



**Approval**

**Santos GLNG Gas Field Development Project (EPBC 2012/6615)**

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

**Proposed action**

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**person to whom the approval is granted** Santos Limited

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**proponent's ACN (if applicable)** ACN: 007 550 923

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**proposed action** To further develop the coal seam gas fields of the Gladstone Natural Gas Project, including up to 6,100 additional CSG wells and associated infrastructure, in central southern Queensland [See EPBC Act referral 2012/6615].

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**Approval decision**

<b>Controlling Provision</b>	<b>Decision</b>
Wetlands of international importance (sections 16 & 17B)	Approved
Listed threatened species and communities (sections 18 & 18A)	Approved
Listed migratory species (sections 20 & 20A)	Approved
Water resources/trigger (section 24D & 24E)	Approved

**conditions of approval**

This approval is subject to the conditions specified below.

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**expiry date of approval**

This approval has effect until 31 March 2066

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**Decision-maker**

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**name and position** The Hon Greg Hunt MP  
Minister for the Environment

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**signature**

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**date of decision** 22 March 2016

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## Conditions attached to the approval

1. For the purpose of the **action**, the **approval holder** must only construct coal seam gas production wells within the GFD Project Tenements shown at Attachment A.
2. The **action** is limited to a maximum of 6,100 coal seam gas production wells and associated infrastructure.
3. The maximum disturbance limits in Annex 1 apply to the action to protect those **EPBC threatened species, EPBC communities and EPBC migratory species** (identified in Annex 1) within the **project area**. The **approval holder** must not exceed these maximum disturbance limits.

## Pre-disturbance surveys

4. The **approval holder** must undertake **pre-disturbance surveys** of proposed disturbance areas, unless the approval holder has an alternative methodology to identify **EPBC threatened species, EPBC communities and migratory species** or habitat for an **EPBC threatened species or EPBC migratory species** approved by the **Minister** in writing.

*Note 1: The approval holder may submit the alternative methodology for identifying EPBC threatened species, EPBC communities or habitat for an EPBC threatened species as part of the Constraints Protocol required at condition 7.*

5. **Pre-disturbance surveys** must be supervised by a **suitably qualified person** and undertaken in accordance with the **Department's survey guidelines** in effect at the time of the survey or other equivalent survey methodology.
6. When an **EPBC threatened species, EPBC community or EPBC migratory species** found in the **project area** for which there is no maximum disturbance limit identified in Annex 1, the **approval holder** must notify the Department in writing within five business days of finding the **EPBC threatened species, EPBC community or EPBC migratory species**. The **approval holder** must cease any activities that may or will impact on that **EPBC threatened species, EPBC community or migratory species** until relevant management plans have been revised to address these impacts and approved by the **Minister** in writing.

## EPBC Species Impact Management

7. The **approval holder** must submit an Environmental Protocol for Constraints Planning and Field Development (Constraints Protocol) for the **Minister's** written approval. The Constraints Protocol must:
  - a. detail the constraints which will apply to project activities with regard to their **impact on EPBC threatened species, EPBC migratory species** and their habitat, and to **EPBC communities**.
  - b. be based on levels of constraints, including, but not limited to:
    - i. the listing status of an **EPBC threatened species** and **EPBC community**;
    - ii. the quality of the **EPBC community** and habitat for an **EPBC threatened species** and **EPBC migratory species**;
    - iii. the number of different **EPBC threatened species, EPBC migratory species** and **EPBC communities** impacted by a project activity; and
    - iv. the value of the **EPBC community** and habitat for an **EPBC threatened species** and **EPBC migratory species** in a regional context.
8. The **approval holder** must not **commence** the **action** until the Constraints Protocol is approved by the **Minister** in writing.

9. The **approval holder** must submit a Significant Species Management Plan for the **Minister's** written approval. The Significant Species Management Plan must include:
- a. measures that will be taken to avoid, mitigate and manage impacts to **EPBC threatened species** and **EPBC migratory species** and their habitat, and **EPBC communities** during clearance of vegetation, including supervision by a **suitably qualified person** at all times during clearance of vegetation;
  - b. measures that will be taken to avoid, mitigate and manage impacts to **EPBC threatened species** and **EPBC migratory species** and their habitat, and to **EPBC communities** during construction, operation and decommissioning of the **action**;
  - c. details of how the approved Constraints Protocol has been applied to avoid and minimise impacts to **EPBC threatened species** and **EPBC migratory species** and their habitat and **EPBC communities** during construction, operation and decommissioning of the **action**;
  - d. a monitoring program to determine the success of mitigation and management measures to ensure adaptive management for the duration of this approval;
  - e. details of the timeframe for a regular review of the approved Significant Species Management Plan; and
  - f. a discussion of relevant **conservation advice**, **recovery plans** and **threat abatement plans** and how measures proposed in the Significant Species Management Plan take into account relevant **conservation advice** and are consistent with the measures contained in relevant **recovery plans** and **threat abatement plans**.
10. The **approval holder** must not **commence** the **action** until the Significant Species Management Plan has been approved by the **Minister** in writing. The approved Significant Species Management Plan must be implemented by the **approval holder**.

*Note 2: The **approval holder** may submit an update to an existing management plan as required under the conditions of approval for the GLNG project (EPBC 2008/4059) provided the relevant matters under the conditions of this approval are clearly and adequately addressed. The **approval holder** may prepare and align a management plan required under these conditions with the requirements of the Queensland Government, provided the relevant matters under the conditions of this approval are clearly and adequately addressed.*

### Offsets

11. The **approval holder** must ensure that environmental offsets comply with the principles of the **EPBC Act Environmental Offsets Policy**.
12. The **approval holder** may carry out the **action** in **project stages**. The **approval holder** must deliver environmental offsets for residual significant impacts to **matters of national environmental significance** for each **project stage**.
13. The **approval holder** must submit an Offset Management Plan for the **Minister's** written approval. The Offset Management Plan may be prepared and submitted to the **Minister** for written approval in stages. If the **approval holder** submits the Offset Management Plan in stages, each stage of the Offset Management Plan must correspond with a **project stage**.
14. The Offset Management Plan must include:
- a. a method for assessing residual significant impacts to **EPBC threatened species**, **EPBC migratory species** and **EPBC communities**;
  - b. results from **pre-disturbance surveys** and/or an alternative approved methodology (if used) for the **project stage** as required under conditions 4 and 5;

- c. details of the offset areas required to address residual significant impacts to **EPBC threatened species, EPBC migratory species and EPBC communities** for the **project stage**;
  - d. a survey and description of the current condition (prior to any management activities) of each offset area proposed, including existing vegetation (the baseline condition). This must include a shapefile of each offset property boundary;
  - e. information about how the offset areas provide connectivity with other relevant habitats and biodiversity corridors, including a map depicting the offset areas in relation to other habitats and biodiversity corridors;
  - f. performance and completion criteria for evaluating the management of the offset area, and criteria for triggering remedial action (if necessary);
  - g. a description of the management measures that will be implemented for the protection of **EPBC threatened species, EPBC migratory species and EPBC communities**, including a discussion of how measures outlined take into account relevant **conservation advice** and are consistent with the measures in relevant **recovery plans and threat abatement plans**;
  - h. a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;
  - i. a description of potential risks to the successful implementation of the plan, and a description of the contingency measures that would be implemented to mitigate against these risks;
  - j. a timeline for when actions identified in the Offset Management Plan will be implemented for each offset area; and
  - k. the proposed legal mechanism for securing the offset.
15. The **approval holder** must not **commence** the **action** until the Offset Management Plan has been approved by the **Minister** in writing. The approved Offset Management Plan must be implemented by the **approval holder**.
16. The **approval holder** must register and legally secure offsets for the first project stage identified in the Offset Management Plan within two years of **commencement** of the **action**.
17. The **approval holder** must register and legally secure offsets for a **project stage** which are sufficient to acquit the residual significant impacts of that **project stage**.
18. If the **approval holder** submits the Offset Management Plan in stages, the **approval holder** must prepare and submit an updated Offset Management Plan for each subsequent **project stage**, for written approval by the **Minister**. The updated Offset Management Plan must:
- a. include the information required for the Offset Management Plan at condition 14 for the relevant **project stage**;
  - b. include a reconciliation of actual residual significant impacts to **EPBC threatened species, EPBC migratory species and EPBC communities** against offsets secured for the previous **project stage**. The reconciled offset obligations may be subtracted from the obligations required for the subsequent **project stage**; and
  - c. demonstrate how the offset builds on offsets already secured for previous **project stages** and will contribute to a larger strategic offset for cumulative project impacts.
19. The **approval holder** must not **commence** the subsequent **project stage** until:
- a. the Offset Management Plan, updated for that **project stage**, has been approved by the Minister in writing; and

- b. the offset for that **project stage** has been registered and legally secured in accordance with Queensland legislation.

### **Water management and monitoring**

20. The **approval holder** must submit a Groundwater Management and Monitoring Plan (GMMP) for the written approval of the **Minister** who may seek the advice of an **expert panel**. The GMMP must contain:

- a. details of a groundwater monitoring network for the measurement of **impacts** on water resources associated directly or indirectly with the **action**, including the ability to:
  - (i) provide for the early detection of any changes in the groundwater regime in terms of amplitude and frequency of fluctuations in water pressure, water level and water quality in groundwater systems and changes in connectivity with surface water;
  - (ii) monitor relevant formations to determine hydraulic connectivity and provide for early detection of **impacts** prior to reaching migration pathways to other formations (e.g. faults and unconformities known to connect two or more hydrogeological units);
  - (iii) monitor potential **impacts** on groundwater dependent ecosystems, including spring based and non-spring based ecosystems, and provide for the early detection of **impacts**;
  - (iv) monitor changes to the **project area** water balance; and
  - (v) monitor changes to water availability for water users and the environment.
- b. details of a baseline monitoring data acquisition program for the **action**;
- c. a rationale for the design of the monitoring network with respect to the nature of potential **impacts** and the location and occurrence of **matters of national environmental significance**;
- d. details of proposed early warning indicators, trigger thresholds and limits for detecting impacts on groundwater levels and a description of how and when these measures will be finalised and subsequently reviewed in accordance with the requirements of the **Underground Water Impact Report**, including that groundwater drawdown does not exceed 0.2 metres at **EPBC springs** as a result of the project;
- e. details of a risk based exceedance response for the actions the **approval holder** will take, and the timeframes in which these actions will be undertaken, if early warning indicators or trigger threshold values are exceeded, including reporting of the location and severity of exceedance/s to the **Minister**;
- f. details of the timeframe for a regular review of the approved GMMP in accordance with the requirements of the **Underground Water Impact Report**, and the incorporation of the outcomes of any updates to the numerical groundwater model and water balance calculations;
- g. provisions to make monitoring results publicly available on the **approval holder's** website for the life of the project; and
- h. provisions to make monitoring data available to the **Department** and **Queensland Government authorities** (if requested) for inclusion in any cumulative impact assessment, regional water balance model, bioregional assessment or relevant research.

21. The GMMP, including any revised plans, must be peer reviewed by a **suitably qualified water resources expert/s** approved by the **Minister** in writing. The peer review must be submitted to the **Minister** together with the GMMP and a statement from the **suitably qualified water resources expert/s** stating that they carried out the peer review and evaluated the adequacy of the monitoring, mitigation and management measures proposed.

22. The **approval holder** must not **commence** the extraction of water or coal seam gas until the GMMP has been approved by the **Minister** in writing. The approved GMMP must be implemented by the **approval holder**.
23. The **Minister** may direct in writing that the **approval holder** cease water extraction from a coal seam gas well or coal seam gas wells when an early warning indicator, trigger threshold or limit is exceeded (required at condition 20d), and if the **Minister** is not satisfied that the action proposed or taken by the **approval holder** will remedy the situation. The **Minister** may direct the **approval holder** to implement alternative action at the expense of the **approval holder**.
24. If the Minister has directed in writing that the **approval holder** must cease water or coal seam gas extraction pursuant to condition 23, the **approval holder** must not recommence such activities until the **Minister** has given approval in writing for the recommencement of those activities. Approval to recommence activities may be subject to conditions that the **Minister** considers reasonable.

*Note 3: The approval holder may prepare and align the GMMP with the requirements of the UWIR, provided the relevant matters under the conditions of this approval are clearly and adequately addressed.*

### **CSG waste management**

25. The **approval holder** must submit a CSG Waste Management Plan (CSGWMP) for the written approval of the **Minister**. The CSGWMP must:
- a. detail measures that will be implemented to avoid, mitigate and manage impacts to surface and groundwater resources, **EPBC threatened species**, **EPBC migratory species** and **EPBC communities** as a result of the production, storage and disposal of **CSG produced water** and **waste products**, during the life of the project;
  - b. detail monitoring to measure the amount of **CSG produced water** and **waste products** produced;
  - c. detail the storage, management and disposal of **CSG produced water** and **waste products**, including, but not limited to:
    - i. beneficial reuse;
    - ii. re-injection into groundwater aquifers;
    - iii. irrigation; and
    - iv. transfer to a licensed waste management facility.
  - d. details of proposed early warning indicators, trigger thresholds and limits for detecting impacts on surface and groundwater quality; and
  - e. details of a risk based exceedance response for the actions the **approval holder** will take, and the timeframes in which these actions will be undertaken, if early warning indicators or trigger threshold values are exceeded, including reporting of the location and severity of exceedance/s to the **Minister**.
26. The **Minister** may direct in writing that the **approval holder** cease water or coal seam gas extraction from a coal seam gas well or coal seam gas wells when an early warning indicator, trigger threshold or limit is exceeded (required at condition 25d), and if the **Minister** is not satisfied that the action proposed or taken by the **approval holder** will remedy the situation. The **Minister** may direct the **approval holder** to implement alternative action at the expense of the **approval holder**.
27. The **approval holder** must not **commence** the extraction of water or coal seam gas until the CSGWMP has been approved by the **Minister** in writing. The approved CSGWMP must be implemented by the **approval holder**.

*Note 4: The release of CSG produced water to watercourses is not an element of the action assessed under the EPBC Act. If releases to watercourses are sought, and a significant impact to matters of national environmental significance is likely, a further referral will be required under the EPBC Act.*

## Water Quality Management

28. The **approval holder** must submit terms of reference for a chemical risk assessment of the **chemicals proposed to be used in coal seam gas extraction** to the **Minister** for written approval. The terms of reference must incorporate **best practice risk assessment methodology** for the assessment of the potential impacts of the **chemicals proposed to be used in coal seam gas extraction on matters of national environmental significance**.
29. The **approval holder** must submit a Water Quality Management Plan for the written approval of the **Minister**. The Water Quality Management Plan must include:
- a chemical risk assessment of the **chemicals to be used in coal seam gas extraction** in accordance with the terms of reference approved under condition 28;
  - a complete list of **chemicals to be used in coal seam gas extraction** for the purpose of undertaking the **action**. This list must include the chemical name, **CAS registry number**, likely quantities, concentrations and the chemical's general purpose and function;
  - a description of the scale of **hydraulic fracturing** proposed, including the likely number of wells, number of fracturing events per well and types of wells to be stimulated;
  - consideration of the chemical life-cycle under specific site conditions at both the surface and subsurface;
  - mitigation and management measures to reduce the risk to **matters of national environmental significance** to a low level for each **chemical to be used in coal seam gas extraction**;
  - a monitoring and reporting framework to assess the efficacy of the mitigation and management measures identified in the plan (in accordance with condition 29e) and for the measurement and monitoring of fracture propagation;
  - a schedule for the regular review of the Water Quality Management Plan including the inclusion of new chemicals; and
  - a peer review by a **suitably qualified chemical risk assessment expert/s**. The peer review must include a statement from the **suitably qualified chemical risk assessment expert/s** stating that they carried out the peer review of the findings of the chemical risk assessment required at condition 29a and evaluated the adequacy of the monitoring, mitigation and management measures proposed in the Water Quality Management Plan.
30. The Water Quality Management Plan must be approved by the **Minister** in writing prior to the **commencement** of construction of coal seam gas production wells. All updates of the Water Quality Management Plan must be approved by the **Minister** in writing.
31. The approved Water Quality Management Plan must be implemented by the **approval holder**. Chemicals must only be used in the manner identified in the approved Water Quality Management Plan.

## General

32. Within 20 days after the **commencement** of the **action**, the **approval holder** must advise the **Department** in writing of the actual date of **commencement**.
33. The **approval holder** must maintain accurate records substantiating all activities associated with or relevant to the conditions of **approval**, including measures taken to implement the

management plans required by this **approval**, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of **approval**. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.

34. Unless otherwise agreed to in writing by the **Minister**, within three months of every 12 month anniversary of the **commencement** of the **action**, the **approval holder** must publish a report on its website addressing compliance with each of the conditions of this **approval**, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and details of non-compliance with any of the conditions of this **approval** must be provided to the **Department** at the same time as the compliance report is published. Reports must remain published for life of the approval.
35. Upon the direction of the **Minister**, the **approval holder** must ensure that an independent audit of compliance with the conditions of **approval** is conducted and a report submitted to the **Minister**. The independent auditor and audit criteria must be approved by the **Minister** prior to the commencement of the audit. The audit report must address the approved criteria to the satisfaction of the **Minister**.
36. The **approval holder** may choose to revise a management plan approved by the **Minister** under conditions 9, 20, 25, and 29 without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the **action** in accordance with the revised plan or strategy would not be likely to have a **new or increased impact**. If the **approval holder** makes this choice it must:
  - a. notify the **Department** in writing that the approved plan or strategy has been revised and provide the **Department** with an electronic copy of the revised plan or strategy;
  - b. implement the revised plan or strategy from the date that the plan or strategy is submitted to the **Department**; and
  - c. for the life of this **approval**, maintain a record of the reasons the **approval holder** considers that taking the **action** in accordance with the revised plan or strategy would not be likely to have a **new or increased impact**.
37. The **approval holder** may revoke its choice under condition 36 at any time by notice to the **Department**. If the **approval holder** revokes the choice to implement a revised plan or strategy, without approval under section 143A of the Act, the plan or strategy most recently approved by the **Minister** must be implemented.
38. If the **Minister** gives a notice to the **approval holder** that the **Minister** is satisfied that the taking of the **action** in accordance with the revised plan or strategy would be likely to have a **new or increased impact**, then:
  - a. condition 36 does not apply, or ceases to apply, in relation to the revised plan or strategy; and
  - b. the **approval holder** must implement the plan or strategy most recently approved by the **Minister**.

To avoid any doubt, this condition does not affect any operation of conditions 36 and 37 in the period before the day the notice is given.

At the time of giving the notice the **Minister** may also notify that for a specified period of time that condition 36 does not apply for one or more specified plans or strategies required under the **approval**.



39. Conditions 36, 37 and 38 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the **approval holder** to submit a revised plan or strategy to the **Minister** for approval.
40. If, at any time after 10 years from the date of this **approval**, the **approval holder** has not substantially **commenced** the **action**, then the **approval holder** must not substantially **commence** the **action** without the written agreement of the **Minister**.
41. Unless otherwise agreed to in writing by the **Minister**, the **approval holder** must publish all management plans, strategies and reports, referred to in these conditions of approval on its website. Each management plan and/or strategy must be published on the website within 1 month of being approved by the **Minister**. All published reports must remain on website for the life of the approval.

## Definitions

**Action:** the Santos GLNG Gas Field Development Project (EPBC 2012/6615) as referred and assessed under the EPBC Act (EPBC 2012/6615).

**Approval holder:** the person to whom the approval is granted or any person acting on their behalf, or to whom the approval is transferred under section 145B of the EPBC Act.

**Best practice risk assessment methodology:** A risk assessment in accordance with best practice national or international standards and guidelines may be based on the following:

- US EPA (2014). EPA-Expo-Box (A Toolbox for Exposure Assessors), available at <http://www.epa.gov/expobox>
- OECD (2014). The OECD Environmental Risk Assessment Toolkit: Tools for Environmental Risk Assessment and Management, available at <http://www.oecd.org/chemicalsafety/risk-assessment/theoecdenvironmentalriskassessmenttoolkittoolsforenvironmentalriskassessmentandmanagement.htm>
- The most recently published and approved guideline recommended by the Minister.

**CAS registry number:** means the unique, unmistakable identifier assigned for a chemical substance by the Chemical Abstracts Service division of the American Chemical Society.

**Chemicals to be used in coal seam gas extraction/chemicals proposed to be used in coal seam gas extraction:** means all chemicals in drilling fluids, hydraulic fracturing fluids and in the treatment of flowback or produced water.

**Commenced/commencement:** means any physical disturbance, including clearance of native vegetation, new road work and the establishment of well sites to develop the gas field **project area**. Commencement does not include:

- a) minor physical disturbance necessary to undertake pre-clearance surveys or establish monitoring programs or geotechnical investigations; or
- b) activities that will have no adverse impact on **matters of national environmental significance**.

**Conservation advice:** means a conservation advice approved by the Minister under the EPBC Act.

**CSG produced water:** means underground water brought to the surface of the earth, or otherwise interfered with, in connection with exploring for or producing coal seam gas.

**Department:** means the Australian Government Department administering the **EPBC Act**.

**Department's survey guidelines:** means:

Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999 -

<http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance>.

Survey Guidelines for Australia's Threatened Frogs, Threatened Birds, Threatened Fish, Threatened Mammals, Threatened Reptiles and Threatened Bats:

<http://www.environment.gov.au/epbc/guidelines-policies.html>.

**EPBC/ EPBC Act:** means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

**EPBC Act Environmental Offsets Policy:** means the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (October 2012) including the Offsets Assessment Guide.

**EPBC community/ies:** means an endangered or critically endangered ecological community listed under the EPBC Act.

**EPBC migratory species:** means a migratory species listed under the EPBC Act.

**EPBC springs:** Springs known to be associated with *the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin*.

**EPBC threatened species:** means a threatened flora or fauna species listed under the EPBC Act.

**Expert panel:** means an expert panel agreed to by the Minister.

**Hydraulic fracturing/fractured:** means a well-stimulation technique in which rock is fractured by a hydraulically pressurised liquid.

**Impact:** is as defined in section 527E of the EPBC Act.

**Matters of national environmental significance:** means matters protected by Division 1 of Part 3 of the EPBC Act.

**Minister:** means the Minister administering the EPBC Act and includes a delegate of the Minister.

**New or increased impact:** means a new or increased impact on any matter protected by the controlling provisions for the **action**, when compared to the plan, program or strategy that has been approved by the Minister.

**Project area:** means the Possible Supporting Infrastructure Area and GFD Project Tenements shown at Attachment A.

**Pre-disturbance surveys:** means surveys that are undertaken for **EPBC threatened species, EPBC communities and EPBC migratory species**.

**Project stage/s:** means the development phases of the project which are to be for duration of no more than 5 years.

**Queensland Government authorities:** means authorities who have a role in regulating activities relating to water resources or biodiversity.

**Recovery plan:** means a recovery plan made or adopted by the Minister under the EPBC Act.

**Suitably qualified person:** means a person who has professional qualifications, training or skills or experience relevant to the nominated subject matters and can give authoritative assessment, advice and analysis about performance relevant to the subject matters using relevant protocols, standards, methods or literature.

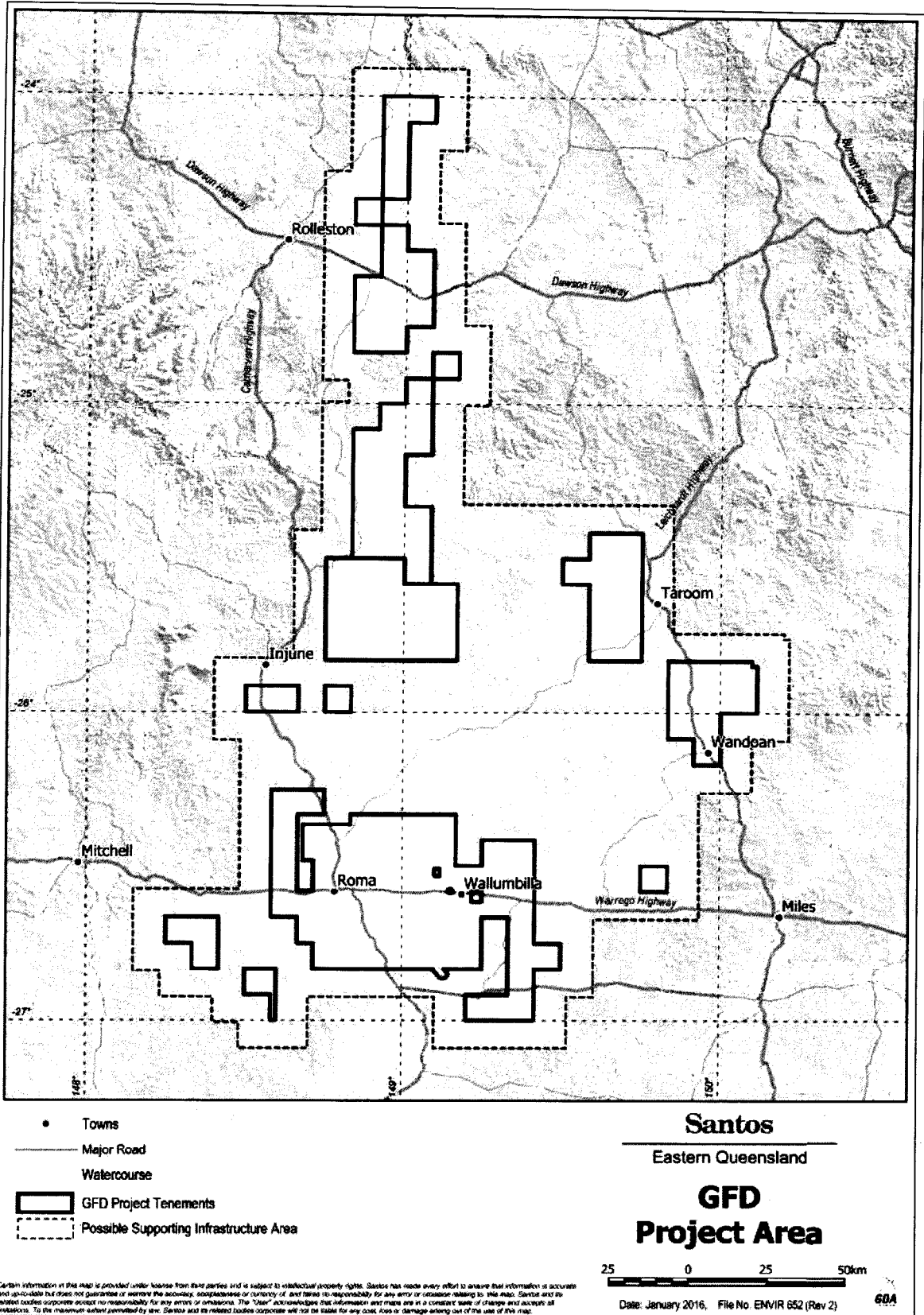
**Suitably qualified chemical risk assessment expert/s:** means a natural person with at least a postgraduate degree (or equivalent) in a suitable area and a minimum of 10 (ten) years relevant experience in chemical risk assessment, including at least one year of experience in Australia.

**Suitably qualified water resources expert/s:** means a natural person with at least a postgraduate degree (or equivalent) in a suitable area (such as hydrology or hydrogeology) and a minimum of 10 (ten) years relevant experience in water resources assessment, including at least one year of experience in Australia.

**Threat abatement plan:** means a threat abatement plan made or adopted by the **Minister** under the EPBC Act.

**Underground Water Impact Report:** means the *Underground Water Impact Report for the Surat Cumulative Management Area (State of Queensland, 2012)* or any revision thereof.

**Waste product:** means anthropogenic and geogenic chemicals contained within CSG produced water and drilling muds including, but not limited to, brine and salt.



Annex 1 to the Approval  
Santos GLNG Gas Field Development Project (EPBC 2012/6615)

**Whole of project maximum disturbance limits**

EPBC Act Threatened species	Predicted maximum disturbance (ha)
<i>Xerothamnella (Xerothamnella herbacea)</i>	129
<i>Tylophora linearis</i>	975
Salt pipewort ( <i>Eriocaulon carsonii</i> )	2,330
<i>Bertya opposens</i>	478
<i>Daviesia discolor</i>	7
Slender darling-pea ( <i>Swainsona murrayana</i> )	40
<i>Westringia parvifolia</i>	263
Curly-bark wattle ( <i>Acacia curranii</i> )	328
<i>Acacia grandifolia</i>	859
<i>Calytrix gurlmundensis</i>	115
Bean's ironbark ( <i>Eucalyptus beaniana</i> )	243
<i>Homoranthus decumbens</i>	1,051
Swamp orchid ( <i>Phaius australis</i> )	481
<i>Aristida annua</i>	40
Hairy-joint grass ( <i>Arthraxon hispidus</i> )	346
King bluegrass ( <i>Dichanthium queenslandicum</i> )	40
Bluegrass ( <i>Dichanthium setosum</i> )	4
Belson's panic ( <i>Homopholis belsonii</i> )	1937
Austral Toad flax ( <i>Thesium australe</i> )	1659
Ooline ( <i>Cadellia pentastylis</i> )	232
Cycad ( <i>Macrozamia platyrhachis</i> )	2496
Australasian bittern ( <i>Botaurus poiciloptilus</i> )	168
Australian painted snipe ( <i>Rostratula australis</i> )	168
Black-breasted button-quail ( <i>Turnix melanogaster</i> )	233
Black-throated finch ( <i>Poephila cincta cincta</i> )	2,745
Red goshawk ( <i>Erythrotriorchis radiatus</i> )	2,425
Squatter pigeon (southern) ( <i>Geophaps scripta scripta</i> )	4,032
Star finch ( <i>Neochmia ruficauda ruficauda</i> )	3,244
Superb parrot ( <i>Polytelis swainsonii</i> )	2,136
Swift parrot ( <i>Lathamus discolor</i> )	1,987
Plains-wanderer ( <i>Pedionomus torquatus</i> )	278
Murray cod ( <i>Maccullochella peelii</i> )	73
Brush-tailed rock-wallaby ( <i>Petrogale penicillata</i> )	166
South-eastern long-eared bat ( <i>Nyctophilus corbeni</i> )	4,202
Koala ( <i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT))	3,303
Large-eared pied bat ( <i>Chalinolobus dwyeri</i> )	1,950
Northern quoll ( <i>Dasyurus hallucatus</i> )	4,855
Collared delma ( <i>Delma torquata</i> )	2,703
Dunmall's snake ( <i>Furina dunmalli</i> )	2,512
Fitzroy River turtle ( <i>Rheodytes leukops</i> )	73
Five-clawed worm-skink ( <i>Anomalopus mackayi</i> )	40
Ornamental snake ( <i>Denisonia maculata</i> )	279

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Yakka skink ( <i>Egernia rugosa</i> )	4,144
<b>EPBC Act Threatened Ecological Communities</b>	<b>Predicted maximum disturbance (ha)</b>
Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	179
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions ecological community	124
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	190
Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin	288
Weeping Myall Woodlands	517
<b>EPBC listed migratory species</b>	<b>Predicted maximum disturbance (ha)</b>
Cattle Egret ( <i>Ardea ibis</i> )	8,162
Glossy Ibis ( <i>Plegadis falcinellus</i> )	168
Great Egret ( <i>Ardea modesta</i> )	168
Osprey ( <i>Pandion haliaetus</i> )	2,687
Rainbow Bee-eater ( <i>Merops ornatus</i> )	15,738