas of highly erodible soils, topsoil must be:

(a) removed from an area prior to other significant disturbance commencing in the area;
(b) stockpiled in a manner that will minimise erosion and preserve its biological and chemical integrity; and
(c) used only for on-site rehabilitation purposes.

Acid sulfate soils

Condition 12 When carrying out petroleum activities in areas with a high probability of acid sulfate soils, the holder of the environmental authority must comply with an acid sulfate soil environmental management plan prepared in accordance with the *State Planning*

Policy 2/02 Guideline: Planning and Managing Development Involving Acid Sulfate Soils and the relevant Guidelines.

Drilling operations

Condition 13 All waste fluids and muds resulting from drilling and exploration activities must be contained in an appropriately constructed dam or containment structure for disposal, remediation or reuse where applicable.

Condition 14 Oil and synthetic based drilling muds are not authorised to be used under the authority.

Pipeline construction

Condition 15 The pipeline construction corridor must not exceed 30 metres in width. Turn arounds and work areas must not exceed 50 metres in width.

Condition 16 During construction, pipe must be strung with gaps to allow for fauna movement across the line of the pipe.

Condition 17 Measures must be employed to prevent fauna entrapment in pipe sections or within the pipeline trench.

Condition 18 Open trenches and pipes must be checked for fauna prior to backfill and any trapped animals removed.

Condition 19 Hydrostatic test water must be contained in dams on site, tested and either:

(a) directly reused where appropriate for petroleum activities;
(b) treated so that it meets water quality criteria for the intended reuse; or
(c) disposed of via evaporation.

Condition 20 The pipeline construction corridor must be rehabilitated on completion of laying the pipe, with the exception of the width of an access track, if necessary, to enable vehicular movement along the corridor for pipeline inspection and maintenance.

Spill response

Condition 21 A spill response plan must be developed for all pipelines and other plant or equipment under this authority carrying liquids that have the potential to cause environmental harm. The plan must address the following:

(a) monitoring and detection systems;
(b) notification and reporting procedures (internal and external);

(c) call-out procedures and contact lists;
(d) measures required to halt the spill (i.e. control of pumps, valves etc);
(e) spill containment procedures;
(f) procedures to safely recover the spilt material;
(g) clean up and rehabilitation procedures;
(h) requirements for the remediation or disposal of contaminated soil;
(i) personnel responsibilities;
(j) equipment requirements, location, storage, maintenance and transport;
(k) communications and logistics; and
(l) incident investigation procedures.

Condition 22 Workforce training must be conducted in spill response and recovery procedures.

Contaminant release

Condition 23 Contaminants that are likely to cause environmental nuisance, or serious or material environmental harm, must not be released directly or indirectly to land or **waters** unless explicitly authorised in the environmental authority.

Bunding

Condition 24 Any container such as a tank or drum that contains material that has the potential to cause material or serious environmental harm if **released** to the environment must be appropriately labelled and be contained in a **bunded** area. Volumes of liquid less than 1000L may be stored without bunding if:

(a) recovery of any spilt material is possible;
(b) containers or drums are stored undercover on an impervious base;
(c) the storage is occurring at least 50m from any waters; and
(d) absorbent material is readily available for clean up if necessary.

Individual drums may be temporarily stored on spill containment pallets.

Condition 25 The net capacity of a bunded compound in a storage facility must be at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas.

Condition 26 If an automatic fire sprinkler system is installed in or over any bunded tank or drum storage compound, the capacity of the on-site containment must be increased to include the output from the sprinkler system over a 20 minute period.

Condition 27 If the material to be bunded is contained in drums (or other small containers) the bunded area must contain at least 25% of the total volume of the stored product.

Condition 28 The bund floor and wall must be built of materials impervious to the contents of any tank or container within the bund and be capable of preventing the migration of any spillage or leakage outside the bund wall to the environment.

Condition 29 Wall type bunds at tank storage facilities must be at least 0.5 metres high and not exceed 1.5 metres high. The distance between a tank and the bund wall must be at least 1 metre.

Condition 30 A collection sump must be provided in the bund floor and the floor must be graded in such a way that liquids collect in the sump. The sump must not be connected to a sewer drainage system or any waters.

Condition 31 The bund must be designed to minimise rainwater collection. Removal of accumulated rainwater must be done with a manually operated pump, bailing from the sump or via a locked valve. Rainwater from the bund must meet water quality criteria for the intended use or receiving environment prior to release.

Condition 32 All pipework must be sited above ground and go over the bund walls where possible. Pumps must still be able to operate when the bund is full of liquid.

Condition 33 Piping and pumping facilities must be arranged so that the potential for leaks to escape the confines of the bund is minimised.

Flammable and combustible liquids

Condition 34 Flammable and combustible liquids, including petroleum products, must be stored and handled in accordance with the latest edition of Australian Standard 1940 — The storage and handling of flammable and combustible liquids.

Erosion and sediment control

Condition 35 Erosion protection and sediment control measures must be designed, implemented and maintained to minimise erosion and the release of sediment resulting from carrying out the petroleum activities.

Protection of watercourses, wetlands and springs

Condition 36 Unless otherwise approved under relevant legislation, the holder of the environmental authority must not:

(a) excavate or place **fill** in a way that interferes with the flow of water in a watercourse, wetland, or spring, including: works that divert the course of flow of the water, or works that impound the water;

(b) undertake activities that take water from a watercourse, wetland or spring; or
(c) undertake activities that take **overland flow water** using works that are mentioned as assessable development in a water resource plan under the *Water Act 2000*.

Activities in a watercourse, wetland or spring

Condition 37 Significant disturbance to the **bed or banks** of a watercourse or wetland, or to a spring must:

(a) only be caused where necessary for the construction, operation and/or maintenance of roads, tracks and pipelines that are essential for carrying out other authorised petroleum activities and no reasonable alternative location is feasible; and
(b) be no larger than the minimum area necessary for the purpose; and
(c) be designed by an appropriately qualified person; and
(d) be undertaken and maintained by a person with appropriate skills who has been informed of the design and is appropriately supervised; and
(e) have rehabilitation commence as soon as reasonably practicable upon cessation of the relevant authorised petroleum activities.

Condition 38 Sediment control measures must be implemented to minimise any increase in water turbidity due to carrying out petroleum activities in the bed or banks of a watercourse or wetland, or in a spring.

Condition 39 Routine visual monitoring must be undertaken while carrying out petroleum activities in a watercourse, wetland or spring. If, due to the petroleum activities, water turbidity increases in the watercourse, wetland or spring outside contained areas, works must cease and the sediment control measures must be rectified before activities recommence.

Management of dams

Condition 40 Only low hazard dams are authorised under this authority.

Condition 41 All dams must be designed, constructed, operated and maintained in accordance with **accepted engineering standards** currently appropriate for the purpose for which they are intended.

Condition 42 The **hazard category** of each dam must be determined by a **suitably qualified and experienced person** prior to its construction and at least once per year, based on documented evidence sufficient to define or confirm the current nature and extent of environmental consequences from potential failure of that dam.

Condition 43 Where the hazard category of a dam is for the first time assessed as significant or high, the holder of the environmental authority must:

(a) as soon as reasonably possible, advise the administering authority of the current details of that dam, including:
    I. the assessed hazard category of that dam,
    II. sufficient points of latitude and longitude in the current Australian geodetic datum to form a perimter around that dam and its associated works,
    III. the maximum surface area, maximum volume, maximum depth of that dam; and
(b) apply to amend the environmental authority to a level 1 environmental authority; and
(c) ensure that the dam meets the **hydraulic performance** required of the assessed hazard category within 12 months of that assessment.

Condition 44 The condition of all dams must be monitored for early signs of loss of structural or hydraulic integrity, based on the advice of a suitably qualified and experienced person. The methods of monitoring and frequency of monitoring shall be as assessed by the person who conducts the hazard assessment based on the particular circumstances of each dam.

Decommissioning dams

Condition 45 Each dam must be decommissioned such that it either:

(a) becomes a **stable** landform that no longer contains **flowable substances**; or
(b) is approved or authorised under relevant legislation for a **beneficial use**; or
(c) is a void authorised by the administering authority to remain after decommissioning, or
(d) is compliant with the rehabilitation requirements of the authority; and
(e) is agreed by the post petroleum authority landowner/holder to remain after surrender of the environmental authority and meets water quality criteria for the intended use.

Access to dams

Condition 46 Any dam constructed as part of the petroleum activities must be managed so that either:

(a) where the quality of the water is likely to result in adverse health affects if contacted or consumed, adequate barriers are provided to limit access to the water by humans, livestock and native fauna; or

(b) where the quality of the water will not result in any adverse health affects if contacted or consumed, safe access to the water is provided for livestock and native fauna.

Associated water

Condition 47 **Associated water** may be temporarily contained in a dam or other containment vessel on site prior to:

(a) reuse on site for petroleum activities; or
(b) use under the provisions of the *Petroleum and Gas (Production and Safety) Act 2004*; or
(c) use for an approved beneficial use; or
(d) removal from site for treatment or disposal at an appropriately authorised facility.

Condition 48 If the use of associated water for a purpose other than a petroleum activity has been authorised by grant of a Notice of decision to approve a resource for beneficial use under Part 6A of the *Environmental Protection (Waste Management) Regulation 2000* it can be used in accordance with the Notice for the stated type of use(s).

Release of contaminants to the atmosphere

Condition 49 The release of **noxious** or **offensive** odour, dust, particulate matter or any other airborne contaminant resulting from the petroleum activities must not cause environmental nuisance at any sensitive place or commercial place.

Noise management

Condition 50 If the environmental authority holder receives a complaint as defined in Condition 60 about noise from the petroleum activities at a **sensitive place** or **commercial place**, the holder must conduct an appropriate investigation and must implement remedial action if the noise from the petroleum activities exceeds the noise limits at the sensitive place or commercial place in Table 1 — Noise Limits.

Table 1 — Noise limits

Sensitive place						
Noise level dB(A) measured as:	**Monday to Saturday**			**Sundays and public holidays**		
	7am to 6pm	**6pm to 10pm**	**10pm to 7am**	**9am to 6pm**	**6pm to 10pm**	**10pm to 9am**
$L_{A90,\ adj,\ 15\ mins}$	lesser of bg+3 or 48	bg+0	bg+0	bg+0	bg+0	bg+0
$L_{A10,\ adj,\ 15\ mins}$	lesser of bg+5 or 50	lesser of bg+5 or 45	bg+0	lesser of bg+5 or 45	lesser of bg+5 or 40	bg+0

$L_{A1, adj, 15 mins}$	lesser of bg+1 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	lesser of bg+10 or 45	lesser of bg+5 or 40
Commercial place						
Noise level dB(A) measured as:	**Monday to Saturday**			**Sundays and public holidays**		
	7am to 6pm	**6pm to 10pm**	**10pm to 7am**	**9am to 6pm**	**6pm to 10pm**	**10pm to 9am**
$L_{A90, adJ, 15 mins}$	lesser of bg+5 or 50	bg+0	bg+0	lesser of bg+3 or 43	bg+0	bg+0
$L_{A10, adj, 15 mins}$	lesser of bg+10 or 55	lesser of bg+10 or 50	lesser of bg+5 or 45	lesser of bg+10 or 50	lesser of bg+10 or 45	lesser of bg+5 or 40
$L_{A1, adj, 15 mins}$	lesser of bg+15 or 60	lesser of bg+15 or 55	lesser of bg+10 or 50	lesser of bg+15 or 55	lesser of bg+15 or 50	lesser of bg+10 or 45

• bg **= background noise level**
• In the event that measured bg is less than 25 dB(A), then 25 dB(A) is to be substituted for the measured level.
• If the background is higher than the number shown on the second line in any box, the limit is to be background plus 0.

Condition 51 The method of measurement and reporting of noise levels must comply with the latest edition of the Department of Environment and Heritage Protection's Noise Measurement Manual or the most recent version of AS1055 Acoustics — Description and measurement of environmental noise.

General waste management

Condition 52 Where practicable, general waste generated in carrying out the petroleum activities must be reused, recycled or removed to a facility that can lawfully accept the waste under the *Environmental Protection Act 1994*.

Condition 53 If no viable alternative exists, solid general waste may be disposed of on site at a facility designed to receive waste at a rate of less than 50t per year only if it is:

(a) disposed of into a waste disposal trench;
(b) consolidated, compacted and covered with a layer of inert material following placement of the waste into the trench;
(c) managed in a way that prevents scavenging and access by vermin;
(d) managed in a way that prevents or contains wind blown litter; and
(e) managed in a way that prevents or controls **leachate** generated from the activity.

Condition 54 Waste, including vegetation, must not be burnt.

Regulated waste

Condition 55 **Regulated waste** must be removed and transported from the site by a person who holds a current authority to transport such wastes to a facility that is lawfully able to accept the waste under the *Environmental Protection Act 1994.*

Condition 56 Regulated waste generated in carrying out the petroleum activities can be temporarily stored on the site awaiting removal provided:

(a) it is stored in a place and circumstance in which there is minimal risk of causing contamination to land or waters or a fire hazard; and
(b) each container of regulated waste stored awaiting movement off site is clearly marked to identify the contents.

Condition 57 A record of all regulated waste (excluding trackable waste) must be kept detailing the following information:

(a) date of pickup of waste;
(b) description of waste;
(c) quantity of waste;
(d) origin of waste; and
(e) destination of waste.

Treated Sewage Effluent

Condition 58 Treated sewage effluent or greywater from a mobile and temporary treatment system with a daily peak design capacity of less than 21 equivalent persons (EP) may be released to land provided it:

(a) be to a fenced and signed contaminant release area(s):
(b) does not contain any properties nor contain any organisms or other contaminants in concentrations that are capable of causing environmental harm;
(c) does not result in pooling or run-off or aerosols or spray drift or vegetation die-off;
(d) minimises deep drainage below the root zone of any vegetation;
(e) does not adversely affect the quality of shallow aquifers;
(f) be to a contaminant release area(s) that is kept vegetated with groundcover, that is:
    I. not a declared pest species; and
    II. kept in a viable state for transpiration and nutrient uptake

Monitoring

Condition 59 The holder of the environmental authority must:

(a) develop a monitoring program that will demonstrate compliance with the conditions of the environmental authority;
(b) document monitoring and inspections carried out under the monitoring program and any actions taken; and
(c) record, compile and keep for a minimum of seven (7) years all monitoring results and data.

Complaints

Condition 60 The holder of the environmental authority must:

(a) when the administering authority advises the holder of a complaint that the administering authority does not consider to be frivolous, vexatious or based on a mistaken belief alleging nuisance (e.g. caused by dust or noise), investigate the complaint and advise the administering authority of the action proposed or undertaken in relation to the complaint;
(b) if the administering authority is not satisfied with the proposed or completed action, undertake monitoring or other action requested by the administering authority; and
(c) maintain a record of complaints and incidents causing environmental harm and actions taken in response to the complaints or incidents for a minimum of seven (7) years.

Rehabilitation

Condition 61 As soon as practicable after the end of petroleum activities that have caused significant disturbance to land, the holder of the environmental authority must:

(a) remediate contaminated land caused by petroleum activities in accordance with EP Act requirements and this authority; and
(b) undertake works to establish a safe, stable, non polluting landform similar to that of surrounding un-disturbed areas, including where relevant:
    I. backfilling any **voids** and trenches;
    II. neutralising and /or encapsulating any acid producing or potentially acid producing material;
    III. removing or encapsulating in low permeability material saline residues from evaporation ponds;
    IV. re-establishing surface drainage lines;
    V. minimising the potential for slumping, subsidence or erosion;
    VI. reinstating the top layer of the soil profile;
    VII. respreading any cleared vegetation; and
    VIII. promoting establishment of vegetation of similar species composition and density of cover to the surrounding undisturbed land;

IX. unless the holder has the written consent of the landowner/holder and the administering authority.

Maintenance of land rehabilitation

Condition 62 Monitoring and maintenance of rehabilitated areas must take place to ensure and demonstrate:

(a) stability of landforms;
(b) erosion control measures remain effective;
(c) stormwater runoff and seepage from rehabilitated areas does not negatively affect the environmental values of any waters;
(d) plants show healthy growth and recruitment is occurring; and
(e) rehabilitated areas are free of any **declared pest plants.**

Rehabilitation Success

Condition 63 Rehabilitation can be considered successful when the site can be managed for its designated land-use (either similar to that of surrounding undisturbed areas or as otherwise agreed in a written document with the landowner/holder and administering authority) without any greater management input than for other land in the area being used for a similar purpose and there is evidence that the rehabilitation has been successful for at least three (3) years.

Decommissioning pipelines

Condition 64 Decommission inactive buried pipelines by in-situ decommissioning (abandonment in place).

Condition 65 Prior to pipelines and equipment being disconnected they must be drained or vented and cleaned via purging or flushing.

Condition 66 Any water used for purging or flushing pipelines must be contained in dams on site, tested and either:

(a) directly reused where suitable for petroleum activities;
(b) treated so that it meets water quality criteria for the intended reuse; or
(c) removed from the site for disposal or treatment at an appropriately authorised facility; or
(d) disposed of via evaporation in a suitably lined pond.

Infrastructure

Condition 67 All above ground **infrastructure** used for the petroleum activities must be removed prior to surrender of the environmental authority, except where it is to remain under the authority of the Petroleum and Gas (Production and Safety) Act 2004;, or with the

written agreement of the administering authority and the post petroleum authority landowner/holder.

Transition of petroleum authority

Condition 68 The holder of the environmental authority must take responsibility for the rehabilitation of any disturbance to land undertaken as part of a petroleum activity on a petroleum authority that has been transitioned (all or in part) due to the grant of a new petroleum authority over that land which now forms part of the current project.

Notification

Condition 69 In addition to the requirements under section 320A of the *Environmental Protection Act 1994*, the administering authority must be notified through the Pollution Hotline and in writing within 48 hours of becoming aware of any of the following events:

(a) any unauthorised **significant disturbance to land**
(b) threatened or actual loss of structural or hydraulic integrity of a dam
(a) (c)any incident where there is a threatened or actual loss of well integrity
(c) When the seepage trigger action response procedure is implemented
(d) unauthorised releases of any volume of **prescribed contaminants** to water
(e) unauthorised releases of volumes of contaminants (or their mixtures) to land greater than:
    I. 200 L of hydrocarbons; or
    II. 5 000 L of associated water; or
    III. 5 000 L of raw sewage; or
    IV. 10 000 L of treated sewage effluent.

Definitions

Note: Where a term is not defined in this Authority, the definition in the *Environmental Protection Act 1994*, its regulations and Environmental Protection Policies or the *Petroleum and Gas (Production and Safety) Act 2004* and its regulations must be used in that order.

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*.

Appropriately qualified person means a person who has professional qualifications, training, skills or 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.

Archaeological artefact means:

(a) any artefact that is evidence of an aspect of Queensland's history, whether it is located in, on or below the surface of land, and not
(b) a thing that is Aboriginal cultural heritage under the *Aboriginal Cultural Heritage Act 2003* or Torres Strait Islander cultural heritage under the *Torres Strait Islander Cultural Heritage Act 2003*.

Archaeological investigation means a physical investigation of the place carried out by a person or persons with recognised qualifications, experience or standing in historical archaeology, mining history, cultural heritage management, or related discipline for the purpose of investigating, recording or conserving archaeological artefacts on the place.

Archaeological place means a place entered in the Queensland heritage register under Part 5 of the *Queensland Heritage Act 1992*.

Assessed or **assess** by a suitably qualified and experienced person in relation to a hazard assessment of a dam means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

(a) what has been assessed and the precise nature of that assessment;
(b) the relevant legislative, regulatory and technical criteria on which the assessment has been based;
(c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
(d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

Associated water means underground water taken or interfered with, if the taking or interference happens during the course of, or results from, the carrying out of another activity authorised under a petroleum authority, such as producing petroleum from a well, and includes water also known as produced formation water. The term includes all contaminants suspended or dissolved in the water.

Associated works in relation to a dam means:

(a) operations of any kind and all things constructed, erected or installed for that dam; and
(b) any land used for those operations.

Background noise level means the sound pressure level, measured in the absence of the noise under investigation, as the $L_{A90,\ T}$ being the A-weighted sound pressure level exceeded for 90 percent of the measurement time period T of not less than 15 minutes, using Fast response.

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.

Beneficial use means:
1. with respect to dams, that the current or proposed owner of the land on which a dam stands, has found a use for that dam that is:
    (a) of benefit to that owner in that it adds real value to their business or to the general community,
    (b) in accordance with relevant provisions of the *Environmental Protection Act 1994*,
    (c) sustainable by virtue of written undertakings given by that owner to maintain that dam, and
    (d) the transfer and use have been approved or authorised under any relevant legislation; or
2. with respect to associated water, see Environmental Protection Agency's Operational Policy *Management of water produced in association with petroleum activities (associated water)* and *Notice of decision to approve a resource for beneficial use — associated water* which can be accessed on Department of Environment and Heritage Protection's website atvwww.ehp.q1d.gov.au.

Bund or bunded in relation to spill containment systems for fabricated or manufactured tanks or containers designed to a recognised standard means an embankment or wall of brick, stone, concrete or other impervious material which may form part or all of the perimeter of a compound and provides a barrier to retain liquid. Since the bund is the main part of a spill containment system, the whole system (or bunded area) is sometimes colloquially referred to within industry as the bund. The bund is designed to contain spillages and leaks from liquids used, stored or processed above ground and to facilitate clean-up operations. As well as being used to prevent pollution of the receiving environment, bunds are also used for fire protection, product recovery and process isolation.

Certification or **certified** by a suitably qualified and experienced person in relation to a **design plan** or an annual report regarding dams, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:
    (a) exactly what is being certified and the precise nature of that certification;
    (b) the relevant legislative, regulatory and technical criteria on which the certification has been based;
    (c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and
    (d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

Clearing means:
    (a) in relation to grass, scrub or bush - the removal of vegetation by disturbing root systems and exposing underlying soil (including burning), but does not include—

i. the flattening or compaction of vegetation by vehicles if the vegetation remains living; or
ii. the slashing or mowing of vegetation to facilitate access tracks; or
iii. the clearing of noxious or introduced plant species; and

(b) in relation to trees - cutting down, ringbarking, pushing over, poisoning or destroying in any way.

Commercial place means a work place used as an office or for business or commercial purposes which is not part of the petroleum activities and does not include employees accommodation or public roads.

Construction in relation to a dam includes building a new dam and modifying or lifting an existing dam.

Cultural heritage significance means aesthetic, architectural, historical, scientific, social or other significance, to the present generation or past or future generations, as assessed against the following criteria:

(a) the place is important in demonstrating the evolution or pattern of Queensland's history;
(b) the place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage;
(c) the place has potential to yield information that will contribute to an understanding of Queensland's history;
(d) the place is important in demonstrating the principal characteristics of a particular class of cultural places;
(e) the place is important because of its aesthetic significance;
(f) the place is important in demonstrating a high degree of creative or technical achievement at a particular period;
(g) the place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
(h) the place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history.

Dam means a land-based structure (including a levee, **dyke** or bund) or a void that is intended or used to contain, divert or control **flowable substances**, and includes any substances that are thereby contained or controlled by that land-based structure or void and **associated works**. However; a dam does *not* mean a fabricated or manufactured tank or container designed to a recognised standard, nor does a dam mean a land-based structure where that structure is designed to an Australian Standard such as a bund designed for spill containment to AS1940.

Declared pest plants are listed in Schedule 2 of the *Land Protection (Pest and Stock Route Management) Regulation 2003*.

Design plan is the documentation required to describe the physical dimensions of the dam, the materials and standards to be used for construction of the dam, and the criteria to be used for operating the dam. The documents must include design and investigation reports, specifications and certifications, together with the planned decommissioning and rehabilitation works and outcomes. A design plan may include 'as constructed' drawings.

Discharge area is an area in the landscape where the net movement of groundwater is out of the aquifer. This may be expressed by waterlogging where groundwater discharges at the soil surface because of seepage or salting because of evaporation.

Dispersible soils are structurally unstable soils that readily breakdown into their constituent particles in water (e.g. the clay material disintegrates into particles less than 2 microns across within 24 hours when soil crumbs are submerged in distilled water). These soils are also known as sodic soils and have a high percentage of sodium ions (in soluble or exchangeable form).

Ecosystem functioning means the interactions between and within living and non-living components of an ecosystem and generally correlates with the size, shape and location of an area of vegetation.

End means the stopping of the particular activity that has caused a significant disturbance in a particular area. It refers to, among other things, the end of a seismic survey or the end of a drilling operation. It does not refer to the end of all related activities such as rehabilitation. In other words, it does not refer to the 'completion' of the petroleum activity, the time at which the petroleum authority ends or the time that the land in question ceases to be part of an authority.

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

Equivalent person has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2005, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2008 where:

- EP = V/200 where V is the volume, in litres, of the average dry weather flow of sewage that can be treated at the works in a day; or
- EP = M/2.5 where M is the mass, in grams, of phosphorus in the influent that the works are designed to treat as the inlet load in a day.

Evaporation pond means a dam specifically designed for the purpose of disposing of a liquid via evaporation.

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*.

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

Foreseeable future is 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.

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

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

Hazard category means the level of hazard (low, significant or high) assigned to a dam as a result of an assessment against tables and other criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* published by the Environmental Protection Agency (Department of Environment and Heritage Protection) on its website.

Heritage place means any place that may be of **cultural heritage significance**, or any place with potential to contain **archaeological artefacts** that are an important source of information about Queensland's history.

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.

Highly erodible soils means very unstable soils that are generally described as Sodosols with hard-setting, fine sandy loam to silty clay loam surfaces (solodics, solodised solonetz and solonetz) or soils with a dispersible layer located less than 25cm deep or soils less than 25cm deep.

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 in the Manual for Assessing Hazard Categories and *Hydraulic Performance of Dams (Version 1.0, 2008)* published by the Department of Environment and Heritage Protection on its website.

Infrastructure means water storage dams, roads and tracks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activities, but does not

include other facilities required for the long term management of the impact of those activities or the protection of potential resources. Such other facilities include dams other than water storage dams (e.g. evaporation ponds), pipelines and assets that have been decommissioned, rehabilitated and lawfully recognised as being subject to subsequent transfer with ownership of the land.

$L_{A90,adj,15}$ mins means the A-weighted sound pressure level exceeded for 90 percent of the measurement time period of 15 minutes, adjusted for noise characteristics including tonality and impulsiveness and measured in the presence of the noise under investigation, using Fast Response.

$L_{A10,adj,15}$ mins means the A-weighted sound pressure level exceeded for 10 percent of the measurement time period of 15 minutes, adjusted for noise character including tonality and impulsiveness and measured in the presence of the noise under investigation, using Fast Response.

$L_{A1,adj,15}$ mins means the A-weighted sound pressure level exceeded for 1 percent of the measurement time period of 15 minutes, adjusted for noise character including tonality and impulsiveness and measured in the presence of the noise under investigation, using Fast Response.

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

Levee means a dyke or bund that is designed only to provide for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from unplanned releases from other works of infrastructure, during the progress of those stormwater or flood flows or those unplanned releases; and does not store any significant volume of water or flowable substances at any other times.

Limited regulated waste means any of the following regulated wastes, asbestos, clinical waste or quarantine waste that has been rendered non-infectious, fish processing waste, food processing waste, poultry processing, waste, tyres or treatment tank sludge or residue produced in the carrying out of an activity in relation to sewage treatment and water supply activities.

Noxious means harmful or injurious to health or physical well being.

'Of concern' regional ecosystem means an 'of concern' regional ecosystem identified in the database maintained by the Department of Environment and Heritage Protection called 'Regional ecosystem description database' containing regional ecosystem numbers and descriptions. The database is available for inspection on the Department of Environment and Heritage Protection's website at http://www.ehp.q1d.gov.au/ecosystems/biodiversity/regional-ecosystems/maps/index.php

Offensive means causing unreasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.

Overland flow water means water, including floodwater, flowing over land, otherwise than in a watercourse or lake:

(a) after having fallen as rain or in any other way; or
(b) after rising to the surface naturally from underground.

Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads, pipelines etc) which is to be left by agreement with the landowner.

Petroleum authority is:

(a) a 1923 Act petroleum tenure granted under the *Petroleum Act 1923*; or
(b) a petroleum authority granted under the *Petroleum and Gas (Production and Safety) Act 2004*; or
(c) a licence, permit, pipeline licence, primary licence, secondary licence or special prospecting authority granted under the *Petroleum (Submerged Lands) Act 1982*.

Prescribed contaminants have the meaning in section 440ZD of the *Environmental Protection Act 1994* and means:

(a) earth; or
(b) a contaminant prescribed under section 440ZF.

Regulated dam means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Version 1.0, 2008)* published by the Department of Environment and Heritage Protection on its website.

Regulated waste means non-domestic waste mentioned in Schedule 7 of the *Environmental Protection Regulation 2008* (whether or not it has been treated or immobilised), and includes—

(a) for an element — any chemical compound containing the element; and
(b) anything that has contained the waste.

Release of a contaminant into the environment includes:

(a) to deposit, discharge, emit or disturb the contaminant; and
(b) to cause or allow the contaminant to be deposited, discharged, emitted or disturbed; and
(c) to allow the contaminant to escape; and
(d) to fail to prevent the contaminant from escaping.

Secondary treated class B standards means treated sewage effluent or greywater which meets the following standards:

- total phosphorous as P, maximum 20mg/L
- total nitrogen as N, maximum 30mg/L
- 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L
- suspended solids, maximum 30mg/L

- pH, range 6.0 to 8.5
- e-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10000cfu per 100mL.

Secondary treated class C standards means treated sewage effluent or greywater which meets the following standards:

- total Phosphorous as P, maximum 20mg/L
- total Nitrogen as N, maximum 30mg/L
- 5-day Biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L
- suspended solids, maximum 30mg/L
- pH, range 6.0 to 8.5
- e-Coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10000cfu per 100mL, maximum 100000cfu per 100mL.

Sensitive place means:

(a) a dwelling (including residential allotment, mobile home or caravan park, residential marina or other residential premises, motel, hotel or hostel;
(b) a library, childcare centre, kindergarten, school, university or other educational institution;
(c) a medical centre, surgery or hospital;
(d) a protected area;
(e) 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.

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

Site means the area within the petroleum authority or authorities to which the environmental authority relates.

Spring means the land to which water rises naturally from below the ground and the land over which the water then flows.

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.

State heritage place means a place entered in the Queensland heritage register under Part 4 of the *Queensland Heritage Act 1992*.

Suitably qualified and experienced person in relation to dams means one who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act*

1988, OR registered as a National Professional Engineer (NPER) with the Institution of Engineers Australia, OR holds equivalent professional qualifications to the satisfaction of the administering authority for the Act; AND the administering authority for the Act is satisfied that person has knowledge, suitable experience and demonstrated expertise in relevant fields, as set out below:

(a) knowledge of engineering principles related to the structures, geomechanics, hydrology, hydraulics, chemistry and environmental impact of dams; and
(b) a total of five (5) years of suitable experience and demonstrated expertise in the geomechanics of dams with particular emphasis on stability, geology and geochemistry; and
(c) a total of five (5) years of suitable experience and demonstrated expertise each, in three (3) of the following categories:
    i. investigation and design of dams;
    ii. construction, operation and maintenance of dams;
    iii. hydrology with particular reference to flooding, estimation of extreme storms, water management or meteorology;
    iv. hydraulics with particular reference to sediment transport and deposition, erosion control, beach processes;
    v. hydrogeology with particular reference to seepage, groundwater;
    vi. solute transport processes and monitoring thereof;
    vii. dam safety.

"Suitably qualified and experienced person" — means a person:

(a) holding a National Association of Testing Authorities (NATA) signatory; **or**
(b) either;
    I. who is holder of a degree in Science or Applied Science conferred after due examination by a University or College of Advanced Education in Queensland; **or**
    II. who is the holder of a degree in Science or Applied Science conferred after due examination by a University, College of Advanced Education or other Tertiary Education Institution outside Queensland and that is to be the like effect as a degree conferred by a University or College of Advanced Education in Queensland; **or**
    III. who has corporate membership of the Royal Australian Chemical Institute; **and**
    IV. has gained at least three (3) years practical experience in chemical bacteriological or other specialist analysis to demonstrate the persons capacity to maintain a high level of performance in all aspects of the performance of the particular analysis; **or**
(c) working under the direct supervision of person(s) mentioned in a) and b).

Thing means a material object without life or consciousness or some entity, object or creature which is not or cannot be specifically designated or precisely described.

Threatening processes are processes, features and actions that can have a detrimental effect upon the health and viability of an area of vegetation. For example, altered hydrology, land use practices, invasion by pest and weed species, land degradation, edge effects and fragmentation.

Tolerable limits means a range of parameters regarded as being sufficient to meet the objective of protecting relevant environmental values. For example, a range of settlement for a tailings capping, rather than a single value, could still meet the objective of draining the cap quickly, preventing pondage and limiting infiltration and percolation.

Topsoil 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.

Void means any man-made, open excavation in the ground (includes borrow pits, drill sumps, frac pits, flare pits, cavitation pits and trenches).

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

Watercourse is a creek, river or stream

(a) in which water flows intermittently or permanently in a visibly defined channel, whether artificial, artificially improved or natural; and
(b) that has evidence of biological dependence on any water that flows in the creek, river or stream or on the banks or bed.

Wetland means an area shown as a wetland on a 'Map of referable wetlands', a document approved by the chief executive (environment). A map of referable wetlands can be viewed at www.ehp.q1d.gov.au

Wild river declaration is a statutory instrument under the *Wild Rivers Act 2005*. A declaration lists the relevant natural values to be preserved and delineates certain parts of the wild river area and the different constraints that may apply in these areas. With reference to environmental authorities for petroleum, each declaration also specifies conditions to be included in a new authority if the activity is to be located within the wild river area

Department of Environment and Heritage Protection
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Queensland Government