Australian Government
Department of the Environment and Energy

Referral of proposed action

What is a referral?

The *Environment Protection and Biodiversity Conservation Act 1999* (the **EPBC Act**) provides for the protection of the environment, especially matters of national environmental significance (**NES**). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any of the matters of NES without approval from the Commonwealth Environment and Energy Minister or the Minister's delegate. (Further references to 'the Minister' in this form include references to the Commonwealth Environment and Energy Minister or the Minister's delegate.) To obtain approval from the Minister, a proposed action must be referred. The purpose of a referral is to enable the Minister to decide whether your proposed action will need assessment and approval under the EPBC Act.

Your referral will be the principal basis for the Minister's decision as to whether approval is necessary and, if so, the type of assessment that will be undertaken. These decisions are made within 20 business days, provided sufficient information is provided in the referral.

Who can make a referral?

Referrals may be made by or on behalf of a person proposing to take an action, the Commonwealth or a Commonwealth agency, a state or territory government, or agency, provided that the relevant government or agency has administrative responsibilities relating to the action.

When do I need to make a referral?

A referral must be made by the person proposing to take an action if the person thinks that the action for actions that has, will have, or is likely to have a significant impact on the following matters protected by Part 3 of the EPBC Act:

- World Heritage properties (sections 12 and 15A);
- National Heritage places (sections 15B and 15C);
- wetlands of international importance (sections 16 and 17B);
- listed threatened species and communities (sections 18 and 18A);
- listed migratory species (sections 20 and 20A);
- protection of the environment from nuclear actions (sections 21 and 22A);
- Commonwealth marine environment (sections 23 and 24A);
- Great Barrier Reef Marine Park (sections 24B and 24C);
- a water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E);
- the environment, if the action involves Commonwealth land (sections 26 and 27A), including:
    - actions taken outside Commonwealth land that are likely to have a significant impact on the environment of Commonwealth land;
    - actions taken on Commonwealth land that may have a significant impact on the environment generally;
- the environment, if the action is taken by the Commonwealth (section 28); and
- Commonwealth Heritage places outside the Australian jurisdiction (sections 27B and 27C).

You may still make a referral if you believe your action is not going to have a significant impact, or if you are unsure. This will provide a greater level of certainty that Commonwealth assessment requirements have been met.

To help you decide whether or not your proposed action requires approval (and therefore, if you should make a referral), the following guidance is available from the Department's website:

- Submitting a referral under the EPBC Act – A fact sheet for a person proposing to take an action http://www.environment.gov.au/epbc/publications/factsheet-environment-assessment-process

- the Policy Statement titled Significant Impact Guidelines 1.1 – Matters of National Environmental Significance http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance Additional sectoral guidelines are also available.
- the Policy Statement titled Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-12-actions-or-impacting-upon-commonwealth-land-and-actions
- the Policy Statement titled Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources http://www.environment.gov.au/resource/significant-impact-guidelines-13-coal-seam-gas-and-large-coal-mining-developments-impacts
- the interactive map tool (enter a location to obtain a report on what matters of NES may occur in that location) http://www.environment.gov.au/epbc/pmst/index.html

Can I refer part of a larger action?

In certain circumstances, **the Minister may not accept a referral for an action that is a component of a larger action and may request the person proposing to take the action to refer the larger action for consideration under the EPBC Act (Section 74A, EPBC Act).** If you wish to make a referral for a staged or component referral contact the Referrals Gateway (1800 803 772).

Do I need a permit?

Some activities may also require a permit under other sections of the EPBC Act or another law of the Commonwealth. Information is available on the Department's web site.

Is your action in the Great Barrier Reef Marine Park?

If your action is in the Great Barrier Reef Marine Park it may require permission under the *Great Barrier Reef Marine Park Act 1975* (**GBRMP Act**). If a permission is required, referral of the action under the EPBC Act is deemed to be an application under the GBRMP Act (see section 37AB of the GBRMP Act). This referral will be forwarded to the Great Barrier Reef Marine Park Authority (**the Authority**) for the Authority to commence its permit processes as required under the *Great Barrier Reef Marine Park Regulations 1983* (**GBRMP Regulations**). If a permission is not required under the GBRMP Act, no approval under the EPBC Act is required (see section 43 of the EPBC Act). The Authority can provide advice on relevant permission requirements applying to activities in the Marine Park.

The Authority is responsible for assessing applications for permissions under the GBRMP Act, GBRMP Regulations and Zoning Plan. Where assessment and approval is also required under the EPBC Act, a single integrated assessment for the purposes of both Acts will apply in most cases. Further information on environmental approval requirements applying to actions in the Great Barrier Reef Marine Park is available from http://www.gbrmpa.gov.au/ or by contacting GBRMPA's Environmental Assessment and Management Section on (07) 4750 0700.

The Authority may require a permit application assessment fee to be paid in relation to the assessment of applications for permissions required under the GBRMP Act, even if the permission is made as a referral under the EPBC Act. Further information on this is available from the Authority:

Great Barrier Reef Marine Park Authority

2-68 Flinders Street PO Box 1379
Townsville QLD 4810
AUSTRALIA

Phone: + 61 7 4750 0700
Fax: + 61 7 4772 6093

www.gbrmpa.gov.au

What information do I need to provide?

Please complete all parts of this form to assist the Department to process your referral efficiently. If a section of the referral document is not applicable to your proposal, please enter N/A.

You can complete your referral by entering your information into this Word file.

Instructions

Instructions are provided in blue text throughout the form.

Attachments/supporting information

The referral form should contain sufficient information to provide an adequate basis for a decision on the likely impacts of the proposed action. You should also provide supporting documentation, such as environmental reports or surveys, as attachments.

Coloured maps, figures or photographs to help explain the proposed action and its location should also be submitted with your referral. Aerial photographs, in particular, can provide a useful perspective and context. Figures should be good quality as they may be scanned and viewed electronically as black and white documents. Maps should be of a scale that clearly shows the location of the proposed action and any environmental aspects of interest.

Please ensure any attachments are below five megabytes (5mb) as they will be published on the Department's website for public comment. To minimise file size, enclose maps and figures as separate files if necessary. If unsure, contact the Referrals Gateway (email address below) for advice. Attachments larger than five megabytes (5mb) may delay processing of your referral.

Note: The Minister may decide not to publish information that the Minister is satisfied is commercial-in-confidence. If you believe that your referral contains information that is commercial-in-confidence, you must clearly identify such information and the reason for its confidentiality at the time of making the referral. The Minister cannot be satisfied that particular information included in a referral is commercial-in-confidence unless a person demonstrates to the Minister that:

- release of the information would cause competitive detriment to the person; and
- the information is not in the public domain; and
- the information is not required to be disclosed under another law of the Commonwealth, a State or a Territory; and
- the information is not readily discoverable.

How do I pay for my referral?

From 1 October 2014, the Australian Government commenced cost recovery arrangements for environmental assessments and some strategic assessments under the EPBC Act. If an action is referred on or after 1 October 2014, then cost recovery will apply to both the referral and any assessment activities undertaken. Further information regarding cost recovery can be found on the Department's website at: http://www.environment.gov.au/epbc/publications/cost-recovery-cris

If you are an individual or a small business, you may be exempt from paying the referral fee. See Part 9 of this form for further details.

You may apply for all or part of a fee to be waived. See Part 9 of this form for further details.

Payment of the referral fee can be made using one of the following methods:

- **EFT Payments can be made to:**

  BSB: 092-009
  Bank Account No. 115859
  Amount: $6577
  Account Name: Department of the Environment and Energy.
  Bank: Reserve Bank of Australia
  Bank Address: 20-22 London Circuit Canberra ACT 2601
  Description: The reference number provided (see note below)

- **Cheque** - Payable to "Department of the Environment and Energy". Include the reference number provided (see note below), and if posted, address:

  The Referrals Gateway
  Environment Assessment Branch
  Department of the Environment and Energy
  GPO Box 787
  Canberra ACT 2601

- **Credit Card**

  Please contact the Collector of Public Money (CPM) directly (call (02) 6274 2930 or 6274 20260 and provide the reference number (see note below).

Note: an invoice will be raised and forwarded to you upon submission of your referral which will include the EPBC reference number for your referral.

How do I submit a referral?

Referrals may be submitted by mail or email.

Mail to:

Referrals Gateway
Environment Assessment Branch
Department of Environment and Energy
GPO Box 787
CANBERRA ACT 2601

- If submitting via mail, please also provide electronic copies of documentation (on CD/DVD or by email).

Email to: epbc.referrals@environment.gov.au

- Clearly mark the email as a 'Referral under the EPBC Act'.
- Attach the referral in a suitable electronic document format (e.g. Microsoft Word and, if possible, PDF).
- If submitting via email, please also mail a hardcopy of the referral including copies of any attachments or supporting reports.

What happens next?

Following receipt of a valid referral (containing all required information) you will be advised of the next steps in the process, and the referral and attachments will be published on the Department's web site for public comment. Any person may give the Minister comments on the referral within 10 business days of publication on the Department's website.

The Department will write to you within 20 business days to advise you of the outcome of your referral and whether or not assessment and approval under the EPBC Act is required. There are a number of possible decisions regarding your referral:

The proposed action is NOT LIKELY to have a significant impact and does NOT NEED approval

No further consideration is required under the environmental assessment provisions of the EPBC Act and the action can proceed (subject to any other Commonwealth, state or local government requirements).

The proposed action is NOT LIKELY to have a significant impact IF undertaken in a particular manner

The action can proceed if undertaken in a particular manner (subject to any other Commonwealth, state or local government requirements). The particular manner in which you must carry out the action will be identified as part of the final decision. You must report your compliance with the particular manner to the Department.

The proposed action is LIKELY to have a significant impact and does NEED approval

If the action is likely to have a significant impact a decision will be made that it is a *controlled action*. The particular matters upon which the action may have a significant impact (such as World Heritage values or threatened species) are known as the *controlling provisions*.

The controlled action is subject to a public assessment process before a final decision can be made about whether to approve it. The assessment approach will usually be decided at the same time as the controlled action decision. (Further information about the levels of assessment and basis for deciding the approach are available on the Department's web site.)

The proposed action would have UNACCEPTABLE impacts and CANNOT proceed

The Minister may decide, on the basis of the information in the referral, that a referred action would have clearly unacceptable impacts on a protected matter and cannot proceed.

For more information

- call the Department of the Environment and Energy Community Information Unit on 1800 803 772, or
- visit the web site http://www.environment.gov.au/epbc

All the information you need to make a referral, including documents referenced in this form, can be accessed from the above web site.

Referral of proposed action

Proposed action title:

1 Summary of proposed action

NOTE: In addition to completing the fields below, you must also attach a map of the area affected by the action that includes the following features (if relevant): the location of the action; the approximate boundary of the areas and habitat mentioned in items 3.1 and 3.2; and to the extent practicable and relevant, the tenure of the project area of the proposed action (e.g. freehold, leasehold etc.).

It is the Department's preference that maps are provided in A4 size and that the geographic information system (GIS) vector (shapefile) dataset associated with the maps is also provided.

1.1 **Short description**

Use 2 or 3 sentences to uniquely identify the proposed action and its location. It is important clearly describe the scope of the action accurately because this description lays the basis for the assessment and approval decision-making processes. For the purposes of the EPBC Act, an action includes:

- a project; and
- a development; and
- an undertaking; and
- an activity or series of activities; and
- an alteration of any of the above.

An action does not include:

- a decision by a government body to grant a governmental authorisation for another person to take an action; and
- grant funding from a government body,

where, a government body is the Commonwealth, a Commonwealth agency, a State or self-governing Territory; an agency of a State or a self-governing Territory or an authority established by a law applying in a Territory that is not a self-governing Territory.

The description should refer, as appropriate, to relevant maps.
You should obtain your own advice on whether the action you propose to refer constitutes an 'action' for the purposes of the EPBC Act.

Australia Pacific LNG Pty Limited (Australia Pacific LNG) proposes to further develop the coal seam gas (CSG) resources located in the southern part of Petroleum Lease (PL) 1011, known as the Condabri South Extension Development Area (CSEDA). The CSEDA is located approximately 40km south of Miles in southern central Queensland and is intended to be operated as part of the Australia Pacific LNG project.

Authority to Prospect (ATP) 1178 was converted to Petroleum Lease PL 1011 in 2015 with the CSEDA lying outside of the existing Australia Pacific LNG project's EPBC controlled action approval 2009/4974 area. Activities within the CSEDA will involve the construction, operation, decommissioning and rehabilitation of 38 CSG wells and associated gathering infrastructure. Water and gas produced within the CSEDA will be transferred via an underground pipeline network to existing processing and treatment facilities located on PL 265 within the Condabri Development Area.

The 38 wells will produce a maximum 0.075ML/day of CSG water that will be delivered to the Condabri water treatment facility (WTF) for treatment and then provided to landholders along the FairyMeadow Road Irrigation Pipeline (FRIP) and/or used for gasfield construction purposes. Where CSG water cannot be used in this manner this 0.75ML/day may be contingently discharged to the Condamine River.

This additional load on to the Condabri WTF and release to the Condamine River will not increase the constant continual 35ML/day discharge and associated impact assessment conducted as part of EPBC controlled action approval 2009/4974. As the contingent discharge is within the scope of EPBC controlled action approval 2009/4974 it does not form part of this referral.

The following terms are used in this referral to describe spatial extents:

- CSEDA – area within PL1011 which covers approximately 2,182 ha on Lots 79RG67, 11RG354, 10RG354, 8RG56 and 3RG66.
- Development footprint – area to be disturbed within the CSEDA which comprises 132 ha.
- Condabri Development Area – Area located within PLs 265, 266, 267, and 1011 (not including the CSEDA) that are authorised under EPBC controlled action approval 2009/4974.

The proposed action is **not likely to have a significant impact** on a matter protected under the EPBC Act.

1.2 **Latitude and longitude**

Latitude and longitude details are used to accurately map the boundary of the proposed action. If these coordinates are inaccurate or insufficient it may delay the processing of your referral.

	Latitude			Longitude		
location point	degrees	minutes	seconds	degrees	minutes	seconds
A	-27°	2'	3.23"	150°	10'	4.456"
B	-27°	4'	54.238"	150°	10'	4.633"
C	-27°	4'	54.395"	150°	15'	3.462"

The Protected Matters Search Tool may provide assistance in determining the coordinates of the project area of the proposed action.

If the area is less than 5 hectares, provide the location as a single pair of latitude and longitude references. If the area is greater than 5 hectares, provide bounding location points.

There should be no more than 50 sets of bounding location coordinate points per proposed area.

Bounding location coordinate points should be provided sequentially in either a clockwise or anticlockwise direction.

If the proposed action is linear (e.g. a road or pipeline), provide coordinates for each turning point.

Also attach the associated GIS-compliant file that delineates the proposed referral area. If the area is less than 5 hectares, please provide the location as a point layer. If greater than 5 hectares, please provide a polygon layer. If the proposed action is linear (e.g. a road or pipeline) please provide a polyline layer (refer to GIS data supply guidelines at Attachment A).

Do not use AMG coordinates.

1.3 **Locality and property description**

Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The area is located adjacent to the Leichardt Highway approximately 40 km south of Miles and 15 km south-east of the township of Condamine (refer to **Attachment 1**).

1.4	**Size of the development footprint or work area (hectares)**	The CSEDA is approximately 2,182 ha with a development footprint of 132 ha.
1.5	**Street address of the site**	Not relevant

1.6 **Lot description**

Describe the lot numbers and title description, if known.

The Project area covers the following lot and plans:

- 79RG67 (Lands Lease)
- 11RG354 (Lands Lease)
- 10RG354 (Lands Lease)
- 8RG56 (Lands Lease)
- 3RG66 (Freehold)

1.7 **Local Government Area and Council contact (if known)**

If the project is subject to local government planning approval, provide the name of the relevant council contact officer.

The Project is located wholly within the Western Downs Regional Council

1.8 **Time frame**

Specify the time frame in which the action will be taken including the estimated start date of construction/operation.

Subject to receiving all regulatory approvals development within the CSEDA will commence in March 2017. Construction will occur over approximately nine months and production from the CSG wells will occur until approximately 2062.

1.9	**Alternatives to proposed action** Were any feasible alternatives to taking the proposed action (including not taking the action) considered which are not proposed?	X	No
			Yes, please also complete section 2.2

1.10	**Alternative time frames, locations or activities** Does the proposed action include alternative time frames, locations or activities?	X	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3 and 5 (where relevant).
1.11	**Commonwealth, State or Territory assessment** Is the action subject to other a Commonwealth, State or Territory environmental impact assessment?	X	No No environmental impact statement (EIS) was required. Activities within PL1011 are authorised under the *Environmental Protection Act 1994* (EP Act) by the Condabri Environmental Authority (EA) (EPPG00853013). The Condabri EA was amended in 2015 to include PL 1011 The Condabri EA authorises up to 761 wells and associated infrastructure on PLs 265, 266, 267 and 1011. The CSEDA is located within PL 1011 and will not exceed the authorised scale and intensity of petroleum activities as detailed in Schedule A Table 1 of the Condabri EA.
			Yes, please also complete section 2.5
1.12	**Component of larger action** Is the proposed action a component of a larger action?		No
		X	Yes, please also complete section 2.7
1.13	**Related actions/proposals** Is the proposed action related to other actions or proposals in the region?		No
		X	Yes, provide details: Yes, provide details: Once constructed the CSEDA will provide gas to Australia Pacific LNG's LNG facility at Gladstone for export. Gas and water produced from the CSEDA will be directed to an existing GPF and WTF within the Condabri Development Area.
1.14	**Australian Government funding** Has the person proposing to take the action received any Australian Government grant funding to undertake the proposed action?	X	No
			Yes, please also complete section 2.8
1.15	**Great Barrier Reef Marine Park** Is the proposed action inside the Great Barrier Reef Marine Park?	X	No
			Yes, please also complete section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

NOTE: You **must** complete each of the sections below. Please ensure that the description is complete and includes all components and activities associated with the action. If relevant, each of the matters below need to be addressed in respect of each alternative location, time frame, or activity that is identified as part of the description. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

2.1 Description of proposed action

Please provide a detailed description outlining all activities and aspects of the proposed action and reference figures and/or attachments, as appropriate.

The Condabri South Extension Development Area (CSEDA) involves the further development of CSG fields in the Surat Basin to support the existing and previously authorised Australia Pacific LNG Project. The Australia Pacific LNG Project consists of three main components:

1. Development of up to 10,000 CSG wells within the Australia Pacific LNG's gas fields in the Surat and Bowen Basins in south-west and central Queensland (EPBC 2009/4974);
2. Construction of a 530 km gas transmission pipeline from the gas fields to an LNG facility on Curtis Island off the coast of Gladstone (EPBC 2009/4976); and
3. Construction of an LNG facility on Curtis Island off the coast of Gladstone, with the first two gas production trains processing up to 18 million tonnes per annum (EPBC 2009/4977).

These main components of the Australia Pacific LNG Project were approved by the Commonwealth Minister on 21 February 2011 and are currently being constructed, commissioned and operated by Origin Energy Resources Limited (Origin), as the upstream operator of the Australia Pacific LNG Project.

This referral relates to the construction, operation and decommissioning of 38 development wells and associated gathering infrastructure within PL 1011 which is outside the boundary of EPBC controlled action approval 2009/4074.

ATP 1178 was converted to PL 1011 in 2015 with the southern area immediately adjacent to Australia Pacific LNG's EPBC controlled action approval 2009/4074 area. Activities within the CSEDA will involve the construction, operation, decommissioning and rehabilitation of 38 CSG wells and associated gathering infrastructure needed to transfer gas and associated water to existing processing and treatment facilities located on PL 265 within the Condabri Development Area (refer to Attachment A).

2.1.1 Overview

Activities under this referral will involve the progressive development of CSG infrastructure within the CSEDA and will include the following activities:

- Drilling, installation, operation and maintenance of 38 production wells targeting the Walloon Coal Measures (WCM) over a 40 year life of the development.
- Installation, operation and maintenance of gas and water gathering flowlines
- Installation, operation and maintenance of associated supporting infrastructure (e.g. access roads, power and communication systems, laydowns, stockpiles and storage areas)
- Decommissioning and rehabilitation of infrastructure and disturbed areas.

The CSEDA will not require development of GPFs or water management and treatment infrastructure as gas and water will be directed to the existing Condabri North GPF and a WTF located on PL 265 operated as part of the Condabri Development Area. The use of existing GPFs and WTFs will minimise land disturbance and associated environmental impacts within the CSEDA.

The layout of infrastructure proposed to be constructed for the CSEDA is presented in Attachment A. Locations of infrastructure may be refined as the detailed design process of the development progresses.

Construction will occur approximately from March 2017 and production from the CSG wells will occur until approximately 2062.

2.1.2 Wells

The base case concept for wells in the CSEDA is vertical wells that are hydraulic fracture stimulated (HFS), however alternate drilling and completion techniques may be used where they do not create an increased environmental risk to MNES over the base case.

Drilling

Before the drilling rig is mobilised, the drilling site or 'well lease' and access tracks are prepared. For a full civil lease, vegetation is cleared and where required larger vegetation is felled, a mulcher may be used and the mulch stored at the site for later rehabilitation use. Recoverable hollow timber, larger rocks and other features are relocated to provide microhabitat adjacent to the disturbed area. Topsoil is removed and stockpiled to one side of the well lease site and access track (where required) for later rehabilitation. Lastly, earthmoving equipment is used to cut and fill the lease site where necessary.

Where practicable in favourable topographic areas, minimum disturbance leases (MDL) are used to minimise the impacts to the environment, cost and schedule delays. These leases require minimal stripping and stockpiling of topsoil across the lease area and therefore reduce impacts to soil and risk of erosion. There are three different types of MDL leases:

- MDL type 1 – this requires the least amount of lease preparation, no soil stripping and only requires slashing of grass or pasture (refer to Plate 1)
- MDL type 2 – some ground levelling may be required (by rolling or grading) and removal and mulching of trees, however no topsoil is stripped. Trees outside the minimum workable area will be left where practicable (refer to Plate 2).
- MDL type 3 – some cut and fill is required for small portions of the lease. In these areas, the topsoil will be stripped and stockpiled for later use or respread once the earthworks has been completed.

A full civil lease will require up to 1ha of disturbance (1.25 ha where stimulation is required). An MDL requires an area of approximately 0.73 ha although depending on the type, not all of this will be disturbed. Additional areas may be required around the full civil leases in areas of steep slope for cut and fill required to reduce the batter slope and appropriate erosion and sediment control. It is anticipated that the majority of leases within the CSEDA will be MDL however civil leases have been assumed for the purposes of environmental impact assessment.

Plate 1: MDL Type 1

Plate 2: MDL Type 2

Once the lease is prepared, a drilling rig arrives to install a large diameter conductor pipe. The drilling rig sets up over the conductor pipe. The drilling rig is usually made up of:

- A diesel motor that drives the rigs operation
- A derrick, which is a vertical tower used to manage the long pieces of drill pipe for the drilling process
- A mud pump which pumps drilling mud (comprised primarily of bentonite and water) through the drill pipe and brings rock cuttings to the surface. Mud and cuttings brought to the surface are circulated into tanks or ground sumps, where the cuttings settle out and the mud is re-used
- An iron roughneck, which tightens the pieces of drill stem together as the hole is drilled
- A generator to maintain power to equipment and associated ancillary site buildings.

A photo of the typical drilling rig used by the Project is provided in Plate 3 below.

Plate 3: Typical drilling rig used by the Project

The drilling rig first drills the surface section of the hole which takes around one day. A casing is then cemented in place by pumping cement into the wellbore and circulating back through the casing/well ring. This cement isolates any shallow surface aquifers and prevents cross flow between aquifers.

The second stage is to drill the production section of the hole, which is lined with perforated casing across the coal seams to allow gas and water from the coal seam to flow into the well. Above the coal seams the casing is cemented back to surface to prevent flow into aquifers. It will usually take around three to five days to drill the vertical wells to an average depth of 900m. The drilling rig is then packed up and moved to the next well.

Landspray while drilling (LWD) may be used for the management of drilling by-products as an alternative to excavating pits/sumps to store the by-products which are subsequently buried.

LWD involves the application of drilling by-products onto the soil surface at low application rates provided the drilling by-products and receiving soils meet the quality criteria and the release does not result in scour, erosion, pooling, runoff or vegetation dieback. LWD is managed in accordance with conditions imposed on the Condabri EA (EPPG00853013) issued by the Queensland Government.

Completions

Following the drilling program, a completions rig is mobilised to site of the vertical production well, assembled and then drills through the barriers left by the drilling and installs the equipment required to operate the gas well. The completions rig has similar equipment as the main drilling rig.

During the life of a well, a similar rig (referred to as a "work-over rig") may be mobilised to the well lease to work-over the well to replace the down-hole pump or remediate a down-hole problem.

Cavitation is an alternative technology for well completion that may be utilised for some wells in the study area when other well completion methodologies are not suitable. Cavitation uses air pumped at high pressure to penetrate the coal cleats and occurs underground within the formation. The pressure is held on the well bore for a given amount of time. It is then released suddenly, causing the coal to fail and slump into the well bore. The failed coal is flowed to the surface, leaving a cavity in the coal reservoir sections and a zone of increased permeability around the cavity within the coal formation. The cavitation process requires a work-over rig on site and typically takes 10 to 14 days per well.

In a well designated for cavitation, the production casing is set above the coal seam which ensures that only the coal seams are subjected to the cavitation process. The cavity created is relatively small and has no impact on the surface topography.

Drilling of a well will utilise approximately 200 m^3 of drilling mud comprised mainly of water and the clay mineral bentonite. Water from the drilling mud will be separated from the drill cuttings and managed through an approved disposal or beneficial reuse method. The drill cuttings brought to the surface will be rehabilitated in-situ by mix-bury-cover method if the materials meet the approved quality criteria or by land spraying while drilling method (as permitted in the Condabri EA EPPG00853013 issued by the Queensland Government).

Minor quantities of additional chemical additives are blended into the drilling and completion fluids to assist the drilling process. Most of the chemicals utilised in well drilling and completions, which may include biocides and corrosion inhibitors, are not dangerous goods, as defined by the *Work Health and Safety Act 2011* (Qld). Biocides are used to limit the growth and spread of bacteria that may cause fouling. Corrosion inhibitors limit potential for corrosion and failure of well completions, thus maintaining the integrity of the wells.

The drilling process also utilises limited quantities of chemicals that are classed as dangerous goods including corrosive liquids (Class 8) such as acetic acid and caustic soda solution, as well as some paint thinners, degreasers and oils (Class 3). Chemical additives used in the drilling process are generally at concentrations (pounds per barrel (lb/bbl)) less than 10% of the total drilling fluid. Where required inert additives to manage loss circulation will be added in higher concentrations.

Completions activities will use chemical additives at a maximum 12.5% of the total completions fluid initially but will reduce to 2.5% by the end of the completions operations. A list of chemicals used during the drilling and completions is detailed in Table 1.

Table 1: Chemicals used during drilling and completions

Name	Type	Descriptions
Barite	Weighting Agent	A naturally-occurring high density mineral milled to uniform particle size and used to increase fluid density. Completely inert within the environment.
Bentonite	Viscosifier	A naturally occurring high yield clay compound mined and ground to a uniform particle size used to impart viscosity to the drilling fluid. Readily dispersed in water.
Calcium Carbonate / CIRCAL 1000	Weighting Agent/ Bridging Agent	Naturally occurring ground and sized marble particles used to increase drilling fluid density and to plug pore spaces within the sandstones in the wellbore. Inert and harmless in a wide range of marine and terrestrial environments.
CON DET	Drilling Detergent	A blend of water-soluble surfactants that efficiently wets metal surfaces. Often used to clear the drilling bit of balling caused by the adhesion of soft clays and shales.
DUO-VIS	Viscosifier	Used to impart viscosity to the drilling fluid.
FLC2000	Polymer Blend	Additive consisting of mixtures of vegetable derived material which are temperature stabilized with water-soluble synthetic and partially-soluble organic polymers and insoluble metal oxides.
FLO-TROL	Fluid-Loss Reducer	Controls fluid invading the rock matrix in the wellbore
KLA-STOP	Shale inhibitor	Used in small quantities to control swelling of drilled clays and shales and improve drilling fluid lubricity.
KWIKSEAL	Lost Circulation Material	Contingency product used in various concentrations to stop fluid losses into porous / fracture formations.
POLYPAC UL	Fluid-Loss Reducer	Controls fluid invading the rock matrix in the wellbore
Potassium Chloride	Potassium Source	Naturally occurring salt used to increase fluid density and control swelling of drilled clays and shales.
RADIAGREEN	Lubricant	Ester lubricant for high salinity system and brines.
ROD EASE	Lubricant	Lubricant for Horizontal Directional Drilling, coring and rotary drilling
SAFE CIDE	Biocide	Small quantities used to control bacterial activity within the drilling and completions fluids.
SAPP	Thinner and Dispersant	Used for the reduction of viscosity and gel strengths in freshwater drilling fluids, dispersion of reactive clays
Soda Ash	Hardness Reducer	A naturally occurring fully water-soluble alkali. Small quantities are used to increase and control drilling fluid pH in the range 8.5-10 and to reduce free calcium within the water phase of the drilling fluid.
Sodium Bicarbonate	Acidity Control	Used to treat out cement contamination.
Sodium Formate	Brine	Salt used to increase fluid density and control swelling of drilled clays and shales
STARGLIDE	Lubricant	Reduces torque, drag and the potential for differential sticking
STEELSEAL	Lost Circulation	Contingency product used in various concentrations to stop fluid losses into

Name	Type	Descriptions
	Material	porous / fracture formations.
STOPPIT	Lost Circulation Material	Contingency product used in various concentrations to stop fluid losses into porous / fracture formations.
SUPER SWEEP	Well bore and hole cleaning	Increases the suspension and hole cleaning ability of the fluid
Torque Seal	Lost Circulation Material	Contingency product used in various concentrations to stop fluid losses into porous / fracture formations.
WALNUT PLUG M	Lost Circulation Material	Contingency product used in various concentrations to stop fluid losses into porous / fracture formations.
Wildcat 555	Biocide	Small quantities used to control bacterial activity within the drilling and completions fluids.

Stimulation

Some wells will require stimulation to enable successful gas production as part of the completion of the well. This will primarily be by HFS.

HFS involves pumping treated fluid (usually water) containing sand grains into coal cleats at a high rate and pressure to form and extend a fracture in the coal reservoir. This creates a high conductivity pathway to the well bore and increases the production capability of the well. HFS requires high pressure pumping equipment at surface which is usually on site for two days to perform 3-4 HFS per well. Most of this time is spent rigging up and down the equipment with approximately one hour spent pumping each coal seam. Only the coals are HFS and therefore shallow aquifers are not exposed to the HFS fluids. The HFS fluids are also inert and do not pose any significant environmental hazard. Table 2 lists the current fluids used in HFS operations and have been assessed as part of the APLNG Project Hydraulic Fracturing Risk Assessment.

The zone of influence of HFS around a well is typically 200 m horizontally with a vertical influence of 60 m. As part of the design of the hydraulic fracture, modelling is conducted on each coal seam intersected by the well with target coal seams selected from the results of the model. Due to the nature of the coals being generally between 1 m and 20 m, the coals are fractured in 3 to 12 discrete intervals, with each interval targeting a different coal.

The contrast in stress or physical properties between two rocks can determine whether a fracture will continue to propagate in the same direction. Often a high stress contrast or a significant and sudden change in rock physical properties results in a barrier to fracture propagation. For example, and vertical propagation may terminate against an overlying shale or may turn and develop horizontally at the contact between the coal and the overlying shale.

Australia Pacific LNG carries out risk assessments as per existing environmental authority approval conditions that include fracture stimulation chemical risk assessments, environmental impact and geological setting.

The key elements of the Hydraulic Fracturing Risk Assessment includes:

- Regional and development area geological setting
- Outline of well construction and including well design, drilling and casing, well completion, borehole logging and well integrity
- HFS process, design, control, fluid systems used, and monitoring and assessment
- Risk identification of exposure pathways, identification of chemicals of potential concern, residual chemical fate and transport modelling
- Quantitative human health risk assessment including quantification of exposure and risk characterisation
- Quantitative ecological risk assessment including exposure assessment, potential exposure pathways and receptors toxicity assessment
- Non chemical risk assessment of noise, vibration and radiological exposure
- Uncertainty assessments
- HFS fluid mass balance, eco toxicological data, chemical toxicological assessments and radioactive tracer environmental hazard assessment.

As HFS flowback fluid is temporarily stored in above ground tanks and transported to a WTF for treatment, potential exposure exists. The toxicity of chemicals has been assessed for persistence, bioaccumulation and aquatic toxicity, and human health toxicity. The fracturing process does not contain BTEX or polycyclic hydrocarbons as additives. No chemicals of potential concern identified are persistent (except one), bioaccumulative or toxic hence there are no secondary pathways that require quantification. Polyacrylate (a chemicals of potential concern) is limited in biodegradability potential however it is not bioaccumulative and essentially non toxic to receptors hence secondary pathways of concern are not complete.

The potentially complete exposure pathways identified and assessed in the risk assessment for this aboveground storage are incidental ingestion and dermal contact by trespasses to the flowback fluid holding tanks, and potential release to aquatic environments. After conservative risk scenarios were assess including frequent access to HFS holding tanks and swimming type activities were undertaken no acceptable risks were identified.

Toxicity assessments demonstrate that HFS flowback water has a similar toxicity to that of background CSG water and therefore the risks to the environment from a spill to surface waters are low or negligible. In addition, historical and existing operational controls demonstrate that the controls implemented by Australia Pacific LNG are effective, in that no accidental releases of flowback water from holding tanks to surface waters has occurred, therefore the likelihood of chemicals discharged and exposure to the environment is minimised. Controls include:

- Design consistent with API Guidance and best practice specification for design and implementation
- Fencing and signage around HFS sites include flowback storage tanks
- Routine operation and security patrols to prevent trespassing

Table 2 HFS additives

Group/Function	CSG Stimulation (QLD) - Origin Energy		Commonly Found	Food Additive Number	% volume of chemical in household items	Group % by volume (average)	% volume range of chemical in frac fluid
	CAS No.	Chemical name					
Sand (Proppant) / Water	7732-18-5	Di-hydrogen oxide (water)	Drinking, irrigation, bathing, cooking		1% to 100%	98.415% to 99.9%	85% to 97.6%
	14808-60-7	Silicon dioxide (quartz / sand) (Quartz, Crystalline silica)	Hand cleaner, arts & crafts, glass	E551	1% to 100%		2.3% to 13%
Water Conditioning (Microbial / pH Control)	2682-20-4	3-Isothiazolone, 2-methyl-2h (2-methyl-2h-isothiazol-3-one)	Antibacterial hand soap, kitchen and laundry detergent, air / spray freshener, Hair shampoo, wipes			0.075% to 0.256%	0.00008% - 0.00014%
	14464-46-1	Cristobalite	(SiOs, quartz polymorph)				0.00002% - 0.00009%
	91053-39-3	Diatomaceous earth, calcined	Naturally occuring fossil powder, filtration, toothpaste				0.00442% - 0.00666%
	9000-70-8	Gelatins	Food additive, marshmellows, pharmaceuticals, cosmetics, personal care, cheese, soft sweets	E441			0.0% - 0.012%
	56-81-5	Glycerol / Glycerine	Pharmaceutical industry, hair products, sweetener, personal care, cough syrup, toothpaste, mouthwash, skincare, glycerin soap	E422			0.0% - 0.2818%
	7647-01-0	Hydrochloric acid	Cleaners, Disinfectant, Air freshner, Shampoo, spray insect cleaner, pond fish care	E507			0.22021% - 1.03669%
	7786-30-3	Magnesium chloride ($MgCl_2$)	Fertilizer, De Icing, Tofu, Nigari, baby formula, suppliments	E511			0.00014% - 0.00044%
	10377-60-3	Magnesium nitrate					0.00071% - 0.00088%
	111-30-8	Pentanedial/Glutaraldehyde	Biocide, freshwater aquariums				0.0% - 0.009%

	1310-73-2	Sodium hydroxide (Na(OH)) (caustic soda)	Food preparation, coffee creamer, body wash, face cleaning pads, soaps, detergents, toothpaste, whitening strips, face mask, eau de cologne, black olives	E524	0.1% to 5%		0.0% - 0.01115%
	26172-55-4	5-chloro-2-methyl-2h-isothiazolol-3-one (Methylchloroisothiazolinone)					0.00027% - 0.00045%
	10043-35-3	Boric acid (H3BO3)	Used in cosmetics and skin care products.				0.0% - 0.0017%
	110-17-8	Fumaric acid (2-Butenedioic acid, E-)	Used as a food additive and medical treatment of multiple sclerosis.	E297			0.0% - 0.0015%
Clay Management	7447-40-7	Potassium chloride (KCl)	Table salt substitute, medical use, hair care, african violet food	E508	0.5% to 40%	0.85% to 0.91%	0.85263% - 0.9100%
	9000-30-0	Guar	Cosmetics, baked goods, ice cream, toothpaste, sauces, salad dressing, Substitute for wheat intolerant people to use instead of flour, chicken, pig and cattle food, and medical use	E412	0.5% to 20%	0.00% to 0.297%	0.0% to 0.29702%
	7727-54-0	Diammonium peroxidisulphate (Ammonium persulphate)	Hair bleach				0.025556% - 0.05999%
	7631-86-9	Non-crystalline silica (impurity)					0.00022% - 0.00069%
	1332-77-0	Potassium borate	Lubricants and greases, leavening agent				0.0% - 0.05539%
	1310-58-3	Potassium hydroxide	Soap				0.0% - 0.01953%
	7647-14-5	Sodium chloride (NaCl)	Food Production and additive, table salt, detergents, hair products, water softener, medical saline drips		0.03% to 99%	0.00% to 0.189%	0.0% to 0.004%
	14807-96-6	Talc, Magnesium Silicate (Magnesium silicate hydrate (talc))	Baby powder, personal care, makeup, skin soap, pesticide, pet care, paint, putty	E553			0.00001% - 0.00004%
	25038-72-6	Vinylidene chloride/methylacrylate copolymer	Used in plastic wrap for foods				0.00082% - 0.00127%
	107-21-1	1,2-Ethanediol (Ethylene Glycol)	Used as an antifreeze agent, de-icing, printer inks.				0.0% - 0.0600%
	102-71-6	2,2',2"-nitilotriethanol	Used in cosmetics and skin care				0.03658% - 0.03860%

			products.				
	1319-33-1	Boronatrocalcite (Ulexite)					0.0% - 0.04320%
	1330-43-4	Sodium tetraborate	Component of many detergents, cosmetics, texturing agent in cooking.				0.0% - 0.00330%
	7704-73-6	Monosodium fumarate	Used as a food additive.	E365			0.0% - 0.00120%
	125005-87-0	Diutan gum	Used in mining and metal extraction.				0.0% - 0.00010%
Tracers	445-29-4, 455-38-9, 456-22-4, 385-00-2, 455-40-3, 455-86-7, 2991-28-8, 1583-58-0, 1201-31-6, 455-24-3, 433-97-6, 454-92-2, 121602-93-5, 446-17-3, 61079-72-9, 4519-39-5	Fluorobenzoic acids	Used in groundwater tracers			0.00% to 0.0015%	0.000015%

In support of drilling operations, fuels such as diesel (combustible liquid) are used to fuel power generation supplies and other drilling related required equipment.

All chemicals will be stored and handled in accordance with the relevant legislative requirements and Australian Standards.

All CSG wells drilled by Australia Pacific LNG are constructed in accordance with the C*ode of practice for constructing and abandoning coal seam gas wells and associated bore in Queensland* (DNRM 2013). The Code of Practice mandates that the design and construction of the well must ensure isolation between the well and the geological formations that are not the target of the well, and that the production fluids must travel inside the well conduit directly to the surface infrastructure. This isolation is achieved by cement casing around the well which is verified by a downhole survey of the well using a cement bond and variable density logging tool. If isolation is not verified via this tool remedial actions are taken until isolation is achieved. HFS does not occur until isolation is confirmed via the cement bond and variable density logging tool.

In addition to the Code of Practice Australia, Pacific LNG also has its procedure *Integrity Management Plan: Integrated Gas Coal Seam Gas Wells Operate and Maintain Phase (INT 1000 ENG PLN)* which mandates the testing and maintenance procedures which are to be employed to ensure that the integrity of well and wellhead equipment is maintained throughout all stages of the well lifecycle.

Well Production

Once the well bore is constructed a wellhead and separation equipment is installed to separate the well flow into two streams – gas and water. The lease sites are progressively rehabilitated at this point to the footprint required for the operation of the well, which is typically 0.3 ha.

The typical surface facilities associated with a CSG well are:

- A wellhead through which the gas and associated water is brought to the surface
- A pump that lifts the water in the coal seam to the surface
- A wellhead separator with associated control devices (refer to Plate 4) which separates the gas and the water.

Plate 4: Typical Wellhead Separator

All these facilities are appropriately fenced to keep livestock out. Well lease infrastructure is electrically powered with electricity transmitted by a network of buried cables that are co-located with gas and water flowlines.

As the well pressure declines, a small compressor may be required at the wellhead to ensure that maximum recovery of available gas is achieved. At this time, a pump may also be required to maintain water transfer.

2.1.3 Gas and Water Gathering Flowlines

After separation occurs at the wellhead, the low pressure CSG flows into a network of buried pipelines constructed from high density polyethylene pipe. These interconnect all wells operating in a specific area to form the gas gathering network.

The gas gathering network is designed to flow to the existing Condabri Development Area GPF. Each GPF is typically served by wells in an area covering an approximate 9 km radius or 'drainage circle'. However, design of the gas gathering network typically allows a larger drainage circle, and thereby minimise the number of gas processing facilities required. CSG produced within the CSEDA will be processed at a Condabri GPF (refer to Attachment 1).

After separation at the wellhead, the water flows into a similarly buried high density polyethylene pipeline network. Associated water that is produced within the CSEDA will initially be stored at a regional water gathering station and will subsequently be treated at the Condabri Central WTF (refer to Attachment 1). Some water of appropriate quality may also be beneficially used in construction for dust suppression or irrigation purposes prior to treatment.

Some gas will be entrained in the water flowlines and some water will be present in the gas flowlines. This is managed by high point vents and low point drains which are installed along the right of way (RoW).

Construction of the flowlines involves the following activities:

- Clear and grade of the RoW
- Pipe stringing and bending
- Pipe welding, non-destructive testing and joint coating
- Trenching
- Padding
- Pipe placement in the trench (lowering in and laying)
- Backfilling and compaction
- Pneumatic or hydrostatic testing
- Rehabilitation.

The RoW width is dependent on several factors including the number of pipes and topographical constraints. The construction RoW width for the Project is 40 m. In areas where TEC's are present the RoW construction can be reduced to 12 m. During operations, the RoW is reduced to 8 m to allow access along the pipe for maintenance activities. A typical construction RoW layout is provided in Plate 5.

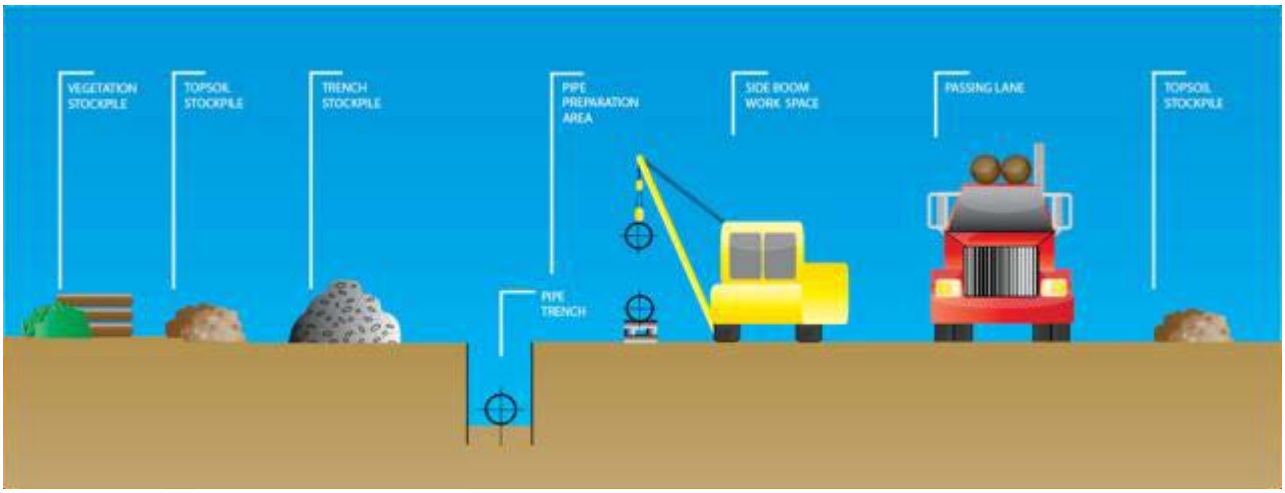


Plate 5: Typical construction RoW layout

2.1.4 Supporting Infrastructure

With the exception of temporary drill rig camps, the construction workforce will be accommodated in workers accommodation camps close to work sites located outside of the CSEDA whilst the operations workforce will be housed in existing permanent accommodation facilities and/or within local housing in nearby regional townships. Drill rig camps which are approximately 1 ha in size are located in strategic areas to ensure travel time between groups of wells and the camps are minimised. As these camps are mobile they are generally placed in pre-existing cleared areas to minimise additional ground disturbance.

Access to wells and associated above-ground facilities will require construction of unsealed access roads, though grading and sealing of some roads may be necessary. Access tracks will predominantly be co-located with the gathering RoW. For standalone access, utilisation and minor upgrades of existing access tracks is preferred.

Laydowns, stockpiles, extra work spaces, mobile offices and substation kiosks are some of the additional supporting infrastructure that may be required. These will be sited to avoid any impacts to threatened ecological communities.

2.1.5 Field Planning

The final location of wells, flowlines, access tracks and ancillary infrastructure gives consideration to a range of matters including environmentally sensitive areas (ESAs), threatened ecological communities (TEC), significant vegetation, habitat for listed species, topography, cultural heritage, impact on landholders, engineering constraints and construction costs. Wherever practicable, previously disturbed areas are utilised and gathering network and access tracks are co-located. Selected locations are progressively refined in consultation with landholders and other stakeholders to minimise adverse environmental and landholder impacts whilst balancing cost and constructability.

A robust internal disturbance approval process ensures the project execution aligns with conditions of approval and management commitments, particularly avoidance of key environmental impacts where there are reasonable and practicable design alternatives. The disturbance approval process occurs over a number of stages:

- FEL 0: Preliminary concept developed (well spacing, number, type) based on reservoir modelling
- FEL 1: Conceptual layout of infrastructure developed giving consideration to the results of the ecology assessment, landholder and engineering constraints
- FEL 2: Environmental specialists, construction personnel, engineers and landholders undertake site assessment to assess the proposed infrastructure locations and the layout in finalised.
- FEL 3: Detailed design is completed
- Execute: Construction commences

The environmental constraints assessment is based on the following principles:

- Minimising adverse environmental impacts and enhancing environmental benefits associated with project activities, products or services; conserving and protecting the biodiversity values and water resources in its operational areas
- Avoiding direct and indirect adverse impacts on environmental values including MNES where practicable
- Mitigating and managing direct and indirect adverse impacts to minimise cumulative adverse impacts on environmental values including MNES
- Active site remediation and rehabilitation of impacted areas to promote and maintain long term recovery of affected environments including MNES.

The infrastructure layout for the Project shown in Attachment A has been developed through application of this process. Note this layout is may be refined further through design development and construction execution.

2.1.6 Disturbance Area

During the construction of petroleum infrastructure within the CSEDA, it is estimated that approximately 132 ha of land (approximately 6% of the Project area) will be disturbed. Of this 132 ha, less than 1.3 ha will impact on remnant vegetation with the balance located in previous cleared grazing land.

2.1.7 Water management

Australia Pacific LNG is not proposing to construct any water storages to store or treat CSG water within the CSEDA as produced water will be stored and treated at existing infrastructure within the approved Condabri Development Area on PL 265.

Water extracted through CSG water production will be treated at the existing Condabri WTF, and is then provided to landowners through the FRIP. The irrigation scheme is part of the APLNG Stage 2 CSG Water Monitoring and Management plan (APLNG, 2014). Under emergency conditions APLNG have existing approvals for a contingent discharge of treated water from the Condabri WTF into the Condamine River at a designated discharge point.

Releases from the Condabri WTF into the Condamine River have been previously assessed and are approved under EA EPPG00853013 (issued by the Queensland Government) and EPBC controlled action approval 2009/4974.

2.2 Feasible alternatives to taking the proposed action

If you have identified that alternatives to taking the action were considered, but are not proposed (in section 1.9), please complete this section. Please provide a detailed description outlining any feasible alternatives to taking the proposed action (including not taking the action) that were considered but are not proposed. (Please note that these do not include any proposed alternative locations, time frames, or activities that form part of the proposed action which are to be discussed below at section 2.3).

Nil

2.3 Alternative locations, time frames or activities that form part of the referred action

If you have identified that the proposed action includes alternative time frames, locations or activities (in section 1.10), please complete this section. Please describe any alternatives related to the physical location of the action, time frames within which the action is to be taken and alternative methods or activities for undertaking the action. For each alternative location, time frame or activity identified, please also complete (where relevant) the details in sections 1.2-1.9, 2.4, 2.7, 3 and 5. Please note, if the action that you propose to take is determined to be a controlled action, any alternative locations, time frames or activities that are identified here may be subject to environmental assessment and a decision on whether to approve the alternative.

Nil, however refer to Section 2.1.5 for a description of the process used to design infrastructure locations to minimise environmental impacts.

2.4 Context, including any relevant planning framework and state/local government requirements

Please explain the context in which the action is proposed, including any relevant planning framework at the state and/or local government level (e.g. within scope of a management plan, planning initiative or policy framework) and social and economic context including as population size, economic opportunities and employment information. Describe any applicable Commonwealth or state legislation or policies (other than those related to other environmental impact assessment which are to be discussed below at section 2.5).

Petroleum and Gas (Production and Safety) Act 2004

Petroleum activities in Queensland are regulated under the *Petroleum and Gas (Production and Safety) Act 2004* (PAG Act).

Petroleum authorities that are issued under the PAG Act include petroleum survey licences, petroleum leases, petroleum pipeline licences and petroleum facilities licences.

The principal petroleum authority that is required prior to the construction of gas wells and any other associated infrastructure in the gas fields for production is a petroleum lease. A petroleum lease allows Australia Pacific LNG to carry out various activities, including producing petroleum, constructing and operating petroleum pipelines and water pipelines, petroleum storage and petroleum processing facilities authorised under the lease. Other related incidental activities may also be authorised under this lease.

Environmental Protection Act 1994

The EP Act aims to promote ecologically sustainable development in Queensland in order to protect Queensland's environment. This Act is the principal environmental legislation in Queensland and governs the environmental regulation of petroleum activities, including the issue of environmental authorities for a petroleum activity.

The Condabri Development Area (EA EPPG00853013) authorises up to 761 wells and associated infrastructure in the following PLs:

- PL 265
- PL 266
- PL 267
- PL 1011

- PPL 186

No amendment to the EA is required to include the Project in PL 1101 as it is authorised under EA EPPG00853013. The total number of wells and associated infrastructure detailed in Schedule A Table 1 of the Condabri EA will not be exceeded. Minor amendments to the EA may be sought to ensure compliance with spatial rules for siting infrastructure defined in the EA.

The Project may require additional approvals under other State legislation including but not limited to:

- *Fisheries Act 1994*
- *Nature Conservation Act 1992*
- *Regional Planning Interests Act 2014*
- *Sustainable Planning Act 2009*
- *Water Act 2000*
- *Aboriginal Cultural Heritage Act 2003*

Approvals under these acts will be obtained as required.

2.5 Environmental impact assessments under Commonwealth, State or Territory legislation

If you have identified that the proposed action will be, is being or has been subject to a Commonwealth, State or Territory environmental impact statement (in section 1.11), please complete this section. Please describe any environmental assessment of the relevant impacts of the proposed action that has been, is being, or will be carried out under Commonwealth, State or Territory legislation. Specify the type and scope of the assessment (for example, whether the assessment relates to part or the whole of the proposed action, or the proposed action, as a component of a larger action), the relevant legislation and the current status of any assessments or approvals. Where possible, provide contact details for the relevant assessment contact officer. Further, please describe or summarise any public consultation undertaken, or to be undertaken, during the assessment. Attach copies of relevant assessment documentation and outcomes of public consultations (if available).

EPBC controlled action approval 2009/4974 incorporates approximately 60% of PL1101.

As described in Section 1.11, the CSEDA (which represents the remaining portion of PL1011 outside of EPBC controlled action approval 2009/4974 area) has been assessed and approved at a state level through amendments to the Condabri EA under the EP Act.

2.6 Public consultation (including with Indigenous stakeholders)

Your referral must include a description of any public consultation that has been, or is being, undertaken. Where Indigenous stakeholders are likely to be affected by your proposed action, your referral should describe any consultations undertaken with Indigenous stakeholders. Identify the relevant stakeholders and the status of consultations at the time of the referral. Where appropriate include copies of documents recording the outcomes of any consultations.

<u>Land owner Consultation</u>

Engagement and consultation with landowners has occurred for existing infrastructure and will be undertaken for future project activities in accordance with the requirements of the PAG Act and Land Access Policy Framework, which includes the Land Access Code (DNRM, 2016).

The Land Access Code outlines mandatory conditions for resource companies undertaking activities on private land and also provides a best practice guide to communications between landholders and resource companies.

A dedicated project team for landowner liaison exists to support sub-project teams responsible for infrastructure delivery.

The typical landholder engagement process is detailed in Plate 6 below.

Plate 6: Typical landholder engagement process

Indigenous Stakeholders

Native title has been extinguished on the CSEDA. APLNG have negotiated Cultural Heritage Management Plans (CHMP) under the *Aboriginal Cultural Heritage Act 2003* has been negotiated and covers:

- Archaeological surveys
- Annual review of Agreements
- Use of and terms of employment of representatives of the relevant Native Title parties for cultural heritage assessment and/or monitoring of Project activities
- Dispute resolution processes
- Recording and mapping of cultural heritage sites/artefacts
- Restricted Heritage areas

- Audits
- Keeping places for artefacts recovered or salvaged
- Cultural Heritage awareness training for Origin personnel and Contractors.

New development is subject to internal disturbance approval that addresses site specific heritage requirements and identifies conditions of approval. Instances of Aboriginal heritage in the Project area has been recorded in consultation with the relevant Aboriginal parties and is detailed on project plans to ensure avoidance.

To date a number of Aboriginal Heritage finds (including flakes and corestones) have been identified within the Project area which have been collected and relocated in accordance with the CHMP.

A dedicated project team for heritage (both Aboriginal and Shared) exists to support sub-project teams responsible for infrastructure delivery in meeting our duty of care.

2.7 A staged development or component of a larger action

If you have identified that the proposed action is a component of a larger action (in section 1.12), please complete this section. Please provide information about the larger action and details of any interdependency between the stages/components and the larger action. You may also provide justification as to why you believe it is reasonable for the referred action to be considered separately from the larger action (e.g. the referred action is 'stand-alone' and viable in its own right, there are separate responsibilities for component actions or approvals have been split in a similar way at the state or local government levels).

The CSEDA is located immediately adjacent to existing Australia Pacific LNG held petroleum tenements that form part of the existing Australia Pacific LNG Project. It has been assessed by Australia Pacific LNG and advice provided by the Department of the Environment that this development falls outside of the currently approved controlled action decisions for the Australia Pacific LNG Project and therefore a separate significant impact assessment is required. The relationship to other approved Australia Pacific LNG controlled actions is as follows:

- 2009/4974 – Australia Pacific LNG Project – Walloons Gas Fields
  The CSG and associated water produced within the CSEDA will be transported to relevant GPFs and WTFs within the Condabri Development Area for processing and treatment. The petroleum activities within the Condabri Development Area have been approved as part of the Australia Pacific LNG Project and do not form part of this referral.

- 2009/4976 – Australia Pacific LNG Project – Gas Transmission Pipeline
  CSG produced within the CSEDA may be transported through the Australia Pacific LNG Main Pipeline System for liquefaction at the Australia Pacific LNG Facility on Curtis Island. This would not be the case where the CSG produced in the CSEDA would be utilised in the domestic market.

- 2009/4977 – Liquefied Natural Gas Plant and Onshore Marine Facilities
  CSG produced within the CSEDA may be transported through the Australia Pacific LNG Main Pipeline System to Gladstone for liquefaction at the Australia Pacific LNG Facility located on Curtis Island and sale to international markets. This would not be the case where the CSG produced in the CSEDA would be utilised in the domestic market.

Australia Pacific LNG considers it appropriate that this action is considered separately from any further gas field developments as the CSEDA was granted after action 2009/4974 was approved. It is possible that in the future Australia Pacific LNG may be required to refer additional areas outside of the currently approved areas if additional tenements are acquired and are determined not to be within the scope of EPBC controlled action approval 2009/4974 .

2.8 Related actions

If you have identified that the proposed action has related actions (in section 1.13), please complete this section. Please provide information about the related actions including, as appropriate:

- the nature, scope and location of the related action;
- the nature and scope of the assessment under the relevant legislation;
- a statement confirming how the action relates to the Proposed Action;
- the key documents produced as part of the assessment, by whom and when (using active statements), and the extent to which the assessment of the action is relevant to the assessment of the impacts of the Proposed Action on the matters protected by the Controlling Provisions of the EPBC Act and the related findings of this Report. Please cross reference to the analysis of the impacts of the Proposed Action below;
- public consultation during the assessment including the extent (i.e. duration and means) and results; and
- if available, the conclusion of the assessment and final decision following assessment, i.e. approval, approval subject to conditions or refusal.

As outlined in Section 2.7, this action is related to EPBC controlled action approval 2009/4974 (Attachment A shows the location of the proposed action). EPBC controlled action approval 2009/4974 was assessed under the bilateral agreement between the Federal and Queensland State Government for which the key documentation was the Australia Paciific LNG Environmental Impact Statement (EIS), dated March 2010 – available at https://www.aplng.com.au/about-us/compliance/eis.html.

The Australia Paciific LNG EIS is for the development of the Walloons gas fields, construction and operation of a 450 km gas transmission line and a four train LNG Plant. The action was assessed under the Commonwealth EPBC Act and Queensland State

Development and Public Organisation Act (1971). The EIS was released for public comment and consultation on 29 March 2010. The project was approved subject to conditions by the Australian Government in August 2011.

Gas and water extracted from the CSEDA will be transferred to existing gas and water treatment facilities within the Condabri Development Area (which are approved under EPBC controlled action approval 2009/4974) and then transported via a high pressure gas pipeline (approved under EPBC controlled action approval 2009/4976) for processing and export at the Australia Pacific LNG facility on Curtis Island (approved under EPBC controlled action approval 2009/4977).

Development within the CSEDA has been assessed independently from the EPBC controlled action approval 2009/4974 area with the impacts considered not to be significant.

3 Description of environment & likely impacts

Note: If you have identified alternatives in relation to location, time frames or activities as part of the proposed action at section 1.10 and 2.3, please complete this section in relation to each of the alternatives identified.

3.1 Matters of national environmental significance

Describe the affected area and the likely impacts of the proposed action on the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest.

For each matter protected by the EPBC Act, provide a description of the matter including, as appropriate:

- a brief description of the matter (for example, for threatened species, the population size, habitat, breeding, diet and life cycle etc);
- the status, extent and condition of the matter within the affected area and also more broadly in the region; and
- the key threats and threatening processes and beneficial actions and processes for the Protected Matter(s) excluding those from the proposed action, for example, under relevant approved conservation advices, recovery plans or threat abatement plans, management plans or other strategic plans, management principles or obligations under International Conventions.

- Having identified the relevant matters protected under the EPBC Act, identify the impacts the proposed action will or is likely to have on these matters (e.g. light, noise, biodiversity loss, water quality etc). For each type of impact, provide a concise description of the likely nature, scope and consequences of the impact on the Protected Matter(s). In doing so, consider factors such as, as appropriate: whether the impact is a direct or indirect impact - **note that, even if your proposed action will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts) by its indirect impacts**;
- the timing and duration of the likely impact, for example, one-off, re-occurring or ongoing, short term or long term;
- the extent of the impact, for example, uncertain or certain, permanent/irreversible or temporary/ reversible, and localised or broad-scale;
- the likely consequence of the impact on the Protected Matter(s), including both adverse and beneficial impacts and any related social and economic impacts;
- the likelihood of the impact affecting the Protected Matter(s); and
- whether there are any measures available to prevent and avoid, or mitigate and repair the consequences of, the impact.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- Associated sectoral and species policy statements available on the web site, as relevant.

Your assessment of likely impacts should also consider whether a bioregional plan is relevant to your proposed action. The Minister has prepared four marine bioregional plans (**MBP**) in accordance with section 176 of the EPBC Act. It is likely that the MBPs will be more commonly relevant where listed threatened species, listed migratory species or a Commonwealth marine area is considered.

The existing environment of the Project area has been impacted by a history of land clearing and agricultural land uses that have significantly reduced the biodiversity values across the landscape. The biodiversity baseline and surface and groundwater assessments undertaken by Australia Pacific LNG to date have characterised the existing environmental features (including MNES) considered in this document. These previous assessments have been comprehensive and the following reports have been referenced to provide the following summary of the existing environment relating to MNES:

- Attachment A – Location map
- Attachment B – Condabri South PL 1011, Matters of National Environmental Significance Self Assessment (ERM, 2016)
- Attachment C – Condabri South Extension Project EPBC Act Referral, Aquatic MNES (FRC, 2016)

- Attachment D - Condabri South Extension EPBC Referral Hydrogeological Assessment (KCB, 2016)

APLNG engaged the services of a consultant, ERM, to undertake a desktop ecological assessment of listed fauna and flora species in the PL 1101 Project area using the following information:

- DoE EPBC Act Protected Matters Report (10km buffer of the Project area boundary) created 26/09/2016;
- DSITI Wildlife Online Species List created 26/09/2016;
- DoE's Species Profile and Threats Database, including relevant listing and conservation advices, policy statements, guidelines and information sheets;
- Queensland Herbarium Specimen Data (HERBRECS) (including records from within the Project area and within 10km of the Project area boundary); and
- DEHP Regional Ecosystem Description Database (REDD v8.0) accessed 26/09/2016
- APLNG Pre Clearance Report Q-4500-15-RP-1329
- Origin Energy Ecological Assessment Report Q-4500-15-RP-1317
- APLNG Ecology Assessment Report Q-4500-15-RP-1319
- Origin Energy Ecological Assessment Report Q-4500-15-RP-140

Klohn Crippen Berger (KCB) was engaged by APLNG to undertake a groundwater assessment and frc environmental (frc) to undertake the Aquatic Ecology Assessment.

Sections 3.1 (d) List Species and Communities and 3.1 (i) Impacts to Water resources describe the environment and impacts to listed species, communities and MNES related water resources.

3.1 (a) World Heritage Properties

Description

There are no world heritage properties identified within the CSEDA.

Nature and extent of likely impact

Address any impacts on the World Heritage values of any World Heritage property.

No direct or indirect impacts are expected to occur due to the large distance between the CSEDA and the protected area.

3.1 (b) National Heritage Places

Description

There are no National Heritage Places identified within the Project area. The closest listed Natural Heritage Place is the Glasshouse Mountains National Landscape (approximately 320 km east).

Nature and extent of likely impact

Address any impacts on the National Heritage values of any National Heritage place.

No direct or indirect impacts are expected to occur due to the large distance between the CSEDA and National Heritage Places.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

There are five Ramsar sites within Queensland (Administrator is shown in brackets): Moreton Bay (Queensland), Bowling Green Bay (Queensland), Currawinya Lakes (Queensland), Shoalwater and Corio Bays (Queensland/Commonwealth), and Great Sandy (Queensland). None of these wetlands, or their respective catchment areas, occurs within the CSEDA.

The Project area does occur upstream approximately 440 km north-east of the Narran Lake Nature Reserve, a Ramsar listed wetland. Minor tributaries south of the Project area (in the Maranoa-Balonne catchment) drain south into the Balonne River eventually meeting the Narran River south-west of Dirranbandi, Queensland. The Narran River crosses the border into New South Wales (NSW), ultimately draining into the NSW Narran Lake Nature Reserve.

Nature and extent of likely impact

Address any impacts on the ecological character of any Ramsar wetlands.
No direct or indirect impacts are expected to occur due to the large distance between the CSEDA and Ramsar wetlands.

3.1 (d) Listed threatened species and ecological communities

Description

A significant portion of the CSEDA has been historically cleared of vegetation. Within the development footprint remnant vegetation persists isolated remnant shadelines, and small patches of regrowth vegetation and remnant vegetation throughout the area.

The majority of the development is in the existing disturbed areas and as such the habitat value of the development footprint for listed threatened species and ecological communities is considered low.

A desktop assessment of the protected matters search tool (PMST), state database searches conservatively identified 4 Threatened Ecological Communities (TECs) and 18 listed EPBC Act listed threatened species which have potential habitat within the CSEDA, or are known to occur proximal to the CSEDA (see Attachment B).

A likelihood of occurrence assessment has been undertaken to refine the list of species that were identified in EPBC Act and NC Act database searches. The assessment analysed on ground reports, previous species records, species distribution, the presence of individuals and signs of habitat preferences. No EPBC Act listed threatened flora or fauna have been confirmed within the Project area during the various field surveys. The listed species that are likely or known to occur in the Project area are listed in Table 3.

One TEC - Brigalow (*Acacia harpophylla* dominant and co-dominant) listed as endangered has been mapped within the Project area (refer to Attachment B) and covers approximately 45.6 ha. The disturbance to Brigalow will be 1.3 ha.

Table 3: EPBC listed threatened fauna and flora species

Scientific name	Common name	EPBC Status
Acacia harpophylla	Brigalow	Endangered
Homopholis belsonii	Belson's Panic	Vulnerable
Geophaps scripta scripta	squatter pigeon	Vulnerable
Egernia rugosa	yakka skink	Vulnerable
Delma torquata	collared delma	Vulnerable
Furina dunmallii	Dunmall's snake	Vulnerable
Anomalopus mackayi	Long-legged worm-skink	vulnerable

One listed species of fish is potentially located within the CSEDA, the Murray cod (*Maccullochella peelii*), which is listed as vulnerable under the EPBC Act. The Murray cod uses a wide range of habitats however are frequently found in their preferred habitat of main channels and larger tributaries. The Murray cod has not been found in the CSEDA or the wider PL 1011 area watercourses. The species has been found in the Condamine River where the closest population is approximately 18 km to the west of the CSEDA.

Nature and extent of likely impact

Address any impacts on the members of any listened threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat.

The significance of impacts to threatened species and ecological communities have been assessed using available Commonwealth guidelines, including:

- Matters of National Environmental Significance Significant Impact Guidelines 1.1 (SIG 1.1) (DoE, 2013)
- Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles (DSEWPAC, 2011)

Terrestrial Threatened Species and Ecological Communities

Only those species assessed as having likely and potential habitat in the CSEDA (as listed in Table 4) have been assessed. Where the same set of impact assessment guidelines apply to multiple species, the impact assessments for these species have been grouped. Where species-specific guidelines are available, species have been assessed individually.

Potential habitat for MNES within the CSEDA may be damaged or lost through the clearing of vegetation for construction of CSEDA infrastructure. The estimated development footprint is approximately 132 ha. This represents approximately 6% of the total CSEDA (2,182 ha). The disturbance to habitats for species likely or potentially occurring does not exceed 1.3 ha for all individual species except *Geophaps scripta scripta*. This is not considered a significant disturbance due to the short duration of construction and that any important habitat features are not likely to be disturbed.

Infrastructure will be predominately located in areas that have already undergone substantial vegetation clearing from existing landholder agricultural activities thereby reducing the need for additional clearing. However, some minimal clearing will be required and this has the potential to impact upon EPBC Act-listed species habitat and TECs within the CSEDA.

Table 4: Area of disturbance

Scientific Name	Species / Community	Status	Disturbance Area (ha)	Area within Project Area (ha)	Percentage disturbed (%)
Acacia harpophylla (dominant and co-dominant)	Brigalow	E	1.3	45.6	2.8
Homopholis belsonii	Belsons panic	V	1.3	45.6	2.8
Geophaps scripta scripta	squatter pigeon	V	130.7	2136.4	6.1
Egernia rugosa	yakka skink	V	1.3	45.6	2.8
Delma torquata	Collared delma	V	1.3	45.6	2.8
Furina dunmalli	Dunmall's snake	V	1.3	45.6	2.8
Anomalopus mackayi	Long-legged worm-skink	V	1.3	45.6	2.8
Status under EPBC Act: E= endangered; V = vulnerable					

The Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DoE 2013) have been used to guide the assessment of the Project's impact significance on MNES. Assessments of significance against the guideline criteria for each TEC and species known or likely to occur within the Project area, or known to occur proximal to the CSEDA, are provided in Attachment B. Summaries are provided in Table 5.

Table 5: Significant impact assessment

MNES	Area of Potential Impact	Guideline Threshold and Recommendation
Brigalow TEC	1.3 ha	Approximately 1.3 ha from 45.6 ha of Brigalow TEC will be cleared to accommodate wells, access tracks and flowlines. To assist in reducing the impacts, flowline clearing will be reduced from 40 m to 12 m when in sensitive vegetation reducing the impact. Overall there are 9 patches of brigalow and one large block of 44.3 ha which will be retained. The impact of 1.3 ha is not considered to be a significant as it remains below the 1.5 ha threshold. **No significant impact.**
Belson's panic grass	1.3 ha	Belson's panic grass does have the potential to occur in the CSEDA however can be avoided. As the disturbance from the Project activities is narrow and linear it is unlikely to cause fragmentation, prevent the species from occurring in the surrounding area and will not reduce the area of occupancy. **No significant impact.**
Squatter pigeon	130.7 ha	No thresholds or definitions of habitat critical to the survival of the squatter pigeon are provided in available documentation. The development will remove approximately 130.7 ha of possible dispersal habitat. This is approximately 6% of available habitat for this species within the Project area and important habitat features for the species are not likely to be impacted, or not of an extent that is likely to lead to a decline in the species. **No significant impact.**
Dunmall's snake	1.3 ha	The CSEDA is not anticipated to provide important habitat for the Dunmall's snake as the area is mapped as 'species may occur' and there has been no sightings during the on ground surveys. In addition it does not contain large contiguous suitable habitat and the area for development is largely in cleared areas. The development footprint does not represent a barrier to dispersal throughout the landscape. Vegetation clearing is generally confined to linear corridors, providing minimal fragmentation or barriers to the movement/dispersal of these species. **No significant impact.**

Yakka skink	1.3 ha	The CSEDA is not anticipated to provide important habitat for the yakka skink as the area is mapped as 'species likely occur' and there has been no sightings during the on ground surveys. In addition it does not contain large contiguous suitable habitat and the area for development is largely in cleared areas. The development footprint does not represent a barrier to dispersal throughout the landscape. Vegetation clearing is generally confined to linear corridors, providing minimal fragmentation or barriers to the movement/dispersal of these species. **No significant impact.**
Collared delma	1.3 ha	The CSEDA is not anticipated to provide important habitat for the collared delma as the area is mapped as 'species may occur' and there has been no sightings during the on ground surveys. In addition it does not contain large contiguous suitable habitat and the area for development is largely in cleared areas. The development footprint does not represent a barrier to dispersal throughout the landscape. Vegetation clearing is generally confined to linear corridors, providing minimal fragmentation or barriers to the movement/dispersal of these species. **No significant impact.**
Long-legged worm skink	1.3 ha	The CSEDA is not anticipated to provide important habitat for the Long-legged worm-skink as the area is mapped as 'species may occur' and there has been no sightings during the on ground surveys. In addition it does not contain large contiguous suitable habitat and the area for development is largely in cleared areas. The development footprint does not represent a barrier to dispersal throughout the landscape. Vegetation clearing is generally confined to linear corridors, providing minimal fragmentation or barriers to the movement/dispersal of these species. **No significant impact.**

Aquatic threatened Species

Murray cod

FRC through their assessment (Refer Attachment C) determined that watercourses in the CSEDA do not support populations, or habitat of MNES species due to the low aquatic ecological values, low value for human users of water and high levels of existing disturbance. Therefore watercourses of the CSEDA are considered to be low quality. Construction of the proposed development within the CSEDA will therefore have no direct impact on Murray cod.

The CSEDA is sufficiently displaced from any populations of Murray cod in the Condamine River (approximately 18km) so that there will be no indirect impacts therefore **no significant impact** is expected**.**

3.1 (e) Listed migratory species

Description

Seven Migratory birds and an additional six marine birds were identified in the EPBC Database search and identified as known, likely or with potential to occur within the CSEDA, which are detailed in Attachment B. Of these species, one is listed as Critically Endangered and one is listed as Endangered.

Nature and extent of likely impact

Address any impacts on the members of any listed migratory species, or their habitat.

Given the species' migratory habits, the ephemeral nature of food and habitat resources and the extent of habitat across the species' range, it is likely that the existing resources within the CSEDA would be utilised by most of the migratory/marine species listed. However, these species are typically common and widespread, and available documentation indicates that the CSEDA does not include habitat features of particular significance to these species or provide an area of important habitat for a migratory species.

The CSEDA is avoiding water bodies, the disturbance is localised, and the majority of impacts are on disturbed land, therefore the Project will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of any population of a migratory species. Therefore likelihood of a significant impact to migratory species is considered low and considered no significant impact.

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, please complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

There are no Commonwealth Marine Areas in the vicinity of the CSEDA and, due to the large distance between the CSEDA and protected marine areas, no direct or indirect impacts are expected to occur.

Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth marine area.

Due to the large distance between the CSEDA and Commonwealth Marine Areas, no direct or indirect impacts are expected to occur.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, please complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land).

Description

If the action will affect Commonwealth land also describe the more general environment. The Policy Statement titled *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* provides further details on the type of information needed. If applicable, identify any potential impacts from actions taken outside the Australian jurisdiction on the environment in a Commonwealth Heritage Place overseas.

The action is not on Commonwealth land.

Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth land. Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

N/A

3.1 (h) The Great Barrier Reef Marine Park

Description

The CSEDA is located approximately 420km south-west of the Great Barrier Reef World Heritage Area (GBRWHA).

Nature and extent of likely impact

Address any impacts on any part of the environment of the Great Barrier Reef Marine Park.

Note: If your action occurs in the Great Barrier Reef Marine Park you may also require permission under the *Great Barrier Reef Marine Park Act 1975* (**GBRMP Act**). If so, section 37AB of the GBRMP Act provides that your referral under the EPBC Act is deemed to be an application under the GBRMP Act and Regulations for necessary permissions and a single integrated process will generally apply. Further information is available at www.gbrmpa.gov.au

Due to the large distance between the CSEDA and the Great Barrier Reef Marine Park, no direct or indirect impacts are expected to occur.

3.1 (i) A water resource, in relation to coal seam gas development or large coal mining development

Description

If the action is a coal seam gas development or large coal mining development that has, or is likely to have, a significant impact on water resources, the draft *Policy Statement Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources* provides further details on the type of information needed.

Groundwater

The CSEDA is located within the Surat Cumulative Management Area (CMA). Under the *Queensland Water Act 2000* (the Water Act), CMAs may be declared where two or more tenure holders exercise their underground water rights. The Surat CMA was declared because of the adjacent development of the following major CSG projects:

- Australia Pacific LNG;
- Queensland Curtis LNG (QGC);
- Gladstone LNG (Santos); and
- Surat Gas Project (Arrow Energy).

In addition, there was pre-existing conventional petroleum and gas production and other CSG developments in the area that are

included in the CMA.

Potential impacts associated with petroleum activities in a CMA are assessed and managed by the Queensland Office of Groundwater Impact Assessment (OGIA – formerly the Queensland Water Commission), which is required to submit an Underground Water Impact Report (UWIR) for the CMA. The Water Act defines the requirements for a UWIR, which include but are not limited to:

- The quantity of water historically produced and an estimate of the quantity of water to be produced because of the exercise of underground water rights;
- For each aquifer affected or likely to be affected a description of the aquifer and an analysis of the movement of groundwater between aquifers, including the changes due to the exercising of underground water rights;
- A water monitoring strategy, including:
  - The rationale for the strategy and locations to be monitored
  - The parameters to be measured and their measurement frequency; and
- A spring impact management strategy, including:
  - An assessment of the hydraulic connection between the spring and underlying aquifer(s);
  - The predicted risk to the spring due to declining water levels at its location, and likely impact on ecosystem and ecological values of the spring due to declining water levels
  - Options available and a strategy for preventing or mitigating predicted impacts on the spring.

The initial UWIR for the Surat CMA was first published in 2012 (QWC, 2012) and recently revised in 2016. Details of the conceptual hydrogeological model and numerical modelling undertaken for the Surat CMA is described in detail therein. The UWIR was used as the basis for the development of the drawdown triggers and limits as required by the federal approval for the Australia Pacific LNG Project – Gas Field Development (EPBC 2009/4974), as implemented through the Stage 2 CSG Water Monitoring and Management Plan (WMMP) (Q-LNG01-15-MP-2105) and the associated Joint Industry Plan for an Early Warning System for the Monitoring and Protection of EPBC Springs, September 2013.

The WMMP can be accessed and referenced from the Australia Pacific LNG website at: http://www.aplng.com.au/environment/management-plans

Hydrogeology

A hydrostratigraphic column for the Surat CMA is presented as Figure 1. The uppermost unit present within the CSEDA is the Bungil Formation. CSG extraction is from the WCM, which lies approximately halfway through the stratigraphic sequence. The Springbok Sandstone and the WCM are the important formations for the CSEDA.

The underlying Eurombah Formation is considered an aquitard, consisting of siltstone, mudstone and fine to medium-grained poorly sorted sandstone, with almost no coal and consequently, little permeability (OGIA, 2016).

The hydrogeology and aquifer connectivity at the CSEDA has been assessed using the following information sources:

- APLNG 2014/15 and 2015/16 Groundwater Assessment Report (APLNG, 2015; 2016).
- OGIA (2016) Surat CMA geological model grid surfaces developed as part of the UWIR.
- Condabri South 6 (CNS006), a CSG exploration well located within the CSEDA boundary.
- Greenlea 1, a CSG exploration well drilled into the Bowen Basin (Pangaea, 2016) located ~2 km south of the CSEDA southern boundary.

In this area of the basin, the WCM, the target for CSG production, is overlain by the Springbok Sandstone aquifer. OGIA (2016) reports the presence of a lower permeability aquitard layer which is part of the WCM and separates the productive coal seams from the Springbok Sandstone. Based on drilling at Condabri South 6, the thickness of the upper aquitard layer at the CSEDA is approximately 29 m.

In terms of connectivity of the Springbok Sandstone with the underlying WCM, OGIA (2016) have considered both the upper aquitard thickness and the differences in water chemistry of the two formations which suggest limited interconnectivity between these units. The UWIR states that at this early stage of CSG development, the available monitoring data shows little or no evidence of CSG-related pressure impacts in the Springbok Sandstone, therefore indicating limited connectivity.

The Hutton Sandstone is the next aquifer in GAB sequence which underlies the WCM and is separated from the lowermost producing coal seams by the Eurombah Formation (referred to as Durabilla Formation in OGIA, 2016), which is considered an aquitard. Limited drilling data is available at the CSEDA to provide a thickness for the formation, therefore the OGIA geological model has been used. OGIA (2016) estimate the Eurombah Formation to be 35 m in thickness across the CSEDA, and as a result of this layer, consider the connectivity between the WCM and Hutton Sandstone to be low. This is also supported by water chemistry data, which indicates that the groundwater quality in the WCM is distinctly different from the Hutton Sandstone, with the difference increasing with distance from the outcrop areas (OGIA, 2016).

The outcrop mapping indicates that the Springbok Sandstone is 37 km north-east of the CSEDA, the WCM outcrop is 50 km

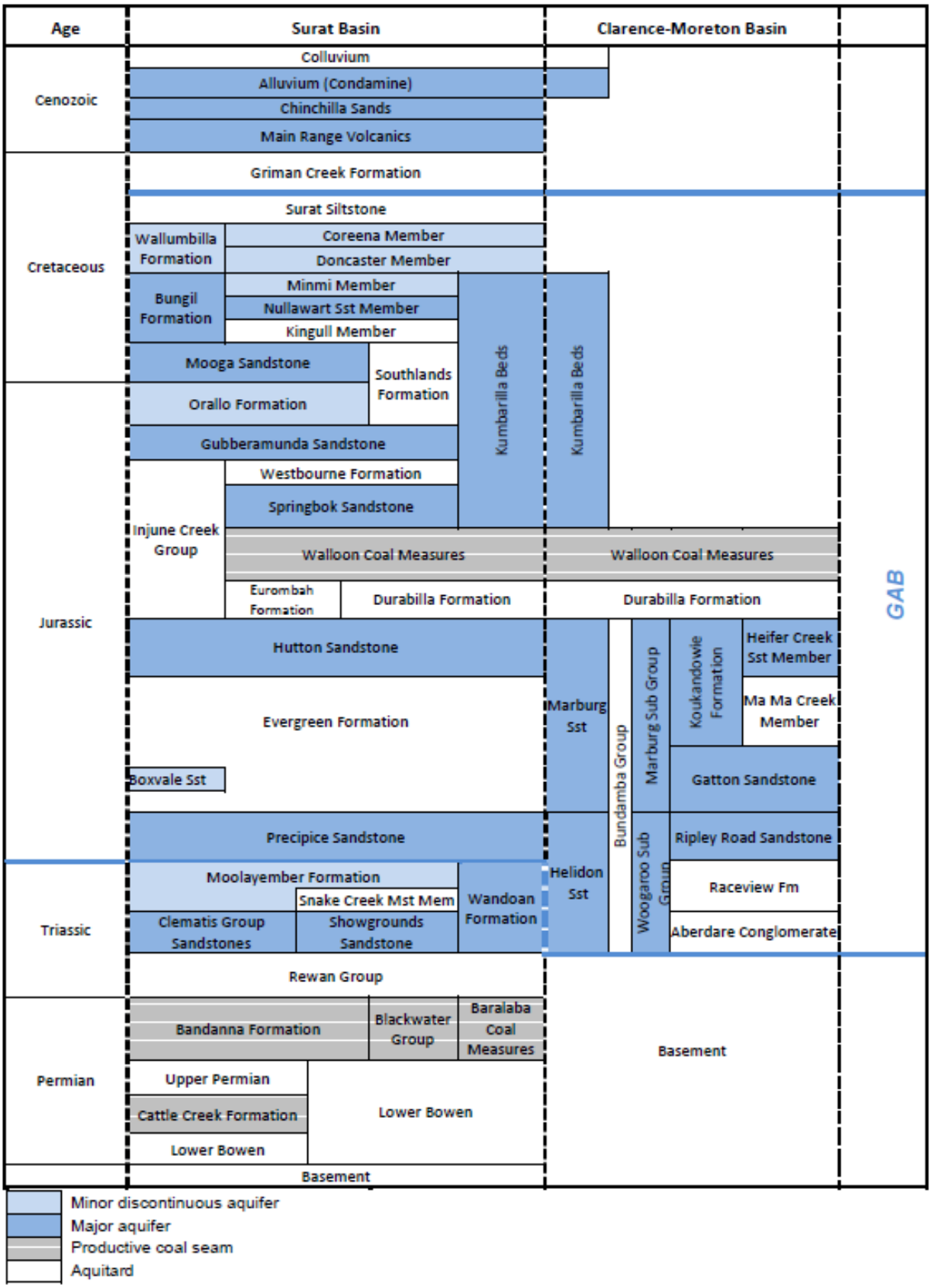
north-east and the Hutton Sandstone outcrop is 86 km to the north-east. Most recharge to the GAB formations occurs in the outcrop areas, with the majority of recharge occurring from direct rainfall infiltration, indirectly through stream bed leakage or from overlying aquifer units (OGIA, 2016).

Five third party groundwater bores were identified within 25 km of the CSEDA and are most likely used for water supply for stock and domestic purposes.

Two spring complexes were identified in the vicinity of the CSEDA, Wambo Creek Springs approximately 30 km east and Orana located 42 km north east, both with a source from Cainozoic Sediments. It is considered that there is limited hydrogeological connectivity due to the thickness of aquifers/aquitards between the Cainozoic sediments and WCM.

The nearest spring complex, is the Scott's Creek Spring Complex with the source aquifer being the Hutton Sandstone and located approximately 155 km north-west of CSEDA. The Scott's Creek Spring complex supports populations of the EPBC listed (endangered) salt pipewort *Eriocaulon carsonii* a groundwater community (UWIR, 2016).

Figure 1 Hydrostratigraphic column for the Surat CMA



Nature and extent of likely impact

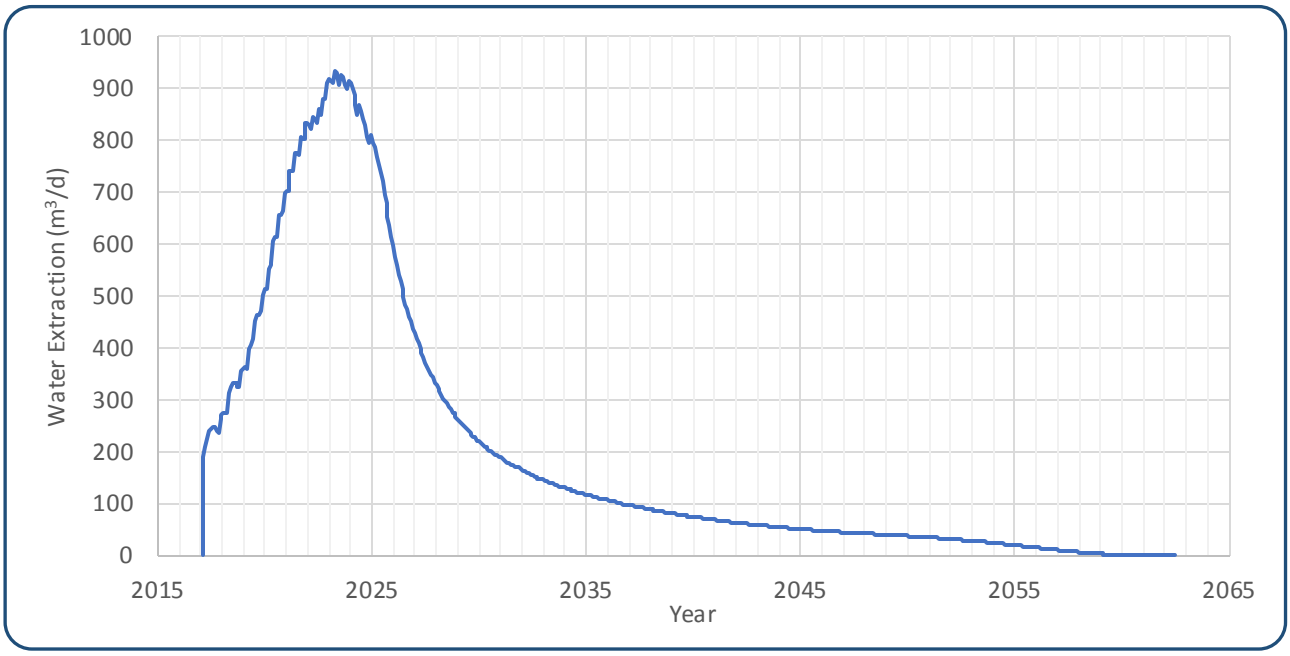
Address any impacts on water resources. Your assessment of impacts should refer to the draft *Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources*.

Groundwater

Potential Localised Impacts

Klohn Crippen Berger Ltd (KCB) undertook a hydrogeological assessment for the CSEDA to assess the potential impact on groundwater resources, ecological communities and threatened species listed under the EPBC Act. An analytical assessment using MLU for Windows (version 2.25.69) was performed. The assessment was based on the water production profile contained in Figure 2. and the model inputs listed in Table 6.

Figure 2: Projected Water Production Profile, Total Water Extraction for the Project area



The analytical assessment undertaken by KCB (refer Attachment D) allowed for the simulation of drawdown impacts across multiple layered aquifer systems. The assessment was conducted to consider the localised impacts on the Springbok Sandstone, WCM and Hutton Sandstone as a result of the proposed CSG production well development within the CSEDA.

Modelling also used the following CSG Water Production information:

- The CSG water production (extraction) rate was calculated based on the predicted production rate from the Australia Pacific LNG stochastic reservoir model for the 38 CSG production wells.
- To simplify the groundwater extraction in the model, and to incorporate conservatism in the simulation of the extraction, the total water production profile for the 38 wells was distributed across three model wells distributed within the CSEDA.
- Based on the current estimate of CSG production well commissioning within the CSEDA, water extraction / production is modelled to commence in March 2017 and end in June 2062.
- To maintain a condition of low reservoir pressure, the maximum extraction rate was assumed to persist for the duration of production, which allows for relative permeability effects of gas reducing water production which is not inherent in the analytical assessment software used.

Table 6: Summary of Model Input Parameters

Formation	Aquifer	Thickness (m)	Hydraulic Conductivity (m/d)	Storativity	Pumping Wells	Receptors
Top Aquitard	Aquitard	686 (a)	0.686 (Kv, d)	0		
Springbok Sandstone	Aquifer	91 (a)	0.0021 (Kh, d)	0.00045		2
Upper Walloons	Aquitard	29 (a)	0.0001 (Kv, d)	0		
Walloon Coal Measures	Aquifer	279 (a)	0.00061 (Kh, e)	0.00014	3	3
Eurombah Formation	Aquitard	34 (b)	0.0001 (Kv, d)	0		
Hutton Sandstone	Aquifer	302 (c)	0.02 (Kh, d)	0.001		
Bottom Aquitard	Aquitard	130 (c)	0.0001 (Kv, d)	0		

Thickness source: a. Condabri South 6, b. OGIA geological model c. Greenlea 1
Hydraulic Conductivity, Kv – Vertical, Kh – Horizontal, Source d. APLNG (2015), e. Condabri South 6

Third Party Bores

Groundwater from the Springbok Sandstone, WCM and Hutton Sandstone is abstracted by a number of users within the vicinity of the CSEDA. Five (5) groundwater bores have been identified from the OGIA Aquifer Attribution dataset as being within 25km of the CSEDA. Details of these bores are provided in Table 7.

The analytical assessment undertaken by KCB (refer Attachment D) indicates that no groundwater level drawdown will occur at the groundwater bores identified in Table 7. The extent of drawdown associated with groundwater extraction from the CSEDA is limited to a maximum of 500 m from any single well.

Table 7: Groundwater Bores and Springs relevant to the CSEDA

Receptor Type	Receptor Name	Formation	Distance from CSEDA (km)	UWIR (2016) Long Term Drawdown Predicted (m)	Estimated Years Before Cumulative Impacts Exceed Trigger
Groundwater Bore	RN 12233	Springbok Sandstone	10.0	19.3	Not indicated
	RN 22795	Springbok Sandstone	23.7	11.1	>2
	RN 23060	Walloon Coal Measures	15.7	170.8	2
	RN 23424	Walloon Coal Measures	21.2	150.9	2
	RN 23469	Walloon Coal Measures	16.4	156.5	2
Spring	Scotts Creek	Hutton Sandstone	150.0	0.5 – 2.5	>100 years

Groundwater Dependent Ecosystems (GDEs)

Groundwater dependent ecosystems within the vicinity of the CSEDA are limited to springs which are sourced from the Cainozoic sediments. These are not considered to be impacted by the proposed CSEDA due to the significant thickness of formation and aquitard layers between the WCM and the Cainozoic sediments.

The Scott's Creek Spring Complex which is connected to the Hutton Sandstone is the nearest to the CSEDA being 150 km to the north-east. Based on KCB's assessment (refer Attachment D), drawdown in the Hutton Sandstone is limited to within the CSEDA and will therefore not impact the Scott's Creek Spring Complex. As there is no identified impact to the Spring Creek Complex the CSEDA is not predicted to:

- reduce the extent of an ecological community;
- fragment or increase fragmentation of an ecological community;
- adversely affect habitat critical to the survival of an ecological community;
- modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns;
- cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species;
- cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- assisting invasive species, that are harmful to the listed ecological community, to become established, or
- causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or
- interfere with the recovery of an ecological community.

Water Quality

There is potential for impacts to surface and /or groundwater quality from contamination from drilling fluids primarily during construction of the wells. Groundwater impacts may occur where well integrity is not achieved prior to commencing production from the well. Australia Pacific LNG ensures all wells are drilled in accordance with the *Code of Practice for constructing and abandoning coal seam gas wells and associated bores in Queensland* (DNRM, 2013) which requires that well integrity is achieved.

HFS will be undertaken within the CSEDA. As discussed in section 2.1.2 (Stimulation component) well integrity is confirmed before HFS occurs. This prevents migration paths from the well to aquifers above or below the target coal formation. As such, no impacts to water quality within these aquifers is likely to occur.

Based on historical monitoring of HFS wells, up to 60% of HFS fluid is returned during flowback operations. For HFS fluid which remains in the WCM, when hydrated, inorganic hydraulic fracture chemicals will either rapidly dissociate into salts or have restricted mobility based on their physical properties hydrated (i.e. they are the consistency of a gel). On this basis, the migration of inorganic hydraulic fracturing chemicals within the WCM is likely to result in a change in the alkalinity and/or salinity of groundwater within the immediate vicinity of the hydraulically fractured zone (up to 200 m horizontally from the well). As the quality of the groundwater within the WCM is already saline (historical monitoring by Australia Pacific LNG averages above 4,000 µS/cm within the Condabri development area), a localised change in the alkalinity and salinity from dissociated inorganic chemicals is considered a low risk in an aquifer environment and thus does not warrant further assessment.

The Hydraulic Fracturing Risk Assessment which addresses the environmental risks of leaving the remaining HFS fluid in the formation as low for the following reasons:

- Existing conditions on state approvals require the following minimum separation distances from water extraction bores – 200 m vertical and 1km horizontal
- Fractures formed by hydraulic fracturing propagate up to 200m from the well
- Residual chemical fate and transport modelling indicates that the most soluble of the hydraulic fracture chemicals will migrate 9 m beyond the 200 m fracture zone over a period of 1000 years (based on production never occurring from the well).
- Once the well is brought into production, water is drawn towards the well and the migration pathway is drawn towards the well rather than away from the well.

Potential Cumulative Impacts

Impacts to groundwater in the CSEDA were assessed as part of the UWIR (2016) model to evaluate the cumulative impacts of CSG water production as part of the regional cumulative CSG development drawdown in the WCM, Springbok Sandstone and the Hutton Sandstone. This model is used to predict response to extraction / production of water from the coal seams in the Surat CMA. As part of the UWIR regional monitoring, predictive simulation of long term draw down was undertaken, with the following predictions made in the report:

- Long-term depressurisation in the WCM directly underlying the CSEDA was predicted to range between 150 and 300 m.
- The extent of 'long term affected area' within the Springbok Sandstone overlaps with the CSEDA extent, with 5 to 10m of drawdown predicted across the CSEDA.
- The drawdown impact predicted for the Hutton Sandstone underlying the CSEDA is 5 to 10 m.

The UWIR 2016 model determines long term impacts at ground water bore receptor sites including the timeframe that water levels will take to exceed the trigger level of five metres. Groundwater from the Springbok Sandstone, WCM and Hutton Sandstone is abstracted by a number of users within the vicinity of the CSEDA. Five (5) groundwater bores have been identified from the OGIA Aquifer Attribution dataset as being within 25 km of the CSEDA. Details of these bores are provided in Table 7.

The analytical assessment undertaken by KCB (refer Attachment D) indicates that no groundwater level drawdown will occur at the groundwater bores identified in Table 7. The extent of drawdown associated with groundwater extraction from the CSEDA is limited to a maximum of 500 m from any single well.

Table 7 shows the results of the UWIR prediction at the groundwater bores located at the receptor sites for the CSEDA.

Assessment of the cumulative impacts of CSG production well water extraction was completed as part of the UWIR (OGIA, 2016), with the CSG water production from CSEDA included in the UWIR regional modelling. All of the groundwater bores are predicted to see a decline in water level greater than the groundwater trigger threshold (5 m), however based on the results of the analytical assessment conducted by KCB (refer Attachment D) there is no identifiable drawdown impact attributable from the CSEDA from a cumulative perspective.

Based on the above no significant impact is expected to occur to ground or surface water as a result of the proposed development within the CSEDA.

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

You must describe the nature and extent of likely impacts (both direct & indirect) on the whole environment if the proposed action:

- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef Marine Park.

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	**Is the proposed action a nuclear action?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	X	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))		

3.3 Description of the project area and affected area for the proposed action

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, please also complete each of the details below (where relevant) for each alternative identified.

3.3 (a) Flora and fauna

The following state NC Act listed flora or fauna species have been identified during pre-clearance surveys:

Listed flora

- Red-soil wolly wrinklewort (*Rutidosis lanata*)- V
- Kurrajong (*Brachychiton populneus*)- SLC
- Black orchid (*Cymbidium canaliculatum*)- SLC
- Northern sandalwood (Santalum lanceolatum)- SLC

Listed fauna

- Rainbow bee-eater (Merops ornatus) - SLC
- Short beaked echidna (*tachyglossus aculeatus*)- SLC

3.3 (b) Hydrology, including water flows

Refer to Section 3.1 (i) for a description on the hydrology within the CSEDA.

3.3 (c) Soil and Vegetation characteristics

The CSEDA predominantly comprises brown/grey non-cracking clays (Dermosols and Vertosols) typical of the Brigalow plains. A number of clay alluvial plains areas also exhibit black and grey cracking clays and shallow stony loams or sands derived from sediments (mainly Rudosols) or texture contrast soils (Chromosols / Sodosols / Kurosols) with a shallow mainly sandy surface (acidic to alkaline subsoil). Loams with exposed rock (laterite) occur in areas of higher elevation.

The CSEDA is comprised of flat to gently undulating alluvial plains and flat clay pans with gilgai microrelief varying from very shallow to moderately deep. Generally, the elevation of the CSEDA ranges between 290 to 300 m Australian Height Datum with slope gradients generally below five (5) percent (refer to Figure 10). The areas of alluvial plains are subject to periodic flooding.

The CSEDA has generally been cleared of remnant vegetation with areas largely consisting of grazing pastures and dryland agriculture areas. Extensively cleared Brigalow communities are present, with black and grey cracking clays and alluvial soil in the flat to undulating lands being suitable for belah forests.

3.3 (d) Outstanding natural features

There are no outstanding natural features in the CSEDA.

3.3 (e) Remnant native vegetation

The majority of the CSEDA comprises grazing and other agricultural activities. The land use of the CSEDA is almost wholly related to agricultural activities. These activities have affected the environmental values of the CSEDA.

Remnant and regrowth vegetation within the CSEDA is generally sparsely distributed and fragmented, reflecting the predominant land use. Historical clearing of the Brigalow communities within the CSEDA has resulted in scattered vegetation, which generally occurs in linear patches within road easements and along property boundaries. A summary of the RE's within the CSEDA is provided in Table 8 based on State RE mapping.

Table 8 Regional Ecosystems

Regional Ecosystem	Biodiversity Status of Regional Ecosystem[1]	Remnant	Regrowth
11.4.3	Endangered	Yes	Yes

Regional Ecosystem	Biodiversity Status of Regional Ecosystem[1]	Remnant	Regrowth
11.5.1	Not of Concern		Yes
11.5.20	Not of Concern		Yes

Notes:
1 - Biodiversity Status is based on an assessment of the condition of remnant vegetation in addition to the criteria used to determine the class under the *Vegetation Management Act 1999 (Qld)*.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

Please refer to information contained in Section 3.3(c).

3.3 (g) Current state of the environment

Include information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The majority of the CSEDA has been cleared, with the exception of isolated remnant shadelines, patches of regrowth vegetation and vegetation. The area has historically been utilised for agriculture.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

There are no commonwealth heritage places or other places recognised as having heritage values with the CSEDA.

3.3 (i) Indigenous heritage values

Native Title has been extinguished in PL 1011.

3.3 (j) Other important or unique values of the environment

Describe any other key features of the environment affected by, or in proximity to the proposed action (for example, any national parks, conservation reserves, wetlands of national significance etc).

There are no other important or unique values in the CSEDA.

3.3 (k) Tenure of the action area (e.g. freehold, leasehold)

The majority of the CSEDA is freehold with one parcel lands lease.

3.3 (l) Existing uses of area of proposed action

The CSEDA is utilised as a grazing enterprise for managed cattle.

3.3 (m) Any proposed uses of area of proposed action

The CSEDA will be used for undertaking petroleum activities and cattle grazing will continue.

4 Environmental outcomes

Provide descriptions of the proposed environmental outcomes that will be achieved for the matters protected by the EPBC Act that are likely to be affected by the proposed action. Include details of the baseline data upon which the outcomes are based, and the confidence about the likely achievement of the proposed outcomes. Where outcomes cannot be identified or committed to, provide explanatory details including any commitments to identify outcomes through an assessment process.

If a proposed action is determined to be a controlled action, the Department may request further details to enable application of the *Outcomes-based Conditions Policy 2016* (http://www.environment.gov.au/epbc/publications/outcomes-based-conditions-policy-guidance), including information about the environmental outcomes to be achieved by proposed avoidance, mitigation, management or offset measures, details of baseline data, milestones, performance criteria, and monitoring and adaptive management to ensure the achievement of outcomes. If this information is available at the time of referral it should be included in the description of the proposed measures.

General commitments to achieving environmental outcomes, particularly relating to beneficial impacts of the proposed action, CANNOT be taken into account in making the decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. However, those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, and conditions of approval, if your proposal proceeds to these stages.

Ecological assessments have been undertaken to assess any likely impacts to MNES from the Project. These assessments have involved field surveys, desktop reviews and significant impact assessments for MNES. These assessments have concluded that the Project is not likely to result in a significant impact upon any MNES and therefore the development of outcomes based conditions is not proposed.

5 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities as part of the proposed action at sections 1.10 and 2.3 please complete this section in relation to each of the alternatives identified.

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

For each proposed measure, specify:

- a concise description of the nature, scope, work plan and consequence of the measure for the relevant impact and any statutory or policy basis for the measure;
- in doing so, include analysis and findings on whether each measure is likely to achieve the environmental outcomes for the matters protected by the EPBC Act which are likely to be affected by the proposed action, including noting:
    - the likely effectiveness of the measure in avoiding or mitigating the relevant impact on the matters protected by the EPBC Act;
    - the level of commitment by the person proposing to take the action to achieve the proposed environmental outcomes and implement the proposed mitigation measures. For example, identify if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner);
    - any likely residual impacts (being, impacts likely to occur having implemented mitigation and/or avoidance measures) and, if such impacts will or are likely to occur, the measure available to compensate or offset these residual impacts. Please consider the Department's *EPBC Act, the EPBC Environmental Offsets Policy* (October 2012) (and *How to use the Offsets Assessment Guide*) and the *draft Policy Statement on EPBC Act Advanced Environmental Offsets*;
    - the likely consequences for the matters protected by the EPBC Act should the measure not be effective; and
    - any other likely consequences of the measure including both adverse and beneficial, such as efficiency, cost and cost-effectiveness and public acceptability (noting however, beneficial consequences of the measure will not be considered in deciding whether or not the proposed action is likely to have a significant impact on the matters protected by the EPBC Act).

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

Note, the Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:

- clearly form part of the referred action (e.g. be identified in the referral and fall within the responsibility of the person proposing to take the action);

- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected; and
- must be realistic and practical in terms of reporting, auditing and enforcement.

Management measures set out in Table 9 to minimise impacts to MNES are based on the following hierarchy:

1. Avoid direct and indirect adverse impacts to MNES
2. Mitigate and manage any unavoidable direct and indirect adverse impacts to MNES
3. Implement remediation and rehabilitation of impacted areas to promote long-term recovery of MNES

Table 9 Management measures

Avoid Direct And Indirect Adverse Impacts To MNES	
Avoidance	Ecology surveys have been undertaken to ground-truth vegetation communities, sample presence of flora and fauna species, determine habitat values and identify areas of existing disturbance. Results of the ecology surveys have been used to inform infrastructure planning and decision making, as follows: • Infrastructure will be preferentially sited to avoid areas of TEC or habitat for listed species. Where such areas are unavoidable, the disturbance area will be minimised to the greatest extent practicable. • Use of existing disturbed areas (such as access tracks, clearings) will be maximised as far as practicable to reduce disturbance to remnant vegetation. • Ancillary infrastructure (laydown areas, temp camps etc.) will be sited in cleared land and will not require clearing of remnant vegetation.
	Construction of wells will be undertaken in accordance with the *Code of Practice for constructing and abandoning coal seam gas wells and associated bores in Queensland* (DNRM, 2013) which requires that well integrity is achieved so as to prevent impacts to MNES. Hydraulic fracture risk assessments have been undertaken for the chemicals proposed to be used during hydraulic fracturing which have concluded that they present a low environmental risk to a MNES.
Mitigate And Manage Any Unavoidable Direct And Indirect Adverse Impacts To MNES	
Pre-clearance Inspections	A pre-clearing inspection will be undertaken by a qualified fauna spotter catcher (holds a valid rehabilitation permit (spotter/catcher endorsed)). A qualified fauna spotter catcher will also be present during clearing activities. If active breeding places of listed fauna species are identified during the pre-clear inspection or construction, a buffer will be established and marked out as directed by the fauna spotter catcher. The fauna spotter catcher is to determine whether the active breeding place is to be relocated, left in situ to allow the breeding cycle to occur (i.e. young have fully fledged or left the breeding place) or if clearing is to proceed. The following hierarchy is to be applied, and records kept by the fauna spotter catcher to demonstrate application of the hierarchy: • Avoid – leave the active breeding place in situ to allow the breeding cycle to occur • Relocate the active breeding place to adjacent undisturbed habitat and monitor to determine a return by breeding individuals. • Remove the active breeding place or remove young/eggs from irrecoverable breeding place and place in the care of a wildlife carer until ready for release to the wild. If options 1 to 3 are not practicable the active breeding place may be destroyed (destroy eggs/euthanase young, orphaned animal) where it is deemed by the fauna spotter catcher that that the young/eggs cannot be successfully rehabilitated to the wild. The Code of Practice "Care of sick injured or orphaned Animals in Queensland" (EHP, 2013) must be followed in the event euthanasia is required. Any animal captured under the permit will be returned to the nearest appropriate habitat (or in accordance with the relevant permit holders conditions), unless the

	animal is sick, injured or orphaned.
Incident Response	If during clearing, a listed species is found sick, injured or orphaned a fauna spotter catcher who holds a valid rehabilitation permit will conduct fauna handling in accordance with Code of Practice – Care of Sick, Injured of Orphaned Protected Animals in Queensland (EHP 2013). Any injured fauna shall be transported to a veterinarian or recognised wildlife carer immediately for treatment or euthanized, if necessary. The permit holder must notify EHP within 24 hours of taking possession of a vulnerable animal.
Clearing Controls	Clearing will be carried out in a sequential manner and in a way that directs escaping wildlife away from clearing and into adjacent native vegetation or natural areas and not cross roads or into other areas of threat.
Speed Restriction	A speed limit of 40 km/hr will be enforced in construction sites to minimise mortality by vehicle collision.
Staff Induction and training	Staff conducting clearing activities should be educated in fauna management measures, prior to commencing activities. Staff involved in clearing will be instructed to follow the advice of the available suitably qualified fauna spotter catcher.
Dust Controls	To minimise the generation of dust, the following controls will be implemented: • The area of exposed soils will be minimised and progressively reinstated as soon as possible upon completion of the works; • Exposed and/or disturbed soils will be regularly treated with water where required to mitigate dust generation; • During dry and windy conditions, high dust generating works (e.g. stripping, excavation) will be avoided where feasible; and • Dust suppression activities will be modified or increased in the event of unacceptable dust generation or in the event of a complaint.
Noise Controls	Noise attenuation devices (e.g. mufflers) will be installed and maintained on all equipment during construction activities to minimise noise pollution disturbance to foraging, breeding or roosting.
Directional Lighting	Directional lighting or shrouding of lights will be used to reduce light spillage into any habitat areas adjacent to construction activities to minimise light pollution disturbance to foraging, breeding or roosting.
Reduce risk of fire	The following controls will be implemented to minimise the risk of fire: • No burning of cleared vegetation will be undertaken; • Fire extinguishers will be present at the location of hot works (primarily welding); • Hot works permits will be followed at all times where applicable; • Site vehicles will be equipped with fire extinguishers; • Flammable material will not be stockpiled or stored near hot work activities (including vegetation stockpiles); and • Smoking areas will be designated with provision for containers for safe disposal of cigarette butts.
Weed and Pest Control	The following key measures, amongst others described in the Australia Pacific LNG Biosecurity Management Plan (Q-1000-15-MP-107), will be implemented for the management of declared weeds and pests: • All vehicles requiring access to an Origin site or property must have a valid biosecurity hygiene declaration unless an exemption applies. Biosecurity hygiene declarations are to be issued only by an authorised inspector; • All vehicles/equipment carrying loads of high-risk materials must also have a valid biosecurity hygiene declaration for that load; • Personnel must not enter areas of known weed infestation (e.g. areas fenced or signed as weed zones) without prior approval from the environmental advisor or health, safety and environment advisor responsible for the area; • Pre-clearance weed survey will be completed to identify declared weeds present at a site. A site specific weed management plan will be prepared if

	required and will outline roles and responsibilities, proposed treatment, access controls and survey results; • The construction area will be monitored for weed growth during regular inspections. In the event a weed infestation is discovered, access to the area will be restricted and weed control will be undertaken. Random spots checks of vehicles, equipment and visitors will be completed to ensure conformance with the weed hygiene procedures; • Reinstated areas will also be monitored for effectiveness of prevention, containment and control strategies; and • In the event a biosecurity threat other than weeds is identified, the following must be completed: - Attempt to confirm the identity of the pest or pathogen where possible; - Check whether the species is listed on the notifiable pests list; - If the pest is a notifiable pest, immediately advise the Project Delivery Environment Manager who must notify Biosecurity Queensland or the Emergency Disease Watch Hotline; - Notify landholders where required and as advised by the Environment Manager and Land Relations Advisor; and - Prepare a site-specific pest management procedure outlining specific management actions to address the threat as required.
Erosion and Sediment Controls	A site specific erosion and sediment control plan will be prepared and implemented during construction to minimise sedimentation off site and impacts to adjacent watercourses.
Specific Management Measures for Koalas	When a koala is identified in a tree or trees where the crown is overlapping with the trees earmarked for clearing, the fauna spotter catcher must establish an exclusion zone around the tree in which the koala is residing. The exclusion zone must be clearly marked by tape and/ or signage to ensure there is no clearing in that area until the koala has moved from the tree of its own accord. The exclusion zone should include a path for the koala to move out of the clearing area on its own accord. The fauna spotter catcher must take in to account the following when marking the exclusion zone: • Any tree that could cause risk to the koala if being felled • Direction of clearing • A way for the koala to leave the clearing site (trees that can act as a corridor) • Suitable locations away from the clearing site for the koala to self-relocate to. A fauna spotter catcher must ensure that no vegetation is cleared that can fall into the marked exclusion zone and no vehicles are to enter the exclusion zone at any time until the koala has moved on without the authorisation of the fauna spotter catcher. Throughout clearing the fauna spotter catcher must monitor the koala. If the koala displays signs of stress or agitation (i.e. moving about the tree, sitting up, unsettled and staying alert) the clearing must cease at that location and can continue further away from the koala as directed by the fauna spotter catcher.
Specific Management Measures for fauna capture in trenches and pipelines	The length of open trench will be minimised and backfilling must be undertaken progressively. Cellar pits on leases will be backfilled immediately following drilling operations Duration of open excavations (including bell holes) will be minimised and backfilled immediately following completion of construction Fauna egress (e.g. matting, ladder) will be installed in all excavations left open overnight Fauna refuge will be installed for any open excavations left open overnight Open excavations and trenches will be inspected daily on active work sites and weekly in other areas Prior to backfilling, the excavation or trench must be inspected for presence of fauna and evidence of burrowing fauna or breeding places. If fauna present, a fauna

	spotter catcher must relocate the animal. The use of “night caps” will be implemented over ends of welded pipe to prevent the ingress of wildlife Pipes will be strung with gaps to allow for fauna movement across the line of the pipe.
Implement Remediation And Rehabilitation Of Impacted Areas To Promote Long-Term Recovery Of MNES	
Progressive rehabilitation	Progressive rehabilitation of significantly disturbed land which is not required for ongoing petroleum activities will be undertaken and will commence within nine months following completion of works. Progressive rehabilitation will include: • Remediation of any land contaminated during construction (e.g. soils contaminated from minor hydrocarbon spills) • Reshape all significantly disturbed land to a stable landform • Re-profile all significantly disturbed land to original contours and re-establish surface drainage lines • Reinstate the top layer of the soil profile • Establish groundcover to ensure that erosion is minimised • Establish vegetation of floristic species composition found in analogue sites. Regular maintenance and at least yearly monitoring for three years of rehabilitated areas will be undertaken to determine rehabilitation success. In the event the rehabilitation is not successful, maintenance and monitoring will continue until it has been achieved for three years.

6 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (i.e. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

6.1 Do you THINK your proposed action is a controlled action?

X	No, complete section 5.2
	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act by reference to each relevant matter protected by the EPBC Act.

The Project does not impact World Heritage Properties, National Heritage Places, Great Barrier Reef Marine Park, Commonwealth marine areas or Commonwealth land and it is not a nuclear action.

Four (4) TECs, eighteen (18) listed threatened species and twelve migratory/marine species are likely or have potential to occur within the Project area or are known to occur proximal to the Project area. The significance of impacts to these species and ecological communities has been assessed using available Commonwealth guidelines, including:

- Matters of National Environmental Significance Significant Impact Guidelines 1.1 (SIG 1.1) (DoE 2013)
- Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles (DSEWPAC 2011)
- EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DoE 2014).

In addition, the following reports have been generated from on ground works:

- APLNG Pre Clearance Report Q-4500-15-RP-1329
- Origin Energy Ecological Assessment Report Q-4500-15-RP-1317
- APLNG Ecology Assessment Report Q-4500-15-RP-1319
- Origin Energy Ecological Assessment Report Q-4500-15-RP-140

Due to the area within the CSEDA being highly disturbed, the avoidance measures implemented during the design phase and limited potential for important populations to occur it is concluded that no significant impact is likely to occur for any EPBC Act-listed threatened species or TEC.

The CSEDA has the potential to impact groundwater by:

- Drawdown above the trigger level at third party bores
- Impacts to GDE's from reduced groundwater supply
- Groundwater contamination from well construction

The UWIR 2016 reported that there would be drawdown from the CSEDA however the contribution to cumulative impacts minimal. The analytical assessment undertaken for localised impacts has found that the CSEDA drawdown at groundwater bore receptors will be localised within the lease area and that drawdown within the Springbok Sandstone and Hutton sandstone are below trigger levels. There are five third party users groundwater bores within a 25 km radius and there would be no drawdown at those sites. The drawdown in the Hutton Sandstone is limited to the CSEDA and no impacts to GDE's being the Scott Creek Spring Complex are predicted. Existing controls in place for drilling and stimulation activities will ensure that water quality contamination is unlikely.

Overall the assessments of the CSEDA support that the activities are not likely to constitute a significant impact on a MNES and are therefore NOT a controlled action.

6.3 Proposed action IS a controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

	Matters likely to be significantly impacted
	World Heritage values (sections 12 and 15A)

	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above by reference to each matter protected by the EBPC Act identified in section 3 above.

7 Environmental record of the person proposing to take the action

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** Australia Pacific LNG is committed to responsible environmental management. Origin Energy (upstream operator for Australia Pacific LNG) has a Health, Safety and Environmental Management System which helps govern all activities and ensures continual improvement in managing environmental risks. Origin sets objectives and targets that promote the efficient use of resources, minimisation of wastes and emissions, and the prevention of pollution. Origin aims to comply with all environmental regulations and conditions attached to our approvals to operate, and promptly report any non-compliance to relevant authorities. We encourage our people to report on environmental performance associated with our activities. To increase our understanding and improve our company-wide performance we maintain a register of all environmental incidents, observations and good practices.	X	
7.2	**Provide 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, or** **(b) if a permit has been applied for in relation to the action - the person making the application.** No. Australia Pacific LNG has not been subject to court proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources. **If yes, provide details**		X
7.3	**If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework and if and how the framework applies to the action.** As the upstream operator for Australia Pacific LNG, Origin Energy is committed to protecting the environment and consequently manages Health Safety and Environment (HSE) matters as critical business activities. Origin Energy has developed corporate environmental policies that provide a public statement of the corporate commitment to protecting the environment during operations. In addition, Origin Energy, as an operator of gas production activities, uses a structured approach to the management of HSE issues through a documented HSE Management System. This management system ensures that environmental risks associated with Origin's operations are either avoided or kept to as low as reasonably practicable. In addition the HSE Management System drives continuous improvement in the company's environmental performance and assists in providing confidence to regulators, commercial partners and stakeholders that Origin is managing its operations in an environmentally responsible way. The corporate Health, Safety and Environmental policy forms part of Origin's HSE Management System. A copy of which is attached to this referral (Attachment E).	X	

7.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?** **Provide name of proposal and EPBC reference number (if known)**	X	

Reference Number	Title of Referral	Date Received
2016/7720	AUSTRALIA PACIFIC LNG PTY LIMITED/Energy Generation and Supply (non-renewable)/Approximately 65km north-east of Roma, southern Queensland/Queensland/Spring Gully CSG field extension, southern Queensland	09 Jun 2016
2011/6221	AUSTRALIA PACIFIC LNG CSG TRANSMISSION PTY LIMITED /Mining/Approximately 40km west of Dalby/Queensland/Ruby Spur Line	14 December 2011
2009/4977	AUSTRALIA PACIFIC LNG PTY LIMITED/Energy Generation and Supply (non-renewable)/Curtis Island and Point Curtis/Queensland/LNG Plant and Ancillary onshore and marine facilities	6 July 2009
2009/4976	AUSTRALIA PACIFIC LNG PTY LIMITED/Energy Generation and Supply (non-renewable)/Western Downs of QLD to Curtis Island, Gladstone/Queensland/Construct and operate 447km high pressure gas transmission pipeline	6 July 2009
2009/4974	AUSTRALIA PACIFIC LNG PTY LIMITED/Energy Generation and Supply (non-renewable)/Walloon Gas Fields, Surat Basin, Darling Downs/Queensland/Expansion of Coal Seam Gas Fields	6 July 2009

8 Information sources and attachments

(For the information provided above)

8.1 References

- List the references used in preparing the referral.
- Highlight documents that are available to the public, including web references if relevant.

APLNG, Stage 2 CSG Water Monitoring and Management Plan (WMMP) (Q-LNG01-15-MP-2105)
https://www.aplng.com.au/about-us/compliance.html

Department of Environment and Heritage Protection, 2013. Code of Practice - Care of sick injured or orphaned Animals in Queensland

Department of Environment and Heritage Protection, *Regional Ecosystem Description Database* (REDD v8.0) accessed 26/09/2016

Department of the Environment, 2013. Matters of National Environmental Significance Significant Impact Guidelines 1.1

Department of the Environment, EPBC Act Protected Matters report (10km buffer of the Project area boundary) created 26/09/2016

Department of the Environment, Species Profile and threats Database including relevant listing and conservation advices, policy statements guidelines and information sheets

Department of the Environment, 2001, Brigalow (Acacia harpophylla dominant and co-dominant) Recommendation to the Minister for the Environment and Water Resources from the threatened Species Scientific Committee (TSSC) on a public nomination for an ecological community listing on the *Environment Protection and Biodiversity Conservation Act 1999* (the Act), Accessed 29 September 2016 from http://www.environment.gov.au/node/14496

Department of the Environment, 2014. EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)

Department of Natural Resources and Mines, 2013. Code of Practice for constructing and abandoning coal seam gas wells and associated bores in Queensland – Edition 2.0

Department of Natural Resources and Mines, 2016. Land Access Code V2

Department of Sustainability, Environment, Water, Population and Communities, 2011. Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles

DSITI Wildlife Online Species List created 26/09/2016

Environmental Resources Management Australia Pty Ltd, 2016. Condabri South PL1011, Matters of National Environmental Significance Self Assessment

Fensham R.J, Ponder, W.F. and Fairfax, R.J. 2010. *Recovery plan for the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin*. Report to Department of the Environment, Water, Heritage and the Arts, Canberra. Queensland Department of Environment and Resource Management, Brisbane

Fensham, R. J, Pennay, C. and Drimer, J. 2011. Ecological and botanical survey of springs in the Surat Cumulative Management Area. Department of Environment and resource Management, Brisbane

FRC Environmental, 2016, Condabri South Extension Project Environmental Protection and Biodiversity Conservation Act Referral - Aquatic Matters of National Environmental

Klohn Crippen Berger, 2016, Condabri South Extension EPBC Referral Hydrogeological Assessment

Office of Groundwater Impact Assessment (OGIA), 2016. Underground Water Impact Report for the Surat Cumulative Management Area, Department of Natural Resources and Mines, Brisbane

Queensland Water Commission (QWC), 2012. Underground Water Impact Report for the Surat Cumulative Management Area

Queensland Herbarium Specimen Data (HERBRECS) (including records from within the Project area and within 10km of the Project area boundary)

Abbreviation	Description
ATP	Authority to Prospect
Australia Pacific LNG	Australia Pacific LNG Pty Limited
Australia Pacific LNG CSG Marketing	Australia Pacific LNG CSG Marketing Pty Limited
CHMP	Cultural Heritage Management Plan
CSG	coal seam gas
EA	Environmental Authority
EIS	environmental impact statement
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	environmentally sensitive areas
FRIP	FairyMeadow Road irrigation Pipeline
GAB	Great Artesian Basin
GBRWHA	Great Barrier Reef World Heritage Area
HSE	Health Safety and Environment
LNG	liquefied natural gas
LWD	Landspray while drilling
MDL	minimum disturbance leases
MNES	matters of national environmental significance
NSW	New South Wales
PAG Act	*Petroleum and Gas (Production and Safety) Act 2004*
PL	Petroleum Lease
PMST	Protected matters search tool
RE	Regional Ecosystems
RoW	right of way
TEC	threatened ecological communities
WTF	Water treatment facility

8.2 Reliability and date of information

For information in section 3 and the map required by section 1, specify:

- source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

The information provided in Section 3 has been sourced from various studies gathered from published and unpublished literature as listed in Section 8.1.

The search of protected matters of national significance conducted using the EPBC online database and interactive mapping tool for the proposed project area was undertaken on 6 June 2016 with a 10 km buffer.

8.3 Attachments

Indicate the documents you have attached. All attachments must be less than three megabytes (3mb) so they can be published on the Department's website. Attachments larger than three megabytes (3mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the locality of the proposed action (section 1)	✓	Attachment A: Maps
	GIS file delineating the boundary of the referral area (section 1)	✓	
	figures, maps or aerial photographs showing the location of the proposed action in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Attachment A: Maps

If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		
	copies of any flora and fauna investigations and surveys (section 3)		• Attachment B - Condabri South PL 1011, Matters of National Environmental Significance Self Assessment (ERM, 2016) • Attachment C - Condabri South Extension Project Environmental Protection and Biodiversity Conservation Act Referral - Aquatic Matters of National Environmental (FRC, 2016) • Attachment D - Condabri South Extension EPBC Referral Hydrogeological Assessment (KCB, 2016)
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3) conclusions in the referral (section 3 and 4)		
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

9 Contacts, signatures and declarations

NOTE: Providing false or misleading information in response to a requirement under Part 7 of the EPBC Act is an offence punishable on conviction by imprisonment and/or fine (section 489 of the EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action.

Proposed action title:

9.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action. It may be a trustee (either being an individual or a body corporate) acting on behalf of the trust for which they have responsibility (but not the trust).

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the GBRMP Act[1], this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

Name and Title:	Natasha Patterson General Manager Communities and Access, Origin Energy
Organisation: (if applicable	Australia Pacific LNG Pty Limited
Trust deed: (if applicable):	
ACN / ABN: (if applicable):	001 646 331
Postal address:	GPO Box 148 Brisbane QLD 4001
Telephone:	07 3033 1862
Email:	Natasha.patterson@originenergy.com.au

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION

[1] *If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A,* EPBC Act*). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.*

FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

- ☐ an individual; OR
- ☐ a small business entity – aggregated turnover is less than $2million for the previous income year (as prescribed within section 328-110 (other than subsection 328-119 (4)) of the *Income Tax Assessment Act 1997*); OR
- ☐ a small business entity – aggregated turnover for the current financial year is likely to be less than $2million (note that aggregated turnover for one of the previous two income years must also be less than $2million) (as prescribed within section 328-110 (other than subsection 328-119 (4)) of the *Income Tax Assessment Act 1997*) (Cth)).
- ☐ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

Note 1: Please retain evidence (i.e. tax statements) displaying aggregated turnover for the relevant income year. The Department may request this evidence at any stage of the assessment process. Aggregated turnover, for the purposes of the *Environment Protection and Biodiversity Conservation Regulations* 2000 (Cth)), means:

(1) a company annual turnover for the income year **and**

(11) the annual turnover for the income year of any entity that is connected or affiliated with the company at any time during the income year (see section 328-155 of the Income Tax Assessment Act 1997 (Cth)).

Note 2: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

Note: Applications for a waiver must be supported by information in writing setting out the grounds on which the applicant considers that a waiver should be made and the reasons why it should be made. The Minister may, at his or her discretion, waive all or part of a fee that would otherwise be payable in the following circumstances:

- the action's primary objective is to protect the environment, or protect and conserve heritage, in a way that is consistent with the objects of the EPBC Act;
- it is in the public interest to do so; or
- there are other exceptional circumstances justifying the waiver.

The Minister will consider the application within 20 business days.

I would like to apply for a waiver of full or partial fees under regulation 5.21A of the EPBC Regulations. Under regulation 5.21A(5), you must include information about the applicant (if

- ☐ not applicable.

not you) the grounds on which the waiver is sought and the reasons why it should be made:

Declaration:

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature: **Date:** 4/11/16

9.2 Designated proponent

Individual or organisation who is proposed to be designated as the proponent if the Minister decides that the action is a controlled action and further assessment and approval is required. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent may or may not be the person proposing to take the action.

Name of proposed proponent:

If the name of the proposed proponent is not the same person as named at item 1 of section 9.1 above, please complete all of the below fields in section 9.2.

ACN / ABN (if applicable):

Postal address:

Telephone:

Email:

Declaration by the proposed proponent:

I ....., the proposed proponent, consent to the proposed designation of myself as the proponent for the purposes of the action described in this referral.

Signature : **Date**:

Declaration by the person proposing to take the action:

I ....., the person proposing to take the action, consent to the proposed designation of..... as proponent for the purposes of the action described in this referral.

Signature : **Date**:

9.3 Person preparing the referral information (if different from section 9.1)

Individual or organisation who has prepared the information contained in this referral form.

Name:	Tony Rutter
Title:	Senior Environmental Adviser, Origin Energy
Organisation:	Australia Pacific LNG Pty Limited
ACN / ABN (if applicable):	001 646 331
Postal address:	GPO Box 148 Brisbane QLD 4001
Telephone:	07 3867 0032
Email:	tony.rutter@upstream.originenergy.com.au
Declaration:	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: 

Date: 3/11/16

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ❑ Completed all required sections of the referral form?
- ❑ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ❑ Provided a map showing the location and approximate boundaries of the project area for the proposed action?
- ❑ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ❑ Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- ❑ Provided complete contact details and signed the form?
- ❑ Provided copies of any documents referenced in the referral form?
- ❑ Ensured that all attachments are less than three megabytes (3mb)?
- ❑ Sent the referral to the Department (electronic and hard copy preferred)

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
    - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
    - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

Privacy and Confidentiality Notice

The Department is required under section 74(3) of the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) to publish the information (including personal information of the author and/or third parties) provided in this referral on the internet. The information published may include your personal information.

Information including your personal information included in this referral will be used for the purposes of administering the EPBC Act. The information may be provided to various Commonwealth, State and Territory agencies for the purposes of administering the Act or other Commonwealth, State or Territory legislation. For example, if the proposed action (or a component of it) is to be taken in the GBRMP, the Minister is required to provide a copy of your referral to GBRMPA (see section 73A, EPBC Act). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.

The Department will collect, use, store and disclose the personal information contained in this referral in a manner consistent with its obligations under the *Privacy Act 1988* and the Department's privacy policy.

The Department's privacy policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint.

A copy of the Department's privacy policy is available at: http://environment.gov.au/privacy-policy.

The Department is not obliged to publish information that the Minister is satisfied in commercial-in-confidence. If you believe that this referral contains information that is commercial-in-confidence, you must clearly identify such information and the reason for its confidentiality at the time of making the referral. The Minister cannot be satisfied that particular information included in a referral is commercial-in-confidence unless you demonstrate to the Minister (by providing reasons in writing) that:

- release of the information would cause competitive detriment to the person; and
- the information is not in the public domain; and
- the information is not required to be disclosed under another law of the Commonwealth, a State or a Territory; and
- the information is not readily discoverable.

The Department is subject to certain legislative and administrative accountability and transparency requirements of the Australian Government including disclosures to the Parliament and its Committees. While the Department will treat all referral information provided in this referral sensitively, any information contained in or relating to a referral, including information identified by a person as commercial-in-confidence, may be disclosed by the Department:

- to its employees and advisers in order to evaluate or assess a referral;
- to the Parliamentary Secretary;
- within the Department or other agencies where this serves the legitimate interest of the Australian Government;
- in response to a request by a House or Committee of the Parliament of the Commonwealth of Australia;
- where information is authorised or permitted by law to be disclosed; and
- where the information is in the public domain other than by the Department's disclosure of that information.