Guideline

Environmental Protection Act 1994

Streamlined model conditions for petroleum activities

The purpose of this guideline is to provide a set of streamlined model conditions that can be incorporated into environmental authorities for petroleum activities approved by the administering authority under the Environmental Protection Act 1994.

Introduction **3**
Background **3**
Inclusions 4
Exclusions 4
Revisions 5
Regulatory framework **5**
Considerations for applicants **6**
Applications for new projects in progress 7
Amendment applications 7
EA holders may choose to apply 7
Streamlined model conditions **8**
General notes 8
Implementation notes 8
Streamlined Conditions—General Environmental Protection **9**
Streamlined Conditions—Waste Management **13**
Streamlined Conditions—Protecting Acoustic Values **17**
Streamlined Conditions—Protecting Air Values **18**
Streamlined Conditions—Protecting Land Values **21**
Streamlined Conditions—Protecting Water Values **28**
Streamlined Conditions—Rehabilitation **32**
Conditions—Well construction, maintenance and stimulation activities **34**
Conditions—Dams **38**
Definitions for streamlined conditions **38**
Appendix 1 Explanatory notes and heads of power for streamlined model conditions for petroleum activities **55**
Explanatory notes—General Environmental Protection 55
Explanatory notes—Waste Management 61
Explanatory notes—Protecting Acoustic Values 67
Explanatory notes—Protecting Air Values 68
Explanatory notes—Protecting Land Values 72
Explanatory notes—Protecting Biodiversity Values 74

Explanatory notes—Protecting Water Values 84
Explanatory notes—Rehabilitation 90
Explanatory notes—Well construction, maintenance and stimulation activities 96

Introduction

The former Department of Environment and Heritage Protection (EHP), now the Department of Environment and Science (DES), in partnership with the Australian Petroleum Production and Exploration Association (APPEA) has developed streamlined model conditions ('streamlined conditions') for the petroleum industry.

These conditions provide red tape reduction benefits for the petroleum industry while maintaining environmental standards. Streamlined conditions are outcomes-focussed, provide for transparency and consistency across the petroleum industry and will assist DES in improving decision making timeframes.

The conditions in this guideline can be incorporated in an environmental authority (EA) to manage petroleum activities and meet the objectives of the *Environmental Protection Act 1994* (EP Act). The streamlined conditions are based on acceptable management approaches and constraints to protect environmental values. The guideline provides both explanatory notes in Appendix 1, describing how each condition is to be applied and interpreted, and the head of power for imposing each condition under the EP Act.

Background

In 2013, a project team was established including EHP, APPEA, technical experts and industry representatives to review, update and streamline model conditions for the petroleum industry. One of the aims of this project was to, where possible, amend the model conditions to be outcome-focused and in line with EHP's Regulatory Strategy.

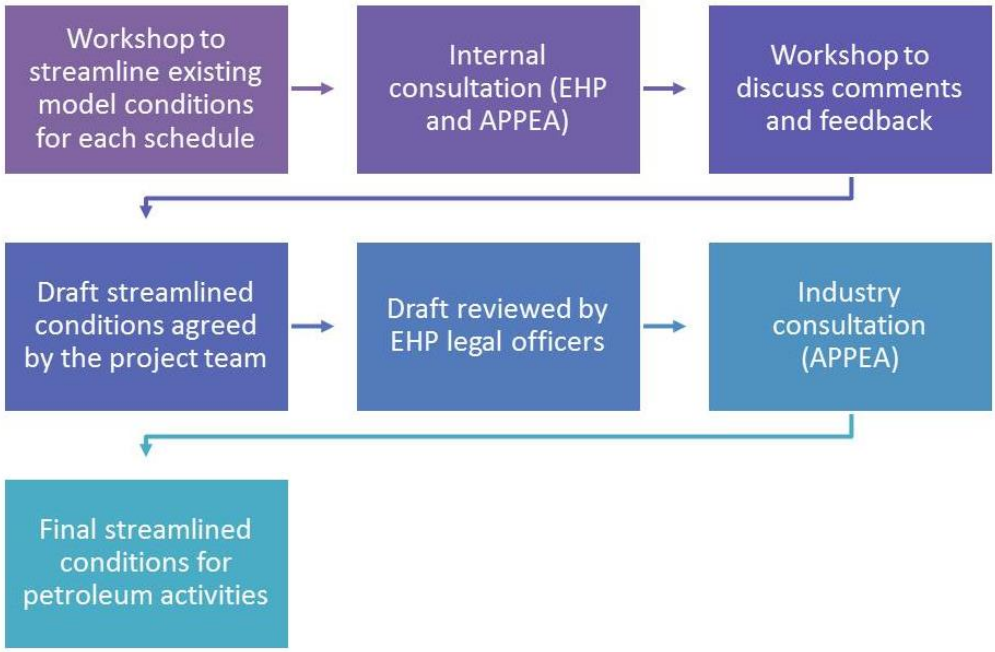
A risk assessment was also undertaken by the project team to identify risks to environmental values from petroleum production activities and potential mitigation measures and constraints to help inform the development of the streamlined conditions. Where the risk assessment identified that the risk of an activity was such that a detailed site-specific environmental assessment was required, the activity was excluded from the scope of the streamlining project.

From July to December 2013, the project team reviewed a range of existing resource industry conditions and workshopped these to develop a set of outcome-focused, streamlined petroleum conditions. These conditions were consulted on both with EHP assessing officers and with industry through APPEA. In some cases, industry experts such as ecologists participated in the workshops to ensure that operational and technical knowledge was utilised.

Comments and feedback on the streamlined conditions were discussed in subsequent workshops and the final draft streamlined conditions were agreed to by the project team in December 2013. These conditions were then endorsed by APPEA's Industry Leadership and Exploration Leadership Groups.

In February 2014, the final draft streamlined conditions were reviewed by EHP legal officers. The streamlined conditions were subject to minor amendments to improve clarity and enforceability. These were then provided to APPEA, for a brief review by industry prior to finalisation. The following diagram (Figure 1) provides a summary of the process followed to develop the streamlined conditions.

Figure 1. Process followed by the project team to streamline the existing petroleum model conditions.



Inclusions

The following schedules of conditions have been streamlined:

- General environmental protection
- Waste management
- Protecting acoustic values
- Protecting air values
- Protecting land values
- Protecting biodiversity values
- Protecting water values
- Rehabilitation.

Exclusions

The streamlined conditions in this guideline do not cover all of the conditions necessary for regulating a petroleum activity. During the risk assessment process, it was identified that due to the risk and site-specific nature of some activities, some conditions must be informed by a detailed environmental assessment, and therefore streamlined conditions were not developed for these activities. The list below outlines which activities were excluded from the streamlining project and therefore from the streamlined conditions in this guideline as site specific assessment is required:

- underground gas storage
- waste injection
- re-injection of treated water

- releases to surface waters
- solid salt management
- regulated structures.

Regulated structures were excluded from the scope of the streamlining project and have not been included in this guideline. The development of model conditions for environmentally relevant activities under the EP Act that involve structures which are dams or levees was undertaken through a separate process involving EHP, APPEA and the Queensland Resources Council. Please refer to the guideline (ESR/2016/1934[1]) for model conditions for regulated structures and the manual (ESR/2016/1933[1]) for the consequence assessment.

Stimulation activities were excluded from the scope of the streamlining project as a separate risk assessment process was underway. In relation to stimulation activities following the risk assessment, a review of the model conditions and development of streamlined conditions will commence. However, the current model conditions and explanatory notes for well construction, maintenance and stimulation activities consistently used by the Department have been included in this guideline for completeness.

Revisions

Version 2.00 of this guideline includes the revision of some conditions made to reflect legislative changes that have occurred since the release of version 1. These changes are as follows:

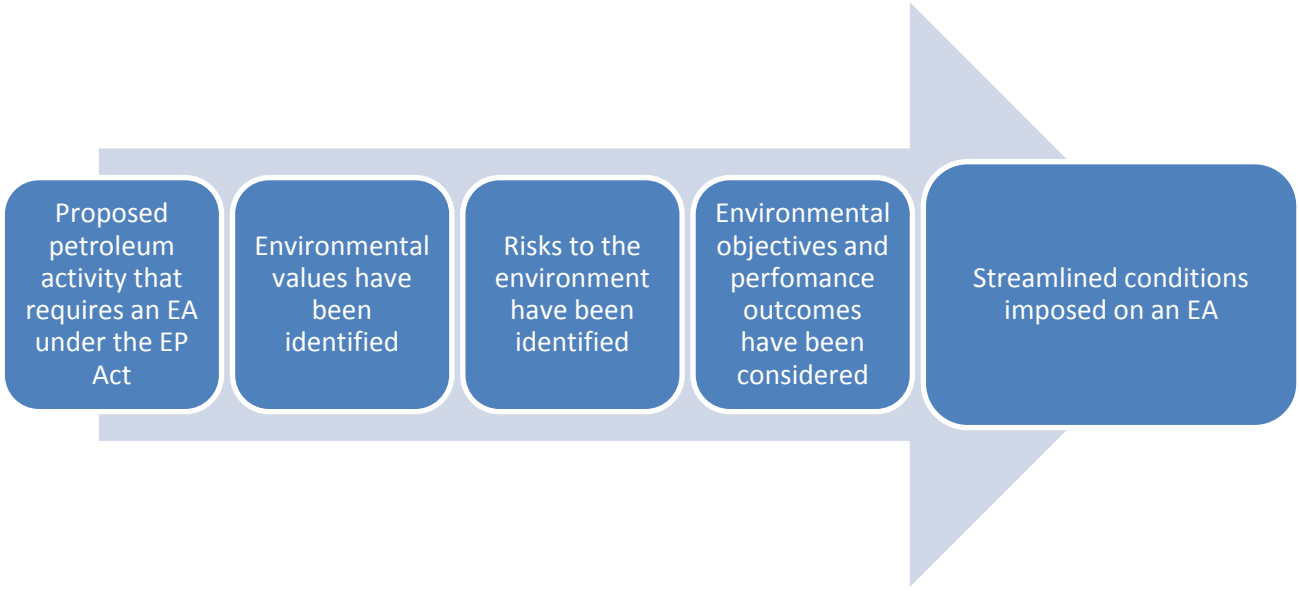
- deletion of the condition relating to wild rivers due to the repeal of the *Wild Rivers Act 2005* and the introduction of the *Regional Planning Interests Act 2014* in 2014; and
- the introduction of the *Environmental Offsets Act 2014* and Queensland Environmental Offsets Policy 2014, which replaced all previous offsets frameworks.

Regulatory framework

The EP Act provides for the application, assessment and approval of environmental authorities for petroleum activities. Chapter 5 of the EP Act outlines the regulatory framework for an application for an EA and the process and powers of the administering authority to impose conditions on an EA. Figure 2 provides an overview of the key considerations taken into account when the administering authority is deciding the conditions to be imposed in an EA for petroleum activities. When giving approval under the EP Act, the administering authority must address the regulatory requirements set out in the Environmental Protection Regulation 2008 (EP Reg) and the standard criteria contained in the EP Act.

[1] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

Figure 2. Overview of key considerations when imposing streamlined conditions on an EA



When determining the appropriate conditions to impose on an EA, the administering authority must consider certain criteria, including sections 207, 208, 209 of the EP Act and sections 52 and 53 of the EP Reg. The head of power for the administering authority to impose conditions may include one or more of the criteria listed above. The head of power is listed in the explanatory notes for each condition in Appendix 1.

The EP Act requires that any condition imposed in an EA be necessary or desirable to achieve the objects of the EP Act. In assessing an EA, the administering authority should consider whether any condition (streamlined, model or site-specific) is necessary or desirable based on the particular facts and circumstances of the application to which the proposed authority relates. These streamlined conditions provide guidance on the administering authority's expectations in managing potential environmental risks posed by petroleum activities. They also allow for consistency in conditioning of environmental authorities across the state.

When considering the appropriateness of streamlined conditions for an EA that relates to a coordinated project under the *State Development and Public Works Organisation Act 1971*, the delegate must impose any conditions for the EA stated in the Coordinator-General's report for the relevant activity, noting that any other condition imposed on the authority cannot be inconsistent with a Coordinator-General's condition. Once incorporated into an EA and the authority is granted, the holder of the authority must comply with the conditions.

Considerations for applicants

The streamlined conditions, where appropriate, may be applied to new petroleum activity EA applications lodged after the guideline is approved. The streamlined conditions are not compulsory for new or existing EAs, but the administering authority may use them, where appropriate, to meet an outcome or regulate an impact on an environmental value following an assessment based on material supplied by an applicant. These conditions are not mandatory and the administering authority may determine alternative conditions to address specific matters or differences in relation to the operation of certain activities.

The availability of the streamlined conditions does not remove application information requirements. Applicants will still need to submit a base level of information as required by legislation and demonstrate they can and are willing to operate/constrain their activity in a way that will ensure compliance with the conditions. DES is working to develop a new guideline for applicants to assist in meeting the application requirements of the EP Act whilst providing a streamlined application process.

Applicants must be aware that some of the streamlined conditions are part of a package of conditions because this effectively constrains the activity to satisfy the risk to the environment, i.e. one condition must be accompanied by another. For example, streamlined conditions for sewage treatment plants and the release of treated sewage effluent to land are indirectly related to other streamlined conditions for plant and equipment, contingency procedures, nuisance, planning, waste, monitoring or rehabilitation.

Pre-lodgement meetings with the administering authority are recommended prior to submission of an application. This will enable a project manager to be appointed for direct contact should any subsequent questions arise.

Applications for new projects in progress

For applications in progress on the date this guideline is approved, the applicant should be advised of the availability of the streamlined conditions.

Amendment applications

For amendment applications where the amendment involves altering activities in a way that increases impacts on environmental values, the administering authority and applicant may negotiate to amend the EA to reflect the streamlined conditions, where appropriate, to the extent they relate to the changed impacts.

EA holders may choose to apply

Industry can apply for an amendment to their EA seeking to incorporate streamlined model conditions, subject to an assessment and approval by DES that the conditions are suitable for managing the proposed or existing activity. The applicant must provide information required under the EP Act, including information about the risks and impacts of the proposed/existing activities, and demonstrate that the streamlined model conditions are the appropriate response to managing those risks and impacts.

For an existing EA, where the streamlined conditions are applied for through an amendment application process, the applicant must:

- be aware of how the existing EA conditions apply to or constrain their current activities in relation to location, scale and intensity, and
- understand the implications that the streamlined conditions may have on their current activities.

Holders of EAs for existing petroleum activities may apply to adopt any or all of the streamlined conditions.

Applicants must identify any indirectly related streamlined conditions (e.g. contingency, planning or monitoring conditions) relevant to the streamlined condition applied for and also identify whether these related conditions are sought to be included in the EA, or if not, what alternative existing conditions achieve their purpose.

The applicant may request changes to the streamlined conditions but must provide clear evidence as to the reason for the change including that the risk of environmental harm is otherwise addressed to at least the same extent by the specific environmental management practices to be implemented; technologies to be used; or the nature of the environmental values impacted by the project. The administering authority may, at their discretion and in consultation with the applicant, impose different conditions to suit the circumstances of a petroleum production activity subject to the standard criteria and regulatory requirements set out in the EP Act and the EP Reg.

Where changes to the streamlined model conditions are requested by the applicant the streamlined application process will not be available.

EA holders must ensure they can comply with the conditions imposed on the EA.

Streamlined model conditions

General notes

Terms defined in the conditions below are underlined in this document. Where a term is not defined in the conditions below or in an EA incorporating the streamlined conditions, the definition in the EP Act, its regulations and Environmental Protection Policies, then the *Acts Interpretation Act 1954,* then the Macquarie Dictionary, then the *Petroleum and Gas (Production and Safety) Act 2004* or its regulations, must be used in that order. Words underlined are currently defined in the dictionary section of this guideline and will be defined in the definitions schedule of an EA.

Conditions that include 'SC' are an existing approved and published standard condition—for example, PESCD1 means the petroleum exploration standard condition from schedule D of the standard conditions for petroleum exploration.

Insertions requested by the applicants and/or required by the administering authority are shaded in grey.

Explanatory notes for user guidance are listed in Appendix 1.

Implementation notes

When inserting a streamlined condition or a streamlined condition that is also a standard condition in an EA, the condition number must be added in brackets and italicised after the condition—for example:

Streamlined condition description	Condition description in the EA
General 4. **PESCD 1.** All monitoring must be undertaken by a suitably qualified person.	**(G4)** All monitoring must be undertaken by a suitably qualified person (*General 5*)(*PESCD 1*).

Streamlined Conditions—General Environmental Protection

Authorised activities[2]

Conditions (General 1) to (General 6)

<< *The environmental authority will contain conditions that explicitly authorise particular activities to be carried out on the relevant resource authorities. This will include a scoping table and thresholds for scale and intensity.*>>

Monitoring standards

General 7.

PESCD[3] **1.**

All monitoring must be undertaken by a suitably qualified person[4].

General 8.

If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.

General 9.

All laboratory analyses and tests must be undertaken by a laboratory that has NATA accreditation for such analyses and tests.

General 10.

Notwithstanding condition (General 9), where there are no NATA accredited laboratories for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.

General 11.

Monitoring and sampling must be carried out in accordance with the requirements of the following documents (as relevant to the sampling being undertaken), as amended from time to time:

(a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2009 – *Environmental Protection (Water) Policy 2009*

(b) for groundwater, *Groundwater Sampling and Analysis – A Field Guide* (2009:27 GeoCat #6890.1)

(c) for noise, the Environmental Protection Regulation 2008

(d) for air, the *Queensland Air Quality Sampling Manual* and/or Australian Standard 4323.1:1995 *Stationary source emissions method 1: Selection of sampling positions*, as appropriate for the relevant measurement

(e) for soil, the *Guidelines for Surveying Soil and Land Resources, 2nd edition* (McKenzie *et al.* 2008), and/or the *Australian Soil and Land Survey Handbook, 3rd edition* (National Committee on Soil and Terrain, 2009)

[2] Advice statements for the environmental authority:
- a) It is an offence under section 426 of the Act for a person to carry out an environmentally relevant activity unless the person holds, or is acting under, an environmental authority for the activity.
- b) The environmental authority does not authorise a relevant act to occur in carrying out an authorised relevant activity unless a condition of this environmental authority expressly authorises the relevant act to occur.
- c) The environmental authority does not authorise environmental harm unless a condition contained within the authority explicitly authorises that harm. Where there is no condition, the absence of a condition shall not be construed as authorising harm.

[3] Conditions that include 'SC' are an existing approved and published standard condition.

[4] Words underlined are currently defined in the dictionary, schedule of an environmental authority or the *Environmental Protection Act 1994* and/or its subordinate legislation.

(f) for dust, Australian Standard AS3580.

Notification

General 12.

In addition to the requirements under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994*, the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within 48 hours of becoming aware of any of the following events:

(a) any unauthorised significant disturbance to land

(b) potential or actual loss of structural or hydraulic integrity of a dam

(c) when the level of the contents of any regulated dam reaches the mandatory reporting level

(d) when a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year

(e) potential or actual loss of well integrity

(f) when the seepage trigger action response procedure required under condition (Water 14(g)) is or should be implemented

(g) unauthorised releases of any volume of prescribed contaminants to waters

(h) unauthorised releases of volumes of contaminants, in any mixture, to land greater than:

  i. 200 L of hydrocarbons; or

  ii. 200 L of stimulation additives; or

  iii. 500 L of stimulation fluids; or

  iv. 1 000 L of brine; or

  v. 5 000 L of untreated coal seam gas water; or

  vi. 5 000 L of raw sewage; or

  vii. 10 000 L of treated sewage effluent.

(i) the use of restricted stimulation fluids

(j) groundwater monitoring results from a landholder's active groundwater bore monitored under the stimulation impact monitoring program which is a 10% or greater increase from a previous baseline value for that bore and which renders the water unfit for its intended use

(k) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

Financial assurance

General 13.

PESCB 1.

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*.

General 14.

Prior to any changes in petroleum activities which would result in an increase to the maximum significant disturbance since financial assurance was last given to the administering authority, the holder of the

environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance.

General 15.

If the amount of financial assurance held by the administering authority has been discounted and either the nominated period of financial assurance has ended, or an event or change in circumstance has resulted in the holder of the environmental authority no longer being able to meet one or more of the mandatory pre-requisites or applicable discount criteria, the holder of the environmental authority must amend the financial assurance and give the administering authority the increased amount of financial assurance as soon as practicable.

Contingency procedures for emergency environmental incidents

General 16.

Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental incidents which include, but are not necessarily limited to:

(a) a clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity.

(b) consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity.

(c) response procedures to be implemented to prevent or minimise the risks of environmental harm occurring.

(d) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused.

(e) procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land.

(f) training of staff to enable them to effectively respond.

(g) procedures to notify the administering authority, local government and any potentially impacted landholder.

Maintenance of plant and equipment

General 17.

PESCC 4.

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

General 18.

The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable:

(a) regulated dams and low consequence dams

(b) exploration, appraisal and development wells

(c) water treatment facilities

(d) brine encapsulation facilities

(e) landfill cells

(f) sewage treatment facilities

(g) specifically authorised discharge points to air and waters

(h) any chemical storage facility associated with the environmentally relevant activity of chemical storage

(i) field compressor stations

(j) central compressor stations

(k) gas processing facilities; and

(l) pipeline compressor stations.

General 19.

Measures to prevent fauna being harmed from entrapment must be implemented during the construction and operation of well infrastructure, dams and pipeline trenches.

Erosion and sediment control

General 20.

For activities involving significant disturbance to land, control measures that are commensurate to the site-specific risk of erosion, and risk of sediment release to waters must be implemented to:

(a) allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities

(b) minimise soil erosion resulting from wind, rain, and flowing water

(c) minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain, and flowing water

(d) minimise work-related soil erosion and sediment runoff; and

(e) minimise negative impacts to land or properties adjacent to the activities (including roads).

Complaints

General 21.

Petroleum activities must not cause environmental nuisance at a sensitive place, other than where an alternative arrangement is in place.

Documentation

General 22.

A certification must be prepared by a suitably qualified person within 30 business days of completing every plan, procedure, program and report required to be developed under this environmental authority, which demonstrates that:

(a) relevant material, including current published guidelines (where available) have been considered in the written document

(b) the content of the written document is accurate and true; and

(c) the document meets the requirements of the relevant conditions of the environmental authority.

General 23.

All plans, procedures, programs, reports and methodologies required under this environmental authority must be written and implemented.

General 24.

All documents required to be developed under this environmental authority must be kept for five years.

General 25.

All documents required to be prepared, held or kept under this environmental authority must be provided to the administering authority upon written request within the requested timeframe.

General 26.

A record of all complaints must be kept including the date, complainant's details, source, reason for the complaint, description of investigations and actions undertaken in resolving the complaint.

Streamlined Conditions—Waste Management

General waste management

Waste 1.

PESCC 24.

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.

Waste 2.

Waste, including waste fluids, but excluding waste used in closed-loop systems, must be transported off-site for lawful re-use, remediation, recycling or disposal, unless the waste is specifically authorised by conditions <<Insert List>> to be disposed of or used on site.

Waste 3.

Waste fluids, other than flare precipitant stored in flare pits, or residual drilling material or drilling fluids stored in sumps, must be contained in either:

(a) an above ground container; or

(b) a structure which contains the wetting front.

Waste 4.

Green waste may be used on-site for either rehabilitation or sediment and erosion control, or both.

Waste 5.

Vegetation waste may be burned if it relates to a state forest, timber reserve or forest entitlement area administered by the *Forestry Act 1959* and a permit has been obtained under the *Fire and Rescue Service Act 1990*.

Pipeline wastewater

Waste 6.

Pipeline waste water, may be released to land provided that it:

(a) can be demonstrated it meets the acceptable standards for release to land; and

(b) is released in a way that does not result in visible scouring or erosion or pooling or run-off or vegetation die-off.

Authorised uses of produced water for petroleum activities

Waste 7.

Produced water may be re-used in:

(a) drilling and well hole activities; or

(b) stimulation activities.

Waste 8.

Produced water may be used for dust suppression provided the following criteria are met:

(a) the amount applied does not exceed the amount required to effectively suppress dust; and

(b) the application:

i. does not cause on-site ponding or runoff

ii. is directly applied to the area being dust suppressed

iii. does not harm vegetation surrounding the area being dust suppressed; and

iv. does not cause visible salting.

Waste 9.

Produced water may be used for construction purposes provided the use:

(a) does not result in negative impacts on the composition and structure of soil or subsoils

(b) is not directly or indirectly released to waters

(c) does not result in runoff from the construction site; and

(d) does not harm vegetation surrounding the construction site.

Waste 10.

If there is any indication that any of the circumstances in condition (Waste 8)(b)(i) to (Waste 8(b)(iv)) or (Waste 9)(a) to (Waste 9(d)) is occurring the use must cease immediately and the affected area must be remediated without delay.

Use of produced water for irrigation activities

<< Insert either option A, B or C: >>

Option A: Insert general beneficial use approval irrigation of associated water conditions including release limits

Option B: Insert release limits proposed in the application and as determined by an independent suitably qualified person

Option C: Insert conditions (Waste C1) and (Waste C2):

Waste C1.

Irrigation of produced water is authorised providing it ensures:

(a) ensures that soil structure, stability and productive capacity can be maintained or improved

(b) toxic effects to crops do not result; and

(c) yields and produce quality are maintained or improved.

Waste C2.

Irrigation of produced water is authorised providing a written report is provided to the chief executive which:

(a) certifies that the outcomes in condition (Waste C1) will be achieved

(b) states water quality criteria, which has been determined in accordance with the assessment procedures outlined in **Waste Schedule, Table 1—Assessment procedures for water quality criteria**

(c) includes a water monitoring program to monitor that the outcomes listed in condition (Waste C1) are being achieved.

Waste management schedule, Table 1—Assessment procedures for water quality criteria

Water quality criteria	Assessment procedure
electrical conductivity sodium adsorption ratio pH	Salinity Management Handbook, with reference to Chapter 11; and/or Australian and New Zealand Guidelines for Fresh and Marine Water Quality, with reference to Volume 1 Chapter 4 and Volume 3 Chapter 9. The assessment should consider: • soil properties within the root zone to be irrigated (e.g. clay content, cation exchange capacity, exchangeable sodium percentage) • water quality of the proposed resource (e.g. salinity, sodicity) • climate conditions (e.g. rainfall) • leaching fractions • average root zone salinity (calculated) • crop salt tolerance (e.g. impact threshold and yield decline) • management practices and objectives (e.g. irrigation application rate, amelioration techniques) • broader landscape issues (e.g. land use, depth to groundwater) • any additional modelling and tests undertaken to support the varied water quality parameters.
heavy metals	Australian and New Zealand Guidelines for Fresh and Marine Water Quality, with reference to Volume 1 Chapters 3 and 4 and Volume 3 Chapter 9. The assessment should aim to derive site specific trigger values (e.g. cumulative contaminant loading limit) based on the methodology provided in the above mentioned procedure.

Sewage treatment

Waste 11.

Treated sewage effluent or greywater can be released to land provided it:

(a) meets or exceeds secondary treated class B standards for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP; or

(b) meets or exceeds secondary treated class C standards for a treatment system with a daily peak design capacity of less than 150 EP.

Waste 12.

The release of treated sewage effluent or greywater authorised in condition (Waste 11) must:

(a) be to a fenced and signed contaminant release area(s)

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

(c) be to a contaminant release area(s) that is kept vegetated with groundcover, that is:

i. not a declared pest species

ii. kept in a viable state for transpiration and nutrient uptake; and

iii. grazed or harvested and removed from the contaminant release area as needed, but not less than every three months.

Waste 13.

Notwithstanding condition (Waste 11), treated sewage effluent that meets or exceeds secondary treated class A standards may be used for dust suppression or construction activities, provided the use meets the criteria in condition (Waste 8) or (Waste 9), as relevant to the use.

Waste 14.

Sewage pump stations must be fitted with a:

(a) stand-by pump; and

(b) high level alarm to warn of imminent pump station overflow, that operates without mains power or with a back-up power source that starts automatically in the event of a power failure.

Residual drilling material

Waste 15.

If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.

Waste 16.

Residual drilling material can only be disposed of on-site:

(a) by mix-bury-cover method if the residual drilling material meets the approved quality criteria; or

(b) if it is certified by a suitably qualified third party as being of acceptable quality for disposal to land by the proposed method and that environmental harm will not result from the proposed disposal.

Waste 17.

Records must be kept to demonstrate compliance with condition (Waste 15) and (Waste 16).

<< *Use conditions (Waste 18) to (Waste 21) where the environmental authority application requests and provides an environmental assessment of onsite waste disposal.* >>

Onsite waste disposal—General waste

Waste 18.

General waste may be disposed of onsite at a dedicated landfill facility provided that the general waste:

(a) is not a liquid

(b) does not contain, or is not comingled with regulated waste

(c) does not contain an organic fraction of more than 5% of the general waste stream

(d) was generated from activities permitted under this environmental authority; and

(e) does not exceed 10 000 tonnes in any year.

Waste 19.

The landfill used for the disposal of general waste must be:

(a) on land owned by the holder of the relevant resource authority(ies)

(b) designed by a suitably qualified person and certified as being suitable for the containment of the waste

(c) designed and located so that the landfill is protected from any potential adverse consequences of regional or local flooding to the probable maximum flood level

(d) designed and operated to exclude stormwater runoff from entering the landfill

(e) capped upon closure with capping methodology certified by a suitably qualified person as being suitable for containing the waste.

Waste 20.

Waste disposal activities must not result in any negative effect on public health particularly in relation to propagation of diseases and the breeding and harbourage of flies, mosquitoes, rats and other pest organisms.

Waste 21.

Waste disposal must not result in litter escaping the boundary of the landfill facility.

Streamlined Conditions—Protecting Acoustic Values

Noise 1.

Notwithstanding condition (General 21), emission of noise from the petroleum activity(ies) at levels less than those specified in **Protecting acoustic values, Table 1—Noise nuisance limits** are not considered to be environmental nuisance.

Protecting acoustic values, Table 1—Noise nuisance limits

Time period	Metric	Short term noise event	Medium term noise event	Long term noise event
7:00am—6:00pm	$L_{Aeq,adj,15\ min}$	45 dBA	43 dBA	40 dBA
6:00pm—10:00pm	$L_{Aeq,adj,15\ min}$	40 dBA	38 dBA	35 dBA
10:00pm—6:00am	$L_{Aeq,adj,15\ min}$	28 dBA	28 dBA	28 dBA
	Max $L_{pA,\ 15\ mins}$	55 dBA	55 dBA	55 dBA
6:00am—7:00am	$L_{Aeq,adj,15\ min}$	40 dBA	38 dBA	35 dBA

1. The noise limits in Table 1 have been set based on the following deemed background noise levels (L_{ABG})*:*
7:00am—6:00 pm: 35 dBA
6:00pm—10:00 pm: 30 dBA
10:00pm—6:00 am: 25 dBA
6:00am—7:00 am: 30 dBA

Noise 2.

If the noise subject to a valid complaint is tonal or impulsive, the adjustments detailed in **Protecting acoustic values, Table 2—Adjustments to be added to noise levels at sensitive receptors** are to be added to the measured noise level(s) to derive $L_{Aeq,\ adj,\ 15\ min}$.

Protecting acoustic values, Table 2—Adjustments to be added to noise levels at sensitive receptors

Noise characteristic	Adjustment to noise
Tonal characteristic is just audible	+ 2 dBA
Tonal characteristic is clearly audible	+ 5 dBA
Impulsive characteristic is detectable	+ 2 to + 5 dBA

Noise 3.

Notwithstanding condition (Noise 1), emission of any low frequency noise must not exceed either (Noise 3(a)) and (Noise 3(b)), or (Noise 3(c)) and (Noise 3(d)) in the event of a valid complaint about low frequency noise being made to the administering authority:

(a) 60 dB(C) measured outside the sensitive receptor; and

(b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or

(c) 50 dB(Z) measured inside the sensitive receptor; and

(d) the difference between the internal A-weighted and Z-weighted (Max $L_{pZ, 15\ min}$) noise levels is no greater than 15 dB.

Noise 4.

PESCC 21.

A Blast Management Plan must be developed for each blasting activity in accordance with Australian Standard 2187.

Noise 5.

PESCC 22.

Blasting operations must be designed to not exceed an airblast overpressure level of 120 dB (linear peak) at any time, when measured at or extrapolated to any sensitive place.

Noise 6.

PESCC 23.

Blasting operations must be designed to not exceed a ground-borne vibration peak particle velocity of 10mm/s at any time, when measured at or extrapolated to any sensitive place.

Streamlined Conditions—Protecting Air Values

Venting and flaring

Air 1.

Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with all of (Air 1(a)) and (Air 1(b)) and (Air 1(c)), or with (Air 1(d)):

(a) an automatic ignition system is used, and

(b) a flame is visible at all times while the waste gas is being flared, and

(c) there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours, or

(d) it uses an enclosed flare.

Fuel burning and combustion facilities—authorised point sources

Air 2A.

A fuel burning or combustion facility must not be operated unless it is listed in **Protecting air values, Table 1– Authorised point sources**.

Air 2B.

If a fuel burning or combustion facility is listed in **Protecting air values, Table 1—Authorised point sources**, the fuel burning or combustion facility must be operated so that the releases to air do not exceed the limits specified in **Protecting air values, Table 1—Authorised point sources** at the specified release point reference.

Protecting air values, Table 1—Authorised point sources

Resource Authority	Facility	Release Point Reference	Equipment Description	Minimum Release Height (m)	Minimum Efflux Velocity (m / sec)	NOx as Nitrogen Dioxide		Carbon Monoxide	
						Maximum concentration (mg / Nm^3)	Maximum Mass emission rate (g / sec)	Maximum concentration (mg / Nm^3)	Maximum Mass emission rate (g / sec)

Point source air monitoring

Air 3.

Point source air monitoring for each fuel burning or combustion facility listed in **Protecting air values, Table 1—Authorised point sources** must:

(a) be undertaken once**:**

i. in the first three months after each facility is first commissioned, and then

ii. every year thereafter

(b) be carried out when the facility the subject of the sampling is operating under maximum operating conditions for the annual period; and

(c) demonstrate compliance with the limits listed in **Protecting air values, Table 1—Authorised point sources** at each release point reference.

Fuel burning and combustion facilities—ambient air quality monitoring

Air 4.

The operation of fuel burning or combustion facilities must not result in ground level concentrations of contaminants exceeding the maximum limits specified in **Protecting air values, Table 2—Maximum ground level concentration of contaminants to air**.

Protecting air values, Table 2—Maximum ground level concentration of contaminants to air

Contaminant	EPP Air Quality Objective / Maximum ground level concentration at 0° Celsius	Units	Averaging time
e.g. Nitrogen Dioxide	*e.g. 250*	*µg/m^3*	*1 hour*
e.g. Nitrogen Dioxide	*e.g. 62*	*µg/m^3*	*1 year*
e.g. Sulphur Dioxide	*e.g. 570*	*µg/m^3*	*1 hour*
e.g. Carbon Monoxide	*e.g. 11*	*mg/ m^3*	*8 hours*

Air receiving environment monitoring program

Air 5.

An air receiving environment monitoring program (AREMP) must be developed to demonstrate compliance with the limits in **Protecting Air Values, Table 2—Maximum ground level concentration of contaminants to air**.

Air 6.

The AREMP must include, but not necessarily be limited to:

(a) the delineation of the relevant air shed(s)

(b) the identification of background reference sites and impact monitoring sites within the relevant air shed(s), including sensitive places

(c) a monitoring program to be carried out annually that:

  i. includes background reference and impact monitoring sites

  ii. includes an assessment of meteorological conditions (wind speed and direction)

  iii. is sufficient to determine compliance with the limits listed in **Protecting Air Values, Table 2—Maximum ground level concentration of contaminants to air**

  iv. identifies the effects of the authorised contaminants released to air in the relevant air shed(s)

  v. is representative of when the fuel burning or combustion facilities are operating under maximum operating conditions for the annual period

(d) an assessment of the condition of each fuel burning or combustion facility; and

(e) a description of other significant point sources in the air shed and surrounding land use including sensitive places.

Air 7.

An AREMP report must be written annually which includes the information required by condition (Air 6) and an assessment of the extent to which monitoring data for ground level concentrations complies with the air contaminant limits listed in **Protecting air values, Table 2—Maximum ground level concentration of contaminants to air**.

Air 8.

Where monitoring data indicates that ground level concentrations listed in **Protecting air values, Table 2—Maximum ground level concentration of contaminants to air** have not been met, the AREMP report required by condition (Air 7) must also include an assessment of:

(a) the extent to which the values of the air environment in the relevant air shed(s) are being protected

(b) an assessment of whether contaminant releases to the air environment are consistent with the air management hierarchy in the Environmental Protection (Air) Policy 2008, and

(c) any corrective actions that have been implemented or proposed to be implemented to become consistent with the air management hierarchy and achieve compliance with **Protecting air values, Table 2—Maximum ground level concentration of contaminants to air**.

Air 9.

A statement of compliance prepared by a suitably qualified person must accompany each AREMP report required by condition (Air 7) and if applicable, condition (Air 8) stating:

(a) whether the AREMP as most recently implemented complies with the requirements of conditions (General 7 / PESCD1), condition (General 11(d)), (Air 5) and (Air 6)

(b) that, to the best of the suitably qualified person's knowledge, the assessment required by condition (Air 7) and if applicable, condition (Air 8) is true, correct and complete, and

(c) that, to the best of the suitably qualified person's knowledge, all information provided as part of the statement of compliance, including attachments, is true, correct and complete.

Air 10.

Where condition (Air 8) applies, the documents required by conditions (Air 7), (Air 8) and (Air 9) must be given to the administering authority within 5 business days after the AREMP report is written.

Streamlined Conditions—Protecting Land Values

General

Land 1.

Contaminants must not be directly or indirectly released to land except for those releases authorised by conditions <<insert relevant waste to land conditions>>.

Top soil management

Land 2.

Top soil must be managed in a manner that preserves its biological and chemical properties.

Land management

Land 3.

Land that has been significantly disturbed by the petroleum activities must be managed to ensure that mass movement, gully erosion, rill erosion, sheet erosion and tunnel erosion do not occur on that land.

Acid sulfate soils

Land 4.

Acid sulfate soils must be treated and managed in accordance with the latest edition of the *Queensland Acid Sulfate Soil Technical Manual*.

Chemical storage

Land 5.

Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable.

Pipeline operation and maintenance

Land 6.

Pipeline operation and maintenance must be in accordance, to the greatest practicable extent, with the relevant section of the APIA Code of Environmental Practice: Onshore Pipelines (2009).

Pipeline reinstatement and revegetation

Land 7.

PPSCE 17.

Pipeline trenches must be backfilled and topsoils reinstated within three months after pipe laying.

Land 8.

Reinstatement and revegetation of the pipeline right of way must commence within 6 months after cessation of petroleum activities for the purpose of pipeline construction.

Land 9.

Backfilled, reinstated and revegetated pipeline trenches and right of ways must be:

(a) a stable landform

(b) re-profiled to a level consistent with surrounding soils

(c) re-profiled to original contours and established drainage lines; and

(d) vegetated with groundcover which is not a declared pest species, and which is established and growing.

Streamlined Conditions—Protecting Biodiversity Values

Confirming biodiversity values

Biodiversity 1.

Prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-the-ground biodiversity values of the native vegetation communities at that location must be undertaken by a suitably qualified person.

Biodiversity 2.

A suitably qualified person must develop and certify a methodology so that condition (Biodiversity 1) can be complied with and which is appropriate to confirm on-the-ground biodiversity values.

Biodiversity 3.

For conditions (Biodiversity 4) to (Biodiversity 9), where mapped biodiversity values differ from those confirmed under conditions (Biodiversity 1) and (Biodiversity 2), petroleum activities may proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity value.

Planning for land disturbance

Biodiversity 4.

The location of the petroleum activity(ies) must be selected in accordance with the following site planning principles:

(a) maximise the use of areas of pre-existing disturbance

(b) in order of preference, avoid, minimise or mitigate any impacts, including cumulative impacts, on areas of native vegetation or other areas of ecological value

(c) minimise disturbance to land that may result in land degradation

(d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and

(e) in order of preference, avoid then minimise clearing of native mature trees.

Planning for land disturbance—linear infrastructure

Biodiversity 5.

Linear infrastructure construction corridors must:

(a) maximise co-location

(b) be minimised in width to the greatest practicable extent; and

(c) for linear infrastructure that is an essential petroleum activity authorised in an environmentally sensitive area or its protection zone, be no greater than 40m in total width.

Authorised disturbance to Environmentally Sensitive Areas

<< *Use conditions (Biodiversity 6) and (Biodiversity 7) where the environmental authority application does not request access to Category A, B or C environmentally sensitive areas or their protection zones, or is silent on impacts to these values.* >>

Biodiversity 6.

Petroleum activities are not permitted in Category A, B or C environmentally sensitive areas.

Biodiversity 7.

Essential petroleum activities may be undertaken in areas of pre-existing disturbance in the primary protection zones of Category B environmentally sensitive areas that are 'endangered' regional ecosystems and Category C environmentally sensitive areas other than 'nature refuges' or 'koala habitat' areas, providing those activities do not have a measurable negative impact on the adjacent environmentally sensitive area.

<< *Or, if access to Category A, B or C environmentally sensitive areas or their protection zones is requested in the application and approved, delete conditions (Biodiversity 6) and (Biodiversity 7) and insert (Biodiversity 8) as relevant to the scope of the approval request.* >>

Biodiversity 8.

Where petroleum activities are to be carried out in environmentally sensitive areas or their protection zones, the petroleum activities must be carried out in accordance with **Protection of Biodiversity Values, Table 1— Authorised petroleum activities in environmentally sensitive areas and their protection zones**.

Protecting biodiversity values, Table 1—Authorised petroleum activities in environmentally sensitive areas and their protection zones

Environmentally sensitive area	**Within the environmentally sensitive area**	**Primary protection zone of the environmentally sensitive area**	**Secondary protection zone of the environmentally sensitive area**
Category A environmentally sensitive areas	No petroleum activities permitted.	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.
Category B environmentally sensitive areas that are other than 'endangered' regional ecosystems	Only low impact petroleum activities permitted.	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.
Category B environmentally sensitive areas that are 'endangered' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	Only essential petroleum activities permitted.
Category C environmentally sensitive areas that are 'nature refuges' or 'koala habitat'	Only low impact petroleum activities permitted.	Only low impact petroleum activities permitted.	
Category C environmentally sensitive areas that are 'essential habitat', 'essential regrowth habitat', or 'of concern' regional ecosystems	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	
Category C environmentally sensitive areas that are 'regional parks' (previously known as 'resources reserves')	Only essential petroleum activities permitted.	Only essential petroleum activities permitted.	
Category C environmentally sensitive areas that are 'state forests' or 'timber reserves'	Only essential petroleum activities permitted.	Petroleum activities permitted.	
Areas of vegetation that are 'critically limited'	Only low impact petroleum activities permitted.	Only essential petroleum activities permitted.	

Biodiversity 9.

A report must be prepared for each annual return period for all petroleum activities that involved clearing of any environmentally sensitive area or protection zone which includes:

(a) records able to demonstrate compliance with conditions (Biodiversity 4), (Biodiversity 5) and (Biodiversity 8)

(b) a description of the works

(c) a description of the area and its pre-disturbance values (which may include maps or photographs, but must include GPS coordinates for the works); and

(d) based on the extent of environmentally sensitive areas and primary protection zones on the relevant resource authority(ies), the proportion of native vegetation cleared per environmentally sensitive area and primary protection zone, including regional ecosystem type, over the annual return period.

Impacts to prescribed environmental matters

<< *Note: Conditions (Biodiversity 10 to 20) were not formulated during the streamlining project. These conditions were developed separately by DES in consultation with QRC, APPEA and AMEC to reflect the requirements of the* Environmental Offsets Act 2014 following its introduction in July 2014. These conditions have replaced conditions (Biodiversity 8B), and (Biodiversity 10 to 13) from Version 1 of this guideline. >>

<< *Include condition (Biodiversity 10) in all environmental authorities. However, if significant residual impacts to a prescribed environmental matter were not proposed or authorised, there is no need to include* ***Protecting biodiversity values, Table 2—Significant residual impacts to prescribed environmental matters*** *or a reference to* ***Table 2*** *in condition (Biodiversity 10). Or, if significant residual impacts to a prescribed environmental matter were proposed and authorised, include the full condition (Biodiversity 10) and* ***Table 2****, populated as per the instructions given in Appendix 1.* >>

Biodiversity 10.

Significant residual impacts to prescribed environmental matters << *other than if the impacts were authorised by an existing authority issued before the commencement of the* Environmental Offsets Act 2014 >>, are not authorised under this environmental authority or the *Environmental Offsets Act 2014* << *unless the impact(s) is specified in* ***Protecting biodiversity values, Table 2—Significant residual impacts to prescribed environmental matters*** >>.

Protecting biodiversity values, Table 2—Significant residual impacts to prescribed environmental matters

Prescribed environmental matter	**Location of impact**	**Maximum extent of impact <<*OR* *Maximum extent of impact – stage 1*>>**
REGULATED VEGETATION		
Endangered regional ecosystem – *insert RE ID*	*e.g., maps/figures, coordinates, lot(s) on plan(s), resource authorities or project areas.*	*X ha*
Of concern regional ecosystem (not within an urban area) – *insert RE ID*	*as per above*	*X ha*
Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map – *insert RE ID*	*as per above*	*X ha*
Regional ecosystems (not within an urban area) within the defined distance from the defining banks of a relevant watercourse on the vegetation management watercourse map – *insert RE ID and Broad Vegetation Group*	*as per above*	*X ha*
Essential habitat (not in an urban area) for endangered wildlife – *insert species name*	*as per above*	*X ha*
Essential habitat (not in an urban area) for vulnerable wildlife – *insert species name*	*as per above*	*X ha*
Connectivity areas		
Connectivity area that is a regional ecosystem (not in urban area) – *insert RE ID*	*as per above*	*X ha*
Wetlands and watercourses		
A wetland in a wetland protection area shown on the Map of referable wetlands (HES wetlands in GBR) – *insert reference*	*as per above*	*X ha*

Prescribed environmental matter	**Location of impact**	**Maximum extent of impact <<*OR* *Maximum extent of impact – stage 1*>>**
A wetland of high ecological significance shown on the Map of referable wetlands – *insert reference*	*as per above*	*X ha*
Designated precincts in strategic environmental areas		
Designated precinct in a strategic environmental areas – *insert reference*	*as per above*	*X ha*
Protected wildlife habitat		
An area shown as a high risk area on the flora survey trigger map that contains plants that are endangered or vulnerable wildlife – *insert area and species names*	*as per above*	*X ha*
An area not shown as a high risk area on the flora survey trigger map that contains plants that are endangered or vulnerable wildlife – *insert area and species names*	*as per above*	*X ha*
A non-juvenile koala habitat tree located in an area shown as a bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat in the 'Map of Assessable Development Area Koala Habitat Values' – *insert reference*	*as per above*	*X ha*
Habitat for an animal that is endangered wildlife – *insert area and species name*	*as per above*	*X ha*
Habitat for an animal that is vulnerable wildlife – *insert area and species name*	*as per above*	*X ha*
Habitat for an animal that is special least concern wildlife – *insert area and species name*	*as per above*	*X ha*
Protected areas		
National park – *insert reference*	*as per above*	*X ha*
Regional park – *insert reference*	*as per above*	*X ha*
Nature refuge – *insert reference*	*as per above*	*X ha*
Highly protected zones of State marine parks		
Conservation park zone – *insert reference*	*as per above*	*X ha*
Marine national park zone – *insert reference*	*as per above*	*X ha*
Preservation zone – *insert reference*	*as per above*	*X ha*
Other zones – *insert reference*	*as per above*	*X ha*
Fish habitat areas		
A declared fish habitat area – *insert reference*	*as per above*	*X ha*
Waterway providing for fish passage		
Fish passage (not in an urban area) – *insert reference*	*as per above*	*X ha*
Marine plants		
Marine plant (not in an urban area) – *insert reference*	*as per above*	*X ha*
Legally secured offset area		
Legally secured offset area – *insert reference*	*as per above*	*X ha*

Biodiversity 11.

<< *Include condition (Biodiversity 11) in all environmental authorities. If* ***Table 2*** *is not needed to be included in the environmental authority, then delete all grey text from the condition.* >>

Records demonstrating that each impact to a prescribed environmental matter << *not listed in* ***Protecting biodiversity values, Table 2—Significant residual impacts to prescribed environmental matters*** >> did not, or is not likely to, result in a significant residual impact to that matter must be:

(a) completed by an appropriately qualified person; and

(b) kept for the life of the environmental authority.

Biodiversity 12.

<< *Include condition (Biodiversity 12) in all environmental authorities that authorise a significant residual impact to a prescribed environmental matter. Include the relevant condition reference, depending on whether staging will be undertaken.* >>

An environmental offset made in accordance with the *Environmental Offsets Act 2014* and Queensland Environmental Offsets Policy, as amended from time to time, must be undertaken for the maximum extent of impact to each prescribed environmental matter authorised in **Protecting biodiversity values, Table 2—Significant residual impacts to prescribed environmental matters**, unless a lesser extent of the impact has been approved in accordance with condition (Biodiversity 14) [for staged offsets] OR condition (Biodiversity 18) [for non-staged offsets].

Staged impacts

<< *Insert conditions (Biodiversity 13 to 17) if the environmental authority application, or a notice of election provided prior to the environmental authority application being decided, proposed to carry out the activities that will, or are likely to, result in a significant residual impact to a prescribed environmental matter in stages, as well as the undertaking of environmental offsets in stages.* >>

Biodiversity 13.

The significant residual impacts to a prescribed environmental matter authorised in condition (Biodiversity 10) for which an environmental offset is required by condition (Biodiversity 12) may be carried out in stages. An environmental offset can be delivered for each stage of the impacts to prescribed environmental matters.

Biodiversity 14.

Prior to the commencement of each stage, a report completed by an appropriately qualified person, that includes an analysis of the following must be provided to the administering authority:

(a) for the forthcoming stage—the estimated significant residual impacts to each prescribed environmental matter; and

(b) for the previous stage, if applicable—the actual significant residual impacts to each prescribed environmental matter, to date.

Biodiversity 15.

The report required by condition (Biodiversity 14) must be approved by the administering authority before a notice of election for the forthcoming stage, if applicable, is given to the administering authority.

Biodiversity 16.

A notice of election for the staged environmental offset referred to in condition (Biodiversity 15), if applicable, must be provided to the administering authority no less than three months before the proposed commencement of that stage, unless a lesser timeframe has been agreed to by the administering authority.

Biodiversity 17.

Within six months from the completion of the final stage of the project, a report completed by an appropriately qualified person, that includes the following matters must be provided to the administering authority:

(a) an analysis of the actual impacts on prescribed environmental matters resulting from the final stage; and

(b) if applicable, a notice of election to address any outstanding offset debits for the authorised impacts.

Non-staged impacts

<< Insert conditions (Biodiversity 18 to 20) if the environmental authority application, or a notice of election provided prior to the environmental authority application being decided, did not propose to carry out the activities that will, or are likely to, result in significant residual impacts to a prescribed environmental matter, or the undertaking of environmental offsets in stages. Offset debits are not allowed for non-staged impacts and any exceedances of the maximum extent of impact authorised in ***Table 2*** *are likely to be investigated further as a compliance matter. >>*

<< If the administering authority is satisfied that conditions (Biodiversity 18) and (Biodiversity 19) are not required, i.e., because sufficient information has been provided in the environmental authority application, then these conditions are not necessary for inclusion in the environmental authority. >>

Biodiversity 18.

Prior to the commencement of any impacts to a prescribed environmental matter for which an environmental offset is required by condition (Biodiversity 12), a report completed by an appropriately qualified person that contains an analysis of the estimated maximum extent of impact to each prescribed environmental matter must be provided to the administering authority.

Biodiversity 19.

The report required by condition (Biodiversity 18) must be approved by the administering authority before the notice of election, if applicable, is given to the administering authority.

Biodiversity 20.

The notice of election for the environmental offset required by condition (Biodiversity 12), if applicable, must be provided to the administering authority no less than three months before the proposed commencement of the significant residual impacts for which the environmental offset is required.

Streamlined Conditions—Protecting Water Values

Authorised impacts to waters

Water 1.

<< Insert site-specific conditions authorising impacts to waters, if approved. >>

Authorised impacts to wetlands

Water 2.

The extraction of groundwater as part of the petroleum activity(ies) from underground aquifers must not directly or indirectly cause environmental harm to a wetland.

Authorised activities in waters

Water 3.

Petroleum activities must not occur in or within 200m of a:

(a) wetland of high ecological significance

(b) Great Artesian Basin Spring

(c) subterranean cave GDE.

Water 4.

Only construction or maintenance of linear infrastructure is permitted in or within any wetland of other environmental value or in a watercourse.

Water 5A.

The construction or maintenance of linear infrastructure in a wetland of other environmental value must not result in the:

(a) clearing of riparian vegetation outside of the minimum area practicable to carry out the works; or

(b) ingress of saline water into freshwater aquifers; or

(c) draining or filling of the wetland beyond the minimum area practicable to carry out the works.

Water 5B.

After the construction or maintenance works for linear infrastructure in a wetland of other environmental value are completed, the linear infrastructure must not:

(a) drain or fill the wetland

(b) prohibit the flow of surface water in or out of the wetland

(c) lower or raise the water table and hydrostatic pressure outside the bounds of natural variability that existed before the activities commenced

(d) result in ongoing negative impacts to water quality

(e) result in bank instability; or

(f) result in fauna ceasing to use adjacent areas for habitat, feeding, roosting or nesting.

Water 6.

The construction or maintenance of linear infrastructure activities in a watercourse must be conducted in the following preferential order:

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

(b) secondly, in times of no flow

(c) thirdly, in times of flow, providing a bankfull situation is not expected and that flow is maintained.

Water 7.

The construction or maintenance of linear infrastructure authorised under condition (Water 4) must comply with the water quality limits as specified in **Protecting water values, Table 1—Release limits for construction or maintenance of linear infrastructure**.

Protecting water values, Table 1—Release limits for construction or maintenance of linear infrastructure

Water quality parameters	Units	Water quality limits
Turbidity	Nephelometric Turbidity Units (NTU)	For a wetland of other environmental value, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within a 50m radius of the construction or maintenance activity. For a watercourse, if background water turbidity is above 45 NTU, no greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.
		For a wetland of other environmental value, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within a 50m radius of the construction or maintenance activity. For a watercourse, if background water turbidity is equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within 50m downstream of the construction or maintenance activity.
Hydrocarbons	-	For a wetland of other environmental value, or watercourse, no visible sheen or slick

Water 8.

Monitoring must be undertaken at a frequency that is appropriate to demonstrate compliance with condition (Water 7).

Register of activities in wetlands and watercourses

Water 9.

A register must be kept of all linear infrastructure construction and maintenance activities in a wetland of other environmental value and watercourses, which must include:

(a) location of the activity (e.g. GPS coordinates (GDA94) and watercourse name)

(b) estimated flow rate of surface water at the time of the activity

(c) duration of works, and

(d) results of impact monitoring carried out under condition (Water 8).

Activities in river improvement areas

Water 10.

Measures must be taken to minimise negative impacts to, or reversal of, any river improvement works carried out in River Improvement Areas by Queensland's River Improvement Trusts.

Activities in floodplains

Water 11.

Petroleum activity(ies) on floodplains must be carried out in a way that does not:

(a) concentrate flood flows in a way that will or may cause or threaten a negative environmental impact; or

(b) divert flood flows from natural drainage paths and alter flow distribution; or

(c) increase the local duration of floods; or

(d) increase the risk of detaining flood flows.

Seepage monitoring program

Water 12.

A seepage monitoring program must be developed by a suitably qualified person which is commensurate with the site-specific risks of contaminant seepage from containment facilities, and which requires and plans for detection of any seepage of contaminants to groundwater as a result of storing contaminants by << *Insert the specified date no longer than 3 months from date of grant of this environmental authority* >>.

Water 13.

The seepage monitoring program required by condition (Water 12) must include but not necessarily be limited to:

(a) identification of the containment facilities for which seepage will be monitored

(b) identification of trigger parameters that are associated with the potential or actual contaminants held in the containment facilities

(c) identification of trigger concentration levels that are suitable for early detection of contaminant releases at the containment facilities

(d) installation of background seepage monitoring bores where groundwater quality will not have been affected by the petroleum activities authorised under this environmental authority to use as reference sites for determining impacts

(e) installation of seepage monitoring bores that:

  i. are within formations potentially affected by the containment facilities authorised under this environmental authority (i.e. within the potential area of impact)

  ii. provide for the early detection of negative impacts prior to reaching groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores

  iii. provide for the early detection of negative impacts prior to reaching migration pathways to other formations (i.e. faults, areas of unconformities known to connect two or more formations)

(f) monitoring of groundwater at each background and seepage monitoring bore at least quarterly for the trigger parameters identified in condition (Water 13(b))

(g) seepage trigger action response procedures for when trigger parameters and trigger levels identified in conditions (Water 13(b)) and (Water 13(c)) trigger the early detection of seepage, or upon becoming aware of any monitoring results that indicate potential groundwater contamination

(h) a rationale detailing the program conceptualisation including assumptions, determinations, monitoring equipment, sampling methods and data analysis; and

(i) provides for annual updates to the program for new containment facilities constructed in each annual return period.

Seepage monitoring bore drill logs

Water 14.

A bore drill log must be completed for each seepage monitoring bore in condition (Water 13) which must include:

(a) bore identification reference and geographical coordinate location

(b) specific construction information including but not limited to depth of bore, depth and length of casing, depth and length of screening and bore sealing details

(c) standing groundwater level and water quality parameters including physical parameter and results of laboratory analysis for the possible trigger parameters

(d) lithological data, preferably a stratigraphic interpretation to identify the important features including the identification of any aquifers; and

(e) target formation of the bore.

Streamlined Conditions—Rehabilitation

Rehabilitation planning

Rehabilitation 1.

A Rehabilitation Plan must be developed by a suitably qualified person and must include the:

(a) rehabilitation goals; and

(b) procedures to be undertaken for rehabilitation that will:

  i. achieve the requirements of conditions (Rehabilitation 2) to (Rehabilitation 8), inclusive; and

  ii. provide for appropriate monitoring and maintenance.

Transitional rehabilitation

Rehabilitation 2.

Significantly disturbed areas that are no longer required for the on-going petroleum activities, must be rehabilitated within 12 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) and be maintained to meet the following acceptance criteria:

(a) contaminated land resulting from petroleum activities is remediated and rehabilitated

(b) the areas are:

  i. non-polluting

  ii. a stable landform

  iii. re-profiled to contours consistent with the surrounding landform

(c) surface drainage lines are re-established

(d) top soil is reinstated; and

(e) either:

  i. groundcover, that is not a declared pest species, is growing; or

  ii. an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.

Final rehabilitation acceptance criteria

Rehabilitation 3.

All significantly disturbed areas caused by petroleum activities which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be rehabilitated to meet the following final acceptance criteria measured either against the highest ecological value adjacent land use or the pre-disturbed land use:

(a) greater than or equal to 70% of native ground cover species richness

(b) greater than or equal to the total per cent of ground cover

(c) less than or equal to the per cent species richness of declared plant pest species; and

(d) where the adjacent land use contains, or the pre-clearing land use contained, one or more regional ecosystem(s), then at least one regional ecosystem(s) from the same broad vegetation group, and with

the equivalent biodiversity status or a biodiversity status with a higher conservation value as any of the regional ecosystem(s) in either the adjacent land or pre-disturbed land, must be present.

Final rehabilitation acceptance criteria in environmentally sensitive areas

Rehabilitation 4.

Where significant disturbance to land has occurred in an environmentally sensitive area, the following final rehabilitation criteria as measured against the pre-disturbance biodiversity values assessment (required by conditions (Biodiversity 1) and (Biodiversity 2)) must be met:

(a) greater than or equal to 70% of native ground cover species richness

(b) greater than or equal to the total per cent ground cover

(c) less than or equal to the per cent species richness of declared plant pest species

(d) greater than or equal to 50% of organic litter cover

(e) greater than or equal to 50% of total density of coarse woody material; and

(f) all predominant species in the ecologically dominant layer, that define the pre-disturbance regional ecosystem(s) are present.

Continuing conditions

Rehabilitation 5.

Conditions (Rehabilitation 2), (Rehabilitation 3) and (Rehabilitation 4) continue to apply after this environmental authority has ended or ceased to have effect.

Rehabilitation reporting for relinquishment of part of an authority to prospect area under the *Petroleum and Gas (Production and Safety) Act 2004*

Rehabilitation 6.

Prior to relinquishing all or part of an authority to prospect area, a rehabilitation report must be prepared which specifically relates to the area to be relinquished and demonstrates condition (Rehabilitation 2), (Rehabilitation 3) and (Rehabilitation 4) has been met.

Rehabilitation 7.

The report required under condition (Rehabilitation 6) must be submitted to the administering authority at least 40 business days prior to the relinquishment notice being lodged with the administering authority for the *Petroleum and Gas (Production and Safety) Act 2004*.

Remaining dams

Rehabilitation 8.

Where there is a dam (including a low consequence dam) that is being or intended to be utilised by the landholder or overlapping tenure holder, the dam must be decommissioned to no longer accept inflow from the petroleum activity(ies) and the contained water must be of a quality suitable for the intended on-going uses(s) by the landholder or overlapping tenure holder.

Conditions—Well construction, maintenance and stimulation activities[5]

<< Note: Stimulation conditions were not part of the streamlining project, however DES still conditions in relation to stimulation activities. Therefore the most recent version of the stimulation conditions have been inserted for completeness. >>

Drilling activities

Well activities 1.

Oil based or synthetic based drilling muds must not be used in the carrying out of the petroleum activity(ies).

Well activities 2.

Drilling activities must not result in the connection of the target gas producing formation and another aquifer.

Well activities 3.

Practices and procedures must be in place to detect, as soon as practicable, any fractures that have or may result in the connection of a target formation and another aquifer as a result of drilling activities.

Stimulation activities

<< Where the EA application does not request authorisation of stimulation activities, insert condition (Well activities 4), otherwise insert conditions (Well activities 5) to (Well activities 18). >>

Well activities 4.

Stimulation activities are not permitted.

<< OR >>

Well activities 5.

Polycyclic aromatic hydrocarbons or products that contain polycyclic aromatic hydrocarbons must not be used in stimulation fluids in concentrations above the reporting limit.

Well activities 6.

Stimulation activities must not negatively affect water quality, other than that within the stimulation impact zone of the target gas producing formation.

Well activities 7.

Stimulation activities must not cause the connection of the target gas producing formation and another aquifer.

Well activities 8.

The internal and external mechanical integrity of the well system prior to and during stimulation must be ensured such that there is:

(a) no significant leakage in the casing, tubing, or packer; and

(b) there is no significant fluid movement into another aquifer through vertical channels adjacent to the well bore hole.

[5] 131202 Stimulation

Well activities 9.

Practices and procedures must be in place to detect, as soon as practicable, any fractures that cause the connection of a target gas producing formation and another aquifer.

Stimulation risk assessment

Well activities 10.

Prior to undertaking stimulation activities, a risk assessment must be developed to ensure that stimulation activities are managed to prevent environmental harm.

Well activities 11.

The stimulation risk assessment must be carried out for every well to be stimulated prior to stimulation being carried out at that well and address issues at a relevant geospatial scale such that changes to features and attributes are adequately described and must include, but not necessarily be limited to:

(a) a process description of the stimulation activity to be applied, including equipment and a comparison to best international practice

(b) provide details of where, when and how often stimulation is to be undertaken on the tenures covered by this environmental authority

(c) a geological model of the field to be stimulated including geological names, descriptions and depths of the target gas producing formation(s)

(d) naturally occurring geological faults

(e) seismic history of the region (e.g. earth tremors, earthquakes)

(f) proximity of overlying and underlying aquifers

(g) description of the depths that aquifers with environmental values occur, both above and below the target gas producing formation

(h) identification and proximity of landholder' active groundwater bores in the area where stimulation activities are to be carried out

(i) the environmental values of groundwater in the area

(j) an assessment of the appropriate limits of reporting for all water quality indicators relevant to stimulation monitoring in order to accurately assess the risks to environmental values of groundwater

(k) description of overlying and underlying formations in respect of porosity, permeability, hydraulic conductivity, faulting and fracture propensity

(l) consideration of barriers or known direct connections between the target gas producing formation and the overlying and underlying aquifers

(m) a description of the well mechanical integrity testing program

(n) process control and assessment techniques to be applied for determining extent of stimulation activities (e.g. microseismic measurements, modelling etc.)

(o) practices and procedures to ensure that the stimulation activities are designed to be contained within the target gas producing formation

(p) groundwater transmissivity**,** flow rate, hydraulic conductivity and direction(s) of flow

(q) a description of the chemical compounds used in stimulation activities (including estimated total mass, estimated composition, chemical abstract service numbers and properties), their mixtures and the resultant compounds that are formed after stimulation

(r) a mass balance estimating the concentrations and absolute masses of chemical compounds that will be reacted, returned to the surface or left in the target gas producing formation subsequent to stimulation

(s) an environmental hazard assessment of the chemicals used including their mixtures and the resultant chemicals that are formed after stimulation including:

i. toxicological and ecotoxicological information of chemical compounds used

ii. information on the persistence and bioaccumulation potential of the chemical compounds used; and

iii. identification of the chemicals of potential concern in stimulation fluids derived from the risk assessment

(t) an environmental hazard assessment of use, formation of, and detection of polycyclic aromatic hydrocarbons in stimulation activities

(u) identification and an environmental hazard assessment of using radioactive tracer beads in stimulation activities

(v) an environmental hazard assessment of leaving chemical compounds in stimulation fluids in the target gas producing formation for extended periods subsequent to stimulation

(w) human health exposure pathways to operators and the regional population

(x) risk characterisation of environmental impacts based on the environmental hazard assessment

(y) potential impacts to landholder bores as a result of stimulation activities

(z) an assessment of cumulative underground impacts, spatially and temporally of the stimulation activities to be carried out on the tenures covered by this environmental authority; and

(aa) potential environmental or health impacts which may result from stimulation activities including but not limited to water quality, air quality (including suppression of dust and other airborne contaminants), noise and vibration.

Water quality baseline monitoring

Well activities 12.

Prior to undertaking any stimulation activity, a baseline bore assessment must be undertaken of the water quality of:

(a) all landholder's active groundwater bores (subject to access being permitted by the landholder) that are spatially located within a two (2) kilometre horizontal radius from the location of the stimulation initiation point within the target gas producing formation; and

(b) all landholders' active groundwater bores (subject to access being permitted by the landholder) in any aquifer that is within 200m above or below the target gas producing formation and is spatially located with a two (2) kilometre radius from the location of the stimulation initiation point; and

(c) any other bore that could potentially be adversely impacted by the stimulation activities in accordance with the findings of the risk assessment required by conditions (Well activities 10) and (RMW026).

RMW028.

Prior to undertaking stimulation activities at a well, there must be sufficient water quality data to accurately represent the water quality in the well to be stimulated. The data must include as a minimum the results of analyses for the parameters in condition (RMW029).

RMW029.

Baseline bore and well assessments must include relevant analytes and physico-chemical parameters to be monitored in order to establish baseline water quality and must include, but not necessarily be limited to:

(a) pH

(b) electrical conductivity [μS/m]

(c) turbidity [NTU]

(d) total dissolved solids [mg/L]

(e) temperature [ºC]

(f) dissolved oxygen [mg/L]

(g) dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L]

(h) alkalinity (bicarbonate, carbonate, hydroxide and total as $CaCO_3$) [mg/L]

(i) sodium adsorption ratio (SAR)

(j) anions (bicarbonate, carbonate, hydroxide, chloride, sulphate) [mg/L]

(k) cations (aluminium, calcium, magnesium, potassium, sodium) [mg/L]

(l) dissolved and total metals and metalloids (including but not necessarily being limited to: aluminium, arsenic, barium, borate (boron), cadmium, total chromium, copper, iron, fluoride, lead, manganese, mercury, nickel, selenium, silver, strontium, tin and zinc) [μg/L]

(m) total petroleum hydrocarbons [μg/L]

(n) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [μg/L]

(o) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [μg/L]

(p) sodium hypochlorite [mg/L]

(q) sodium hydroxide [mg/L]

(r) formaldehyde [mg/L]

(s) ethanol [mg/L]; and

(t) gross alpha + gross beta or radionuclides by gamma spectroscopy [Bq/L].

Stimulation impact monitoring program

RMW030.

A stimulation impact monitoring program must be developed prior to the carrying out of stimulation activities which must be able to detect adverse impacts to water quality from stimulation activities and must consider the findings of the risk assessment required by conditions (RMW025) and (RMW026) that relate to stimulation activities and must include, as a minimum, monitoring of:

(a) the stimulation fluids to be used in stimulation activities at sufficient frequency and which sufficiently represents the quantity and quality of the fluids used

(b) flow back waters from stimulation activities at sufficient frequency and which sufficiently represents the quality of that flow back water

(c) flow back waters from stimulation activities at sufficient frequency and accuracy to demonstrate that 150% of the volume used in stimulation activities has been extracted from the stimulated well; and

(d) all bores in accordance with condition (RMW027).

RMW031.

The stimulation impact monitoring program must provide for monitoring of:

(a) analytes and physico-chemical parameters relevant to baseline bore and well assessments to enable data referencing and comparison including, but not necessarily being limited to the analytes and physico-chemical parameters in condition (RMW029); and

(b) any other analyte or physico-chemical parameters that will enable detection of adverse water quality impacts and the inter-connection with a non-target aquifer as a result of stimulation activities including chemical compounds that are actually or potentially formed by chemical reactions with each other or coal seam materials during stimulation activities.

RMW032.

The stimulation impact monitoring program must provide for monitoring of the bores in condition (RMW030(d)) at the following minimum frequency:

(a) monthly for the first six (6) months subsequent to stimulation activities being undertaken; then

(b) annually for the first five (5) years subsequent to stimulation being undertaken or until analytes and physico-chemical parameters listed in conditions (RMW029(a)) to (RMW029(t)) inclusive, are not detected in concentrations above baseline bore monitoring data on two (2) consecutive monitoring occasions.

RMW033.

The results of the stimulation impact monitoring program must be made available to any potentially affected landholder upon request by that landholder.

Conditions—Dams

<< Note: Dams conditions were not part of the streamlining project, however DES still applies conditions in relation to dams. The most recent version of dam conditions can be found in the guideline 'Structures which are dams or levees constructed as part of environmentally relevant activities (ESR/2016/1934[6])'. >>

Definitions for streamlined conditions

acceptable standards for release to land	means wastewater of the following quality as determined by monitoring results or by characterisation: (a) electrical conductivity (EC) not exceeding 3000µS/cm (b) sodium adsorption ratio (SAR) not exceeding 8 (c) pH between 6.0 and 9.0 (d) heavy metals (measured as total) meets the respective short term trigger value in section 4.2.6, Table 4.2.10—Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality (e) does not contain biocides.
acid sulfate soil(s)	means a soil or soil horizon which contains sulfides or an acid soil horizon affected by oxidation of sulfides.
adjacent land use(s)	means the ecosystem function adjacent to an area of significant disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.
administering authority	means: (a) for a matter, the administration and enforcement of which has been devolved to a local government under section 514 of the *Environmental Protection Act 1994*—the local government; or (b) for all other matters—the Chief Executive of the Department of Environment and Science; or (c) another State Government Department, Authority, Storage Operator, Board or Trust, whose role is to administer provisions under other enacted legislation.

[6] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

<table>
<tr><td>alternative arrangement</td><td>means a written agreement about the way in which a particular environmental 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.</td></tr>
<tr><td>analogue site(s)</td><td>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, vegetation community attributes 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.</td></tr>
<tr><td>annual return period</td><td>means the most current 12-month period between two anniversary dates.</td></tr>
<tr><td>appraisal well</td><td>means a petroleum well to test the potential of one (1) or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well does not include an exploration well.</td></tr>
<tr><td>appropriately qualified person / suitably qualified person</td><td>means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.

<< Note: The preferred term to use for the environmental offset conditions is ‘appropriately qualified person’ as ‘suitably qualified person’ as defined under the EP Act does not relate to these conditions. However, for consistency within an existing EA, the term ‘suitably qualified person’ can be used at the discretion of the relevant assessment team. >></td></tr>
<tr><td>approved quality criteria</td><td>for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:

<u>Part A</u> In all cases:
<table>
<tr><th>Parameter</th><th>Maximum concentration</th></tr>
<tr><td>pH</td><td>6–10.5 (range)</td></tr>
<tr><td>Electrical Conductivity</td><td>20dS/m (20,000µS/cm)</td></tr>
<tr><td>Chloride*</td><td>8000mg/L</td></tr>
</table>
*Chloride analysis is only required if an additive containing chloride was used in the drilling process

The limits in Part A must be measured in the clarified filtrate of oversaturated solids prior to mixing.

<u>Part B</u> If any of the following metals are a component of the drilling fluids, then for that metal:
<table>
<tr><th>Parameter</th><th>Maximum concentration</th></tr>
<tr><td>Arsenic</td><td>20mg/kg</td></tr>
<tr><td>Selenium</td><td>5mg/kg</td></tr>
<tr><td>Boron</td><td>100mg/kg</td></tr>
<tr><td>Cadmium</td><td>3mg/kg</td></tr>
</table></td></tr>
</table>

	<table><tr><td>Chromium (total)</td><td>400mg/kg</td></tr><tr><td>Copper</td><td>100mg/kg</td></tr><tr><td>Lead</td><td>600mg/kg</td></tr></table> The limits in Part B and Part C refer to the post soil/by-product mix. Part C If a hydrocarbon sheen is visible, the following hydrocarbon fractions: <table><tr><th>TPH</th><th>Maximum concentration</th></tr><tr><td>C6-C10</td><td>170mg/kg</td></tr><tr><td>C10-C16</td><td>150mg/kg</td></tr><tr><td>C16-C34</td><td>1300mg/kg</td></tr><tr><td>C34-C40</td><td>5600mg/kg</td></tr><tr><td>Total Polycyclic Aromatic Hydrocarbons (PAHs)</td><td>20mg/kg</td></tr><tr><td>Phenols (halogenated)</td><td>1mg/kg</td></tr><tr><td>Phenols (non-halogenated)</td><td>60mg/kg</td></tr><tr><td>Monocyclic aromatic hydrocarbons (Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)</td><td>7mg/kg</td></tr><tr><td>Benzene</td><td>1mg/kg</td></tr></table>
areas of pre-existing disturbance	means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re-colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the authorised petroleum activities). The term ‘areas of pre-disturbance’ does not include areas that have been impacted by wildfire/s, controlled burning, flood or natural vegetation die-back.
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 authorised activity under a petroleum authority, such as a petroleum well, and includes waters also known as produced formation water. The term includes all contaminants suspended or dissolved within 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.
Australian Standard 3580	means any of the following publications:

	• AS3580.10.1 Methods for sampling and analysis of ambient air—Determination of particulate matter—Deposited matter—Gravimetric method. • AS3580.9.6 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter—PM10 high volume sampler with size-selective inlet—Gravimetric method • AS3580.9.9 Methods for sampling and analysis of ambient air—Determination of suspended particulate matter— PM10 low volume sampler—Gravimetric sampler.
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% of the measurement time period T of not less than 15 minutes (or $L_{A\ 90,\ adj,\ 15\ mins}$), using Fast response.
bankfull	means the channel flow rate that exists when the water is at the elevation of the channel bank above which water begins to spill out onto the floodplain. The term describes the condition of the channel relative to its banks (e.g. overbank, in-bank, bankfull, low banks, high bank).
bed	of any waters, has the meaning in Schedule 12 of the Environmental Protection Regulation 2008 and— (a) includes an area covered, permanently or intermittently, by tidal or non-tidal waters; but (b) does not include land adjoining or adjacent to the bed that is from time to time covered by floodwater.
being or intended to be utilised by the landholder or overlapping tenure holder	for significantly disturbed land, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use of the land such that rehabilitation standards for revegetation by the holder of the environmental authority are not required. For dams, means there is a written agreement (e.g. land and compensation agreement) between the landholder or the overlapping tenure holder and the holder of the environmental authority identifying that the landholder or the overlapping tenure holder has a preferred use for the dam such that rehabilitation standards for revegetation by the holder of the environmental authority are not required.
biodiversity values	for the purposes of this environmental authority, means environmentally sensitive areas, prescribed environmental matters and wetlands.
BTEX	means benzene, toluene, ethylbenzene, ortho-xylene, para-xylene, meta-xylene and total xylene.
Category A Environmentally Sensitive Area	means any area listed in Schedule 12, Section 1 of the Environmental Protection Regulation 2008.
Category B Environmentally Sensitive Area	means any area listed in Schedule 12, Section 2 of the Environmental Protection Regulation 2008.
Category C Environmentally Sensitive Area	means any of the following areas: • nature refuges as defined in the conservation agreement for that refuge under the *Nature Conservation Act 1992*

	• koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2006 • state forests or timber reserves as defined under the *Forestry Act 1959* • regional parks (previously known as resource reserves) under the *Nature Conservation Act 1992* • an area validated as 'essential habitat' from ground-truthing surveys in accordance with the *Vegetation Management Act 1999* for a species of wildlife listed as endangered or vulnerable under the *Nature Conservation Act 1992* • 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'RE description database' containing regional ecosystem numbers and descriptions.
certified or certification	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* and for vegetation— (a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but (b) does not include destroying standing vegetation by stock, or lopping a tree.
closed-loop systems	means using waste on site in a way that does not release waste or contaminants in the waste to the environment.
control measure	has the meaning in section 47 of the Environmental Protection Regulation 2008 and means a device, equipment, structure, or management strategy used to prevent or control the release of a contaminant or waste to the environment.
critically limited regional ecosystem	means the regional ecosystems defined and listed in Appendix 5 of the Queensland Biodiversity Offset Policy.
coal seam gas water	means underground water brought to the surface of the earth, or moved underground in connection with exploring for, or producing coal seam gas.
daily peak design capacity	for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2008 as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.
dam(s)	means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works.

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.
declared plant pest species	has the meaning in the Land Protection (Pest and Stock Route Management) Regulation 2003 and is a 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 plant.
designated precinct	has the meaning in Part 5 section 15(3) of the Regional Planning Interests Regulation 2014 and means: • for a strategic environmental area mentioned in section 4(1) – the area identified as a designated precinct on the strategic environmental area map for the strategic environmental are; or • if a strategic environmental area is shown on a map in a regional plan – the area identified on the map as a designated precinct for the strategic environmental area.
design storage allowance or DSA	means an available volume, estimated in accordance with the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933[7]), published by the administering authority, as amended from time to time, that must be provided in a dam to an annual exceedance probability specified in that Manual.
development wells	means a petroleum well which produces or stores petroleum. For clarity, a development well does not include an appraisal well.
document	has the meaning in the *Acts Interpretation Act 1954* and means: • any paper or other material on which there is writing; and • any paper or other material on which there are marks; and • figures, symbols or perforations having a meaning for a person qualified to interpret them; and • any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).
ecologically dominant layer	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means the layer making the greatest contribution to the overall biomass of the site and the vegetation community (NLWRA 2001). This is also referred to as the ecologically dominant stratum or the predominant canopy in woody ecosystems.
ecosystem function	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.
enclosed flare	means a device where the residual gas is burned in a cylindrical or rectilinear enclosure that includes a burning system and a damper where air for the combustion reaction is admitted.
environmental harm	has the meaning in section 14 of the *Environmental Protection Act 1994* and means any adverse effect, or potential adverse effect (whether temporary or permanent and of

[7] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

	whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance. Environmental harm may be caused by an activity— (a) whether the harm is a direct or indirect result of the activity; or (b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.
environmental nuisance	has the meaning in section 15 of the *Environmental Protection Act 1994 and means* unreasonable interference or likely interference with an environmental value caused by— (a) aerosols, fumes, light, noise, odour, particles or smoke; or (b) an unhealthy, offensive or unsightly condition because of contamination; or (c) another way prescribed by regulation.
environmental offset	has the meaning in section 7 of the *Environmental Offsets Act 2014.*
environmentally sensitive area	means Category A, B or C environmentally sensitive areas (ESAs)
equivalent person or EP	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.
essential petroleum activities	means activities that are essential to bringing the resource to the surface and are only the following: • low impact petroleum activities • geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample /test / geotechnical pits, core holes) • single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance • well sites with monitoring equipment (including monitoring bores): o for single well sites, not exceeding 1.25 hectares disturbance o for multi-well sites, not exceeding 1.75 hectares disturbance • well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1 ML) for above ground fluid storage: o for single well sites, not exceeding 1.5 hectares disturbance o for multi-well sites, not exceeding 2.0 hectares disturbance • associated infrastructure located on a well site necessary for the construction and operations of wells: o water pumps and generators o flare pits

	○ chemical / fuel storages ○ sumps for residual drilling material and drilling fluids ○ tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. stimulation flow back waters, produced water) ○ pipe laydown areas ○ soil and vegetation stockpile areas ○ a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works ○ temporary administration sites and warehouses ○ dust suppression activities using water that meets the quality and operational standards approved under the environmental authority • communication and power lines that are necessary for the undertaking of petroleum activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of petroleum activities • supporting access tracks • gathering / flow pipelines from a well head to the initial compression facility • activities necessary to achieve compliance with the conditions of the environmental authority in relation to another essential petroleum activity (e.g. sediment and erosion control measures, rehabilitation).
existing authority	has the meaning in section 94 of the *Environmental Offsets Act 2014*.
exploration well	means a petroleum well that is drilled to: • explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum; or • obtain stratigraphic information for the purpose of exploring for petroleum. For clarity, an exploration well does not include an appraisal or development well.
flare pit	has the meaning in the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933[8]), and means containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling operation is diverted to, and combusted, The flare pit is only used during the drilling and work over process on a petroleum well.
flare precipitant	means waste fluids which result from the operation of a flare.
floodplains	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 of the watercourse.

[8] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

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.
fuel burning or combustion facility	means a permanent fuel burning or combustion equipment which in isolation, or combined in operation, or which are interconnected, is, or are capable of burning more than 500 kg of fuel in an hour.
GDA	means Geocentric Datum of Australia.
Great Artesian Basin (GAB) spring	means an area protected under the *Environment Protection and Biodiversity Conservation Act 1999* because it is considered to be a Matter of National Environmental Significance and identified as a: • community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or • Great Artesian Basin spring; or • Great Artesian Basin discharge spring wetland. A GAB spring includes a spring vent, spring complex or watercourse spring and includes the land to which water rises naturally from below the ground and the land over which the water then flows. *Note: The Australian Government's Protected Matters Search Tool should be used to get an indication of whether the area of interest may contain an MNES spring.* *Note: The GAB springs dataset can be requested from the Queensland Government Herbarium*
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.
groundwater dependent ecosystem (GDE)	means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services. For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as "unknown".
growing	means to increase by natural development, as any living organism or part thereof by assimilation of nutriment; increase in size or substance.
hydraulic integrity	refers to the capacity of a dam to contain or safely pass flowable substances based on its design.
impulsive (for noise)	means sound characterised by brief excursions of sound pressure (acoustic impulses) that significantly exceed the background sound pressure. The duration of a single impulsive sound is usually less than one second.
$L_{A\ 90,\ adj,\ 15\ mins}$	means the A-weighted sound pressure level, adjusted for tonal character that is equal to or exceeded for 90% of any 15 minutes sample period equal, using Fast response.

$L_{Aeq, adj, 15 mins}$	means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within any 15 minute period has the same square sound pressure as a sound level that varies with time.
land degradation	has the meaning in the *Vegetation Management Act 1999* and means the following: • soil erosion • rising water tables • the expression of salinity • mass movement by gravity of soil or rock • stream bank instability • a process that results in declining water quality.
landholder's active groundwater bore	means bores that are able to continue to provide a reasonable yield of water in terms of quantity for the bores authorised purpose or use. This term does not include monitoring bores owned by the administering authority of the *Water Act 2000*.
linear infrastructure	means powerlines, pipelines, flowlines, roads and access tracks.
liquid	means a substance which is flowing and offers no permanent resistance to changes of shape.
long term noise event	means a noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five (5) days, even when there are respite periods when the noise is inaudible within those five (5) days.
low consequence dam	means any dam that is not classified as high or significant as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, published by the administering authority, as amended from time to time.
low impact petroleum activities	means petroleum activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.
Map of referable wetlands	has the meaning in Schedule 12 of the Environmental Protection Regulation 2008 and means the 'Map of referable wetlands', a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D.
Max $L_{pA, 15 min}$	means the absolute maximum instantaneous A-weighted sound pressure level, measured over 15 minutes.
Max $L_{pZ, 15 min}$	means the maximum value of the Z-weighted sound pressure level measured over 15 minutes.
maximum extent of impact	means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.

medium term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five (5) days and does not re-occur for a period of at least four (4) weeks. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a difference source or source location.
methodology	means the science of method, especially dealing with the logical principles underlying the organisation of the various special sciences, and the conduct of scientific inquiry.
mix-bury-cover method	means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology: • the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material (kw=10–8m/s) or subsoil with a clay content of greater than 20%; and • the residual solids is mixed with subsoil in the sump and cover; and • the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v); and • a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and • topsoil is replaced.
month	has the meaning in the *Acts Interpretation Act 1954* and means a calendar month and is a period starting at the beginning of any day of one (1) of the 12 named months and ending— • immediately before the beginning of the corresponding day of the next named month; or • if there is no such corresponding day—at the end of the next named month.
NATA accreditation	means accreditation by the National Association of Testing Authorities Australia.
notice of election	has the meaning in section 18(2) *Environmental Offsets Act 2014*.
prescribed environmental matters	has the meaning in section 10 of the *Environmental Offsets Act 2014*, limited to the matters of State environmental significant listed in schedule 2 of the Environmental Offsets Regulation 2014.
pipeline waste water	means hydrostatic testing water, flush water or water from low point drains.
pre-disturbed land use	means the function or use of the land as documented prior to significant disturbance occurring at that location.
predominant species	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a species that contributes most to the overall above-ground biomass of a particular stratum.
prescribed contaminants	has the meaning in section 440ZD of the *Environmental Protection Act 1994* and means:
primary protection zone	means an area within 200m from the boundary of any Category A, B or C ESA.

produced water	has the meaning in Section 15A of the *Petroleum and Gas (Production and Safety) Act 2004* and means CSG water or associated water for a petroleum tenure.
protection zone	means the primary protection zone of any Category A, B or C ESA or the secondary protection zone of any Category A or B ESA.
regional ecosystem	has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 3.2 August 2012) and means a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by Queensland Herbarium and contains the current descriptions of regional ecosystems.
regulated dam	means any dam in the significant or high consequence category as assessed using the Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (ESR/2016/1933[9]), published by the administering authority, 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. For the purposes of pipeline rehabilitation, rehabilitation includes reinstatement, revegetation and restoration.
reinstate or reinstatement	for pipelines, means the process of bulk earth works and structural replacement of pre-existing conditions of a site (i.e. soil surface typography, watercourses, culverts, fences and gates and other landscape(d) features) and is detailed in the Australian Pipeline Industry Association (APIA) Code of Environmental Practice: Onshore Pipelines (2013).
reporting limit	means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as “less than” the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 ug/L–0.02 ug/L.
residual drilling material	means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.
restoration	means the replacement of structural habitat complexity, ecosystem processes, services and function from a disturbed or degraded site to that of a pre-determined or analogue site. For the purposes of pipelines, restoration applies to final rehabilitation after pipeline decommissioning.
restricted stimulation fluids	has the meaning in section 206 of the *Environmental Protection Act 1994* and means fluids used for the purpose of stimulation, including fracturing, that contain the following chemicals in more than the maximum amount prescribed under a regulation— (a) petroleum hydrocarbons containing benzene, ethylbenzene, toluene or xylene (b) chemicals that produce, or are likely to produce, benzene, ethylbenzene, toluene or xylene as the chemical breaks down in the environment.

[9] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

revegetation or revegetating or revegetate	means to actively re-establish vegetation through seeding or planting techniques in accordance with site specific management plans.
secondary protection zone	in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.
secondary treated class A 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, 100cfu per 100mL, maximum 1000cfu per 100mL.
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 10 000cfu 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, 10 000cfu per 100mL, maximum 100 000cfu per 100mL.
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 petroleum 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	is defined in Schedule 2 of the Environmental Protection (Noise) Policy 2008, and means an area or place where noise is measured.
short term noise event	is a noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven (7) days. Re-occurrence is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.
significant residual impact	has the meaning in section 8 *Environmental Offsets Act 2014*.
significantly disturbed or significant disturbance or significant disturbance to land or areas	has the meaning in Schedule 12, section 4 of the Environmental Protection Regulation 2008. Land is significantly disturbed if— (i) to a condition required under the relevant environmental authority; or (ii) if the environmental authority does not require the land to be rehabilitated to a particular condition—to the condition it was in immediately before the disturbance.
species richness	means the number of different species in a given area.
stable	has the meaning in Schedule 5 of the Environmental Protection Regulation 2008 and, for a site, means the rehabilitation and restoration of the site is enduring or permanent so that the site is unlikely to collapse, erode or subside.
statement of compliance	for a condition in an environmental authority has the meaning in section 208 of the *Environmental Protection Act 1994* and is a condition that requires the holder to give the administering authority a statement of compliance about a document or work relating to a relevant activity. The condition must also state— (a) the criteria (the compliance criteria) the document or work must comply with; and (b) that the statement of compliance must state whether the document or work complies with the compliance criteria; and (c) the information (the supporting information) that must be provided to the administering authority to demonstrate compliance with the compliance criteria; and (d) when the statement of compliance and supporting information must be given to the administering authority.
stimulation	means a technique used to increase the permeability of 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. **Explanatory note:** This definition is restricted from that in the *Petroleum and Gas (Production and Safety) Act 2004* in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.

stimulation fluid	means the fluid injected underground to increase permeability. For clarity, the term stimulation fluid only applies to fluid injected down well post-perforation.
stimulation impact zone	means a 100m maximum radial distance from the stimulation target location within a gas producing formation.
strategic environmental area	has the meaning in section 11(1) of the *Regional Planning Interest Act 2014.*
structure	means a dam or levee.
subterranean cave GDE	• means an area identified as a subterranean cave in the mapping produced by the Queensland Government and identified in the Queensland Government Information System, as amended from time to time; and • means a cave ecosystem which requires access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain its communities of plants and animals, ecological processes and ecosystem services. Subterranean cave GDEs are caves dependent on the subterranean presence of groundwater. Subterranean cave GDEs have some degree of groundwater connectivity and are indicated by either high moisture levels or the presence of stygofauna, or both, referred to in the Queensland Government WetlandsInfo mapping program, as amended from time to time. *Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government WetlandInfo mapping program.* *Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.*
suitably qualified person	means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using 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' 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.
sump	means a pit in which waste residual drilling material or drilling fluids are stored only for the duration of drilling activities.
synthetic based drilling mud	means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.
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.
total density of coarse woody material	means the total length of logs on the ground greater than or equal to 10cm diameter per hectare and number of logs on the ground greater than or equal to 10cm diameter per hectare.
transmissivity	means the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer.
valid complaint	means all complaints unless considered by the administering authority to be frivolous, vexatious or based on mistaken belief.
void	means any constructed, open excavation in the ground.
waste and resource management hierarchy	has the meaning provided in section 9 of the *Waste Reduction and Recycling Act 2011 and* is the following precepts, listed in the preferred order in which waste and resource management options should be considered— (a) AVOID unnecessary resource consumption (b) REDUCE waste generation and disposal (c) RE-USE waste resources without further manufacturing (d) RECYCLE waste resources to make the same or different products (e) RECOVER waste resources, including the recovery of energy (f) TREAT waste before disposal, including reducing the hazardous nature of waste (g) DISPOSE of waste only if there is no viable alternative.
waste and resource management principles	has the meaning provided in section 4(2)(b) of the *Waste Reduction and Recycling Act 2011* and means the: (a) polluter pays principle (b) user pays principle (c) proximity principle (d) product stewardship principle.
waste fluids	has the meaning in section 13 of the *Environmental Protection Act 1994* in conjunction with the common meaning of "fluid" which is "a substance which is capable of flowing and offers no permanent resistance to changes of shape". Accordingly, to be a waste fluid, the waste must be a substance which is capable of flowing and offers no permanent resistance to changes of shape.
watercourse	has the meaning in Schedule 4 of the *Environmental Protection Act 1994* and means: 1) a river, creek or stream in which water flows permanently or intermittently— (a) in a natural channel, whether artificially improved or not; or (b) in an artificial channel that has changed the course of the watercourse. 2) Watercourse includes the bed and banks and any other element of a river, creek or stream confining or containing water.
waters	includes 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.
well integrity	the ability of a well to contain the substances flowing through it.
wetland	for the purpose of this environmental authority, wetland means: • areas shown on the Map of referable wetlands which is a document approved by the chief executive on 4 November 2011 and published by the department, as amended from time to time by the chief executive under section 144D of the Environmental Protection Regulation 2008; and • areas defined under the Queensland Wetlands Program as 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 six (6) metres, and possess one or more of the following attributes: o 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 o the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers, or o the substratum is not soil and is saturated with water, or covered by water at some time. The term wetland includes riverine, lacustrine, estuarine, marine and palustrine wetlands; and it does not include a Great Artesian Basin Spring or a subterranean wetland that is a cave or aquifer.
wetland of high ecological significance	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'high ecological significance' or wetland of 'high ecological value' on the Map of referable wetlands.
wetland of other environmental value	means a wetland that meets the definition of a wetland and that is shown as a wetland of 'general environmental significance' or wetland of 'other environmental value' on the Map of referable wetlands.

Appendix 1 Explanatory notes and heads of power for streamlined model conditions for petroleum activities

Explanatory notes—General Environmental Protection

Explanatory note (Authorised Activities - conditions General 1 to General 6)

<< *The streamlined model conditions will be updated to include model conditions relating to authorising the scope (including scale and intensity) of the relevant resource activity.* >>

Explanatory note (RMG079) to (RMG042)

Conditions (RMG079) to (RMG042) require that monitoring is carried out in a stated way. The conditions require that monitoring and laboratory analyses meet stated standards. Accreditation of laboratory analyses methods is required in order to have confidence in both the accuracy and precision of the result.

Note that calibration requirements are included in the documents listed and so there is no additional condition requiring these.

Note that condition (RMS001) relates to all complaints and not only valid complaints, this is because monitoring to inform an investigation may be necessary to determine if a complaint is vexatious, frivolous or based on mistaken belief and hence it is a necessary step to determine the complaint's validity.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s. 53(2)(d).

Explanatory note (RMG043)

Condition (RMG043) is a necessary and desirable condition and requires that information be given for the administration and enforcement of the *Environmental Protection Act 1994*. These circumstances do not mean that environmental harm has already occurred but rather, they are indicators of potential harm. The intent of this condition is to only capture environmental issues or circumstances of interest which may result in environmental harm and not administrative breaches that have no consequence for the environment. These are dealt with under the annual return process. The volume thresholds provide some flexibility as releases below these are considered sufficiently low risk to not warrant notification. The duty to notify provisions in Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994* apply to all persons for events where serious or material environmental harm has been caused or threatened or a non-mining resource activity aquifer event has occurred (i.e. an event as described by section 320A(1)(b)(i) or (ii) of that Act). The notification requirements in this condition apply to the lower risk or potential environmental issues only—the higher risk activities are dealt with under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994*.

Notification under condition (RMG043) should occur using the form, Incident notification for resource activities other than mining (ESR/2015/1753[10]) available from the administering authority's website. The notification conditions no longer require an incident report to be submitted after initial notification because contingency procedures must be implemented and require incidents to be investigated. There are relevant provisions in the *Environmental Protection Act 1994* that allow the DES to require more information about an incident response or as part of routine incident investigations.

Refer to Schedule 9 of the Environmental Protection Regulation 2008 for the list of prescribed contaminants to water.

Condition (RMG043(h)) refers to the list of contaminants in isolation or in any mixture such as water. Condition (RMG043(h)(v)) specifically refers to coal seam gas water because, unlike other types of produced water, it will contain high levels of total dissolved solids and is produced at larger volumes than produced water from other unconventional resource activities. Other unconventional resource activities (e.g. shale or tight gas) are

[10] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

captured by condition (RMG043(h)(ii) or (iii)) in the event that their activities spill stimulation fluids (which includes stimulation flow back water) or stimulation additives on land.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008,ss. 52(1)(a) and 53(2)(c).

Explanatory note (General 13) to (General 15)

The *Environmental Protection Act 1994* provides that the administering authority "may" require financial assurance by a condition. Whilst this provides a head of power to prescribe a condition requiring financial assurance, condition (RMG075) is making it clear that the giving of financial assurance is a mandatory requirement prior to carrying out petroleum activities. Scoping of this condition is limited to 'significant disturbance to land' to allow for low impact petroleum activities to occur without giving financial assurance. Refer to the latest version of the guideline *Financial assurance under the Environmental Protection Act 1994* (ESR/2015/1758[11]).

Condition (RMG044) is a variation of standard condition (RSG069) and provides for financial assurance to be amended by an application or a plan of operations so the condition can be used for all types of tenures (e.g. PL, ATP, PPL, etc.).

Condition (RMG045) is required to trigger an amendment to financial assurance if a discount is no longer applicable to the amount of financial assurance held by the administering authority. This condition is necessary to capture the following circumstances:

- Where the holder of the environmental authority no longer meets one or more of the mandatory pre-requisites or applicable discount criteria (e.g. because there has been a relevant compliance action in relation to an environmental authority condition that sets limits on disturbance);
- Where the discount otherwise ceases to apply (e.g. at the end of the nominated financial assurance period such as the plan of operations period).

Head of power

Environmental Protection Act 1994, s. 292.

Explanatory note (RMG046)

Condition (RMG046) requires that measures to minimise the likelihood of environmental harm being caused as a result of an emergency environmental incident are taken. The development of contingency procedures will ensure preparation to respond to an emergency environmental incident promptly and effectively thereby reducing environmental harm. Contingency procedures may exist within another document (e.g. Plan of Operations) but must meet the content requirements of this condition. This condition is limited in scope to 'significant disturbance to land', to allow for low impact petroleum activities (which do not warrant contingency procedures) to occur. Note that this condition inserts requirements that were in previous notification conditions. The contingency procedures must be implemented by virtue of condition (RMG050) and if required, the administering authority will ask for the incident response information.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a) and 53(2)(c).

Explanatory note (General 17)

Condition (RMG078 / RSG062) requires that plant and equipment is maintained and operated in a stated way and that stated measures to minimise the likelihood of environmental harm being caused are taken. Note that conditions of this type used to refer to "installing" plant and equipment, however this is redundant as the equipment must be installed in order to maintain and operate it.

[11] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

The common meaning of proper is ‘adapted or appropriate to the purpose or circumstances; fit; suitable’. The common meaning of effective is ‘serving to effect the purpose; producing the intended or expected result’. The actions in this condition provide certainty and clarity around the reasonable and practicable measures to prevent harm and ensure that the conditions of the environmental authority (EA) are complied with.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, s. 52(1)(a), (b) and (l).

Explanatory note (RMG047)

Condition (RMG047) requires plant and equipment is installed in a stated way. This condition enables the ready identification of infrastructure on site for compliance purposes in the field and is important given the scale of petroleum activities. If there is any other significant infrastructure, it should be added to this list.

Head of power

Environmental Protection Act 1994, s. 203(1)(a).

Explanatory note (RML001)

Condition (RML001) requires that there are measures in place to prevent fauna entrapment. Whether fauna entrapment occurs or is minimised, is not relevant as this condition is requiring implementation of ‘measures’. That is, fauna becoming entrapped does not create an offence against this condition provided that there were measures in place designed to prevent the entrapment. It is acknowledged that despite these measures not all fauna will avoid entrapment (e.g. small animals such as snakes and lizards). In these circumstances, measures to prevent harm to these fauna should instead be implemented (e.g. refugia in trenches, regular inspections of trenches, etc).

Well infrastructure includes all the infrastructure associated with the construction and operation of a well and therefore includes sumps and flare pits.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(f) and Environmental Protection Regulation 2008, s. 52(1)(l).

Explanatory note (General 20)

Condition (RML002) sets the outcomes to be achieved for all sediment and erosion control. The condition provides flexibility for erosion and sediment measures to vary with the type of works, site location and receiving environment. The risks of erosion at each site will vary and this condition provides flexibility to tailor solutions according to risk. For example, if works are undertaken during the dry season or occur for two or three days, there is less risk of erosion and minimal erosion controls may be needed.

Items (a) to (e) are derived from the International Erosion Control Association Guidelines (IECA) which is considered national best practice management for erosion and sediment control.

Note that unless specifically authorised by conditions of the environmental authority, the release of sediment into waters is not permitted.

Head of power

Environmental Protection Act 1994 s. 207(1)(e) and (f) and Environmental Protection Regulation 2008, s. 52(1)(b),(i) and (l).

Explanatory note (RMG048)

Condition (RMG048) is based on standard condition RSS010. Condition (RMG048) prohibits environmental nuisance being caused at a sensitive place. Accordingly, this condition actually gives scope and clarity that

under the EA, nuisance is not considered a nuisance when it occurs at a sensitive place and an alternative arrangement is in place. The condition also allows for alternative arrangements to be negotiated with sensitive receptors in relation to causing environmental nuisance. An 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.

This condition does not replace noise limits and DES's current noise standards apply (see explanatory notes for Protecting acoustic values).

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s. 52(1)(a), (b), (g) and (i).

Explanatory note (RMG049)

This general condition removes the need to repeat this requirement throughout the other schedules of the streamlined conditions. It can be modified to explicitly state or reference the conditions requiring plans, procedures, programs and reports so that the requirements are clear. The condition requires the content of the written document to be certified as accurate and true. This ensures the document will be developed by a suitably qualified person.

If the certification does not meet the requirements in the definition (e.g. the document does not address the relevant matters for the function and is factually incorrect) then certification has not been obtained and this is a breach of condition (RMG049). It is another matter if the administering authority wished to take action against the suitably qualified person for providing false and misleading information and not meeting their certification requirements.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation, s. 52(1)(a).

Explanatory note (RMG050)

Condition (RMG050) requires that all plans, procedures, programs, reports and methodologies that are required to be developed must be written and implemented. The common meaning of implement is 'to put (a plan, proposal, etc.) into effect'.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s. 52(1)(a).

Explanatory note (RMG051)

Document has the meaning in the *Acts Interpretation Act 1954* and means:

- any paper or other material on which there is writing; and
- any paper or other material on which there are marks; and
- figures, symbols or perforations having a meaning for a person qualified to interpret them; and
- any disc, tape or other article or any material from which sounds, images, writings or messages are capable of being produced or reproduced (with or without the aid of another article or device).

Condition (RMG051) ensures that all documentation held in relation to the EA is available if required by the administering authority. Five years is the department standard for keeping material relevant to environmental management. However, if an activity is approved on the tenure that presents a long term risk to an environmental value a longer record retention period may be required for documents only relating to that specific activity.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s. 52(1)(a).

Explanatory note (RMG052)

Condition (RMG052) requires the giving of information reasonably required for the administration of the *Environmental Protection Act 1994*. Note that s. 466 of the *Environmental Protection Act 1994* provides that documents must be made available to an authorised person on request. This condition may be modified to specify exactly which documents are required to be prepared, held or kept under the EA.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s. 52(1)(a).

Explanatory note (RMS002)

Condition (RMS002) requires that all complaints and any actions taken to investigate and where relevant rectify the complaint are recorded. This is considered necessary and desirable for effective environmental management and will assist in preventing or minimising the likelihood of environmental harm caused from similar complaints or incidents. It will also assist the administering authority to determine compliance with the EA and when investigating whether a complaint is valid or not.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s. 52(1)(a).

Explanatory notes—Waste Management

Explanatory note (RMG080) and (RMG053)

Condition (RMG080) is standard condition PESCC 24, it is a necessary and desirable condition and reflects the requirements for waste management in the environmental objective assessment in Schedule 2 of the Environmental Protection Regulation 2008.

Condition (RMG053) requires waste to be removed off-site unless on-site disposal or reuse is authorised by conditions in the EA. The intent of the condition is that waste must not be stored or disposed of on-site if it is not authorised by the conditions. The assessing officer must insert the specific conditions that authorise waste disposal and reuse (e.g. RMG054, RML003, RMG055, any landspraying while drilling conditions, any regulated dams conditions, etc.). Reuse of waste on-site where the waste is released to the environment must be authorised in order to be clear that the contaminant release as a result of the reuse is authorised. Reuse for the purpose of condition (RMG080) excludes “closed loop” reuse.

Note that when the waste is approved for use as a resource under a beneficial use approval, it is no longer a waste (but rather a resource) and therefore no longer subject to the waste conditions in the EA.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, s. 52(1)(a), (b), (f), (g), and (j).

Explanatory note (Waste 3)

Condition (RMG054) explicitly authorises waste fluids to be stored in either above ground containers or structures that contain the wetting front.

Condition (RMG054) excludes flare precipitant stored in flare pits from having containment standards because flaring of natural gas / coal seam gas is temporary and low risk. Temporary refers to the duration of the drilling and work over process on a petroleum well as described in the flare pit definition.

Different standards may need to be imposed for conventional petroleum flare pits and flare precipitant management as these waste fluids have a different chemical composition and risk, and the flare pits have a different duration on site to that of natural gas / coal seam gas flares,.

For the purpose of petroleum drilling activities, flare pits and sumps used to store residual drilling material and drilling fluids are not structures. These have been explicitly excluded in the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams* (ESR/2016/1933[12]).

Note that some small and temporary structures associated with drilling activities (including hydraulic fracturing activities) are also exempt from the requirements of the *Manual for Assessing Consequence Categories and Hydraulic Performance of Dams* (ESR/2016/1933[12]). For more information, refer to the Manual. Condition (RMG054) ensures that any small and temporary structures that are excluded from the requirements of the Manual, for wastes other than produced water, flare precipitant or residual drilling material, has containment standards.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, s. 52(1)(a), (b), (g) and (j).

Explanatory note (RML003)

Condition (RML003) is based on standard condition RSL012 and is necessary to specifically authorise the re-use of green waste on-site. Green waste used in rehabilitation or sediment and erosion control activities are common standard practices that present a low risk to causing environmental harm. Any other use must be assessed on a case-by-case basis to determine the risks.

Head of power

Environmental Protection Act 1994, ss. 207(1)(e) and (f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (e), (f), (g), (i), (j), (k) and (l).

Explanatory note (RMG055)

Burning waste is not an authorised activity because condition (RMG053) requires waste to be removed off-site unless on-site disposal or reuse is authorised. In the case of vegetation waste, it may be burned but only under the requirements of condition (RMG055), that is, provided that approval has been obtained from the administering authority of the *Forestry Act 1959*. A Part 7 permit also needs to be obtained under the *Fire and Rescue Service Act 1990*. Condition (Waste 4) is required because the burning of vegetation waste may be a preferred management option under this legislation in certain situations. It is the EA holder's obligation to be aware of any other permits that may be required for burning vegetation waste on site. The condition will only apply to locations which are within the jurisdiction of the *Forestry Act 1959.* Burning of vegetation waste in areas beyond the jurisdiction of the administering authority of the *Forestry Act 1959* is not covered in the condition and, as stated above, is not an authorised activity.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, s. 52(1), (b), (f) and (j).

Explanatory note (RML004)

Quality standards for pipeline waste water (i.e. hydrostatic testing water, flush water and water from low point drains) provide certainty that negative impacts and land contamination will not occur. The use of the defined standard is the simplest way to ensure that the contaminant release is within a lower risk threshold.

To be able to demonstrate compliance with the acceptable standards for release to land, there must be appropriate monitoring and testing systems in place to show that the water is of an acceptable standard. This

[12] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

does not necessarily mean that testing is required for each release event. The definition of acceptable standards provides for this flexibility. Compliance could also be demonstrated by, for example, a series of results over a period of time that show that the release always meets the acceptable standards.

The standards are based on published guideline values (e.g. see ANZECC Guideline, section 4.2.6 Table 4.2.10). The standards take into consideration community expectations that the environment be protected from undue harm. This is consistent with the administering authority's Regulatory Strategy.

Heavy metals are contaminants of concern for pipeline waste waters, hence their necessary inclusion in the standard. The acceptable standard specifically excludes biocides (which are sometimes used in pipeline hydrostatic testing) to ensure that the release does not cause vegetation die-off.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008 s. 52(1)(a), (b), (f), (g), and (j).

Explanatory note (RML005), (RML006) and (RML007)

Section 185(5) of the *Petroleum and Gas (Production and Safety) Act 2004* provides that a petroleum tenure holder may use produced water for any purpose. Therefore, water unavoidably taken as a result of drilling a petroleum well may be used for any purpose, which would include dust suppression or construction. Under the *Environmental Protection Act 1994*, produced water is defined as a waste. Therefore, any use where a contaminant is released to the environment must be authorised under the conditions of the EA, or the waste approved for use as a resource under a beneficial use approval which authorises reuse, including using produced water for dust suppression or construction purposes.

The use of produced water for dust suppression and construction is low risk providing control measures are implemented. The measures prescribed in conditions (RML005) and (RML006) are appropriate standards to minimise the risks of the use. The most important standard is that produced water is not 'disposed' to land under the guise of reuse.

In condition (RML005), note the use of produced water for dust suppression does not have a standard requiring the protection of soil composition and structure. This is because dust suppression will mostly occur on access tracks and roads which do not require this level of protection.

Measures have been tailored with a focus on salts, as these are the contaminants most likely to be experienced for produced water, particularly from coal seam gas (CSG). This is why conditions (RML005) and (RML006) differ to the release standards for treated sewage effluent (where nutrients, viruses, pathogens and bacteria are the contaminants of concern).

Information provided by the applicant about the quality of, and contaminants in, the produced water is relevant for determining the suitability of this condition for authorising the proposed activity.

Condition (RML007) requires the authorised use of produced water to cease immediately if there is any indication that the outcomes in conditions (RML005(b)) or (RML006(a) to (d)) are not being met. The area is required to be remediated without delay.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (f), (g), and (j).

Explanatory note (Use of produced water for irrigation activities) (Option A, B or C (conditions RML008 and RML009))

Section 185(5) of the *Petroleum and Gas (Production and Safety) Act 2004* provides that a petroleum tenure holder may use produced water for any purpose. Therefore, water unavoidably taken as a result of drilling a petroleum well may be used for any purpose, which would include irrigation. It may also include supplying it to any landowner for irrigation.

Under the *Environmental Protection Act 1994*, produced water is defined as a waste. Therefore, any use where a contaminant is released to the environment must be authorised under the conditions of the EA, or the waste

approved for use as a resource under a beneficial use approval which authorises reuse, including irrigation of produced water.

If an applicant seeks to have the authorisation in the EA rather than the beneficial use approval and can meet the standards in the general beneficial use approval for irrigation of produced water, then the assessment can be streamlined and the conditions therein can be inserted in the EA (Option A).

If the applicant cannot meet the standards or needs to vary any limits, then the applicant may provide appropriate limits and standards developed and certified by an independent and suitably qualified person to be assessed and prescribed in the EA (Option B).

Alternatively, the company may choose to provide a report developed by an independent and suitably qualified person after the EA is granted and which meets the requirements and outcomes prescribed under Option C, conditions (RML008) and (RML009).

Where a certification by a suitably qualified person cannot be obtained because the contaminants in the produced water are too high to be safely and sustainably used for irrigation activities, it is likely that the activity requires authorisation as waste disposal.

Explanatory note (RML010) and (RML011)

Conditions (RML010) and (RML011) apply to the release of treated sewage effluent and greywater to land and are only relevant where the application has specifically requested these activities. If these activities are not described or requested in the application, these conditions must be deleted. The locations of the treatment facility and the contaminant release area must be authorised in the scoping table.

Condition (RML010) is written to provide flexibility so that either the standards in (a) or (b) can be met.

Sewage treatment plants above 1500 EP require more detailed assessment (as determined by impact modelling such as MEDLI) and site-specific release limits will need to be prescribed.

The reference to class B and C treated sewage effluent refers to the amount of viruses, pathogens and bacteria in the treated sewage effluent and not other contaminants such as nitrogen or phosphorus. Class A (and class A+) exceeds the quality of B and C by having less viruses, pathogens and bacteria. The levels of biological contamination are taken directly from the Public Health Regulation 2005.

Effluent quality standards apply to ensure that the plants are running efficiently and effectively – not just to manage environmental impacts of effluent releases (e.g. biological oxygen demand (BOD) and suspended solids limits (SS)). Suspended solids, whilst a good indicator of STP performance is not relevant to land irrigation of treated effluent. Care should be taken when prescribing limits for residual chlorine as this is toxic to soil microbes and organisms. In addition, negative impacts to soil microbes and organisms may occur if effluent has a high oxygen demand (high BOD) as oxygen will be stripped from the soil. In addition, odours can occur. If BOD is not prescribed, a dissolved oxygen limit should be prescribed instead.

The limits for nutrients, BOD and SS are based on secondary treatment of sewage. Note that they will not be applicable for primary treatment (i.e. septic tanks) where there is very limited nutrient reduction nor would they be applicable to tertiary treatment plants where there is very advanced nutrient reduction (e.g. plants which include biological treatment / bioreactors or a nano, micro, ultra filtration step). The values assume that the effluent is irrigated on a dedicated area of land on the petroleum tenure (i.e. indefinite duration).

The requirement to fence the irrigation area in condition (RML011) prevents human contact with treated sewage effluent and standards prohibiting aerosols and spray drift protection from inhalation of viruses, pathogens and bacteria.

Maintaining an appropriate crop which is harvested and removed has the effect of removing nutrients from the system. This can be achieved, for example, by mowing grassed areas with a catcher and then disposing of clippings outside of the contaminant release area. This practice is more sustainable in the long term than leaving groundcover unmaintained.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (f), (g), and (j).

Explanatory note (RML012)

Condition (RML012) is considered necessary in addition to condition (RML010) in order to specifically authorise the use of class A (or class A+) effluent for dust suppression and construction in addition to authorised releases to land.

Class A is an acceptable quality for dust suppression and construction as per the Public Health Regulation 2005 but class B and class C are not because of the higher amounts of viruses, pathogens and bacteria posing excessive risk to health via aerosols and spray drift in the open areas where dust suppression activities and construction wetting are carried out. Controls for class B and class C used for irrigation are in place by the requirement for the irrigation area to be fenced. No such controls can be imposed for dust suppression activities which occur in the open, increasing the risk of health issues as a result of spray drift and aerosols. This is why the authorisation for treated sewage effluent to be used for dust suppression and construction is limited to the higher quality, lower risk, class A and A+ effluent only.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (f), (g), and (j).

Explanatory note (Waste 14)

Condition (Waste 14) relates to sewage pump stations that pump sewage through the sewerage system to the treatment plant. It does not refer to treatment plant pumps.

Stand-by pumps on sewage pump stations are a standard contingency measure to prevent pump station overflows if the primary pump fails. Pumps are not typically required to operate off mains power but the high level alarm is and this ensures that in the event of power failure and when the pumps stop working, emergency response to prevent overflow can occur without needing to have an operator present to manually manage the incident.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b) and (l).

Explanatory note (Waste 15) to (Waste 17)

The drilling activities referred to in condition (Waste 15) includes the period of decommissioning drilling equipment and the provisional rehabilitation of the well pad construction site. Note this is different to the drilling and work over process defined for flare pits in condition (Waste 3).

Condition (Waste 16) and (Waste 17) are based on standard conditions (PESCC 32) and (PESCC 33) respectively but the definition of residual drilling material within these conditions has changed to allow for cement returns. Because of the change to the definition, the conditions cannot be referenced as standard conditions.

The mix-bury-cover conditions were developed with industry experts and were subject to public consultation. The administering authority is satisfied that the 1 metre impermeable layer of soil between the material and groundwater will be sufficient to protect groundwater from contamination.

Mix-bury-cover of residual drilling materials may trigger Notifiable Activity 20: Landfill—disposing of waste (excluding inert construction and demolition waste) as listed in Schedule 4 of the *Environmental Protection Act 1994.* The conditions do not remove obligations to comply with the contaminated land provisions in that Act, despite the use of quality criteria for the material to be buried. Where notification has occurred and where that notification results in the property being listed on the Environmental Management Register due to sufficient levels of hazardous contaminants, the administering authority will have a record of the locations where disposal has occurred. The rehabilitation conditions ensure that any contaminated land will be remediated and restored prior to surrender. If this is not possible, the surrender may occur but only if a Site Management Plan is in place to manage the contamination.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (f), (g), and (j).

Explanatory note (Waste 18) to (Waste 21)

Conditions (Waste 18) to (Waste 21) apply to the disposal of general waste on site and are only relevant where the application has specifically requested general waste disposal activities be authorised. If this is not part of the application, these conditions must be deleted.

Where solid salt / brine landfills or injection of waste fluid into an aquifer are being applied for, conditions will need to be developed on a case-by-case basis. Conditions must be included that clearly identify the waste disposal activity being authorised. Prior to approval of such waste disposal activities, the administering authority must undertake an assessment of the application which considers the relevant regulatory requirements under the *Environmental Protection Act 1994*.

Waste disposal triggers Notifiable Activity 20: Landfill—disposing of waste (excluding inert construction and demolition waste) as listed in Schedule 4 of the *Environmental Protection Act 1994.* Accordingly, the administering authority will have a record of the locations where disposal has occurred (and so a register does not need to be kept). The rehabilitation conditions ensure that any contaminated land will be remediated and restored prior to surrender. If this is not possible, the surrender may occur but only if a site management plan is in place to manage the contamination.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (f), (g), and (j).

Explanatory notes—Protecting Acoustic Values

The streamlined conditions for protecting acoustic values has been based on the existing industry specific published guideline Prescribing Noise Conditions for Environmental Authorities for Petroleum Activities (ESR/2016/1935[13]).

Explanatory note (Noise 1)—(Noise 3)

Complaint management and the requirements to not cause environmental nuisance (including noise), and monitoring protocols are applicable to all activities and will not vary. As such, they are listed as conditions (General 8), (General 11) and (General 21).

The conditions in this schedule deal solely with the standards for protecting the acoustic environment. Where these limits are met, the noise emissions will not constitute noise nuisance.

The deemed background noise levels used in condition (Noise 1) may be altered to actual and site specific, verified and validated background levels. This requires long term monitoring of the site (encompassing seasonal variations) and associated data being submitted with the application to demonstrate the change is necessary and desirable. Note the deemed background noise level for petroleum activities between 6:00am – 7:00am differs from that in the Environmental Protection (Noise) Policy 2008 because petroleum activities are predominantly in rural areas and there is a greater effect from bird song during the dawn period.

The noise emissions in condition (Noise 1) reflect best practice noise emissions and have been demonstrated to be able to be achieved for petroleum activities using readily available and affordable noise abatement measures. For more information about the rationale for these noise limits and best practice methods for minimising risk of noise nuisance, see the guideline *Prescribing Noise Conditions for Environmental Authorities for Petroleum Activities* (ESR/2016/1935[13]).

Rather than prescribing how companies should plan activities to ensure noise nuisance is not created, the streamlined model conditions simply state the outcomes that must be achieved. However, in order to achieve

[13] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

these outcomes it is strongly recommended that noise and nuisance management planning and control procedures are developed. Details on how to develop these procedures, including a Noise Management Plan are listed in the guideline ESR/2016/1935[14].

In the event an application seeks to alter these noise limits, the proposal will be subject to an environmental objective assessment and assessment against the requirements of the Environmental Protection (Noise) Policy 2008. If the required information is not submitted with the application, additional requests for information will be made which may delay the assessment period. For the mandatory information required to accompany a site specific application, refer to sections 125 and 126 of the *Environmental Protection Act 1994*, and for amendment applications, sections 226 and 227 of that Act. The administering authority has also prepared the guideline Application requirements for Petroleum Activities (ESR/2016/2357[14]) to explain these application requirements.

The adjustments detailed in condition (Noise 2) are taken from the *Noise Measurement Manual* which states "the impulse adjustment should then be added to the component level (L_{Aeq} or L_{Amax}) and should not exceed 5dB. Combined adjustments for tonality and impulsive noise in total should not exceed 10dB."

Conditions (Noise 4 / PESCC 21) to (Noise 6 / PESCC 23) are approved standard conditions. A Blast Management Plan is a plan prepared for each blast event and it details how that event will be carried out so as to minimise harm and maximise safety. The Plan includes site specific and climatic considerations such as wind direction and speed. Note the requirements for the noise criteria being design criteria as opposed to absolute limits. They are not absolute compliance limits. The compliance test is for the person to demonstrate how they have designed the blast to achieve the prescribed standards, regardless of whether those standards were actually achieved during the event.

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and Environmental Protection Regulation 2008 – ss. 52(1)(a), (b), (c), (f), (i) and (l), s. 53(3)(a) - (h).

Explanatory notes—Protecting Air Values

A fuel burning or combustion facility means permanent equipment which in isolation, or combined in operation, or which are interconnected, is, or are capable of burning more than 500 kg of fuel in an hour and the facility is relevant to the petroleum activity and is not mobile or temporary. For example a central compressor station is a fuel burning or combustion facility which requires specific authorisation in the EA. A diesel generator used on a drilling rig is not a fuel burning or combustion facility requiring specific authorisation because it is a temporary activity unlikely to impact the air shed.

For clarification of terms, refer to common meanings below:

- isolation is "the state of being isolated"; isolate is "to set or place apart; detach"
- combined is "to bring or join into a close union or whole; unite; associate; coalesce"
- interconnected is "connected one to another"
- a permanent fuel burning or combustion facility is "lasting or intended to last" for the life of the activity and is not temporary or mobile.

Any fuel burning or combustion facility that in isolation is capable of burning less than 500 kg in an hour is not considered a significant risk to the environment, does not have an aggregate environmental score and has not been included as an environmentally relevant activity (ERA) in Schedule 2 of the Environmental Protection Regulation 2008.

Any fuel burning or combustion facility that is temporary or mobile is not considered a significant risk to the environment because the emissions are occurring on a temporary basis within the airshed (e.g. emissions from a generator used on a drilling rig, or standby or emergency generators). It is not necessary or desirable to condition emission limits or require monitoring of emissions from a temporary or mobile facility. A fuel burning or combustion facility that is temporary or mobile or does not meet the 500 kg in an hour threshold is covered by environmental nuisance provisions.

[14] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

Note that a facility that uses electricity or solar energy is not fuel burning for the purposes of the *Environmental Protection Act 1994*. The fact that the administering authority does not regulate these types of fuel burning may drive changed behaviour by industry towards cleaner production because of the reduced regulatory requirements.

The application must include a description of all sources and activities likely to release contaminants to air, including point sources, diffuse sources and fugitive emissions.

Air dispersion modelling is expected to accompany applications requiring approval for fuel burning. Details are provided in the guideline *Application requirements for petroleum activities (ESR/2016/2357[15])*. Where possible, emission estimates should be based on actual measurements or samples from existing fuel burning facilities, or if this is not possible, from manufacturer's specifications.

Condition (General 7) requires all monitoring to be carried out by a suitably qualified person and condition (General 11(d)) requires sampling to be in accordance with the Air Quality Sampling Manual. This will ensure sampling protocols (including calibration requirements) are followed.

Please note that reference to hubs and populated areas (as per many historical EAs) has been removed from the conditions because the identification and impact of fuel burning or combustion is an application requirement regardless of whether it is near a hub or populated place (refer to guideline ESR/2016/2357[15]). Point source releases from all fuel burning facilities that are capable of burning at least 500 kg in an hour and which are not mobile or temporary will be licenced regardless of the nominal use of a hub or populated place. The conditions are outcomes focused and will provide for the protection of environmental values of air whether the activities are in hubs or not, it is therefore unnecessary to prescribe specific conditions for these activities.

If a fuel burning or combustion facility used in petroleum activity(ies) does not trigger the fuel burning 500 kg of fuel in an hour threshold either in isolation or combined, or is temporary or mobile, then the activity does not have to be authorised and conditions (Air 2A)to (Air 10) must not be imposed.

Fugitive emissions are controlled by safety requirements under the *Petroleum and Gas (Production and Safety) Act 2004*. Under section 557(b)(ii) of the *Petroleum and Gas (Production and Safety) Act 2004*, any standard prescribed under a regulation for carrying out the activity (Standards include Australian standards, international standards, codes or protocols) must be complied with. Under section 7 and Schedule 1 of the Petroleum and Gas (Production and Safety) Regulation 2004, the *Code of practice for coal seam gas well head emissions detection and reporting* is mandatory. The objective of this Code of Practice is to set a standard: methodology to detect gas leaks; procedure to classify and action reportable leaks, and notification procedure to the Petroleum and Gas Inspectorate for reportable emissions. Fugitive emissions will also be indirectly controlled by condition (General 17) that requires all plant and equipment to be maintained and operated in their proper and effective condition.

Waste gas is profit loss. This market driver will motivate companies to minimise waste gas and fugitive emissions. If seepage and significant cumulative impacts from fugitive emissions are identified (for example through an upcoming CSIRO report on cumulative impacts of fugitive emissions from CSG projects) the administering authority may change its position on how it regulates fugitive emissions. For more information about the CSIRO report visit www.csiro.au.

Explanatory note (Air 1)

Condition (Air 1) is stating that venting is authorised under the EA, only if it is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, otherwise venting would be considered a relevant activity and in the event harm was caused, would be unlawful under the *Environmental Protection Act 1994*. Where waste gas is not authorised under the P&G Act to be vented, it must only be flared, and the flaring must be undertaken in a manner consistent with conditions (Air 1(a)) to (Air 1(c)) or (Air 1(d)). This condition is specific to waste gas from petroleum wells, field or central gas compressor stations and does not include waste gas emissions from, for example, landfills or sewage treatment. The reference to waste gas is required so that the activity (i.e. flaring) does not trigger ERA 15, because flaring is not burning for the purpose of power generation but for the purpose of burning waste.

[15] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

The condition was derived from the most up to date source emission standards available from the *NSW DECCW Protection of the Environment Operations (Clean Air) Regulation* and the *United Nations Framework Convention on Climate Change Annex 13 Paper, Methodological Tool to determine project emissions from flaring gases containing methane*. The automatic ignition system is required to ensure emissions are released and burnt quickly at a continuous and constant rate, and provide immediate notification to appropriate personnel when the ignition system ceases to function. If the activity includes a non-visible flame, this means that the ignition source may not be in a ready state to burn gas at an efficient rate.

If an enclosed flare is used, the requirements in relation to the ignition system, flame and smoke do not apply. This is because enclosed flares are a more effective standard with higher and more consistent fuel burning efficiency rates. Enclosed flares have 90% combustion efficiency but are not commonly used in petroleum activities. They can cost 1.5 – 2 times more than an open flare but have many environmental advantages including 90% or more combustion efficiency and no visible flame or smoke.

The administering authority considers that this condition will give industry flexibility to choose the manner in which the flare operates whilst also driving performance to the higher standard of the enclosed flare because, by virtue of the more reliable and higher burning efficiency, they do not require compliance monitoring.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, s. 52(1)(b), (g), (j) and (l).

Explanatory note (Air 2A) to (Air 3)

Conditions (Air 2A), (Air 2B) and (Air 3) are required when an applicant seeks stack emission limits on their EA and / or air dispersion modelling shows there are negative cumulative impacts from surrounding industry to ambient air quality. These conditions are the default EA conditions.

Table 1 in the Protecting Air Values Schedule includes fuel burning and combustion facilities. The table outlines the minimum acceptable standards to ensure that the nature, extent and impact from point source emissions from the petroleum activity(ies) is prevented or minimised . These standards are derived from the Air Sampling Manual and Environmental Protection (Air) Policy 2008.

Parameters in Table 1 of the Protecting Air Values Schedule must include those assessed in the air dispersion modelling and those in the Environmental Protection (Air) Policy 2008 which protect relevant environmental values (i.e. NOx, SOx, CO, $PM_{2.5}$ etc).

The intent of this condition is to capture each facility that has the capability to burn more than 500 kg of fuel in an hour. This may mean multiple pieces of equipment that operate in combination, or which are interconnected, or equipment in isolation that has the capability of burning greater than 500 kg of fuel in an hour.

(Air 3) requires each release point at each facility to be monitored in the first three months after it is first turned on and then monitoring must occur annually for each release point thereafter. This means that every facility that is within scope of Table 1 in the Protecting Air Values Schedule gets monitored once in its first three months of operation and then as part of an annual monitoring event after that. Monitoring does not have to be carried out exactly one year from the first monitoring event. The requirements of the condition will be met so long as the monitoring occurs once in the 12 month period.

The intent of condition (Air 3(b)) is for monitoring to occur when the facility is operating at the highest intensity. This maximum throughput may change from year to year but does not exclude the requirement to carry out annual monitoring. For example, it may be at maximum capacity or at 80% maximum capacity provided the 80% is the maximum for that particular facility given operating conditions for that year.

Monitoring on an annual frequency is considered a necessary and desirable requirement for action to be taken to prevent environmental harm because of the fuel burning activity. In setting the standard for annual monitoring of point source releases to air, the administering authority carried out a jurisdictional review of how fuel burning and combustion activities are monitored under other environmental approvals. The review encompassed monitoring requirements for authorised point source releases to air within the Commonwealth and State Governments in Australia, New York (USA), Alberta and British Columbia (Canada).

Annual monitoring is an acceptable standard in keeping with the intent of the administering authority's Regulatory Strategy which is to move away from high levels of prescription and paperwork for low risk activities

and move towards focusing on the department's core business of protecting environmental values. Enhancing compliance is the proposed means to measure environmental performance. It is reasonable for the operator to have annual data on point source emissions to air as this will allow for a yearly compliance assessment by the holder, and if required, the administering authority. It will ensure that the assessment can effectively establish whether each facility is operating efficiently and air quality objectives in the Environmental Protection (Air) Policy 2008 are being met, or whether unexpected impacts are occurring.

The National Pollutant Inventory (NPI) uses equations to develop air emission data, few emissions are based on actual sampling data and monitoring. Annual monitoring data can be fed through to the NPI to aid in providing greater accuracy to the estimations currently used.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(f), (g), (j), (h) and (i), 52(3)(a)

Explanatory note (Air 4) to (Air 10)

Conditions (Air 4) to (Air 10) apply when an applicant seeks an alternative approval framework using ground level concentrations. Point source authorisation condition (Air 2 to Air 3) or ambient monitoring condition (Air 4 to Air 10) may be chosen by the applicant but this is subject to preference being identified in the application and impact assessment and final approval by the administering authority.

The environmental values of air and relevant air quality objectives identified in a site-specific application in conjunction with the air dispersion modelling will inform the maximum ground level concentrations in condition (Air 4). If petroleum production activities are found to be eligible, the most stringent objectives in the Environmental Protection (Air) Policy 2008 will be used in condition (Air 4).

Condition (Air 5) requires an air receiving environment monitoring program (AREMP) to be developed to demonstrate compliance with condition (Air 4). The AREMP will therefore be specifically tailored to consider the site-specific characteristics of the activity, surrounding land uses, ambient air quality and will be commensurate with potential risks. The AREMP gives industry ownership and flexibility to develop a program that best suits their needs whilst still meeting the minimum acceptable content requirements.

The AREMP is required to be certified by a suitably qualified person under condition (General 22). It must be implemented under condition (General 23) and records kept for 5 years under condition (General 24). It must be provided to the administering authority upon request under condition (General 25).

Condition (Air 6) prescribes the minimum acceptable standards to determine the nature, extent and impact to ambient air quality from the activity and surrounding land uses and to determine compliance with Table 2 in the Protecting Air Values Schedule. Reference to 'but not necessarily be limited to' means it is a minimum standard and extra matters can be included but they are optional in the AREMP. It gives flexibility for the company to include unique matters or requirements to their organisation.

The AREMP sets the same standards for monitoring conditions and frequency as that in the point source authorisation scenario.

The locations for sampling must be determined by the person who develops the AREMP and these can be augmented to allow for changes in the receiving environment, new sensitive receptors, new emission contributions or changes to meteorological conditions.

In the event that monitoring cannot occur at sensitive places, sites may be determined which are representative of the air quality at those places (e.g. on the boundary of the sensitive place).

Condition (Air 7) refers to ground level concentrations in the Environmental Protection (Air) Policy 2008. When these are met, environmental values are protected.

An AREMP report must be completed after every AREMP monitoring event to ensure the findings are documented and that any non-compliance can be addressed and where required, notified to the administering authority within a reasonable timeframe.

The requirements of condition (Air 8) deliberately include an assessment of emissions to the relevant air shed(s) as these may change over time. This condition will assist the holder in achieving compliance and will inform immediate compliance and enforcement actions.

The statement of compliance in condition (Air 9) ensures that the AREMP and the AREMP report are accurate and correct and have been developed in accordance with best practice. The suitably qualified person who is carrying out the compliance statement may be the same person who developed the AREMP. Suitably 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. The person may work within the organisation and this is acceptable to the administering authority because the mandatory content requirements for the AREMP and AREMP report have been prescribed and must be complied with.

Condition (Air 10) is a necessary and desirable condition and requires the holder to give information for the administration and enforcement of the *Environmental Protection Act 1994*. The intent of this condition is to only capture environmental issues or circumstances of interest which may result in environmental harm and not administrative breaches that have no consequence for the environment.

The submission requirement in this condition is separate and in addition to the Duty to Notify provisions in the *Environmental Protection Act 1994*.

Given the circumstance that ground level concentrations have not been met, five business days is a reasonable timeframe to allow industry to submit the materials to the administering authority.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(b), 207(f), 208 and Environmental Protection Regulation 2008, ss. 52(1)(a)(f),(i) and (l) and 53(3)(a)–(h).

Explanatory notes—Protecting Land Values

Explanatory note (Land 1)

Condition (Land 1) clarifies that the release of contaminants to land under the EA is only permitted where explicitly authorised by a condition of the EA.

This condition requires measures to be taken to minimise the likelihood of environmental harm being caused, and restricts the type, quality, quantity, concentration or characteristics of contaminants that can be released to the environment and the way they can be released.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (f) and (g).

Explanatory note (Land 2)

Top soil has important environmental values including cations, anions and organic matter to promote the growth of flora. It also contains a seed bank that has accumulated over time. Accordingly, healthy top soil is critical to minimise significant disturbance to land and increase the likelihood of successful rehabilitation.

Condition (Land 2) requires that a system for managing risks to the environment is implemented. Note that section 52(1)(k) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about measures for the ongoing protection of environmental values that may be adversely impacted by the activity. Condition (Land 2) will protect the important values of top soil as described above.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(e) and(f) and Environmental Protection Regulation 2008, ss. 52(1)(a),(i),(k) and (l).

Explanatory note (Land 3)

Condition (Land 3) requires measures for the ongoing protection of land be implemented. The condition recognises that land that has been significantly disturbed has a high risk of erosion. Erosion can degrade the

values of land including composition and structure and become a transportation mode for contaminants and waste to sensitive places.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (g) and (l).

Explanatory note (Land 4)

The following documents are non-statutory best practice guidelines for acid sulfate soils in Queensland, and form the Queensland Acid Sulfate Soils Technical Manual in aggregate*:* Legislation and Policy Guideline (Dear SE, Moore NG, Watling KM, Fahl D and Dobos SK, 2004); Acid Sulfate Soils Laboratory Methods Guidelines (Ahern CR, McElnea AE and Sullivan LA, 2004); Soil Management Guidelines (Dear SE, Moore NG, Dobos SK, Watling KM and Ahern CR, 2002); Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland 1998 (Ahern CR, Ahern MR and Powell B, 1998). The documents are available at www.dnrme.qld.gov.au.

The instructions in these documents set out clear requirements which must be complied with if disturbing acid sulfate soils. They also provide guidance on various aspects of managing acid sulfate soils which can be implemented to help reduce the potential for environmental harm to occur.

Condition (Land 4) requires that acid sulfate soils be managed in accordance with current best practice methods to minimise the potential for environmental harm to occur. This is a location specific condition and may be applied if the activity has the potential to disturb acid sulfate soils based on the type of activity and the location of the activity (please note that acid sulfate soils are not restricted to coastal areas and that Queensland has inland areas with these types of soils). This condition is intended to be used for activities which may involve acid sulfate soil disturbance, but the level of disturbance poses a relatively low risk to the environment. For high risk activities involving large volumes of disturbance or strategic reburial of acid sulfate soils a more detailed assessment will be required and site-specific conditions will apply.

While this condition does require certain treatment to be adopted, it is not meant to restrict innovative approaches to acid sulfate soil management.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b) and (e).

Explanatory note (Land 5)

Condition (Land 5) captures the storage and containment of all chemicals and fuels because of their potential to cause contamination if released to land.

Where an Australian Standard is not applicable, this condition provides flexibility when choosing effective storage and containment for the relevant chemical or fuel.

Whilst AS1940:2004—Storage and Handling of Flammable and Combustible Liquids and the *Work Health and Safety Act 2011* have requirements for storing chemicals, these two documents only target combustible and flammable chemicals and chemicals that are classified as dangerous to human health, respectively.

This condition requires that stated measures are taken to minimise the likelihood of environmental harm being caused from storing chemicals and fuels. Moreover, it requires the installation and operation of containment systems that are effective thus minimising the potential for stored chemicals and fuels to breach containment and cause environmental harm.

Head of power

Environmental Protection Act 1994, s. 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b) and (l).

Explanatory note (Land 6) to (Land 9)

Conditions (Land 6) to (Land 9) are based on standard conditions approved for use in eligible pipeline activities, and they relate to best practice requirements for pipeline operation, maintenance, reinstatement and revegetation.

Condition (Land 6) requires measures to be taken to minimise the likelihood of environmental harm being caused from operating or maintaining pipelines. The standards referred to in the condition are the accepted industry standards for pipelines and aid the holder in implementing:

- a system for managing risks to the environment, and
- measures for avoiding or minimising the release of contaminants or waste and
- measures for the ongoing protection of environmental values that are, or may be, adversely affected by the activity.

The requirements in conditions (Land 6) to (Land 9) are not final rehabilitation requirements but rather, those processes to stabilise the land after construction and for the duration of the pipeline's operation.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(e),(f) and Environmental Protection Regulation 2008 , ss. 52(1)(a),(b),(i),(k) and (l).

Explanatory notes—Protecting Biodiversity Values

Note – Further guidance is provided for in the information sheet How to address environmentally sensitive areas and offset requirements in an application for an environmental authority for resource activities (ESR/2016/1992[16]).

Explanatory note (Biodiversity 1) and (Biodiversity 2)

The intent of conditions (Biodiversity 1) and (Biodiversity 2) is to confirm the presence or absence of biodiversity values of native vegetation communities on land to be significantly disturbed. This informs compliance with the requirements of the authorised disturbance to environmentally sensitive areas as the values assessment will necessarily include endangered regional ecosystems, of concern regional ecosystems and least concern regional ecosystems. These regional ecosystems are normally regulated under the *Vegetation Management Act 1999* however petroleum activities are exempt from these obligations as they are regulated via the environmental authority.

The identification of native vegetation communities will yield information about the presence of regional ecosystems. A regional ecosystem is a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems of Queensland were originally described in Sattler and Williams (1999). The Regional Ecosystem Description Database (Queensland Herbarium 2013) is maintained by the Queensland Herbarium and contains the current descriptions of regional ecosystems. Regional ecosystems are native vegetation communities described by using numbers in three parts. The first part refers to a biogeographic region that the regional ecosystem is found in. The second part refers to the land zone that the regional ecosystem occurs on. The third part is the region. For example, RE 11.3.17 represents bioregion 11 (Brigalow belt), land zone 3 (alluvium (river and creek flats)) and region 17 (*Eucalyptus populnea* woodland with *Acacia harpophylla* and/or *Casuarina cristata* on alluvial plains). Accordingly, this assessment is largely about vegetation types and floristic characteristics and by informing the regional ecosystem type, this in turn informs environmentally sensitive area classifications (such as Category A, B and C environmentally sensitive areas and wetlands).

State significant biodiversity values (SSBVs) are determined once regional ecosystems are validated. Accordingly, the methodology will necessarily have to determine whether these values are present and whether any biodiversity offsets are required.

The exact methodology for confirming on-ground biodiversity values in condition (Biodiversity 2) is not prescribed. Rather, these conditions give flexibility to industry to determine the best method(s) which may need

[16] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

to suit more than one purpose. The conditions allow for the certified methodology to apply to a range of situations provided the application is relevant (e.g. assessments that may be required under the *Nature Conservation Act 1992* and / or the *Environment Protection and Biodiversity Conservation Act 1992* (Cwth)). For example, the same regional ecosystem confirmation methodology could be used across the board and supplemented by essential habitat verification where required.

Confirmation methods may involve remote sensing technologies where appropriate.

Previous conditions about ground-truthing were highly prescriptive in nature and listed each value to be confirmed. Note there is no need to validate the below environmental values for the following reasons:

- Category A and B environmentally sensitive areas: The values of Category A and B environmentally sensitive areas have already been assessed as part of the process of declaring these areas.
- Wetlands (including watercourses, lakes and springs): These are already mapped and as part of that process, detailed environmental values and quality assessments were carried out (e.g. Aquatic Biodiversity Assessment and Mapping Methodology (AQUABAMM)).
- State forests and timber reserves (listed under the banner of Category C environmentally sensitive areas): These do not need ground-truthing as these are readily identifiable by mapping.
- Nature refuges (listed under the banner of Category C environmentally sensitive areas): These are readily delineated by the covenant and this same instrument defines the environmental values of these areas.
- Species classed as endangered, vulnerable, rare or near threatened: The legal requirements that apply to these values under the *Nature Conservation Act 1992* apply despite the obligations of the environmental authority.

At the time of the application, applicants may not know the exact location of proposed activities and as such, have not carried out detailed assessments about environmental values of vegetation communities and associated impacts. This means that the administering authority cannot confirm in the EA assessment that the prescribed environmental objectives and performance outcomes for land are being met (see section 52(m) of the Environmental Protection Regulation 2008). Accordingly, conditions (Biodiversity 1) and (Biodiversity 2) allow the administering authority to impose measures for minimising the adverse effects of not achieving the environmental objectives and performance outcomes for land.

Note that section 52(1)(k) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about rehabilitating land to achieve particular outcomes. Usually, the information needed to condition these matters is submitted with the application. As this is not always the case for the petroleum industry, conditions (Biodiversity 1) and (Biodiversity 2) are necessary and desirable as they set out the ground-truthing requirements prior to any significant disturbance to land occurring. It also feeds into the setting of rehabilitation acceptance criteria. For example, an acceptable final land use for an area that was RE 11.3.17 prior to significant disturbance would be *Eucalyptus populnea* woodland with *Acacia harpophylla* and/or *Casuarina cristata,* not pasture and the necessary measures should be taken to restore RE11.3.17 values to the site as part of rehabilitation. Accordingly, ground-truthing methodology must allow for the company to be able to measure and report on rehabilitation success in accordance with the rehabilitation conditions.

The presence of these values as determined from the confirmation assessments dictate what activities can be carried out in accordance with the authorised disturbance to environmentally sensitive areas conditions (Biodiversity 6 and 7 or Biodiversity 8).

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(i),(l) and (m).

Explanatory note (Biodiversity 3)

Condition (Biodiversity 3) recognises that due to the scale of mapping undertaken by the Queensland Herbarium there can be dispute over whether the values are actually present. It also recognises that the mapping can be wrong such that activities could actually be permitted in the particular location because the government mapping places a higher value on the area than what the area actually has. Because of this potential conflict, this condition clarifies that activities can proceed based on the confirmed values despite the

mapped values. If the administering authority defines the value by the map, regardless of the value on-ground, the client could not proceed if that value was constrained by the conditions. Another reason to not define the value by the map is that maps can change over time and affect approval rights. In summary this condition is allowing either:

- adoption of the mapped values and the relevant constraints; or
- adoption of the confirmed and ground-truthed values and the relevant constraints.

It is not necessary to state that one particular value overrides the other because all the requirements of the EA and authorised disturbance apply. For example, if an environmentally sensitive area is both a state forest and an endangered regional ecosystem, the conditions relating to activities in both these areas apply and this means that offsets for the endangered regional ecosystem would be required for any activities to proceed.

Note that section 52(1)(l) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about measures for the on-going protection of environmental values that are, or may be, adversely affected by the activity. This condition requires measures to be taken to check discrepancies between the mapping and confirmed environmental values. This will ultimately enable the administering authority to protect environmental values that will, or may be, affected by the activity.

Confirmation assessments must be sufficient to accurately identify and depict on-the-ground environmental values.

Under condition (General 23), methodologies must be implemented. Under condition (General 24) records must be kept for 5 years. These records will have to be submitted to the administering authority upon request under condition (General 25).

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(i) and (l).

Explanatory note (Biodiversity 4) and (Biodiversity 5)

By prescribing site planning conditions, the administering authority is requiring the implementation of systems to manage risks to the environment and stated measures are taken to minimise the likelihood of environmental harm being caused.

Note that conditions (Biodiversity 4) and (Biodiversity 5(a)) and (Biodiversity 5(b)) apply to all areas on the tenure, not just environmentally sensitive areas and their protection zones. Note that maximum widths in areas that are not environmentally sensitive areas are no longer prescribed because these areas do not warrant that level of protection and negative impacts to native vegetation can be minimised through condition (Biodiversity 4). The limits were also limiting co-location because co-located infrastructure corridors must be wider than what was being prescribed. The general site planning conditions in conjunction with financial assurance liabilities will drive companies to minimise their disturbance.

Section 52(1)(l) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about measures for the on-going protection of environmental values that are, or may be, adversely affected by the activity. These conditions represent the measures to protect biodiversity values.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(i) and (l).

Explanatory note (Biodiversity 6) and (Biodiversity 7)

Conditions (Biodiversity 6) and (Biodiversity 7) are to be used when the applicant has not applied for, or has not submitted, sufficient information with the application to assess and approve activities within environmentally sensitive areas or their protection zones. This is because the administering authority has no power to approve an activity which is not the subject of an application for an EA.

If an applicant requires activities in environmentally sensitive areas, then the application must request such approval. Mandatory application requirements in the *Environmental Protection Act 1994* must be met.

Condition (Biodiversity 7) permits essential petroleum activities only in areas of pre-existing disturbance in the primary protection zones of particular environmentally sensitive areas. The condition is not authorising any disturbance beyond the pre-disturbed area. For example, if there was 0.8 ha available of pre-disturbed protection zone area, activities are permitted only in that 0.8 ha. The exemptions to this are Category B environmentally sensitive areas that are other than 'endangered' regional ecosystems and Category C environmentally sensitive areas that are nature refuges or koala habitat. The standard for activities in the primary protection zone of these areas is low impact only.

As only essential petroleum activities are permitted under condition (Biodiversity 7), compressor stations, regulated dams and pipelines (other than flowlines) are not permitted. The additional requirement for 'no measurable impact' to the adjacent environmentally sensitive area is required to protect the environmentally sensitive area mainly from nuisance or stormwater runoff. Whilst some noise is expected during the construction of the essential petroleum activities (which may include hydraulic fracturing or stimulation), ongoing noise and dust impacts to the adjacent environmentally sensitive area is not likely. Regardless, noise, dust and light nuisance are readily able to be monitored and therefore enable compliance to be tested with this requirement.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(i) and (l).

Explanatory note (Biodiversity 8)

Conditions (Biodiversity 8) requires a system for managing risks to the environment to be implemented. The activities prohibited are proportionate to the risk and characteristics, resilience and environmental values of the receiving environment. The system of permissions in environmentally sensitive areas and their protection zones and use of the terms low impact and essential petroleum activities allows disturbance to land to be managed in accordance with the EA.

Section 52(1)(l) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about measures for the on-going protection of environmental values that are, or may be, adversely affected by the activity. The hierarchy of low impact, essential and petroleum activities and the authorisation to carry out only certain activities in certain areas are the measures to protect environmental values in environmentally sensitive areas.

The term low impact petroleum activities does not involve significant disturbance to land and therefore rehabilitation and financial assurance is not required. It is the government's view that all monitoring activities must fit within the definition of low impact petroleum activities unless they can fit within the footprint of the well pad as an essential petroleum activity.

Essential petroleum activities do involve significant disturbance to land but are limited to particular areas and involve only the most essential activities. Other activities not within the scope of the definition can and should be located outside of environmentally sensitive areas. This definition is the current government's endorsed definition and is based on a risk assessment carried out of the activities included and their associated impacts.

The term 'petroleum activities' covers all authorised activities in keeping with the requirements of the *Petroleum and Gas (Production and Safety) Act 2004*.

The stated categories of environmentally sensitive areas, protection zones and low/essential/petroleum activities will reduce environmental harm because they identify sensitive areas of different environmental value that require conservation and protection in accordance with regulatory requirements. Petroleum activities that cause potential significant disturbance to Category A or B environmentally sensitive areas have been classified in Schedule 2A of the Environmental Protection Regulation 2008, with an Aggregate Environmental Score (AES) of 126.

Note Category B environmentally sensitive areas are defined in Schedule 12 of the Environmental Protection Regulation 2008 and include "(j) an endangered regional ecosystem identified in the database known as the "Regional ecosystem description database'" (REDD) kept by the department". The REDD defines endangered using the vegetation management class under the *Vegetation Management Act 1999* and also using biodiversity

status. Therefore any 'endangered' regrowth or remnant vegetation is considered Category B environmentally sensitive area (as explained on the REDD webpage).

Because of their very high value, only Category A and Category B environmentally sensitive areas that are endangered regional ecosystems have both a primary and a secondary protection zone. This is because of their higher conservation status. The two protection zones reduce environmental harm on migratory environmental values which are not restricted to the defined area and require a buffer (e.g. migratory fauna, the spreading of vegetation seedlings or overland flow). Generally though, more activities are permitted in the secondary protection zones than the primary.

The current government endorsed scope of permission is as follows for:

- Category A environmentally sensitive areas: No activities within the ESA, low impact in the primary protection zone, essential in the secondary protection zone.
- Category B environmentally sensitive areas other than endangered regional ecosystems: Low impact within the ESA and in the primary protection zone, essential in the secondary protection zone.
- Category B environmentally sensitive areas that are endangered regional ecosystems: Activities within the ESA subject to offsets (as they have State significant biodiversity values or SSBVs), essential in the primary protection zone, all activities in the secondary protection zone. For clarity, if offsets requirements are not met, only low impact petroleum activities would be authorised in the area.
- Category C environmentally sensitive areas that are nature refuges or koala habitat areas: Low impact within the ESA, and low impact in the primary protection zone.
- Category C environmentally sensitive areas that are essential habitat, essential regrowth habitat, 'of concern' regional ecosystems (as they have SSBVs): Activities within the ESA subject to offsets, essential in the protection zone. For clarity, if offsets requirements are not met, only low impact petroleum activities within the ESA would be authorised in these areas.
- Category C environmentally sensitive areas that are 'of concern' regional ecosystems (where an offset is not required, i.e. no SSBVs) and regional parks: Essential activities within the ESA, essential activities in the protection zone.
- Category C environmentally sensitive areas that are state forests and timber reserves: Essential activities within the ESA, petroleum activities in the protection zone.
- Critically limited regional ecosystems: Activities within subject to offsets (as they have SSBVs), essential activities only in the protection zone. For clarity, if offsets requirements are not met, only low impact petroleum activities in these areas.

The government endorsed scope also allows for detailed site specific assessments to occur to extend the above listed permission in any area.

Negative impacts to SSBVs must be offset under the Queensland Biodiversity Offset Policy (January 2014). This includes Category B environmentally sensitive areas that are endangered regional ecosystems, Category C environmentally sensitive areas that are 'essential habitat', 'essential regrowth habitat' and 'of concern' regional ecosystems, and also 'critically limited' regional ecosystems.

Note that 'of concern' regional ecosystems with SSBVs do not neatly align with Category C environmentally sensitive areas 'of concern' regional ecosystems as the former includes grassland regional ecosystems given the value of 'of concern' by virtue of the *Vegetation Management Act 1999*. 'Of concern' regional ecosystems other than Category C environmentally sensitive areas without SSBVs need to be listed as the definition of 'of concern' regional ecosystems that are Category C environmentally sensitive areas are those listed in the REDD (as opposed to those listed in the *Vegetation Management Act 1999*). Unlike 'endangered' regional ecosystem, 'of concern' regional ecosystems include only remnant vegetation in the REDD, 'endangered' includes remnant and regrowth in the REDD.

Only low impact petroleum activities are permitted in Category B environmentally sensitive areas and in Category C environmentally sensitive areas that are nature refuges and koala habitat. Activities are restricted in this way because they are high value but are not eligible for offsets. Therefore, any values will be completely and irreversibly lost upon clearing.

Essential petroleum activities are permitted within regional parks and their primary protection zones. On 28 March 2014, amendments to the *Nature Conservation Act 1992* were made which changed the tenure class name of resources reserves to regional parks. Note though that under section 527 of the *Petroleum and Gas (Production and Safety) Act 2004*, a public land authority may, subject to section 426, impose relevant and reasonable conditions on a petroleum authority holder and that if the public land authority is the chief executive of the department in which the *Nature Conservation Act 1992* is administered, that chief executive may impose a condition more stringent than the conditions of the environmental authority. This means that more restrictive conditions can be imposed on a holder of an environmental authority under the permit to occupy provisions of the *Nature Conservation Act 1992*.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (c), (i) and (l).

Explanatory note (Biodiversity 9)

Condition (Biodiversity 9) is to ensure that site planning systems and methods can demonstrate that the requirements of the conditions have been complied with. This condition also requires further details of the significant disturbance to land that has occurred in environmentally sensitive areas or their protection zones, allowing the administering authority to administer the *Environmental Protection Act 1994* in a way that protects environmentally sensitive areas and their protection zones from the cumulative impacts of petroleum activities.

Applicable requirements in condition (Biodiversity 9) can be met utilising GIS technology rather than ground-truthing if desired.

Under condition (General 22), all reports required by the environmental authority must be certified as being true, correct and compliant. Further, under condition (General 24) records must be kept for 5 years. These records will have to be submitted to the administering authority upon request under condition (General 25).

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a),(i) and (l).

Explanatory note (Biodiversity 10)

Condition (Biodiversity 10) is necessary to describe the significant residual impacts to prescribed environmental matters that have been assessed and authorised (i.e., by inclusion in **Table 2—Significant residual impacts to prescribed environmental matters**). When combined with condition (Biodiversity 12), it provides a clear, enforceable 'offset condition' for the purposes of activating the additional deemed conditions contained in the *Environmental Offsets Act 2014* (EO Act), i.e., ss. 19B, 22, 24 and 25.

The intents and purposes of the condition, and the principles to be followed when populating **Table 2**, are as follows:

- Populating the 'prescribed environmental matters' column
    - For the purposes of an EA issued under the EP Act, 'prescribed environmental matters' are limited to the matters of State environmental significance (MSES) listed under Schedule 1 of the Environmental Offsets Regulation 2014.
    - In most circumstances, an impact to a prescribed environmental matter that has been included (and therefore authorised) in **Table 2** will require an environmental offset. The subsequent detail of the offset can be expressed in the notice of election and agreed offset delivery plan.
    - The EP Act provides a head of power to require an environmental offset for significant residual impacts to any type of prescribed environmental matter. This is why all types of prescribed environmental matters are included in this guideline. However, **Table 2** should only include the significant residual impacts to prescribed environmental matters that will be approved by the EA once it is issued. All other prescribed environmental matters should be deleted from Table 2.

- As **Table 2** only includes impacts to prescribed environmental matters that are, or are likely to result in a significant residual impact, the EA holder will be required to undertake ongoing self-assessment of the project's cumulative impacts and to proactively apply for an amendment to its EA to authorise any additional significant residual impacts to prescribed environmental matters not already included in **Table 2**.
- A reference to a prescribed environmental matter in **Table 2** should include specific details of the type of matter as per the examples given.
- If impacts to different prescribed environmental matters that fall under the same grouping (e.g., 'regulated vegetation', 'protected wildlife habitat', etc.) have been authorised, then list each matter separately. For example, authorised impacts to endangered regional ecosystem RE 11.3.1 should be listed separately to authorised impacts to endangered regional ecosystem – RE 11.3.11.
- For regulated vegetation:
  - The Environmental Offsets Regulation 2014 recognises the status of regional ecosystems (RE) as per the *Vegetation Management Act 1999* as opposed to the biodiversity status.
  - If an RE identification includes a suffix (e.g., 11.3.38a), this suffix should also be included in **Table 2**.
  - Only ecosystems that contain remnant vegetation are considered regulated vegetation.
  - The defined distance for a regional ecosystem means the distance identified as the relevant distance from the defining banks of a relevant watercourse in the table included in Appendix 3 of the current version of the Queensland Environmental Offsets Policy (Version 1.1).
- For wetlands and watercourses:
  - Section 1.2.1 of the current version of the Queensland Environmental Offsets Policy (Version 1.1) states that a wetland or watercourse in high ecological value waters is a prescribed environmental matter for only prescribed environmentally relevant activities (i.e., not resource activities), so these matters have not been included in **Table 2**.
- For protected wildlife habitat
  - Species' names should be included as per the listing in the *Nature Conservation Act 1992*.
  - Section 4.3.10 of the current version of the Queensland Environmental Offsets Policy (Version 1.1) states that koala offset requirements in SEQ are based on an average tree density within koala bushland habitat of 250 trees per hectare. The total quantum of impact for a single koala habitat tree in SEQ, using this estimate, is 0.004 ha or 40 m^2.

- Populating the 'location of impact' column
  - The 'location of impact' column of **Table 2** is necessary to ensure that the activity is conducted only in the areas applied for in the EA application.
  - The location of the prescribed environmental matter where significant residual impacts are authorised should be as descriptive as practicable, depending on the nature of the activity that will be, or is likely to be, causing the significant residual impact. In order of preference, locations should be defined using geographic coordinates (including geodetic datum), lot(s) on plan(s), resource tenements/authorities or project areas.
  - Alternatively, a map or series of figures can be included as an Appendix to the EA to show where the significant residual impact to a prescribed environmental matter has been authorised.
- Populating the 'maximum extent of impact' column
  - The maximum extent of impact listed against a prescribed environmental matter in **Table 2** should reflect all impacts estimated for each prescribed environmental matter for a project's life, or for a stage of the project if preferable, after all reasonable avoidance and on-site mitigation measures for the prescribed activity have been or will be undertaken, i.e., the maximum residual impact.
  - It is preferable that **Table 2** reflects the maximum extent of impact anticipated for the life of a project – to avoid the need for ongoing amendments to the EA as each stage is completed. The purpose of

providing such impact information for the life of a project is also to allow future offset debiting and crediting for individual stages of the project as per the current version of the Queensland Environmental Offset Policy (Version 1.1).

- If staging is authorised, an additional column or a replacement column may be included in **Table 2** to reflect the authorised impacts for a particular stage if desired, e.g., 'Maximum extent of impact – Stage 1'. In these circumstances, an EA amendment application must be made for any significant residual impacts to a prescribed environmental matter proposed for a subsequent stage before that stage commences.
- The maximum extent of impact should not describe only the component of the impact that is above a relevant threshold of significance; the whole extent of residual significant impact should be described
- Impacts that will not, or are not likely to, result in a significant residual impact to a prescribed environmental matter should not be included in **Table 2**.
- Further, the authorisation of a maximum extent of impact to a prescribed environmental matter in **Table 2** indicates that the administering authority is satisfied that an offset is available for that extent of impact.
- In some circumstances, more detailed site planning undertaken after the issue of an EA may result in a lesser impact requiring offsetting. In these circumstances, the actual offset requirement will be articulated in the assessment of impacts required under conditions (Biodiversity 14) or Biodiversity 18), the notice of election and, where relevant, the agreed offset delivery plan (i.e. post-EA dealings).
- The notices of election required by condition (Biodiversity 16 [OR 20]) will be the instruments used to specify the extent of significant residual impacts to prescribed environmental matters, and the corresponding environmental offset requirements, for each stage.
- The administering authority may choose to administratively amend the EA under s215 of the EP Act to reflect the updated maximum extent of impact in these instances.

- General comments
  - Coordination with other Queensland Government and Commonwealth agencies may be required to ensure that environmental offset requirements have not been duplicated across different environmental approvals for the same impact, and the same, or substantially the same, prescribed environmental matter.
  - For example, if a clearing permit issued for a threatened species under the *Nature Conservation Act 1992* includes an offset requirement, then the EA should not also require an environmental offset for the same impact to the same prescribed environmental matter.
  - Similarly, environmental offset requirements made by the Commonwealth in an approval issued under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) for the same impact, and the same, or substantially the same, prescribed environmental matter should not be duplicated.

An EA amendment application seeking to cause a significant residual impact to a prescribed environmental matter is likely to be assessed as a 'major' amendment, therefore the information and notification stages under Chapter 5 of the *Environmental Protection Act 1994* (EP Act) may also apply.

The information contained in **Table 2** should be consistent with the information included in the offset register required to be maintained by the administering authority under section 90 of the EO Act.

Head of power

Environmental Protection Regulation 2008, s. 52(1)(l)

How do I comply?

Note: 'How do I comply' text was drafted for inclusion in the Guideline - Model mining conditions (ESR/2016/1936[17]). They have been included here to provide additional assistance.

[17] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

The EA holder will be required to self-assess the cumulative extent and duration of all proposed impacts to prescribed environmental matters well before any impacts occur. If it becomes apparent that the cumulative impacts to a prescribed environmental matter, after all reasonable avoidance and reasonable on-site mitigation measures have been factored in, will exceed a relevant significant residual impact threshold (i.e., as specified in the Queensland Environmental Offsets Policy – Significant Residual Impact Guideline), then EA amendment applications will be required to seek the authorisation for the impact. Similarly, where minimal ground-surveys have been conducted prior to the EA being applied for, ongoing amendments to the EA may be required as the project develops and further details of the expected impacts become available.

Compliance with condition (Biodiversity 10) will require an EA holder to limit its significant residual impacts to prescribed environmental matters to what is specified in Table 2.

Explanatory note (Biodiversity 11)

Condition (Biodiversity 11) is necessary to ensure that the determination of whether an impact to a prescribed environmental matter will, or is likely to, result in a significant residual impact is undertaken by a person that is able to interpret and follow the guidance given in the Queensland Environmental Offsets Policy and the Queensland Environmental Offsets Policy – Significant Residual Impact Guideline when making that determination. Condition (Biodiversity 11) is desirable to ensure that records demonstrating whether an impact to a prescribed environmental matter is, or is likely to be, significant are available if required by the administering authority.

Head of power

Environmental Protection Regulation 2008 –s52(1)(l)

How do I comply?

The holder must, at its own cost, arrange for an appropriately qualified person to determine whether an impact to a prescribed environmental matter is likely to be significant, based on the Queensland Environmental Offsets Policy, and the Queensland Environmental Offsets Policy - Significant Residual Impact Guideline that is relevant to the *Environmental Protection Act 1994.* The EA holder must document this determination and retain documents. The appropriately qualified person may be employed by the EA holder, or may be a third party.

Explanatory note (Biodiversity 12)

Condition (Biodiversity 12) is necessary to clearly state that when an environmental offset is required for an impact to a prescribed environmental matter specified in Table 2. The administering authority considers condition (Biodiversity 12) to be an 'offset condition' as per section 7 of the EO Act, and as such, the inclusion of this condition in an EA activates the additional deemed conditions contained in sections 19B, 22, 24 and 25 of the EO Act. Condition (Biodiversity 12) allows for offsets to be provided for a reduced extent of impact than specific in Table 2 if approval has been given by the administering authority, such as if later site planning has shown that a lesser impact is possible.

NB – The administering authority considers that the inclusion of condition (Biodiversity 12) constitutes an 'offset condition' as per section 7 of the EO Act, and therefore activates deemed conditions prescribed under sections 19B, 22, 24 and 25 of the EO Act. These deemed conditions specify the procedure that must be followed when providing an offset proposal. If condition (Biodiversity 12) is not included in an EA, no other conditions that follow are required.

Head of power

Environmental Protection Act 1994 –s207(1)(c) and Environmental Protection Regulation 2008 –s52(1)(l)

How do I comply?

The procedure required to be followed when making an offset proposal is contained within the EO Act and the Queensland Environmental Offsets Policy.

Explanatory note (Biodiversity 13)

Under section 18 of the EO Act, the staging of significant residual impacts to prescribed environmental matters and the undertaking of environmental offsets are allowed, provided that a condition of an (environmental) authority authorises the staging. Condition (Biodiversity 13) gives effect to this allowance.

The staging of impacts and offset delivery authorised by condition (Biodiversity 13) only applies to the impacts to prescribed environmental matters authorised in Table 2. Impacts to prescribed environmental matters that will not, or are not likely to, result in significant residual impacts to prescribed environmental matters are not limited to being carried out in stages.

Head of power

Environmental Protection Act 1994 –s207(1)(c)

How do I comply?

Compliance with condition (Biodiversity 13) will require an EA holder to forward plan its project in stages, and to ensure that any environmental offsets required for a particular stage are recorded in an agreed delivery arrangement prior to the occurrence of any of the staged impacts.

Explanatory note (Biodiversity 14, 15 and 16)

Conditions (Biodiversity 14, 15 and 16) are necessary to give effect to section 2.4.3 of the current version of the Queensland Environmental Offsets Policy (Version 1.1) regarding when environmental offset proposals must be submitted to the administering authority. Section 2.4.3 of the Policy requires that a notice of election for a forthcoming stage is not considered by the administering authority until the estimated quantum of impacts on the prescribed environmental matters for that stage has been determined and approved by the administering authority. This requirement has been translated into condition (Biodiversity 14).

An analysis of impacts provided prior the lodgement of a notice of election provides the administering authority with an indication of whether further site planning has reduced an offset need, as well as information about any offset credits or debits created from a previous stage. The administering authority acknowledges that the actual impacts from a preceding stage may not be fully known if the impacts are still occurring when the analysis report required under condition (Biodiversity 14) is provided – in these instances, it is expected that only the impacts to date are described. NB – any environmental offset credits from an earlier stage can only be used to satisfy environmental offset requirements for a subsequent stage where the credit relates to the same prescribed environmental matter.

The department has adopted an administrative policy of 20 business days to decide whether to approve an analysis report provided under condition (Biodiversity 15).

Head of power

Environmental Protection Act 1994 –ss. 207(1)(c), 207(1)(f) and Environmental Protection Regulation 2008 –ss. 52(1)(a), 52 (1)(l).

How do I comply?

Additional guidance on how to comply with conditions (Biodiversity 14, 15 and 16) is contained within the Queensland Environmental Offsets Policy and the Queensland Environmental Offsets Policy – General guide.

Explanatory note (Biodiversity 17)

Condition (Biodiversity 17) is necessary to reflect the requirements of section 2.4.3 of the current version of the Queensland Environmental Offsets Policy (Version 1.1), which states that a notice of election for any outstanding environmental offset debits should be provided within six (6) months from the end of the final stage of activities. Condition (Biodiversity 17) is desirable in that it ensures that any offsets debits are reconciled within a timeframe consistent with the current version of the Queensland Environmental Offsets Policy (Version 1.1). An EA should not be approved to be surrendered until all offset requirements have been recorded in an agreed delivery arrangement required by section 19(4) of the EO Act.

Head of Power

Environmental Protection Act 1994 –ss. 207(1)(c), 207(1)(f) and Environmental Protection Regulation 2008 – s52(1)(a), s52(1)(l)

How do I comply?

Additional guidance on how to comply with condition (Biodiversity 17) is contained within the Queensland Environmental Offsets Policy and the Queensland Environmental Offsets Policy – General guide.

Explanatory note (Biodiversity 18, 19 and 20)

Conditions (Biodiversity 18, 19 and 20) are relevant where the staging of impacts to prescribed activities and the delivery of environmental offsets has not been proposed or approved. In these circumstances, the administering authority requires that the proponent provides the analysis of expected impacts for the administering authority's approval prior to the lodgement of any notice of election. A final report is not required where impacts/offsets are not proposed to be staged, as environmental offset debits/credits are only allowed for staged impact/offset scenarios. Any exceedance of the maximum impacts authorised in Table 2 should be dealt with as a compliance matter against EA conditions.

The department has adopted an administrative policy of 20 business days to consider an analysis report provided under condition (Biodiversity 19).

Head of Power

Environmental Protection Act 1994 –ss. 207(1)(c), 207(1)(f) and Environmental Protection Regulation 2008 – s52(1)(a), s52(1)(l)

How do I comply?

Additional guidance on how to comply with conditions (Biodiversity 18, 19 and 20) is contained within the Queensland Environmental Offsets Policy and the Queensland Environmental Offsets Policy – General guide.

Explanatory notes—Protecting Water Values

This schedule includes the protection of environmental values of both surface water and groundwater. Surface water and groundwater environmental values cannot be separated as all elements of the water cycle are interdependent and water must be managed on a total water cycle basis.

Environmental values for water and wetlands are provided in subordinate legislation to the *Environmental Protection Act 1994* – the Environmental Protection Regulation 2008 and the Environmental Protection (Water) Policy 2009 respectively.

The standards to protect the environmental values of a watercourse, lake or spring outlined in the guideline *Activities in a watercourse, lake or spring associated with a resource activity or mining operations*, have been re-drafted into the *Riverine protection permit exemption requirements*, approved by the Chief Executive of the *Water Act 2000.* The conditions below reflect the minimum acceptable standards referred to in both documents and the performance outcomes in the Wetland Protection Area State Planning Code. Combined, these standards are necessary and desirable under the *Environmental Protection Act 1994* to protect the values of wetlands.

Note that under the Water Regulation 2002, destruction, excavation or placement of fill in a watercourse, lake or spring is permitted if the activity is undertaken under an EA (petroleum activities). A riverine protection permit is not required for tenure holders (or for geothermal, GHG storage, gas work licence, gas works authorisation, or for activities in Data acquisition authorities or Water monitoring authorities).

Explanatory Note (Water 1) and (Water 2)

Conditions (Water 1) and (Water 2) are necessary and desirable conditions. Section 440ZG of the *Environmental Protection Act 1994* provides that the release of prescribed contaminants to waters is prohibited unless otherwise authorised in an EA. Under Condition (Water 1), specific authorisation for releases can be inserted. If contaminant releases are to be authorised in the EA, a detailed impact assessment must be carried

out at the time of the application under the *Environmental Protection Act 1994* and subordinate legislation to ensure that the legislated environmental values for Queensland's waters will be protected.

Condition (Water 2) prohibits harm to wetlands, in particular, harm to the wetlands' natural hydrological cycle as a result of the unfettered rights to take underground water under the *Petroleum and Gas (Production and Safety) Act 2004* and *Petroleum Act 1923.*

Should negative impacts to wetlands be likely as a result of the unfettered right to take underground water under the *Petroleum and Gas (Production and Safety) Act 2004* and *Petroleum Act 1923*, the harm must be authorised in the EA. Although Chapter 3 of the *Water Act 2000* requires an impact assessment and impact assessment management strategy, it is not authorising environmental harm; it is providing a mitigating strategy for environmental harm.

Should negative impacts occur to groundwater aquifers lying above or below the target formation (such as a negative impact on quality as a result of reduced quantity or impacts to groundwater dependent ecosystems) as a result of the unfettered right to take underground water, the harm must be authorised in the environmental authority. The EA must not deal with the supply of the water to a private water bore as this is dealt with under Chapter 3 of the *Water Act 2000*.

The definition of a wetland for the purposes of the EA still includes reference to the Map of Referable Wetlands as per Schedule 12 of the Environmental Protection Regulation 2008 but it has been augmented to also include the definition in the Queensland Wetland Program. Accordingly, the definition of wetland used in the EA also includes any area 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 six (6) metres, and possess 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.

Wetlands that are highly modified such as dams and irrigation channels are not excluded from the Wetlands Program definition of a wetland but they are excluded from the Map of referable wetlands.

The modified definition is very important because it provides a two-step test for a wetland to meet the definition: not only must it be mapped, but it actually must meet the characteristics of a wetland on the ground. If it does not, or if it is delineated incorrectly in the mapping, a person can utilise published guidelines to change the mapping (see the Queensland wetlands delineation and mapping guidelines, Queensland Government (2010)). For example if a person carries out a ground-truthing assessment and believes that the wetland is not present.

Wetlands include water bodies such as watercourses (riverine wetlands), lakes (lacustrine wetlands), springs, swamps and billabongs (palustrine wetlands) and aquifers (subterranean wetlands) and any of these can be groundwater dependent ecosystems. Groundwater dependent ecosystems (GDEs) can be terrestrial GDEs (which include riverine regional ecosystems), surface expression GDEs and subterranean GDEs. For the purposes of petroleum activities, subterranean wetlands that are aquifers and aquifer GDEs are excluded from the definition of a wetland. This does not mean that impacts are authorised to these systems. The administering authority must carry out an environmental objective assessment and comply with regulatory requirements to develop site-specific conditions to authorise such impacts.

It is not necessary to provide different conditions for different types of wetlands (including terrestrial GDEs) because they have the same environmental values (see section 81A of the Environmental Protection Regulation 2008) and have the same protection requirements. The protection requirements are taken from the Wetland Protection Area State Code (Qld).

Section 52 in the Environmental Protection Regulation 2008 enables the administering authority to consider imposing conditions about protecting environmental values, and meeting quality objectives, under relevant environmental protection policies. The environmental values are wetlands and Queensland waters as prescribed in the *Environmental Protection Act 1994* and Environmental Protection (Water) Policy 2009 respectively.

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(f) and Environmental Protection Regulation 2008 – ss. 52(1)(c), (i) and (l).

Explanatory note (Water 3)

Wetlands of high ecological significance (HES) are referred to in the Map of referable wetlands (MORW) and have high environmental values as determined by either an Aquatic Conservation Assessment (ACA) or AQUABAMM assessment. Some high value wetlands are included in the Map of referable wetlands for particular parts of Queensland using surrogate values such as RAMSAR. HES watercourses are included in the MORW as wetlands of HES in Water Management Areas and Wetland Protection Areas. HES watercourses are included in the MORW as buffered drainage lines and show up as polygons and not lines.

Great Artesian Basin (GAB) springs are a type of palustrine wetland that is identified and listed as a Matter of National Environmental Significance (MNES) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). Interference with MNES requires Federal approval as a controlled action under the EPBC Act. These MNES include "Threatened Ecological Communities" or "National Heritage Places". Within those listed MNES, GAB springs may be referred to as a:

- community of native species dependent on natural discharge of groundwater from the Great Artesian Basin; or
- Great Artesian Basin spring; or
- Great Artesian Basin discharge spring wetland.

Note the Australian Government's Protected Matters Search Tool can be used to identify the MNES that are GAB springs. The GAB springs dataset used in developing the MNES is sourced from the Queensland Herbarium, and can be specifically requested from the Queensland Herbarium.

The definition of GAB springs also includes part of the definition from the *Water Act 2000* and this is important to define boundaries of springs if they only show up as a 'point' on the map. Note that a GAB spring also includes a GAB watercourse spring.

The buffer distances in condition (Water 3) prevent negative impacts to these high value areas. The distances are the same as those in the Wetland Protection Area State Code.

Subterranean caves are a subterranean wetland that is a GDE. The other type of subterranean wetland is an aquifer GDE. Because these are underground, they have not been subject to any values assessment. As discussed above, the EA does not authorise impacts to aquifer GDEs. Subterranean caves are not mapped on the Map of referable wetlands because they have not had their values assessed.

The definition of subterranean cave GDEs calls up the Queensland Government Information System and the Wetlandinfo mapping program. This definition provides a two-step test, to ensure that the subterranean cave is mapped and meets the characteristics on the ground.

Because so little is known about these systems, under the precautionary principle, by default in the EA they are afforded a high environmental value sufficient to prohibit activities from occurring within 200 metres of a subterranean cave GDE. The buffer is required in order to prevent construction activities occurring above the cave (e.g. a regulated dam). Where a tenure overlies a subterranean cave GDE, the application must include information about the values of the subterranean cave and describe any impacts so that the administering authority can carry out an environmental objective assessment and comply with regulatory requirements. If approval is given to impact these systems, condition (Water 3c) can be amended to include site-specific conditions in relation to subterranean cave GDEs.

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(f) and Environmental Protection Regulation 2008 – ss. 52(1)(c), (i) and (l).

Explanatory note (Water 4), (Water 5A) and (Water 5B)

Condition (Water 4) replaces previous conditions that dealt with springs, lakes, watercourses and wetlands as separate values. It recognises that the construction and / or maintenance of linear infrastructure cannot always

avoid crossing wetlands and watercourses that meander and channel across Queensland. This is considered an acceptable and reasonable permission as these are lower value watercourses and wetlands, known as wetlands of other environmental value or wetlands of general ecological significance. The activities permitted include construction or maintenance and this will involve earthworks, vegetation clearing, excavation and placing fill.

Condition (Water 4) also allows for linear infrastructure activities in watercourses. Watercourses are a riverine wetland and these may be mapped as both wetlands of high or general ecological significance on the Map of referable wetlands. This means that linear infrastructure is permitted if the watercourse is mapped as of general ecological significance. Conversely, these activities will not be permitted in a watercourse if it is also mapped as a wetland of high ecological significance.

As condition (Water 4) only permits linear infrastructure, and only in lower value areas, a buffer for works is not relevant.

Condition (Water 5A) prescribes the outcomes to be achieved for works in a wetland. Condition (Water 5B) prescribes the outcomes to be achieved for a wetland after the construction and maintenance works are completed.

The outcomes are taken from the Wetland Protection Area State Code and the redrafted guideline *Activities in a watercourse, lake or spring associated with a resource activity or mining operations* (now the Riverine protection permit exemption requirements).

Condition (Water 5B(f)) is necessary to ensure that the environmental values of any adjacent wetland are protected despite the disturbance from nearby linear infrastructure activities. One of the values of a wetland in section 81A of the Environmental Protection Regulation 2008 is the presence of distinct or unique features, plants or animals and their habitats, including threatened wildlife, near threatened wildlife and rare wildlife under the *Nature Conservation Act 1992*. Condition (Water 5B(f)) protects both the environmental values in the *Environmental Protection Act 1994* and the intent of the State Planning Code.

Higher value wetlands do not need to be protected under this condition because activities are prohibited in and within their 200m buffer under condition (Water 3).

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(f) and Environmental Protection Regulation 2008 – ss. 52(1)(c), (i) and (l).

Explanatory note (Water 6)

Condition (Water 6) applies to all watercourses and is a risk minimisation condition requiring that works be planned around flows. Carrying out works in low volume and slow flows protects the environmental values (e.g. fauna, flora and structural values of the watercourse) of water as it reduces the amount of scouring (and therefore sediments) released.

Head of power

Environmental Protection Act 1994 –s. 207(1)(f) and Environmental Protection Regulation 2008 ss. 52(1)(b), (f), (i) and (l).

Explanatory note (Water 7) and (Water 8)

Condition (Water 7) ensures that impacts to water quality in wetlands of other environmental value and watercourses from contaminant releases are minimised and environmental values are protected despite construction or maintenance activities for linear infrastructure. Sediment and hydrocarbons (from mechanical equipment) are the contaminants of concern for these activities.

The requirement to monitor background water turbidity required in condition (Water 7) ensures that compliance can be tested. All water monitoring must be in accordance with condition (General 11(a)). The monitoring required to comply with condition (Water 7) is convenient and resource efficient as monitoring for hydrocarbons is visual and turbidity is in-situ with a probe.

The turbidity limits are flexible as they allow for site-specific variations in water quality. As per the ANZECC guidelines, 10% variance is a “no change” management goal, which is the highest level of protection, afforded to high ecological value systems. It is not reasonable to impose a no greater than 10% turbidity limit, as this is a condition for wetlands of other environmental value and watercourses generally and not wetlands of high ecological significance. Given that works are being carried out in the lower value systems, the standard allowance is 25%. Note that any proposed limits above 25%, requires a detailed site specific risk assessment.

Visible sheen or slick is the acceptable standard to detect hydrocarbons, which may have been released from mechanical equipment.

Different limits are set for wetlands of other environmental value and watercourses simply because a wetland may not flow and have a downstream. For this reason, for wetlands of other environmental value, the limit applies to a radial area.

The monitoring frequency under condition (Water 8) is not prescribed; rather industry is provided the flexibility to determine an appropriate frequency to demonstrate compliance with condition (Water 7).

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(f) and Environmental Protection Regulation 2008 – ss. 52(1)(b), (f),(g), (h), (i) and (l) and ss. 53(3)(a), (b) and (e).

Explanatory note (Water 9)

Condition (Water 9) requires a register for all linear infrastructure construction and maintenance activities. It is considered necessary and desirable to have a record of these matters given that they are not able to be provided at the time of the application. The register is considered an acceptable practice given that the works are occurring in wetlands of other environmental value and watercourses. If the applicant does not wish to have a register condition, then details of the works, including locations, environmental values, impacts and mitigation measures can be assessed at the application stage. As a result of this upfront assessment, condition (Water 9) could be deleted.

Head of power

Environmental Protection Act 1994 –s. 203(1)(a) and Environmental Protection Regulation 2008 – s. 52(1)(a) and ss. 53(3)(g) and (h).

Explanatory note (Water 10)

Condition (Water 10) prohibits impacts on river improvement works that have been carried out by the River Improvement Trusts. Locations and details of River Improvement Areas and River Improvement Trusts are provided in the Schedule to the River Improvement Trust Regulation 1998 and in the administering authority’s Ecomaps software. The relevant resource authorities should be checked for whether they are in a River Improvement Area and if not, condition (Water 10) is not required.

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(f) and Environmental Protection Regulation 2008 – ss. 52(1)(b)(i) and (l).

Explanatory note (Water 11)

The performance objectives listed in condition (Water 11) ensures that petroleum activities do not negatively impact values protected under the State Planning Policy 1/03 – Mitigating the Adverse Impacts of Flood, Bushfire and Landslide.

This condition originally prohibited infrastructure in floodplains. However in consultation with APPEA and industry, the administering authority was advised that an outcome-based condition was preferred, allowing companies to engineer solutions on a site-specific basis.

Head of power

Environmental Protection Act 1994 – s. 207(1)(f) and Environmental Protection Regulation 2008 – ss. 52(1)(b)(i) and (l).

Explanatory Note (Water 12) and (Water 13)

Condition (Water 12) requires a seepage monitoring program to be developed by a suitably qualified person which can be specifically tailored to the site-specific containment activities and their risks.

An effective seepage monitoring program is not only a risk minimisation measure, but will also minimise contaminated land obligations at the end of the petroleum activity(ies).

The program is applicable to ensure that activities such as storing contaminants (e.g. fuel, chemical and waste storages such as surface dams and monocells) are not causing negative impacts to groundwater quality. To remove any doubt, containment facilities includes regulated structures.

Condition (Water 13) prescribes the minimum matters to be addressed in the program. The condition gives industry ownership and flexibility to develop a program that best suits their needs and which is relevant to the types of contaminants being stored. For example, groundwater will not likely need to be monitored for hydrocarbons near a produced water dam but may be required near fuel storage.

Trigger parameters and levels for early detection required in conditions (Water 13(b)) and (Water 13(c)) are investigation thresholds, not compliance limits. Trigger levels cannot be breached. Trigger parameters and concentration levels may be values derived using a 'percent variance' of background value if appropriate to the analyte. Parameters may include water levels, electrical conductivity and pH.

Control bores required in condition (Water 13(d)) will provide an accurate representation of the receiving environment throughout the life of the activities and will provide the reference data for impact assessment. Baseline monitoring will also allow for detecting groundwater changes over time.

Condition (Water 13(e)) requires potential impact monitoring bores in specified locations for the early detection of contaminants. The location of these bores must include areas that could be contaminant migration paths or corridors to groundwater dependent ecosystems, landholder's active groundwater bores, or water supply bores or formations where contaminants may be transported to, such as aquifers or aquatards. Although (Water 13(e)(ii)) and (Water 13(e)(iii)) location requirements may appear duplicative, migration path locations must be explicitly included as the administering authority considers it a necessary component of a seepage monitoring.

Condition (Water 13(f)) includes quarterly frequency for monitoring, as this allows the holder to monitor and manage contamination events promptly. The quarterly frequency for background seepage monitoring bores may be adjusted if previous monitoring data has proven to be accurate and have little variation.

Condition (Water 13(g)) requires action response procedures to ensure that contamination events are detected and managed early. Procedures may include investigation, validation and verification of root causes for the incident.

Condition (Water 13(h)) is necessary to understand the rationale of the program and ensure compliance with the conditions of the environmental authority.

Condition (Water 13(i)) enables the program to be updated to reflect changes in containment activities on site over time.

If an application does not provide for the storage of contaminants in containment facilities (e.g. dams) then the seepage monitoring program conditions can be removed.

The impact assessment and monitoring of groundwater dependent ecosystems are covered by the spring impact monitoring program under Chapter 3 of the *Water Act 2000*.

Note that under condition (General 22), all plans, procedures and programs are required to be certified by a suitably qualified person and condition (General 23) requires those documents to be implemented. Condition (General 24) requires all records to be kept for 5 years and if the administering authority requires a copy of the program, it may be requested and is required to be submitted under condition (General 25).

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(e) and (f) and Environmental Protection Regulation 2008 – ss. 52(1)(a), (b), (c), (d), (f), (g), (h), (i) and (l) and s. 53(3).

Explanatory note (Water 14)

The information required in condition (Water 14) is complimentary and necessary to assess compliance with the seepage monitoring program. The condition is based on the previous monitoring bore drill log requirements in the *Water Act 2000* which were removed under the *Water and Other Legislation Amendments Act 2013*. Information has been removed that is not relevant to ensuring compliance with condition (Water 13).

The details of monitoring locations are important for the administration of the *Environmental Protection Act 1994* in the event the State needs to carry out groundwater monitoring. The data also enables groundwater monitoring bore mapping layers to be updated and will assist the administering authority where the ownership of the bore is transferred to the State by the tenure holder under the provisions of the *Petroleum and Gas (Production and Safety) Act 2004.*

The condition is intended for any bore and is not limited to the construction method or construction materials of a bore. The common meaning of lithology is the physical characteristics of rock, with reference to qualities such as colour, composition and texture. Note that lithological data may include a log and it may show a description of the soil characteristics where the bore was drilled (e.g. the depth of soil layers and the type of soil). The log can still be performed even if the bore is shallow and was drilled with an auger. Visual inspection and physical measurements can be used to undertake this type of log, and it does not require technical wire logging tools commonly used in drill logs.

This condition is considered necessary and desirable until such time as the drill log is required in the *Code for Construction of Coal Seam Gas Wells* and required for all petroleum tenure holders (i.e. not just coal seam gas activities).

Note that the EA does not include conditions about standards for bore construction, maintenance, decommissioning and abandonment because these requirements are mandatory under the *Water Act 2000* and the *Petroleum and Gas (Production and Safety) Act 2004*.

Head of power

Environmental Protection Act 1994 – s. 203(1)(a) and s. 207(1)(f) and Environmental Protection Regulation 2008 – s. 52(1)(a) and ss. 53(3)(a), (b), (c), (d), (g) and (h).

Explanatory notes—Rehabilitation

Explanatory note (Rehabilitation 1)

A Rehabilitation Plan is necessary to minimise the likelihood of environmental harm being caused from land disturbance. Note the common meaning of ‘plan’ is ‘a scheme of actions or procedures’. The development of this plan will assist in ensuring there are procedures in place to manage and measure rehabilitation of disturbed land effectively, thereby reducing environmental harm. The plan must be developed by a suitably qualified person who will determine the rehabilitation goals, the procedures to achieve rehabilitation conditions and the procedures for appropriate monitoring and maintenance.

The rehabilitation plan is not a duplication of a rehabilitation program in a Plan of Operations. Note the common meaning of ‘program’ is ‘a list of things to be done’. The rehabilitation program outlines in detail what rehabilitation activities are going to be completed within a stated timeframe to inform financial assurance. The rehabilitation plan outlines the objectives and methods to be implemented throughout the life of the project to minimise the likelihood of environmental harm from significant disturbance to land.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(e) and (f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (i), (k) and (l), 53(3)(d).

Explanatory note (Rehabilitation 2)

Condition (Rehabilitation 2) is modified from PESCC38 and relates to all disturbed areas including pipeline areas and trenches and ensures that positive environmental outcomes are achieved and that significant disturbance to land is rehabilitated. Transitional rehabilitation means the criteria described in the condition.

This condition provides the minimum acceptable standards for rehabilitation necessary to prevent environmental harm from on-going land disturbance. The standards will also allow the holder to measure and ensure compliance with the EA.

Additional requirements are needed if waste disposal is authorised (i.e. for capped monocells for general waste disposal, revegetation of appropriate groundcover and/or shrubs, with no deep rooted vegetation so as to protect the integrity of the capping).

The stated rehabilitation performance objectives will minimise the likelihood of environmental harm being caused from land disturbance, erosion, and degradation of soil quality, introduction of pests and weeds and disruption of overland flow.

This condition requires that rehabilitated areas are maintained so as to ensure that the rehabilitation works undertaken are achieving the prescribed outcomes.

Condition (Rehabilitation 2) relates only to significant disturbance to land which is not essentially required for the on-going conduct of the petroleum activities (e.g. areas of a well pad that are no longer required or storage that was used during construction activities). The onus of proof for open areas not being transitionally rehabilitated lies with the holder of the environmental authority.

Head of power

Environmental Protection Act 1994, s. 207(1)(e) and (f) and Environmental Protection Regulation 2008, ss. 52(1)(a),(b),(i),(k) and (l), 53(3)(b) and (d).

Explanatory note (Rehabilitation 3)

Condition (Rehabilitation 3) sets the standard for final rehabilitation acceptance criteria. It is this criteria that must be met in order for the administering authority to be satisfied that rehabilitation has been successful.

Condition (Rehabilitation 3) allows for a different standard where the landholder does not want the land to be revegetated. This is reasonable as these criteria apply to land that has been significantly disturbed which is not an ESA and does not require a high degree of restoration. Land that is “intended to be used by the landholder or overlapping tenure holder” would be determined through consultation with those parties. In the case of an overlapping tenure holder this would need to be verified as occurring in the relevant work program / development plan. A definition of the term “being or intended to be utilised by the landholder” has been added for clarity and describes the need for an agreement.

Streamlined conditions for petroleum activities are best drafted on a site specific basis with detailed understanding of the characteristics of the area when the activities cease. However, as petroleum activities must co-exist with agricultural activities, the land use surrounding petroleum infrastructure may change significantly over time because of activities carried out by the landholder (e.g. clearing for crops). The way to best address this issue is by requiring the “highest ecological value” adjacent land use or the “pre-disturbance” land use as the final landform to be adopted. Note that the administering authority defines a hierarchy of final land use for rehabilitation and this can be used to guide which adjacent land use has the highest value:

1. Reinstating native ecosystem(s) as similar as possible to the original ecosystem(s) present prior to disturbance from the activities; then
2. Establishing an alternative outcome with a higher environmental value than that present prior to disturbance from petroleum activities where it can be demonstrated that returning to the original ecosystem is not possible; then
3. Reinstating the previous land use (e.g. grazing or cropping).

Rehabilitation should firstly focus on the ground level to maintain the top soil and seed banks critical for long-term rehabilitation success. It should be expected that the cover of grasses and forbes be at least as good as the surrounding areas following the rehabilitation effort. It is also recognised that the total groundcover will allow for progressive changes in species diversity. As the trees and shrubs develop the diversity of the ground cover

will change in response. As such, species diversity comparisons between the rehabilitation site and the surrounding area will not be a useful measure.

Species richness in the ground cover often accounts for much of the diversity in the regional ecosystems of the Brigalow Belt. Where the EA is not in this region, this criterion may need to change to reference site specific regional ecosystem data.

It should be expected that declared plant pest species within the rehabilitation area should be no greater than the surrounding area and weeds should not be introduced because if they are present in the surrounding area, their presence in the rehabilitated area will be unavoidable. Further, landholders do not have to eradicate weeds and so, it is highly onerous and resource intensive to require industry to completely and permanently eradicate weeds in rehabilitated areas. The presence of weeds in the adjacent area in combination with their spread rate would render eradication attempts by industry as largely ineffective.

The rehabilitation outcome of condition (Rehabilitation 3d) ensures that there is visual consistency in the final landform with the surrounding landscape and where relevant, that the area contains predominant species for the broad vegetation group. Broad vegetation groups are a higher-level grouping of vegetation communities that are clusters of ecologically related regional ecosystems. The broad vegetation group descriptions are an amalgamation of the most frequent species from a number of regional ecosystems. For example, broad vegetation group 25b consists of a number of different regional ecosystems with similar vegetation.

Using broad vegetation groups allows flexibility for natural regeneration where the rehabilitation outcome may be the same or similar vegetation community as that which was present pre-disturbance. Industry can choose which regional ecosystem of many in the surrounding landscape or even on the pre-disturbed site to include in the rehabilitation so long as they are selecting a regional ecosystem of the equivalent or higher conservation order. This provides flexibility for industry and recognises that detailed criteria for rehabilitating to the exact same regional ecosystems in the surrounding area or on the pre-disturbed site is not required for disturbed land that was not in an environmentally sensitive area.

There are two caveats that must be included when using the broad vegetation group approach: ensuring that the broad vegetation group contains the same biodiversity status as the pre-cleared one, and that the broad vegetation group is taken from the Queensland Herbarium's regional scale grouping (1:1 000 000 map scale). These two caveats as a measure of rehabilitation success maintains the predominant species composition and ecological functionality of vegetation communities, aligning with rehabilitation requirements but also dealing with the broad scale variability in ecosystems being cleared and restored with minimal compromise to ecological outcomes.

Head of power

Environmental Protection Act 1994, ss. 207(1)(e) and (f) and Environmental Protection Regulation 2008, ss. 52(1),(i),(k) and (l).

Explanatory note (Rehabilitation 4)

Condition (Rehabilitation 4) requires additional final acceptance criteria for sites in an environmentally sensitive area or which were environmentally sensitive areas prior to significant disturbance occurring. The additional criterion is necessary and desirable to ensure regional ecosystems that were present at the site pre-disturbance are returned after the activities cease. The condition includes some of the criteria listed in condition (Rehabilitation 3) but also includes the achievable minimum standards for habitat features and restoring the regional ecosystem. If there was more than one regional ecosystem in the pre-disturbance area, the criterion requires that the regional ecosystem with the highest conservation value be selected as the reference for the required species in the ecologically dominant layer. This condition sets a higher standard of rehabilitation because of the high environmental values of these areas prior to significant disturbance occurring. It is generally not considered best environmental practice to significantly disturb environmentally sensitive areas, and therefore the standards for rehabilitation must be more stringent and prescriptive than non-environmentally sensitive areas.

Few empirical studies have demonstrated that restoring flora leads to restoring fauna. Therefore, minimum standards for fauna habitat features are necessary and desirable because they are key components in ensuring the values of the pre-disturbed area are restored. Not only is fauna an integral component of an ecosystem, but it also plays a key role in many processes that would enhance rehabilitation success. These include nutrient

cycling, soil aeration and structure, plant composition and productivity, pollination, dispersion of seeds and spores or control of insect pests. Flora restoration should be in parallel with fauna / habitat restoration.

The selected habitat features are achievable given that litter will necessarily occur from planted vegetation in the rehabilitation area. Coarse woody material (and if required, litter), facilitates faunal recolonisation, and can be sourced from tree lopping activities that will necessarily occur with the maintenance of areas including access tracks and well sites. Hollow bearing trees are not required because these are not commonly found in the Brigalow Belt. Nesting boxes are also considered onerous, as trees will not always be mature enough to support the feature. Habitat features will encourage fauna back into the rehabilitated area, speeding up the rate of return of biodiversity values.

Rehabilitation using more recent technology indicates that modern techniques accelerate convergence of assemblage composition in post-disturbance areas with that of the surrounding ecosystem. The minimum standards are provided in condition (Rehabilitation 4), but other techniques, may include: adding suitable logs (at different stages of decay) as these may be an important factor determining the return of invertebrates (ants for example); catering for hollow-dependent fauna by accelerating the creation of natural hollows and/or providing nest boxes (where not too onerous); and increasing landscape complexity by adding dead stags, rocks, log piles and coarse woody debris.

Provided the species requirements for the regional ecosystem as described in the REDD are met in the regrowth/rehabilitation, it is believed that the rehabilitation is progressing toward the remnant regional ecosystem. That is, items 1-4 alone should allow for the rehabilitation to become a regrowth regional ecosystem.

The “predominant species in the ecologically dominant layer that define the regional ecosystem” allows for the variation in predominant species requirements between different regional ecosystems in the REDD. For example some regional ecosystems are defined using one predominant species (i.e. that species must be present to have the regional ecosystem) while other regional ecosystems have many species that may optionally occur (i.e. any combination of a number of species may be present to have a regional ecosystem) (*see Table 7 Below and text in italics from Neldner*).

The species described in the REDD that may occur in the ecologically dominant layer and the species not represented in the ecologically dominant layer should not be a metric in the final acceptance criteria due to the natural variation that occurs in the regional ecosystem.

As an example where a disturbance occurs on a piece of land with a different micro climate such as aspect, the species that are not predominant in the ecologically dominant layer (i.e. the species not defining the regional ecosystem) would naturally contain variation based on micro climate.

Notes on Final Acceptance Criteria

Final acceptance criteria are required in order to provide certainty and finality about when criteria are met. These conditions are critical in order to declare that rehabilitation standards have been met. Final acceptance criteria must be met before the EA can be surrendered. A final rehabilitation report, required to be submitted with a surrender application will demonstrate this.

There are no prescribed monitoring standards for rehabilitation as this is inherently required in order to demonstrate compliance with conditions (Rehabilitation 3) and (Rehabilitation 4). The Plan of Operations also must contain a program for rehabilitation that sets out how rehabilitation will be carried out. The action program within the Plan of Operations will necessarily include monitoring as this will be the primary means to demonstrate compliance with the rehabilitation and financial assurance conditions of the environmental authority.

The onus of proof in relation to the data presented to demonstrate that final acceptance criteria have been met lies with the holder of the environmental authority.

Meeting each requirement in conditions (Rehabilitation 2) and as applicable, (Rehabilitation 3) and (Rehabilitation 4) are required and when all of these in sequence are accomplished, the standard of rehabilitation will be assured. Accordingly, it is not necessary to also impose a number of consecutive years for final acceptance criteria to be met.

Head of power

Environmental Protection Act 1994, s. 207(1)(e) and (f) and Environmental Protection Regulation 2008, ss. 52(1),(i),(k) and (l), 53(3)(d).

Example for determining predominant species requirements in condition (Rehabilitation 4d)

The short description from the REDD and the regional ecosystem technical descriptions list the species that must be present for the community to be a regional ecosystem.

Example 1.

Species A, B, C ± D ± E ± F indicate open-forest to woodland.

Species G, H ± I ± J shrub layer is frequently present.

Occurs predominantly on alluvial plains

Explanation:

Species A is the dominant species in the predominant canopy layer, and B and C are always present but have a lower biomass than A. D may be present in places and can have a relatively high biomass. E is also present in places and has a lower biomass than D. F is also sometimes present, with a lower biomass than E. The shrub layer is generally but not always present, and is dominated by G and H, with G having a greater biomass. I and J are sometimes present in the shrub layers.

Example 2.

Species A, and/or indicate open-forest to woodland.

Occurs predominantly on alluvial plains

Explanation:

Species A and B are the dominant species in the predominant canopy layer but only one may be present

Note the table below explains how to interpret the short descriptions and species presence requirements.

Table 7 Standard symbols in map unit vegetation label

Connective	Example	Meaning
,	A, B	A and B are always present.
±	A ± B	A is always present; B is sometimes present and sometimes absent.
or	A or B	A is present or B is present; A is never present with B.
and/or	A and/or B	A is present or B is present or A and B are present.

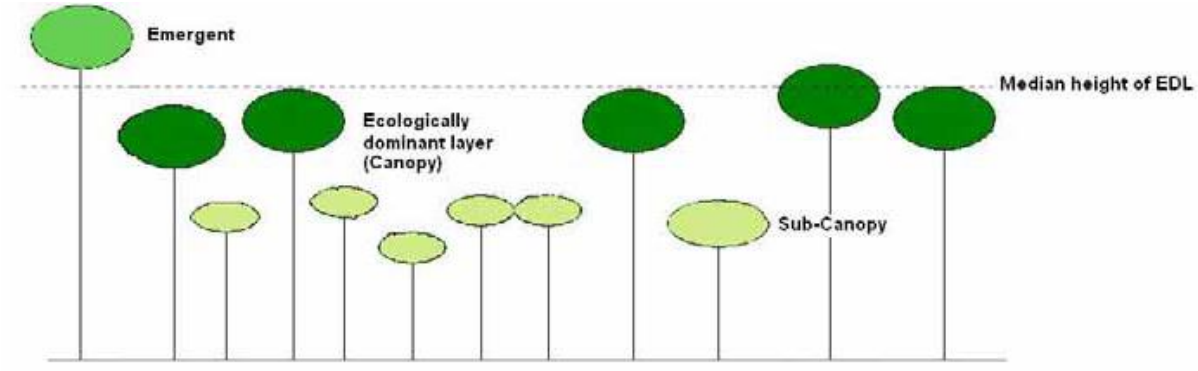


Image from the Biocondition Manual (Eyre*, Kelly and Neldner, 2011*)

REFERENCES:

Neldner, V.J., Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (2012) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 3.2. Updated August 2012.

Queensland Herbarium, Queensland Department of Science, Information Technology, Innovation and the Arts, Brisbane. 124 pp.

Eyre, T.J., Kelly, A.L., and Neldner, V.J. (2011). Method for the Establishment and Survey of Reference

Sites for BioCondition. Version 2.0. Department of Environment and Resource Management (DERM), Biodiversity and Ecological Sciences Unit, Brisbane.

Head of power

Environmental Protection Act 1994, ss. 207(1)(e) and (f) and Environmental Protection Regulation 2008, ss. 52(1),(i),(k) and (l).

Explanatory note (Rehabilitation 5)

Condition (Rehabilitation 5) ensures that the rehabilitation requirements of the EA are met regardless of whether the EA is in force or in effect.

If the EA ends or ceases to have effect, the administering authority can take other legal action to enable access to the land for rehabilitation to be carried out (i.e. an entry order under s. 575) when a condition in the EA that has ended or ceased to have effect continues to apply and has not been complied with (see definition of environmental requirement in Schedule 4 of the *Environmental Protection Act 1994*).

Head of power

Environmental Protection Act 1994, s. 207(3).

Explanatory note (Rehabilitation 6) and (Rehabilitation 7)

Conditions (Rehabilitation 6) and (Rehabilitation 7) are necessary and desirable conditions for EAs which include exploration tenures (e.g. authorities to prospect). The condition is required in order to ensure that the administering authority of the *Environmental Protection Act 1994* is duly notified of the status of land prior to the relinquishment day. Relinquishment is a process *under the Petroleum and Gas (Production and Safety) Act 2004* requiring areas of the tenure to be relinquished back on a stated day (relinquishment day) to the State over time (12 years). Condition (Rehabilitation 7) has the effect of being a system for managing risks to the environment.

Prior to relinquishment of an authority to prospect, the area should be successfully rehabilitated under the EA. This condition is therefore necessary to ensure the administering authority is satisfied the area has been rehabilitated in accordance with the conditions of the EA.

The stated timeframe of 40 business days is considered a reasonable timeframe for the administering authority to ensure final rehabilitation acceptance criteria has been met and coordinate the administration of the relinquishment and partial surrender process with the administering authority of the *Petroleum and Gas (Production and Safety) Act 2004.*

If there are no authorities to prospect as part of the application, conditions (Rehabilitation 6) and (Rehabilitation 7) can be deleted.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(e), (f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (i), (k) and (l), 53(3)(g).

Explanatory note (Rehabilitation 8)

Condition (Rehabilitation 8) is modified from (PESCC 20) and is necessary to make it explicitly clear that final rehabilitation acceptance criteria in condition (Rehabilitation 3) are not required to be complied with, in the event a landholder would like a dam to remain on site.

Dams require minimum rehabilitation criteria to ensure that the water in a dam is fit for use by the landholders. The administering authority can also ensure the minimum acceptable rehabilitation requirements for a dam are met and their liability in approving a surrender application under the *Environmental Protection Act 1994* is met.

The landholder is to provide their written approval in the form as Attachment 1 – landowner statement in the final rehabilitation report (ESR/2015/1616[18]).

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(e) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (i), (k) and (l).

Explanatory notes—Well construction, maintenance and stimulation activities

Explanatory note (Well activities 1)—(Well activities 3)

Conditions (Well activities 1) to (Well activities 3) are necessary and desirable conditions as they require the minimum management measures for all drilling activities.

Condition (Well activities 1) is prohibiting the use of oil based drilling muds and synthetic based drilling muds when carrying out petroleum activities because it will substantially increase the likelihood of environmental harm caused from toxicity and persistent to remain in cuttings piles. Note the contaminants in these drilling muds (e.g. diesel and other hydrocarbons) are considered toxic to various organisms. The explanation for phasing out these muds is explained in the administering authority's fact sheet, Characterisation and management of drilling fluids and cuttings in the petroleum industry.

Note that section 52(1)(f) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about restricting the type, quality, quantity, concentration or characteristics of contaminants that can be released. Condition (Well activities 1) is prohibiting the use of the stated drilling muds and thereby the contaminants in those drilling muds.

The stated action in (Well activities 2) is to prohibit the interconnection of another aquifer and the target gas formation, to ensure contaminants are not released from the formation, thereby reducing the risk of environmental harm from interconnectivity. Note that contaminants are authorised to be released in the Well Activities zone within the target gas formation but this zone is considered the limit of acceptable environmental harm. The way to achieve the performance objective of not causing interconnection has not been stated to allow flexibility in choosing appropriate measures.

Note that section 52(1)(g) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the way in which contaminants are released. Drilling activities have the potential to release contaminants from the formation by causing interconnection with another aquifer. Condition (Well activities 2) prohibits interconnection from drilling activities as being a pathway for the release of chemicals.

The stated action in condition (Well activities 3) is to operate drilling activities in accordance with practices and procedures to detect the connection stated in condition (Well activities 3). The practices and procedures for detection will allow actual and potential harm caused from connectivity to be managed promptly and effectively and ensure compliance with (Well activities 2). It is a requirement of section 54AAA of the Petroleum and Gas (Production and Safety) Regulation 2004 for the holder of a CSG tenure to comply with the *Code of Practice for Constructing and Abandoning Coal Seam Gas Wells* (October 2013) and this is important for ensuring that interconnectivity does not occur. However, despite this requirement, interconnectivity needs to be explicitly prohibited under the environmental authority.

Note that section 52(1)(a) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the implementing a system for managing risks to the environment. Condition (Well activities 3) ensures that practices and procedures are in place to detect any fractures that may increase the potential risk for environmental harm caused by connectivity.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (f), (g), (i) and (l).

[18] This is the publication number, which can be used as a search term to find the latest version of the publication at www.qld.gov.au.

Explanatory note (Well activities 4)

Where a well activities risk assessment is not submitted as part of the EA application or the applicant has confirmed that stimulation will not be carried out on the relevant resource authorities, stimulation will not be authorised and condition (Well activities 4) applies. Otherwise delete condition (Well activities 4) and replace with (Well activities 5) onwards.

Condition (Well activities 4) is a necessary and desirable condition as it ensures that the applicant demonstrates to the administering authority that the activity is going to be appropriately managed so that harm is prevented. It also ensures that stimulation cannot be carried out on the site without the proper assessment against the standard criteria and regulatory requirements.

Note that section 52(1)(g) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the way in which contaminants are released. Stimulation activities have the potential to release contaminants from the formation or from the Well Activities fluid by causing interconnection with another aquifer. Condition (Well activities 4) prohibits stimulation activities thereby preventing any release of contaminants due to those activities.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (f), (g), (i) and (l).

Explanatory note (Well activities 5)

This condition is requiring that polycyclic aromatic hydrocarbons (PAH's) or products that contain PAH's are not used in concentration above the reporting limit, because it is considered that environmental harm will substantially increase from these contaminants.

Condition (Well activities 5) is desirable given that PAH's can be very dangerous and in very small concentrations and guideline trigger values, such as in ANZECC reflect this. A typical PAH that was once commonly used in stimulation activities was naphthalene. However, its use in stimulation is not considered appropriate given its environmental and health risks and the availability of feasible alternatives.

Reporting limit is defined in the dictionary as meaning the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as "less than" the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. Accordingly, the use of the term "reporting limit" in the condition gives a measurable and reliable indicator for measuring compliance (because there is no way to demonstrate that something is completely free of PAH's because of limits of reporting). Note that the standard limit of reporting for PAH's is 1 ppb however under the definition, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 ppb – 0.02 ppb.

Note that section 52(1)(f) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about restricting the type, quality, quantity, concentration or characteristics of contaminants that can be released. Condition (Well activities 5) is prohibiting PAH's in stimulation fluid above the reporting limit because of high environmental risk and the potential environmental harm that may be caused.

Head of power

Environmental Protection Act 1994 ss. 203(1)(a), 206 and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (f), (i) and (l).

Explanatory note (Well activities 6)

By prescribing this condition, the administering authority is prohibiting negative affects to water quality other than within the stimulation impact zone of the target gas producing formation. It is necessary to minimise the likelihood of environmental harm being caused from the activity and ensure contaminants are contained. Where monitoring has identified interaction with waters beyond the stimulation impact zone, an assessment will need to be undertaken to identify whether the interaction resulted in a negative effect. The way to demonstrate

compliance has not been stated to allow flexibility in choosing appropriate measures (e.g. an assessment could include taking a water quality sample from the outside the stimulation impact zone and comparing the quality with the data taken under condition (Well activities 14).

Condition (Well activities 6) is an environmental authorisation condition and cannot be amended in any way. It is a performance criterion to not cause negative affects to water quality beyond a specified area (similar to a mixing zone in a surface water). The administering authority will not authorise negative impacts to adjacent waters that are not within the target seams as a result of stimulation activities. Furthermore, the administering authority cannot be silent on authorisation of harm to the entire seam as there could be non-industrial users of that water. Therefore a condition explicitly limiting the extent of impact is required to be included in the EA. The definition of stimulation impact zone and the 100 m radial measure was developed after consultation with industry where it was said that the extent of stimulation is maximum 80 m radial measure of the initiation point.

Whilst it is recognised that measuring compliance with the condition is frequently raised as an issue, stimulation events, including hydraulic fraccing are carefully designed. This condition sets the parameters of that design. The administering authority is within its jurisdiction under the *Environmental Protection Act 1994* to place physical boundaries around the extent of contamination that is authorised under the EA. This condition gives certainty and finality that negative impacts on water quality beyond this defined zone as a result of stimulation activities is not authorised environmental harm.

Note that section 52(1)(g) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the way in which contaminants are released. The stated way in condition (Well activities 6) is through defining a measurable boundary for the authorised contamination and prohibiting the contamination of waters beyond this boundary.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (c), (g), (i) and (l).

Explanatory note (Well activities 7)

This condition is prohibiting the connection of the target gas producing formation and another aquifer, because it is necessary to ensure that environmental harm is not caused from interconnectivity.

Condition (Well activities 7) is similar to condition (Well activities 2) effectively prohibiting contamination of the environment by causing interconnection. Conditions (Well activities 2) and (Well activities 7) could be merged providing the EA is authorising both activities.

Condition (Well activities 7) also acts as a measurable performance criterion that will assist in the management of stimulation activities to ensure compliance with condition (Well activities 6).

Note that section 52(1)(g) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the way in which contaminants are released. The stated way in Condition (Well activities 7) is prohibiting the connection of the target gas producing formation another aquifer, and any potential contaminants, thereby reducing environmental harm.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(g), (i) and (l).

Explanatory note (Well activities 8)

Well integrity must be maintained in order to ensure that water in other aquifers is not contaminated during stimulation events (via the stimulation fluids being pumped down well, the pressure exerted during the event and/or the flow back process). Well integrity should be in accordance with best practice standards for well maintenance and monitoring.

Note that section 52(1)(b) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about implementing measures for avoiding or minimising the release of contaminants or waste. The measures to ensure well integrity will avoid environmental harm caused from fluid leakage and movement.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a), 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(b), (j) and (l).

Explanatory note (Well activities 9)

Detection measures will need to be determined through the risk assessment and could include microseismic monitoring, tracer analysis and water quality signature analysis. Such measures must be outlined in the application.

Condition (Well activities 9) is similar to (Well activities 3) and requires monitoring systems to be implemented to detect interconnectivity. This is necessary in order to promptly manage the incident and alert other water users. There are a wide range of methodologies to carry out this monitoring and it is preferred that real time methods are used during the event.

Conditions (Well activities 3) and (Well activities 9) could be merged providing that the EA is authorising both activities.

Note that s. 52(1)(a) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the implementing a system for managing risks to the environment. The system includes practices and procedures that will detect, as soon as practicable, any fractures from the well which will assist in the prompt and effective management of any actual or potential environmental harm.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a) and (l) and ss. 53(3)(a) and (b).

Explanatory note (Well activities 10) and (Well activities 11)

Condition (Well activities 10) and (Well activities 11) are necessary and desirable conditions as it ensures stimulation activities cannot be carried out on a well without a risk assessment, despite a risk assessment having been submitted as part of the application so as to ensure life of project compliance with the minimum acceptable standard for content. Each of the requirements in condition (Well activities 11) are important in assessing the risk of stimulation activities. In particular, some of this content may not be relevant to certain stimulation activities (e.g. in the Bowen Basin) but the onus is on the applicant to demonstrate through the risk assessment why this is the case.

Condition (Well activities 10) and (Well activities 11) is requiring the risk of environmental harm from stimulation activities to be identified and appropriate management techniques be proposed to prevent environmental harm. The conditions require a stimulation risk assessment to be developed that addresses the criteria stated in condition (Well activities 11). The risk assessment framework includes the minimum accepted standards to be applied to each well before it is hydraulically fractured so that site-specific risks can be managed at each well during the event. The risk assessment will determine the nature, extent and impact from the stimulation activity and allow the proper and efficient management of any environmental harm caused from the activity.

The statement in condition (Well activities 11) about carrying out the risk assessment for every well provides flexibility to the applicant to develop risk assessments for each well or develop one overarching stimulation risk assessment providing that one document covers all relevant and site specific matters for each of the wells. The risk assessment framework could be applied to a group of wells providing there were no differences in the site-specific characteristics of those wells and no differences in the type of stimulation procedures. This condition would be satisfied either with the one risk assessment report covering all wells to be stimulated over a specified period of time prior to any stimulation activities being carried out. Alternatively, separate risk assessment reports could be written for each individual well prior to fracturing activities occurring, based on one more regionally scaled risk assessment framework. In this latter circumstance, the regionally scaled risk assessment framework would have had to have been submitted as part of the application and contained enough information to demonstrate that site-specific impacts would not be likely to occur.

Note that section 52(1)(b) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about implementing measures for avoiding or minimising the release of contaminants or waste. The measure is to develop a stimulation risk assessment to ensure that stimulation activities are managed to prevent environmental harm cause as a result of water contamination. The criteria identified in condition (Well activities 11) will assist efficient identification of risks and prevention measures for environmental harm.

Head of power

Environmental Protection Act 1994 ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a), (b), (c), (i) and (l).

Explanatory note (Well activities 12)

This condition requires the identification of water quality of nearby active groundwater bores prior to undertaking stimulation activities. The baseline assessment will provide baseline groundwater quality values of the receiving environment (to be included in the monitoring program) and assist industry to identify whether environmental harm has been caused from nearby stimulation activities.

Condition (Well activities 12) is the minimum standard for which bores have to be monitored for baseline groundwater quality. Abandoned bores or bores that cannot yield water are not required to be monitored. The requirements are consistent with the baseline monitoring requirements in Chapter 3 of the *Water Act 2000*.

The measures of 200m and 2km in condition (Well activities 12) were developed in consultation with industry and to be consistent with the baseline monitoring requirements of the *Water Act 2000* respectively. Refer to s. 398 of the *Water Act 2000*.

Condition (Well activities 12) allows for flexibility regarding pre-stimulation monitoring of water quality in a well. In the event that there is not sufficient water in a well prior to stimulation, companies may use monitoring data from another non-stimulated well or bore which is in the vicinity and which accurately represents the water quality in the well to be stimulated.

Note that section 52(1)(a) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing conditions about the implementing a system for managing risks to the environment. The system includes practices and procedures that will detect whether any actual environmental harm promptly has occurred.

Head of power

Environmental Protection Act 1994 ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a) and (l), 53(3)(c).

Explanatory note (Well activities 13)

By prescribing this condition, the administering authority is requiring baseline bore and well assessments where sufficient water quality data, can accurately represent the water quality in the well to be stimulated.

This condition allows for flexibility regarding pre-stimulation monitoring of water quality in a well. In the event that there is not sufficient water in a well prior to stimulation, monitoring data from another unstimulated well or bore which is in the vicinity may be used and which accurately represents the water quality in the well to be stimulated. This determination should be conducted by a suitably qualified person as per the general monitoring and groundwater sampling conditions. This condition is necessary so that the baseline data can be used in comparison with a post stimulation analysis of the water in the formation outside the Well Activities zone to identify whether there was a negative impact as prohibited under condition (Well activities 6).

Note that section 53(2)(a) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing monitoring conditions for the potential impact on the receiving environment. By prescribing this condition, the administering authority is requiring a stated monitoring program. The baseline bore and well water quality monitoring will assist in determining the nature, extent and impact from the activity and also allow for the proper and efficient management of any environmental harm caused from the activities.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a),(i) and (l), 53(3)(b) and (c).

Explanatory note (Well activities 14)

Condition (Well activities 14) is a prescriptive condition to ensure that there is good understanding of baseline water quality in bores and wells identified in condition (Well activities 13) and (Well activities 16).

Condition (Well activities 14) is necessary and desirable. It is the minimum acceptable suite of parameters to carry out a characterisation of ground water quality before and after stimulation at bores and wells. It also ensures consistency and comprehensiveness in monitoring data across industry. No single parameter should ever be deleted. Requiring a baseline assessment of bores and wells including the level and water quality of the water in the bore is consistent with s. 394 of the *Water Act 2000*.

Note that r. 53(2)(a) of the Environmental Protection Regulation 2008 requires the administering authority to consider imposing monitoring conditions for the potential impact on the receiving environment. Detecting the potential impact in the Stimulation Impact Monitoring Program required by conditions (Well activities 15) – (Well activities 17) is dependent on the accurate baseline water quality monitoring of bores and wells for the water quality characteristics in condition (Well activities 13) and (Well activities 14).

Note that section 53(2)(b) of the Environmental Protection Regulation 2008 requires the administering authority, when deciding to impose a monitoring condition, to consider the characteristics of the contaminants. The list of parameters in condition (Stimulation 14) has been determined in consideration of stimulation activities and the suite of contaminants that can occur in fluids and formation water. These parameters are particularly relevant to stimulation activities and have previously been detected as by-products in flow-back water post stimulation.

Note that section 53(3)(b) and (c) of the Environmental Protection Regulation 2008 provides that a monitoring condition includes monitoring indicators for the effective operation of control measures and monitoring the characteristics of the receiving environment. This suite of parameters for baseline and assessments has been determined to detect impacts from stimulation activities in the receiving environment.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a),(i) and (l), ss. 53(3)(b) and (c).

Explanatory note (Well activities 15)—(Well activities 17)

The stimulation impact monitoring program in condition (Well activities 15) must be carried out after stimulation activities occur and it must reference baseline data required by conditions (Well activities 12) – (Well activities 14) to determine and detect the nature and extent of actual or potential environmental harm. The monitoring

program uses a 'before, after, control, impact' design and will detect adverse impacts to water quality, for the prompt and efficient management of impacts. In the program, landholders' bores will typically be the control site but dedicated monitoring bores for this purpose may also be drilled.

Condition (Well activities 15) states which water/waste streams must be monitored as part of the stimulation activity(ies) and at what frequency. Note that frequency is not prescriptive given the variable nature, duration, and timing of flow-back activities. Monitoring under this condition includes as a minimum stimulation fluids, flow-back water volume and quality and quality in the same bores in condition (Well activities 14). Companies are required to complete a *Notice of Intent to undertake Hydraulic Fracturing Activities* under DNRM legislation which requires full disclosure of chemical compounds, products and fluids used in stimulation activities. Companies may request to remove requirement (Well activities 15(a)) from the condition and providing that the risk assessment and the company have committed to using the same formulations, this amendment would be acceptable.

The comparison of the water quality monitoring will identify levels above the baseline values, and allow for adverse impacts to be confirmed and promptly managed.

Condition (Well activities 16) states what parameters must be monitored in the water/waste streams provided in condition (Well activities 15). It requires that the same suite for baseline assessments is repeated for the impact assessments along with any other parameter that may be relevant (Well activities 15(b)) (i.e. the 'before' and 'after').

The stated program duration for post monitoring in condition (Well activities 17) is reasonable to ensure that the any potential environmental harm caused from the activities is minimised. It is necessary to monitor potential impacts over an extended duration as the movement and concentration of contaminants in groundwater can fluctuate dramatically over time.

Monthly monitoring required by condition (Well activities 17(a)) may need to be extended beyond six months depending on the outcomes of the risk assessment and the transmissivity of groundwater in the area. Also, monitoring may be reduced when water quality has returned to baseline values. In some instances, this may be a short period of time but the duration provided is sufficiently long enough to capture low transmissivity groundwater environments.

Note that section 53(2)(a) of the Environmental Protection Regulation 2008 requires the administering authority when deciding to impose a monitoring condition, to consider the potential impact on the receiving environment. To properly monitor for potential impacts, the quality of the stimulation fluids and flow back water and the characteristics of formation and ground water pre and post stimulation in the vicinity of the stimulation activity(ies) is required.

Note that section 53(2)(e) of the Environmental Protection Regulation 2008 requires the administering authority when considering to impose monitoring conditions, to consider whether the monitoring should be continuous or intermittent. The monitoring required in Condition (Well activities 17) is intermittent.

There may be variations to the Stimulation Impact Monitoring in the event that a risk assessment is submitted to the administering authority with the application which includes sufficient data to demonstrate the quality and quantity of the stimulation fluids to be used. To reduce the suite of impact monitoring parameters in condition (Well activities 14), monitoring results of these parameters as sampled from on-site stimulation activities must be included. To vary the requirements of conditions (Well activities 15)—(Well activities 17), the risk assessment must include, for example:

- comprehensive characterisation data from replicate sampling of batch samples of chemical compounds and products to be used in stimulation
- monitoring results of stimulation fluid blends as sampled at low pressure pumps associated with stimulation activities
- monitoring results of flow back waters
- relevant current MSDS's for all additives to be used in stimulation fluids
- whole effluent or direct toxicity assessments of chemical compounds and/or products and/or stimulation fluids
- an assessment of all monitoring data and toxicity assessments against known water quality guidelines, including US EPA Drinking Water Guidelines.

Head of power

Environmental Protection Act 1994, ss. 203(1)(a) and 207(1)(f) and Environmental Protection Regulation 2008, ss. 52(1)(a),(i) and (l), ss. 53(3)(a),(b),(c),(d),(e) and (f).

Explanatory note (Well activities 18)

Condition (Well activities 18) applies to landholders both on and adjacent to the relevant resource authority(ies). It is a necessary and desirable condition because it permits a potentially affected landholder the right to view the monitoring program and gain an understanding of how water quality of groundwater is being managed as part of the activities and how this may (or may not) affect their source of groundwater.

Head of power

Environmental Protection Act 1994, s. 203(1)(a) and Environmental Protection Regulation 2008, s 52(1)(l).

Disclaimer

While this document has been prepared with care it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons external to the Department of Environment and Science should satisfy themselves independently and by consulting their own professional advisors before embarking on any proposed course of action.

Approved:

5 May 2016

Enquiries:

Permit and Licence Management

Ph. 1300 130 372 (select option 4)

Ph:13 QGOV (13 74 68)

Fax. (07) 3330 5875

Email: palm@des.qld.gov.au

Version history

Version	Effective date	Comments
1.00	24 April 2014	The first published version of the guideline.
2.00	5 May 2016	The guideline has been revised to reflect (1) the commencement of the *Environmental Offsets Act 2014*, and (2) the repeal of the *Wild Rivers Act 2000* (existing wild river conditions to be deleted).
2.01	5 May 2016	Wording of condition G4 amended.
2.02	20 August 2018	The document template, header and footer have been updated to reflect current Queensland Government corporate identity requirements and comply with the Policy Register.