

**Draft terms of reference for the
Western Surat Gas Project
environmental impact statement**
Proposed by Senex Energy Limited
August 2015

Prepared by: Impact Assessment and Operational Support Unit, Department of Environment and Heritage Protection

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Background

Project proponent

Senex Energy Limited (Senex; ACN 008 942 827), on behalf of its wholly-owned subsidiary Stuart Petroleum Cooper Basin Gas Pty Ltd (Stuart Petroleum; ACN 130 588 055), proposes to develop the Western Surat Gas Project. Senex is an established ASX 200 listed Australian energy company with an operating history spanning 30 years. With established oil and gas operations in the South Australia, Senex has recently expanded its existing exploration acreage in the Surat Basin in Queensland and is currently in the planning phase for a greenfield coal seam gas (CSG) project, known as the Western Surat Gas Project. The proposed project area includes Authority to Prospect (ATP) 889 (only north of the Warrego Highway), 795 and 767, held in the name of Stuart Petroleum.

The proponent's head office is located in Brisbane at:

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Brisbane QLD 4000
Phone: (07) 3335 9000
Fax: (07) 3335 9999.

Proposed Western Surat Gas Project

The project area is located within the Maranoa and Western Downs local government areas (LGAs). The proposed project would involve the staged drilling of up to 1000 wells and the construction and operation of supporting infrastructure over a period of approximately 30 years. The targeted production throughput rate would be approximately 35–50 terajoules per day. The proposed project would comprise development of a gasfield only and would not require the development of a liquefied natural gas (LNG) processing facility or export pipeline connecting the gasfield to an LNG facility.

The number of operating wells at any time would be determined progressively over the life of the project, dependent on matters such as the location, size and quality of reserves, along with environmental, land access and cultural heritage constraints. The predicted maximum number of wells actively producing gas on the tenure would be between 100 and 300 wells in the first five years. Where practical and commercially viable, existing infrastructure from other nearby approved developments would be utilised and gas field facilities co-located.

Wells proposed to be drilled in the project area comprise mainly production wells. Some exploration and appraisal wells may be drilled in areas on tenure proposed to be developed later in the project life to assist in understanding the reservoir characteristics ahead of production drilling. In addition, water monitoring bores may be drilled to provide data to assist in ongoing field development planning. Wells no longer in production would be progressively decommissioned and rehabilitated throughout the project life.

Gathering flowlines would transfer low pressure gas from the wells to small scale nodal compressors or larger scale field compressor facilities for initial compression before being transferred via trunklines to a central processing facility for further compression and dehydration processing into sales gas. A high-pressure steel pipeline would be required to transfer the sales gas from the central processing facility to its destination. It is anticipated that only one central processing facility is required to support producing wells.

Depending on the management option employed, drilling and other project activities such as dust suppression and construction would primarily source groundwater derived from coal seam depressurisation activities. This produced water may require treatment through a facility with capacity of up to 12 megalitres per day prior to beneficial use.

Power required on-site for initial start-up of wells, would be supplied using diesel generators. The generators would thereafter be powered by gas. The central processing facility, field compressor facilities, nodal compressors, accommodation and workshop infrastructure would also be powered using gas generators with diesel powered back-up generators.

Employees required to support construction and ongoing operations would generally be accommodated in Roma and on-site temporary drilling and construction camps. It is anticipated that the proposed project would require approximately 100

employees during construction and approximately 20 employees during operation, although better estimates would be provided in the environmental impact statement (EIS).

Environmental Protection Act 1994 (Queensland)

On 31 March 2015, Senex applied under sections 70 and 71 of the *Environmental Protection Act 1994* (EP Act) for approval to voluntarily prepare an environmental impact statement (EIS). Under section 72 of the EP Act, the Department of Environment and Heritage Protection (EHP) approved the application on 6 May 2015.

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The proposed project was referred on 24 April 2015 to the Australian Government Department of the Environment (EPBC 2015/7469). On 21 May 2015, the Department of the Environment determined the proposed project to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions are sections 16 and 17B (wetlands of international importance), sections 18 and 18A (listed threatened species and communities), sections 20 and 20A (listed migratory species) and sections 24D and 24E (water resource, in relation to coal seam gas development and large coal mining development). The EIS process will assess potential impacts of the project on the controlling provisions consistent with the bilateral agreement (section 45 of the EPBC Act) between the Australian and Queensland governments for the purposes of the Australian Government's assessment under part 8 of the EPBC Act.

Information on the assessment of projects under the EPBC Act, including referrals and public notices, can be found on the Department of the Environment's website at www.environment.gov.au.

Overview of coal seam gas approvals process and environmental framework

Approval for the development of CSG projects is obtained through a staged assessment process that requires more refinement in detail as the process progresses. Under the EP Act assessment process, the stages comprise preparation and submission of an EIS for project approval, followed by the environmental authority (EA) process whereby the project is conditioned.

Early in the EIS process, the terms of reference (TOR) are developed to inform the scope of the impact assessments to be carried out. The draft TOR will be notified and available for viewing and comment from the public including interested and affected persons. The Chief Executive of EHP then considers all submissions and response from the proponent when finalising the TOR as well as publicly notifying the final TOR. Senex has two years from receiving the final TOR to prepare and submit an EIS to EHP.

Once the EIS has been submitted to EHP for assessment, public comment will also be sought on the EIS itself. Any submissions received on the EIS, the response of Senex to the submissions and any amendments made to the EIS are then considered by EHP to decide whether to allow the EIS to proceed to the EIS assessment report stage. The EIS must contain sufficient information on potential impacts and mitigation measures for EHP to be able to prepare the EIS assessment report including recommendations for draft EA conditions. The EIS process under Chapter 3 of the EP Act is completed when the proponent is given the EIS assessment report.

As this project is assessed under the bilateral agreement, the Australian Government Environment Minister will make a separate decision under the EPBC Act, subsequent to completion of the EIS process.

After the EIS is complete, Senex will apply for a site-specific EA and for tenure under relevant resource legislation. The EA provides detailed conditions under which a project must be carried out. The detailed information required to enable the EA application will be provided in the body of the EIS and by way of an environmental management plan (EM Plan) that will capture commitments made by Senex in the EIS.

While it is not a requirement of the EP Act for the proponent to prepare an EM Plan, the document will be one of the primary tools for implementing EIS commitments and EA conditions for all Senex CSG activities on its tenure. Senex will seek one EA for the 13-block project area. This EA may cover more than one PL and other tenure including potential commercial areas (PCA) and ATPs under which exploration and appraisal activities are carried out. A plan of operations will also be prepared to describe all relevant activities to be carried out in the first five years and clarify the way in which the EA conditions will be complied with. Where the EA is processed immediately following approval of the EIS, it is likely that no additional public notification may be required.

A proponent must have an EA before a petroleum licence (PL) can be granted over the tenure by the Department of Natural Resources and Mines (DNRM) under the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act). During the EIS period, Senex holds the project area tenure as ATPs. PL applications must be published and public comment sought prior to grant of the lease. An initial development plan, which typically covers the first five years of development, must be submitted with the application. The initial development plan contains detailed information about the nature and extent of activities to be carried out under the PL. Subsequent development plans known as later development plans provide detailed information about ongoing development of the tenure. DNRM must consider any submissions in deciding whether to grant the PL and impose conditions.

In addition to the EIS, EA and PL processes, the proponent must also negotiate conduct and compensation agreements (CCA) under the P&G Act with landowners on whose land the petroleum activities will be carried out. Negotiation of the CCA provides an opportunity for landowners to raise concerns specific to their property and to reach agreement with the proponent on where, how and when CSG development will occur on their property. The proponent is required to provide detailed information about the activities, the location and timing of activities, the measures to manage impacts, rehabilitation and compensation. Negotiation of compensation includes access to dispute resolution and the Land Court, if agreement cannot be reached through the normal process. Refer to Figure 1 below for an overview of the approval process.

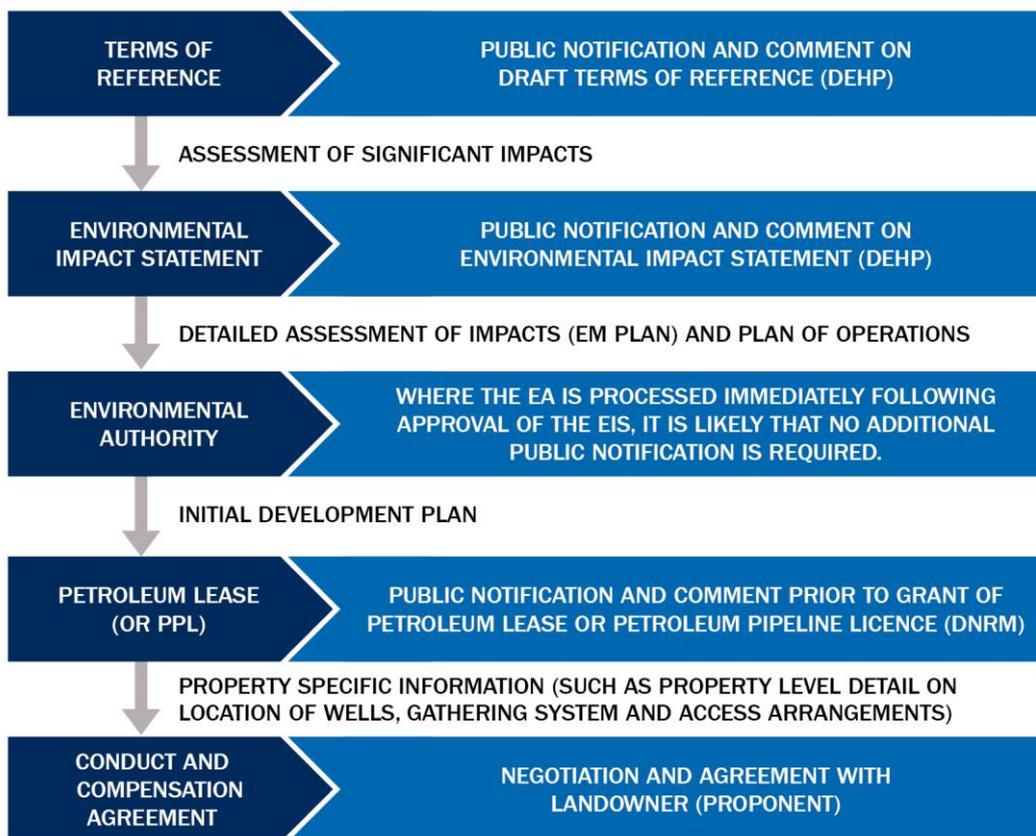


Figure 1 Approvals process for petroleum activities

Siting of petroleum activities

Due to the nature of CSG development, the EIS will not be able to address the exact locations of wells, pipelines and other associated infrastructure required throughout the life of the project. The EP Act requires that the EIS must provide enough information about the potential impacts of the proposed project and mitigation and management measures to adequately protect environmental values identified through detailed studies to enable the proposed project to be appropriately assessed.

Siting of CSG infrastructure is a process of progressive refinement informed by resource validation during exploration and appraisal and gas field design to optimise recovery of economic CSG reserves. It commences with the development of a conceptual layout that describes how wells, gathering systems and production facilities might be arranged to extract and process gas. This is typically presented as areas in which facilities might be developed, with the arrangement of gathering systems and wells within a typical grid arrangement whereby wells are positioned at nominally 750 metre (m) intervals but may range up to 1500m.

A preliminary field development plan is developed during the project's concept engineering design phase to determine priority areas for development and details on how that development may be undertaken. This preliminary field development plan is then further refined during the front end engineering design (FEED) process, undertaken during the EIS preparation.

At this stage, environmental, landholder and cultural heritage preliminary constraints analysis and environmental values identified during the EIS inform the FEED process. The process also takes into consideration technical feasibility, constructability, cost, and risk, as required by standards applicable to the design, construction and operation of petroleum and gas developments. The ongoing siting of infrastructure is an iterative process that is ongoing through the life of the project as gas reserves mature and actual production is realised and development progresses across the tenure. Hence the development sequence would be progressively optimised through the project life.

The preliminary field development plan refined through the FEED process is used in the EIS to assess potential impacts. This is known as the EIS assessment scenario. In turn, information in the EIS informs the development of project-specific EA conditions. Once project activities are authorised to progress on the PL, further constraints analysis and confirmation is undertaken prior to final infrastructure siting. This process, comprising the preliminary and the final constraints analysis are defined in a formal constraints protocol, which forms an important part of Senex's environmental management framework and is discussed further in the EIS.

Part A About these terms of reference

1 Statutory basis

This section draws attention to the project assessment information requirements of the EP Act administered by EHP. The EIS process for the proposed Western Surat Gas Project applies to a voluntary application for an EIS under sections 70 and 71 of the EP Act, approved under section 72 of the EP Act.

The key information requirements of the EP Act that must be addressed in an EIS are:

- the requirements of section 40 of the EP Act, which specifies the purpose of an EIS and of the EIS process
- sections 125 and 126 which set out the general information requirements for applications for an environmental authority
- the environmental objectives and performance outcomes specified in schedule 5, part 3, table 1 of the Environmental Protection Regulation 2008 (EP Regulation).

Section 139 of the EP Act states that the information stage of the environmental authority process does not apply if the EIS process under the EP Act is complete (unless there has been a subsequent change). Consequently, if the project is to proceed, it is particularly important that the EIS provide all the information needed to enable the issuing of an environmental authority for the project.

EHP has developed a set of model conditions for resource projects, which should form the basis for draft EA conditions and general environmental protection commitments in an EIS. The EIS should discuss impact mitigation measures in the context of these model conditions. They are:

- Eligibility criteria and standard conditions—Petroleum exploration activities.
- Eligibility criteria and standard conditions—Petroleum pipeline activities.

2 Accredited process for controlled actions under Commonwealth¹ legislation

As the project is a 'controlled action' under the EPBC Act which requires assessment by an EIS process accredited under the bilateral agreement, the EIS must address the 'controlling provisions' and all matters relating to them. The EIS must state the controlling provisions for the project and describe the particular aspects of the environment leading to the controlled action declaration under the EPBC Act.

The assessment of the potential impacts, mitigation measures and any offsets for residual impacts must be dealt with in a stand-alone section of the EIS that fully addresses the matters relevant to the controlling provisions. The TOR for matters of national environmental significance (MNES) are set out in Appendix 2.

The EIS must also address the matters prescribed in section 6 and in Schedule 1 of the EP Regulation.

¹ This section applies where the proponent has received confirmation from the Australian Government Environmental Agency that the project is a controlled action under the EPBC Act and that it is to be assessed under an EIS accredited under the bilateral agreement.

3 EIS guidelines

To support the generic terms of reference, EHP has developed an information guideline² for an EIS under the EP Act. In addition, subject-specific guidelines are referenced throughout the TOR. Refer to Appendix 1 for a list of these policies and guidelines. Additional technical guidelines on how to comply with the TOR and information about the project or the EIS process conducted under the EP Act can be accessed from the EHP website www.ehp.qld.gov.au.

The TOR must be read in conjunction with the EHP Guideline – The Environmental Impact Statement Process under the EP Act³, which explains:

- participants in the EIS process
- consultation requirements
- EIS format and copy requirements.

Part B Content of the EIS

1 General approach

- 1.1 For the purposes of the EIS process, 'environment' is defined in section 8 of the EP Act.
- 1.2 The EIS should give priority to the critical matters associated with the project (specified in section 7 of the TOR).
- 1.3 The detail in which the EIS deals with matters relevant to the project should be proportional to the scale of the impacts on environmental values. When determining the scale of an impact, consider its intensity, duration, cumulative effect, irreversibility, the risk of environmental harm, management strategies and offsets provisions.

2 Mandatory requirements of an EIS

- 2.1 Describe the project including all aspects subject to this assessment. Provide details of the proponent of the project, including details of any joint venture partners. The project description should include all on and off lease activities relevant to the project including construction, operation and decommissioning activities. If the delivery of the project is to be staged, the nature and timing of the stages should be fully described.
- 2.2 For all the relevant matters, the EIS must identify and describe the environmental values⁴ that must be protected. Environmental values are specified in the EP Act, the Environmental Protection Regulation 2008 (EP Regulation), environmental protection policies (EPPs) and relevant guidelines.⁵
- 2.3 The assessment should cover both the short and long-term scenarios and state whether any relevant impacts are likely to be irreversible.
- 2.4 Provide all available baseline information relevant to the environmental risks of the project. Provide details about the quality of the information provided, in particular: the source of the information; how recent the information is; how the reliability of the information was tested; and any uncertainties in the information.
- 2.5 Demonstrate how the construction, operation and decommissioning (to the extent known) of the project would be consistent with best practice environmental management. In general, the preferred hierarchy for managing likely impacts is: (a) to avoid; (b) to minimise or mitigate; and (c) if necessary, and possible, to offset. Where relevant, mitigation strategies should be described in the context of EHP model conditions.
- 2.6 Provide detailed strategies in regard to all critical matters for the protection, or enhancement as desirable, of all relevant environmental values in terms of outcomes and possible conditions that can be measured and audited.

² <http://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

³ http://www.ehp.qld.gov.au/management/impact-assessment/environmental_impact_assessment_guidelines.html

⁴ Defined in section 125(l)(i)(A) of the EP Act.

⁵ For example, the Queensland Water Quality Guidelines and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (refer to Appendix 1, Policies and guidelines for details).

- 2.7 Impact minimisation measures should include ongoing monitoring and proposals for an adaptive management approach, as relevant, based on monitoring. The proposed measures should give confidence that, based on current technologies, the impacts can be effectively minimised over the long-term.
- 2.8 Present feasible alternatives of the project's configuration (including individual elements) that may improve environmental outcomes. Discuss the consequences of not proceeding with the project.
- 2.9 For unproven elements of a resource extraction or processing process, technology or activity, identify and describe any global leading practice environmental management, where available.

3 Further requirements of an EIS

- 3.1 The assessment and supporting information should be sufficient for the administering authority to decide whether an approval should be granted. Where applicable, sufficient information should be included to enable approval conditions, such as the existing model EA conditions, to be utilised.
- 3.2 To the extent of the information available, the assessment should endeavour to predict the cumulative impact⁶ of the project on environmental values over time and in combination with impacts created by the activities of other adjacent and upstream and downstream developments and landholders—as detected by baseline monitoring. This will inform the decision on the EIS and the setting of conditions. The absence of a comprehensive cumulative impacts analysis need not be fatal to the project. The EIS should also outline ways in which the cumulative impact assessment and management could subsequently be progressed further on a collective basis.
- 3.3 Include a consolidated description of all the proponent's commitments to implement management measures (including monitoring programs). Should the project proceed, these should be able to be carried over into the approval conditions as relevant.
- 3.4 Provide all geographical coordinates throughout the EIS in latitude and longitude against the Geocentric Datum of Australia 1994 (GDA94).
- 3.5 An appropriate public consultation program is essential to the impact assessment process. The proponent should consult with local, Queensland and Australian government authorities, and potentially affected local communities.
- 3.6 The EIS should describe the consultation that has taken place and how the responses from the community and agencies have been incorporated into the design and outcomes of the project. Requirements for the public consultation plan are listed in the document 'Preparing an environmental impact statement: Guideline for proponents'.
- 3.7 Include, as an appendix, a public consultation report. The report should detail how the public consultation plan was implemented including the results.

4 Executive summary

- 4.1 The executive summary should describe the project and convey the most important and preferred aspects and environmental management options relating to the project in a concise and readable form. It should use plain English, avoid jargon, be written as a stand-alone document and be structured to follow the EIS. It should be easy to reproduce and distribute on request to those who may not wish to read or purchase the whole EIS.

5 Introduction

- 5.1 Clearly explain the function of the EIS, why it has been prepared and what it sets out to achieve. Include an overview of the structure of the document.

⁶ Cumulative impact is defined as 'combined impacts from all relevant sources (developments and other activities in the area)'.

Project proponent

- 5.2 Describe the proponent's experience, including:
- the designated proponent's full name, postal address and Australian Business Number, if relevant (including details of any joint venture partners)
 - the nature and extent of business activities
 - environmental record, including a list of any breach of relevant environmental laws during the previous 10 years
 - the proponent's environmental, health, safety and community policies.

The environmental impact assessment process

- 5.3 The EIS should provide an outline of the environmental impact assessment process, including the role of the administering authority in the decision making process for the EIS. The information in this section is required to ensure readers are informed of the process to be followed and are aware of any opportunities for input and participation.
- 5.4 Inform the reader how and when properly made public submissions on the EIS will be addressed and taken into account in the decision-making process.

Project approvals process

- 5.5 Provide an outline of the approvals required to enable the project to be constructed and operated. Explain how the environmental impact assessment process (and the EIS itself) informs the issue of the leases/licences/permits/consents required by the proponent before construction can commence. Provide a flow chart indicating the key approvals and opportunities for public comment.

6 Project description

Proposed development

- 6.1 The EIS must describe and illustrate at least the following specific information about the proposed project:
- the project's title
 - the project, its objectives, and expected capital expenditure
 - rationale for the project
 - the nature and scale of activities to be undertaken and whether it is a greenfield or brownfield site
 - the regional and local context of the project's footprint (with maps at suitable scales)
 - relationship to other coordinated projects and other major projects (of which the proponent should reasonably be aware)
 - the workforce numbers to be employed by the project during its various phases, where personnel would be accommodated and, where relevant, the likely recruitment and rostering arrangements to be adopted
 - the proposed construction staging and likely schedule of works.

Site description

- 6.2 Provide real property descriptions of the project land and adjacent properties; any easements; any underlying resource tenures; and identification number of any resource activity lease for the project land that is subject to application. Key transport, state-controlled roads, rail, air, port/sea and other infrastructure in the region relevant to the project and to the site should be described and mapped.
- 6.3 Describe and illustrate the topography of the project site and surrounding area, and highlight any significant features shown on the maps. Maps should have contours at suitable increments relevant to the scale, location,

potential impacts and type of project, shown with respect to Australian height datum (AHD) and drafted to GDA94.

- 6.4 Where appropriate, describe and map in plan and cross-sections the geology and landforms, including catchments, of the project area. Show geological structures, such as aquifers, faults and economic resources that could have an influence on, or be influenced by, the project's activities.
- 6.5 Where appropriate, describe, map and illustrate soil types and profiles of the project area at a scale relevant to the proposed project. Identify soils that would require particular management due to wetness, erosivity, depth, acidity, salinity or other feature.

Climate

- 6.6 Describe the site's climate patterns that are relevant to the environmental assessment, with particular regard to discharges to water and air and the propagation of noise. Climate information should be presented in a statistical form including long-term averages and extreme values, as necessary.

Proposed construction and operations

- 6.7 Describe the following information about the proposal:
- existing infrastructure and easements on the potentially affected land
 - the proposed extractive and processing methods, associated equipment and techniques
 - the sequencing and staging of activities
 - the capacity of high-impact plant and equipment, their chemical and physical processes, and chemicals or hazardous materials to be used
 - the known locations of new or altered works and structures and infrastructure necessary for the project at all stages of its development, whether on or off the project lease(s) or rights of way
 - any activity that is a prescribed environmentally relevant activity if it were not undertaken on a mining/petroleum lease
 - any new or expanded quarry and screening operations (e.g. from off-site locations) required to service the project.

7 Identification of critical matters

- 7.1 This section sets out the scope of critical matters that should be given detailed treatment in the EIS. A critical matter is an aspect of the proposal that has one or more of the following characteristics:
- a high or medium probability of causing serious or material environmental harm or a high probability of causing an environmental nuisance
 - considered important by the administering authority and/or there is a public perception that an activity has the potential to cause serious or material environmental harm or an environmental nuisance, or, the activity has been the subject of extensive media coverage
 - identified (in a referral decision) as a specific controlling provision under the EPBC Act.

The final scope of critical matters will be determined by the administering authority when finalising the TOR. In the course of preparing the EIS, information may become available that warrants a change of scope and this should be taken into account in the EIS.

- 7.2 The following critical matters have been identified for the proposed Western Surat Gas Project:
- land, flora and fauna and identified matters of state environmental significance (MSES) under the State Planning Policy (July 2014) (section 8.1)
 - water quality (section 8.3)
 - water resources (section 8.4)
 - noise and vibration (section 8.7)

- waste management (section 8.8).

7.3 Matters of national environmental significance (MNES):

- The Australian Government Environment Minister has determined that the project has impacts on MNES (EPBC 2015/7469). The assessment of the potential impacts, mitigation measures and any offsets for residual impacts must be dealt with in a stand-alone section of the EIS that fully addresses the matters relevant to the controlling provisions. Refer to Appendix 2 for detailed MNES-TOR requirements and EPBC Act controlling provisions. The information provided on these matters must be consistent with the relevant aspects of other sections in the EIS, for example Section 8.1 Flora and fauna.

8 Assessment of critical and routine matters

The following subsections list the critical and routine matters for resource projects, with (where applicable) a reference to the objectives defined in the EP Regulation. In some cases, not all the matters may be relevant, while in others the list may not be exhaustive. Where applicable, refer to the objective of the EP Regulation (section 3) to ensure ecologically sustainable development is achieved.

For each routine matter identified below, the level of detail should be proportional to the probable scale of impacts. As a minimum, the proponent should supply sufficient information that confirms the risks/impacts are not significant.

8.1 Land, flora and fauna (critical matter)

Objectives and performance outcomes

The environmental objectives to be met under the EP Act are that the:

- activity is operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna
- choice of the site, at which the activity is to be carried out, minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places
- location for the activity on a site protects all environmental values relevant to adjacent sensitive use
- design of the facility permits the operation of the site, at which the activity is to be carried out, in accordance with best practice environmental management.

The performance outcomes corresponding to these objectives are in Schedule 5, tables 1 and 2 of the EP Regulation. The proponent should supply sufficient evidence (including through studies and proposed management measures) that show these outcomes can be achieved.

Information requirements—land use

- 8.1.1 Describe potential impacts of the proposed land uses taking into consideration the proposed measures that would be used to avoid or minimise impacts. The impact prediction must address:
- landscape (including visual amenity) and land uses in and around the project area, referring to regional plans and local government planning schemes
 - any existing mining, petroleum, geothermal and greenhouse gas storage tenures overlying or adjacent to the project site, and any to be applied for as part of this project
 - any infrastructure proposed to be located within, or which may have impacts on, the Stock Route Network.
- 8.1.2 Address the requirements of the *Regional Planning Interests Act 2014*, including and the requirements of the Darling Downs Regional Plan, Queensland Government, October 2013⁷.

⁷ <http://www.dilgp.qld.gov.au/planning/regional-planning/darling-downs-regional-plan.html>

- 8.1.3 For projects with activities that disturb the land surface, describe the proposed land use during and after the project. Show how the land form during and post disturbance will be stable and non-eroding over time (describe how current technologies will be applied).
- 8.1.4 For underground mines, coal seam gas, underground coal gasification and projects likely to cause land subsidence, assess and provide comprehensive surface subsidence predictions using tools or techniques that enable the location, extent and scale of subsidence, and its effect, over time, on surface landforms and hydrology to be understood⁸. Propose detailed mitigation measures for any significant impacts that would result from subsidence.
- 8.1.5 Detail any known or potential sources of contaminated land that could be impacted by the project. Describe how any proposed land use may result in land becoming contaminated.
- 8.1.6 Identify existing or potential native title rights and interests possibly impacted by the project and the potential for managing those impacts by an Indigenous Land Use Agreement or other measure.

Information requirements—rehabilitation

- 8.1.7 The EIS should provide information based on relevant guidelines, current best practice approaches and legislative requirements about the strategies and methods for progressive and final rehabilitation of the environment disturbed by the project and decommissioning.
- 8.1.8 Develop a preferred rehabilitation strategy for wells, pipelines, roads and all infrastructure associated with the project that would minimise the amount of land disturbed at any one time, and minimise the residual loss of land and water bodies with ecological or productive value. Describe the expected final topography of the site and proposed final land uses. Show the expected final topography of the site with any excavations, waste areas and dam sites on suitably scaled maps. Illustrate the proposed final land uses.
- 8.1.9 Describe rehabilitation success criteria that would be used to measure progress and completion in relation to the final land uses and wildlife habitat areas.
- 8.1.10 Notwithstanding that management techniques may improve over the life of the project, and legislative requirements may change, the EIS needs to give confidence that all potential high-impact elements of the project (e.g. water management dams, creek crossings, etc.) are capable of being managed and rehabilitated to achieve acceptable land use capabilities/suitability, to be stable and self-sustaining and to prevent upstream and downstream surface and groundwater contamination.

Information requirements—flora and fauna

- 8.1.11 Describe the likely impacts on the biodiversity and natural environmental values of affected areas arising from the construction, operation and eventual decommissioning of the project (where known). Take into account any proposed avoidance and/or mitigation measures. The assessment should include, but not be limited to, the following key elements:
- matters of state environmental significance and national environmental significance
 - terrestrial and aquatic ecosystems (including groundwater-dependent ecosystems) and their interaction
 - biological diversity including listed flora and fauna species and regional ecosystems
 - the integrity of ecological processes, including habitats of threatened, near-threatened or special least-concern species
 - connectivity of habitats and ecosystems
 - the integrity of landscapes and places, including wilderness and similar natural places
 - chronic, low-level exposure to contaminants or the bio-accumulation of contaminants
 - impacts on terrestrial and aquatic ecosystems and associated native flora and fauna due to wastes and pollutants, particularly those related to any form of toxicants in:
 - surface and groundwater

⁸ http://www.environment.gov.au/system/files/resources/e9b69ac4-647c-4bbc-84db-83642227ab0d/files/background-review-subsidence_0.pdf

- natural water courses
 - stormwater run-off
 - run-off from any bunded areas holding chemicals and/or the sewage treatment plant
 - run-off from surface spoil
 - impacts of waterway barriers on fish passage in all waterways mapped on the Queensland Waterways for Waterway Barrier Works spatial data layer.
- 8.1.12 Describe any actions of the project that require an authority under the *Nature Conservation Act 1992*, and/or would be assessable development for the purposes of the *Vegetation Management Act 1999*⁹ (VMA), the *Fisheries Act 1994* and/or the *Sustainable Planning Act 2009*.
- 8.1.13 Propose practical measures for protecting or enhancing natural values, and assess how the nominated quantitative indicators and standards may be achieved for nature conservation management. In particular, address measures to protect or preserve any listed threatened, near-threatened or special least concern species.
- 8.1.14 Specifically address any obligations imposed by state or Commonwealth legislation or policy or international treaty obligations, such as the China–Australia Migratory Bird Agreement, Japan–Australia Migratory Bird Agreement, or Republic of Korea–Australia Migratory Bird Agreement.
- 8.1.15 Assess the need for buffer zones and the retention, rehabilitation or planting of movement corridors, and propose measures that would avoid the need for waterway barriers, or propose measures to mitigate the impacts of their construction and operation. The measures proposed for the progressive rehabilitation of disturbed areas should include rehabilitation success criteria in relation to natural values that would be used to measure the progress.
- 8.1.16 Describe how the achievement of the objectives would be monitored and audited, and how corrective actions would be managed. Proposals for the rehabilitation of disturbed areas should incorporate, where appropriate, provision of nest hollows and ground litter.
- 8.1.17 Assess the role of buffer zones in maintaining and enhancing riparian vegetation to enhance water quality and habitat connectivity.

Offsets

- 8.1.18 The proposed offsets should be consistent with the requirements set out in any applicable State and Commonwealth legislation or policy, for example:
- Where Queensland legislation or policy requires an offset for significant residual impacts on a MSES, the offset proposal(s) must be consistent with the requirements of Queensland's *Environmental Offsets Act 2014* and its policy.
 - Where Commonwealth offset policy requires an offset for residual significant impacts on a MNES, the offset proposal(s) must be consistent with the requirements of the EPBC Act Environmental Offsets Policy (October 2012) and Offsets Assessment Guide (refer to Appendix 2).

8.2 Biosecurity

Objective

The construction and operation of the project should aim to ensure:

- the spread of weeds and pest animals is minimised
- existing weeds and pests are controlled.

⁹ This is notwithstanding that *the Vegetation Management Act 1999* does not apply to mining projects. Refer also to <https://www.nrm.qld.gov.au/vegetation/>, and <https://www.dnrm.qld.gov.au/ogia/surat-underground-water-impact-report/cumulative-management-areas>

Information requirements

- 8.2.1 Propose detailed measures to control and limit the spread of pests and weeds on the project site and adjacent areas, particularly declared plants under the *Plant Protection Act 1989* and the *Land Protection (Pest and Stock Route Management) Act 2002* and Regulation 2003 and weeds of national significance (WONS).

8.3 Water quality (critical matter)

Objective and performance outcomes

The environmental objectives to be met under the EP Act are that the activity (project) be operated in a way that:

- minimises harm to the environmental values of waters
- protects the environmental values of wetlands
- protects the environmental values of groundwater and any associated surface ecological systems.

The performance outcomes corresponding to this objective are in Schedule 5, Table 1 of the EP Regulation. The proponent should supply sufficient evidence (including through studies and proposed management measures) that show these outcomes can be achieved.

Information requirements

- 8.3.1 Detail the chemical and physical characteristics of surface waters and groundwater within the area that may be affected by the project.
- 8.3.2 Describe the likely quantity, quality and location of potential and/or proposed discharges of water and waste water by the project, whether as point sources (such as controlled discharges from regulated or other dams) or diffuse sources (such as irrigation to land of treated sewage effluent). Assess the potential impacts of any discharges on the quality and quantity of receiving waters taking into consideration the assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts on water quality objectives and environmental values.
- 8.3.3 Describe how the achievement of the objectives would be monitored and audited, and how corrective actions would be managed.

8.4 Water resources (critical matter)

Objectives

The construction and operation of the project should aim to meet the following objectives:

- equitable, sustainable and efficient use of water resources
- environmental flows, water quality, in-stream habitat diversity, and naturally occurring inputs from riparian zones (including groundwater dependent ecosystems) support the long term maintenance of the ecology of aquatic biotic communities
- the condition and natural functions of water bodies (e.g. lakes, springs, watercourses and wetlands) are maintained—including the stability of beds and banks of watercourses.

Information requirements

- 8.4.1 Provide details of any proposed impoundment, extraction, discharge, injection, use or loss of surface water or groundwater. Identify any approval or allocation that would be needed under the *Water Act 2000*.
- 8.4.2 Detail any significant diversion or interception of overland flow. Include maps of suitable scale showing the location of diversions and other water-related infrastructure in relation to gas infrastructure.
- 8.4.3 Describe the options for supplying water to the project, and assess any potential consequential impacts in relation to the objectives of any water resource plan, resource operations plan that may apply.

8.4.4 Develop hydrological models as necessary to describe the inputs, movements, exchanges and outputs of all significant quantities and resources of surface water and groundwater that may be affected by the project. The models should address the range of climatic conditions and the potential for cumulative impacts¹⁰ that may be experienced at the site, and adequately assess the potential impacts of the project on water resources. The models should include a site water balance. This should enable a description of the project's impacts at the local scale and in a regional context including proposed:

- changes in flow regimes from diversions, water take and discharges
- alterations to riparian vegetation and bank and channel morphology
- direct and indirect impacts arising from the development.

The Independent Expert Scientific Committee

8.4.5 The National Partnership Agreement on Coal Seam Gas and Large Coal Mining, to which Queensland is a signatory, specifies that all coal seam gas and large coal mining proposals that are likely to have a significant impact on water resources are to be referred to the Independent Expert Scientific Committee (IESC) for advice. If relevant, the EIS must include a specific section responding to the information requirements contained in the IESC's Information Guidelines for Proposals Relating to the Development of Coal Seam Gas and Large Coal Mines where there is a Significant Impact on Water Resources¹¹.

8.5 Flooding and regulated structures

Objective

The construction and operation of the project should aim to ensure the risk of, and the adverse impacts from flooding hazards or dam failure are avoided, minimised or mitigated to protect people, property and the environment.

Information requirements

- 8.5.1 Describe current flood risk for a range of annual exceedance probabilities up to the probable maximum flood, based on available data, for potentially affected waterways, and assess (through flood modelling) how the project may potentially change flooding characteristics. The assessment should consider all infrastructure associated with the project including levees, roads and linear infrastructure and all proposed measures to avoid or minimise impacts.
- 8.5.2 Where project infrastructure comprises dams, describe how risks associated with dam failure will be minimised or mitigated to protect people, property and the environment.
- 8.5.3 Describe dams or levees proposed on the project site and describe the process for undertaking an assessment to determine the hazard category of each dam or levee (low, significant, or high), according to the criteria in the EHP Manual for Assessing Hazard Categories and Hydraulic Performance of Dams.

8.6 Air

Objectives and performance outcomes

The environmental objective to be met under the EP Act is that the activity will be operated in a way that protects the environmental values of air.

The performance outcomes corresponding to this objective are in Schedule 5, Table 1 of the EP Regulation. The proponent should supply sufficient evidence (including through studies and proposed management measures) that show these outcomes can be achieved.

¹⁰ <https://www.dnrm.qld.gov.au/ogia/surat-underground-water-impact-report/cumulative-management-areas>

¹¹ <http://www.iesc.environment.gov.au/publications>

Information requirements

- 8.6.1 Fully describe the characteristics (through an emissions inventory) of the contaminants or materials released when carrying out the activity (point source and fugitive emissions). Emissions (point source and fugitive) during construction, commissioning, upset conditions, operation and closure should be described.
- 8.6.2 Predict the impacts of the releases from the activity on environmental values of the receiving environment using recognised quality assured methods. The description of impacts should take into consideration the assimilative capacity of the receiving environment and the practices and procedures that would be used to avoid or minimise impacts. The impact prediction must:
- address residual impacts on the environmental values (including appropriate indicators and air quality objectives) of the air receiving environment, with reference to sensitive receptors¹², using recognised quality assured methods. This should include all relevant values potentially impacted by the activity, under the EP Act, EP Regulation and Environmental Protection (Air) Policy 2008 (EPP (Air))
 - address the cumulative impact of the release with other known releases of contaminants, materials or wastes associated with existing development and possible future development (as described by approved plans and existing project approvals)
 - quantify the human health risk and amenity impacts associated with emissions from the project for all contaminants whether or not they are covered by the National Environmental Protection (Ambient Air Quality) Measure or the EPP (Air).
- 8.6.3 Describe the proposed mitigation measures and how the proposed activity will be consistent with best practice environmental management. Where a government plan is relevant to the activity or site where the activity is proposed, describe the activity's consistency with that plan.
- 8.6.4 Describe how the achievement of the objectives would be monitored, audited and reported, and how corrective actions would be managed.

8.7 Noise and vibration (critical matter)

Objective and performance outcomes

The environmental objective to be met under the EP Act is that the activity will be operated in a way that protects the environmental values of the acoustic environment.

The performance outcomes corresponding to these objectives are in Schedule 5, Table 1 of the EP Regulation. The proponent should supply sufficient evidence (including through studies and proposed management measures) that show these outcomes can be achieved.

Information requirements

- 8.7.1 Fully describe the characteristics of the noise and vibration sources that would be emitted when carrying out the activity (point source and general emissions). Noise and vibration emissions (including fugitive sources) that may occur during construction, commissioning, upset conditions, operation and closure should be described.
- 8.7.2 Predict the impacts of the noise emissions from the activity on the environmental values of the receiving environment, with reference to sensitive receptors¹⁰, using recognised quality assured methods. Taking into account the practices and procedures that would be used to avoid or minimise impacts, the impact prediction must address the:
- activity's consistency with the objectives
 - cumulative impact of the noise with other emissions of noise associated with existing development and possible future development (as described by approved plans)
 - potential impacts of any low-frequency (<200 Hz) noise emissions.

¹² For example, the locations of existing residences, places of work, schools, etc, agricultural or ecologically significant areas/species that could be impacted.

- 8.7.3 Describe how the proposed activity would be managed to be consistent with best practice environmental management for the activity. Where a government plan is relevant to the activity, or the site where the activity is proposed, describe the activity's consistency with that plan.
- 8.7.4 Describe how the achievement of the objectives would be monitored and audited, and how corrective actions would be managed.

8.8 Waste management (critical matter)

Objective and performance outcomes

The environmental objective to be met under the EP Act is that any waste transported, generated, or received as part of carrying out the activity is managed in a way that protects all environmental values.

The performance outcomes corresponding to these objectives are in Schedule 5, Table 1 of the EP Regulation. The proponent should supply sufficient evidence (including through studies and proposed management measures) that show these outcomes can be achieved.

Information requirements

- 8.8.1 Describe all the expected significant waste streams from the proposed project activities (typically these would include water and salt from petroleum and gas projects), during the construction, operational and decommissioning phases of the project.
- 8.8.2 Describe the quantity, form (liquid, solid, gas), hazard, and toxicity of each significant waste, as well as any attributes that may affect its likelihood of dispersal in the environment, as well the associated risk of causing environmental harm.
- 8.8.3 Define and describe the objectives and practical measures for protecting or enhancing environmental values from impacts by wastes.
- 8.8.4 Assess the proposed management measures against the preferred waste management hierarchy, namely: avoid waste generation; cleaner production; recycle; reuse; reprocess and reclaim; waste to energy; treatment; disposal. This includes the generation and storage of waste.
- 8.8.5 Describe how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives would be monitored, audited and managed.
- 8.8.6 Detail waste management planning for the proposed project especially how these concepts have been applied to prevent or minimise environmental impacts due to waste at each stage of the project.
- 8.8.7 Provide details on natural resource use efficiency (such as energy and water), integrated processing design, and any co-generation of power and by-product reuse as shown in a material/energy flow analysis.

8.9 Cultural heritage

Objective

The construction and operation of the project should aim to ensure that the nature and scale of the project does not compromise the cultural heritage significance of a heritage place or heritage area.

Information requirements

- 8.9.1 Undertake research/studies as required under the *Aboriginal Cultural Heritage Act 2003* (ACH Act) and describe impacts on Indigenous cultural heritage, taking into account the practices and procedures that would be used to avoid or minimise impacts. Develop a Cultural Heritage Management Plan in accordance with the requirements of Part 7 of the ACH Act.
- 8.9.2 For non-Indigenous historical heritage, undertake a study of, and describe, the known and potential historical cultural and landscape heritage values of the area potentially affected by the project. Any such study should be

conducted by an appropriately qualified cultural heritage practitioner. Provide strategies to mitigate and manage any negative impacts on non-Indigenous cultural heritage values and enhance any positive impacts.

8.10 Social and economic

Objectives

The construction and operation of the project should aim to:

- avoid or mitigate adverse social and economic impacts arising from the project
- capitalise on opportunities potentially available to affected communities.

Information requirements

- 8.10.1 In accordance with the Coordinator-General's guideline Social impact assessment guideline (draft), describe the likely social impacts (positive and negative) on affected communities taking into account proposed mitigation measures.
- 8.10.2 Describe the likely impacts (positive and negative) of the project on the economies materially impacted by the project. The analysis should describe both the potential and direct economic impacts including estimated costs, if material, on industry and the community.
- 8.10.3 The assessment should identify opportunities to capture the economic benefits of the project, including:
- strategies for enabling local suppliers of goods and services to receive full, fair and reasonable opportunity to tender for work throughout the life of the project through adopting policies such as the Queensland Resources and Energy Sector Code of Practice for Local Content administered by Queensland Resources Council
 - employment strategies for local residents, and for members of Indigenous communities and people with a disability across Queensland
 - opportunities to support the agricultural and tourism industries
 - any recruitment and training programs to be offered.

8.11 Transport

Objectives

The construction and operation of the project should aim to:

- maintain the safety and efficiency of all affected transport modes for the project workforce and other transport system users
- minimise and mitigate impacts on the condition of transport infrastructure
- ensure any required works are compatible with existing infrastructure and future transport corridors.

Information requirements

- 8.11.1 The EIS should include a clear summary of the total transport task for the project, including workforce, inputs and outputs, during the construction and operational phases. Proponents should make appropriate modal choices to ensure transport efficiency and minimise impacts on the community.
- 8.11.2 Present the transport assessment for each project affected mode (road and air) as appropriate for each phase of the project. Provide sufficient information to allow an independent assessment of how existing transport infrastructure will be affected by project transport at the local and regional level (e.g. local roads and state-controlled roads).
- 8.11.3 Include details of the adopted assessment methodology. For impacts on roads: the road impact assessment report in accordance with the Guidelines for Assessment of Road Impacts of Development.

- 8.11.4 Discuss and recommend how identified impacts will be mitigated so as to meet the above objectives for each transport mode. Mitigation strategies may include works, contributions or management plans and are to be prepared in close consultation with relevant transport authorities (including local government). Strategies should consider those transport authorities' works program and forward planning, and be in accordance with the relevant methodologies, guidelines and design manuals.

8.12 Hazards and safety

Objectives

The construction and operation of the project should aim to ensure:

- the risk of, and the adverse impacts from, natural and man-made hazards are avoided, minimised or mitigated to protect people and property
- the community's resilience to natural hazards is maintained or enhanced
- developments involving the storage and handling of hazardous materials are appropriately located, designed and constructed to minimise health and safety risks to communities and individuals and adverse effects on the environment.

Information requirements

- 8.12.1 Describe the potential risks to people and property that may be associated with the project in the form of a preliminary risk assessment for all components of the project and in accordance with relevant standards. The assessment should include:
- potential hazards, accidents, spillages, fire and abnormal events that may occur during all stages of the project, including estimated probabilities of occurrence
 - hazard analysis and risk assessment in accordance with AS/NZS ISO 31000:2009 Risk Management—Principles and Guidelines and with HB203:2006 Environmental Risk Management Principles and Processes
 - identifying likely hazardous substances to be used, stored, processed or produced and the likely rate of usage
 - potential wildlife hazards, natural events (e.g. cyclone, storm tide inundation, flooding, bushfire) and implications related to climate change
 - a description of natural hazards that may affect the site and at a minimum the 1% annual exceedance probability (AEP) or 100 year average reoccurrence interval (ARI) level, including mapping of the potential hazard areas at the site
 - how development will avoid or mitigate the risks and how the development siting and layout responds to these hazards to minimise risks to personal safety and assets
 - how natural processes and the protective function of landforms and vegetation will be maintained in sea erosion and storm tide inundation areas
 - how the development will avoid the release of hazardous materials as a result of a natural hazard events.
- 8.12.2 Provide details on the safeguards that would reduce the likelihood and severity of hazards, consequences and risks to persons, within and adjacent to the project area(s). Identify the residual risk following application of mitigation measures. Present an assessment of the overall acceptability of the impacts of the project in light of the residual uncertainties and risk profile.
- 8.12.3 Provide an outline of the proposed integrated emergency management planning procedures (including evacuation plans, if required) for the range of situations identified in the risk assessment developed in this section.
- 8.12.4 Outline any consultation undertaken with the relevant emergency management authorities, including the Local Disaster Management Group.

9 Appendices to the EIS

- 9.1 Appendices should provide the complete technical evidence used to develop assertions and findings in the main text of the EIS.
- 9.2 No significant issue or matter should be mentioned for the first time in an appendix—it must be addressed in the main text of the EIS.
- 9.3 Include a table listing the section of the EIS where each requirement of the TOR is addressed.
- 9.4 Include a glossary of terms and a list of acronyms and abbreviations.

Acronyms and abbreviations

The following acronyms and abbreviations have been used in this document.

Acronym/abbreviation	Definition
ACH Act	<i>Aboriginal Cultural Heritage Act 2003</i>
AHD	Australian height datum
bilateral agreement	an agreement between the Commonwealth and the State of Queensland under section 45 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> relating to environmental assessment
EIS	environmental impact statement
EP Act	<i>Environmental Protection Act 1994</i>
EP Regulation	Environmental Protection Regulation 2008
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)
EPP	Environmental Protection Policy (under the EP Act)
GDA94	Geocentric Datum of Australia 1994
IESC	Independent Expert Scientific Committee
MNES	matters of national environmental significance (under the EPBC Act)
MSES	Matters of state environmental significance (under the <i>Environmental Offsets Act 2014</i>)
TOR	terms of reference
VMA	<i>Vegetation Management Act 1999</i>

Appendix 1 Policies and guidelines

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand 2000, *The Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian Water Association (Artarmon) and NZ Water and Wastes Association (Auckland), www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html

Australian Level Crossing Assessment Model (ALCAM), www.tmr.qld.gov.au/Travel-and-transport/Rail/Level-crossings/ALCAM.aspx

Commonwealth of Australia 2013, *Information Guidelines for Proposals Relating to the Development of Coal Seam Gas and Large Coal Mines where there is a Significant Impact on Water Resources*, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, Canberra, viewed 18 June 2013, www.environment.gov.au/coal-seam-gas-mining/publications.html

Department of Agriculture, Fisheries and Forestry, 2014, *Waterway Barrier Works Development Approvals*, Queensland Government, Brisbane, <https://www.daff.qld.gov.au/fisheries/habitats/fisheries-development/self-assessable-codes>

Department of Environment and Heritage Protection, 2014, *Information guideline for an environmental impact statement information guideline for an environmental impact statement*, Queensland Government, Brisbane, <http://www.ehp.qld.gov.au/management/impact-assessment/eis-processes/eis-tor-support-guidelines.html>

Department of Environment and Heritage Protection 2013, *Manual for Assessing Consequence Categories and Hydraulic Performance of Structures, November 2013*, Queensland Government, Brisbane, <https://www.ehp.qld.gov.au/land/mining/pdf/mn-mi-assess-haz-cat-hyd-perf-dams-em635.pdf>

Department of Environment and Heritage Protection, 2014, *Streamlined model conditions for petroleum activities*, Queensland Government, Brisbane, <http://www.ehp.qld.gov.au/management/non-mining/documents/guide-model-conditions-petroleum.pdf>

Department of Environment and Resource Management, 2009, *Queensland Water Quality Guidelines, Version 3*, Queensland Government, Brisbane, www.ehp.qld.gov.au/water/pdf/water-quality-guidelines.pdf

Department of Natural Resources and Mines, 2015, Office of Groundwater Impact Assessment (OGIA), Queensland Government, Brisbane, <https://www.dnrm.qld.gov.au/ogia/role>

Department of Main Roads, 2006, *Guidelines for Assessment of Road Impacts of Development*, Queensland Government, Brisbane, www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guidelines-for-assessment-of-road-impacts-of-development.aspx

Department of State Development, Infrastructure and Planning, July 2014, *State Planning Policy*, Queensland Government, Brisbane, www.dsdip.qld.gov.au/about-planning/state-planning-policy.html

Department of State Development and Planning, 2014, *State Development Assessment Provisions (SDAP)*, Queensland Government, Brisbane, www.dsdip.qld.gov.au/development-applications/sdap.html

Department of State Development, Infrastructure and Planning, October 2013, *Darling Downs Regional Plan*, Queensland Government, Brisbane, <http://www.dilgp.qld.gov.au/planning/regional-planning/darling-downs-regional-plan.html>

Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC), January 2015, *Information Guidelines for Proposals Relating to the Development of Coal Seam Gas and Large Coal Mines where there is a Significant Impact on Water Resources*, Commonwealth of Australia, <http://www.iesc.environment.gov.au/publications>

Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC), June 2014, *Subsidence from coal seam gas extraction in Australia*, Commonwealth of Australia, http://www.environment.gov.au/system/files/resources/e9b69ac4-647c-4bbc-84db-83642227ab0d/files/background-review-subsidence_0.pdf

The Coordinator-General, 2013, *Preparing an environmental impact statement: Guideline for proponents*, Department of State Development, Infrastructure and Planning, Brisbane, www.dsdip.qld.gov.au/fact-sheets-and-guidelines/coordinated-projects.html

The Coordinator-General, July 2013, *Social impact assessment guideline*, Department of State Development, Infrastructure and Planning, Queensland Government, Brisbane, <http://www.dsdip.qld.gov.au/resources/guideline/social-impact-assessment-guideline.pdf>

Queensland Government, 2014, *Environmental offsets and Environmental offsets framework*, Queensland Government, Brisbane, <http://www.qld.gov.au/environment/pollution/management/offsets/>

Queensland Government, 2014, *Business and industry portal*, Queensland Government, Brisbane, <https://www.business.qld.gov.au/industry/mining>

Queensland Resources Council, 2013, *Queensland Resources and Energy Sector Code of Practice for Local Content*, Queensland Resources Council, Brisbane, https://www.qrc.org.au/01_cms/details.asp?ID=3209

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Appendix 2 Terms of reference for matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999**

*Content provided by the Australian Government Department of the Environment (refer to Schedule 2 of EP Act).

1 Statutory basis

The proposed project was referred on 24 April 2015 to the Australian Government Department of the Environment (EPBC 2015/7469). On 21 May 2015, the Minister for the Environment determined the proposed project to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions are sections 16 and 17B (wetlands of international importance), sections 18 and 18A (listed threatened species and communities), 20 and 20A (listed migratory species) and sections 24D and 24E (water resource, in relation to coal seam gas development and large coal mining development). The project will be assessed under the bilateral agreement between the Commonwealth and the State of Queensland using the EIS prepared under the EP Act.

2 Background and description of the action

The Assessment Documentation must provide background to the action and describe all components of the action for example (but not limited to), the construction, operation and (if relevant) decommissioning components of the action. This must include the location of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on matters of national environmental significance (MNES).

The description of the action must also include details on how the works are to be undertaken (including stages of development and their timing) and design parameters for those aspects of the structures or elements of the action that may have relevant impacts.

The Assessment Documentation must include how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action.

The Assessment Documentation must also provide details on the current status of the action as well as the consequences of not proceeding with the action.

3 The environment including MNES

The Assessment Documentation must include a description of the environment and management practices of the site and the surrounding areas and other areas that may be affected by the action. Include the relevant MNES protected by controlling provisions of Part 3 of the EPBC Act.

- a) A description of the location, extent and ecological characteristics of any Ramsar Wetland that may be impacted by the action. Refer to the National framework and guidance for describing the ecological character of Australian Ramsar wetlands.
- b) Listed threatened species and communities (including suitable habitat) that are or are likely to be present in the vicinity of the site, including the following details:
 - i. Details of the scope, timing/effort (survey season/s) and methodology for studies or surveys used to provide information on the listed species/community/habitat at the site (and in areas that may be impacted by the project). Include details of:
 - o how best practice survey guidelines are applied; and
 - o how they are consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements.
- c) Listed migratory species (including suitable habitat) that are or are likely to be present in the vicinity of the site, including the following details:
 - i. Details of the scope, timing/effort (survey season/s) and methodology for studies or surveys used to provide information on the listed species/habitat at the site (and in areas that may be impacted by the project). Include details of:

- how best practice survey guidelines are applied;
 - how these are consistent with (or a justification for divergence from) published Australian Government guidelines and policy statements.
- d) A description of the water resource environment relevant to the coal seam gas development or large coal mining development.
- i. Refer to the Independent Expert Scientific Committee's (IESC) Information Guidelines for Proposals Relating to the Development of Coal Seam Gas and Large Coal Mines where there is a Significant Impact on Water Resources.

Note: Advice will be requested from the IESC in regards to the proposal.

4 Impacts

- a) The Assessment Documentation must include a description of all of the relevant impacts of the action on MNES (identified in Section 2). Impacts during the construction, operational and (if relevant) the decommissioning phases of the project must be addressed, and the following information provided:
- i. a description of the relevant impacts (direct, indirect and consequential) of the proposed action on MNES;
 - ii. a detailed analysis of the nature and extent of the likely direct, indirect and consequential impacts relevant to MNES, including likely short-term and long-term impacts – refer to the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance for guidance on the various types of impacts that need to be considered;
 - iii. a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
 - iv. any technical data and other information used or needed to make a detailed assessment of the relevant impacts;
 - v. an explanation of how guidelines published by the Commonwealth in relation to consulting with Indigenous peoples for proposed actions that are under assessment have been considered and applied; and
 - vi. where the proposal is a coal seam gas development or large coal mining development and likely to significantly impact on a water resource – refer to the Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources and the IESC's Information Guidelines for Proposals Relating to the Development of Coal Seam Gas and Large Coal Mines where there is a Significant Impact on Water Resources.
- b) The Assessment Documentation should identify and address cumulative impacts, where potential project impacts are in addition to existing impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the region and vicinity).
- c) The Assessment Documentation should also provide a detailed assessment of any likely impact that this proposed action may facilitate on the relevant MNES at the local and regional scale.
- d) The Assessment Documentation is to outline the direct, indirect and cumulative greenhouse gas emissions of the proposed action. An inventory of the projected greenhouse gas emissions associated with the proposed action is to be provided.

5 Avoidance and mitigation measures / alternatives

Avoidance and Mitigation Measures

The Assessment Documentation must provide information on proposed avoidance and mitigation measures to manage the relevant impacts of the action on MNES.

The Assessment Documentation must take into account approved conservation advice for the threatened species or community.

The Assessment Documentation must also provide information as to how the proposed action is not inconsistent with relevant agreements and plans that cover impacts on MNES, including but not limited to:

- a) any recovery plan for the threatened species or community; and
- b) any threat abatement plan for a process that threatens the species.

The Assessment Documentation must include, and substantiate, specific and detailed descriptions of the proposed avoidance and mitigation measures, based on best available practices and must include the following elements:

- a) A consolidated list of avoidance and mitigation measures proposed to be undertaken to prevent or minimise the relevant impacts of the action on MNES, including:
 - i. a description of proposed avoidance and mitigation measures to deal with relevant impacts of the action, including mitigation measures proposed to be taken by State/Territory governments, local governments or the proponent;
 - ii. assessment of the expected or predicted effectiveness of the mitigation measures, including the scale and intensity of impacts of the proposed action and the on-ground benefits to be gained through each of these measures;
 - iii. a description of the outcomes that the avoidance and mitigation measures will achieve; and
 - iv. any statutory or policy basis for the mitigation measures;
- b) A strategy for the continuing management, mitigation and monitoring of relevant MNES impacts of the action, including a description of the outcomes that will be achieved and any provisions for independent environmental auditing.
- c) Where appropriate, each project phase (construction, operation, decommission) must be addressed separately. It must state the environmental outcomes, performance criteria, monitoring, reporting, corrective action, contingencies, and timing for each environmental issue.
- d) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

Alternatives to the proposed action

The Assessment Documentation must include any feasible alternatives or options to the proposed action to the extent reasonably practicable, including:

- a) if relevant, the alternative of taking no action;
- b) a comparative description of the impacts of each alternative on the triggered MNES protected by controlling provisions of Part 3 of the EPBC Act for the action; and
- c) sufficient detail to make clear why any alternative or option is preferred to another.

Short, medium and long-term advantages and disadvantages of the alternatives or options must be discussed.

6 Residual impacts / offsets

The Assessment Documentation must provide details of:

- a) the residual significant impacts (direct and indirect) on MNES that are likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account.
 - i. include the reasons why avoidance or mitigation of impacts will not be reasonably achieved; and
 - ii. identify the residual significant impacts on MNES.

Offset Strategy (if relevant)

The Assessment Documentation must include details of an offset strategy proposed to be implemented to compensate for the residual significant impacts of the project, as well as an assessment of how the offset strategy meets the requirements in the Department's EPBC Act Environmental Offsets Policy (2012) (EPBC Act Offset Policy) or any updated version of this document.

The offset strategy can comprise a combination of direct offsets and other compensatory measures, so long as it meets the requirements of the EPBC Act Offset Policy. Offsets should align with conservation priorities for the impacted protected matter. Offsets should be tailored specifically to that matter in order to deliver a conservation outcome that improves or maintains the viability of the MNES as compared to what is likely to have occurred under the status quo, that is if neither the action nor the offset had taken place.

The proposed offsets strategy for EPBC Act protected matters must reflect the scale and intensity of the unavoidable impacts on each individual matter of national environmental significance.

Offsets should compensate for residual significant impacts for the full duration of the impact of the action and provide steps for long-term conservation outcomes and demonstrate how these outcomes can be achieved. Any areas used as offsets must be appropriately protected and managed with appropriate surveying and assessment provided to verify the suitability of the offset.

Note: offsets do not make an unacceptable impact acceptable and do not reduce the likely impacts of a proposed action. Instead, offsets compensate for any residual significant impact.

Offsets required by the State/Territory can be applied if the offsets meet the Department's EPBC Act Offset Policy.

7 Environmental record of person(s) proposing to take the action

The information provided must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

- a) the person proposing to take the action; and
- b) for an action for which a person has applied for a permit, the person making the application.

If the person proposing to take the action is a corporation, details of the corporation's environmental policy and planning framework must also be included.

8 Economic and social matters

The economic and social impacts of the action, both positive and negative, must be analysed. Matters of interest may include:

- a) details of any public consultation activities undertaken, and their outcomes;
- b) details of any consultation with Indigenous stakeholders;
- c) projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies; and
- d) employment and other opportunities expected to be generated by the project (including construction and operational phases).

Economic and social impacts should be considered at the local, regional and, where relevant, national levels. Details of the relevant cost and benefits of alternative options to the proposed action, as identified in Section 4 above, should also be included.

Identification of affected parties is required, including a statement mentioning any communities that may be affected and describing their views.

9 Information sources provided in the assessment documentation

For information given in the Assessment Documentation, state:

- a) the source of the information;
- b) how recent the information is;
- c) how the reliability of the information was tested;
- d) what uncertainties (if any) are in the information; and
- e) what guidelines, plans and/or policies did you consider.

10 Conclusion

An overall conclusion as to the environmental acceptability of the proposal on each MNES, including:

- a) a discussion on the consideration with the requirements of the EPBC Act, including the objects of the EPBC Act, the principles of ecologically sustainable development and the precautionary principle;
- b) reasons justifying undertaking the proposal in the manner proposed, including the acceptability of the avoidance and mitigation measures; and
- c) if relevant, a discussion of residual impacts and any offsets and compensatory measures proposed or required for significant residual impacts on MNES, and the relative degree of compensation and acceptability.