6.11 Land Use and Infrastructure

6.11.1 Introduction

This section describes the existing land use of the Santos coal seam gas (CSG) fields including land activities, features, resources and infrastructure. The local, regional and state planning frameworks for land use matters are also discussed. The land use context of the project and the potential land use and planning impacts are assessed plus recommended mitigation measures identified. Using the protocols developed under this Environmental Impact Statement (EIS) for Phase 2 (post EIS) processes, consideration will be given to site specific land use investigations as part of the site specific development of the CSG fields.

6.11.2 Methodology

This section describes the existing land use values in the CSG fields, the impact of the project on these values and proposed mitigation measures.

The project has been examined in the context of relevant land use planning instruments including relevant federal government legislation, state planning policies, local government planning schemes and regional planning schemes. Further information is provided in Appendix V.

6.11.3 Regulatory Framework

6.11.3.1 Regional Planning Framework

There are a number of regional planning instruments that apply to the CSG fields, gas transmission pipeline and LNG facility details are outlined below and in Appendix C.

Central Queensland Regional Growth Management Strategy

The Central Queensland Regional Growth Management Strategy (CQRGMS) was endorsed in July 2002 by the Queensland Government. It is a non-statutory document. The CQRGMS provides a policy framework for the growth of the region in which the CSG fields are located. It recognises the valuable commodities in the region and the importance of preserving and enhancing existing land uses that are mainstays of the region's economy.

The CQRGMS divides the region into the following four naturally occurring sub-regions:

1) Central Highlands;
2) Dawson Valley and Callide Valley;
3) Gladstone and Calliope; and
4) Rockhampton and Capricorn Coast.

The CSG fields are located within sub-regions 1 and 2. The CQRGMS identifies a number of 'outcomes' across a range of themes including:

- Resource use, conservation and management;
- Economic development;
- Infrastructure;
- Social and cultural development;
- Education, training and research; and
- Planning and governance.

Further background details on these outcomes are provided in Appendix V.

Central Queensland Strategy for Sustainability

The Central Queensland Strategy for Sustainability (CQSS) has been developed by the Fitzroy Basin Association. The aims of the CQSS are to:

- Provide a framework for achieving the sustainable use of natural resources and protection of the natural environment in Central Queensland;
- Encourage the active participation of all stakeholders in natural resource and environmental planning, decision-making and management; and
- Guide investment in natural resource and environmental management in Central Queensland.

The strategy sets out objectives, outcomes and strategies, and identifies major regional issues to be resolved to achieve ecologically sustainable development. Key issues identified in the CQSS relevant to the CSG development are:

- Water resource management;
- Weeds;
- Salinity;
- Degradation of the soil resource;
- Vegetation management;
- Land use planning; and
- Economic viability of industries.

Draft Maranoa and Districts Regional Plan

The Roma CSG field and southern portions of the Fairview CSG field are situated within the Maranoa and Districts Regional Plan area. Towns in the regional planning area include Roma, Wallumbilla, Surat, Mitchell, Injune and Miles.

The Queensland Government prepared a draft regional plan for the area in May 2008. It was released for public consultation and comment by the Minister for Infrastructure and Planning with submissions closing on 29 October 2008. The regional plan will have statutory effect under IPA. All development and land use in the region will need to comply with the regional plan. The finalised plan is expected to be released in April 2009.

6.11.3.2 State Planning Provisions

The following state planning policies (SPPs) are a relevant consideration in respect of the project.

SPP 1/92 - Development and Conservation of Agricultural Land

SPP1/92 provides for the protection of good quality agricultural land from inappropriate development. The policy principles of SPP 1/92 state:

"Good quality agricultural land has a special importance and should not be built on unless there is an overriding need for the development in terms of public benefit and no other site is suitable for the particular purpose"

Guideline 1 for SPP 1/92: "The Identification of Good Quality Agricultural Land" (GQAL) describes four classes of GQAL (Classes A, B, C and D); with Class A land holding the highest rating for good quality agricultural land. Section 6.3 provides further details of GQAL land classes.

Most shire planning schemes contain maps showing the location of GQAL. Indicative locations of GQAL based on planning scheme maps are described in Table 6.11.1. Appendix V includes maps from the planning schemes showing GQAL.

Table 6.11.1 GQAL within the Coal Seam Gas Fields

Field	Previous Shire (Regional Council)	GQAL Coverage
Arcadia Valley	Bungil (Roma Regional Council) Taroom (Banana Shire) Bauhinia (Central Highlands Regional Council) Duaringa (Central Highlands Regional Council)	Class A: 8.45 % Class B: 1.02 % Class C: 55.70 %
Comet Ridge	Duaringa (Central Highlands Regional Council) Bauhinia (Central Highlands Regional Council) Taroom (Banana Shire)	Class A: 11.6 % Class B: 10.20 % Class C:45.97 %
Denison	Bauhinia (Central Highlands Regional Council) Emerald (Central Highlands Regional Council) Booringa (Roma Regional Council) Bungil (Roma Regional Council) Taroom (Banana Shire)	Class A:19.05 % Class B: 12.21 % Class C:27.85 %
Eastern Surat Basin	Tara (Dalby Regional Council)	Data not available.
Fairview	Bungil (Roma Regional Council) Taroom (Banana Shire)	Class A:1.50 % Class B: 5.57 % Class C: 92.93 %
Mahalo	Duaringa (Central Highlands Regional Council) Bauhinia (Central Highlands Regional Council)	Class A: 0.62 % Class C: 53.12 %
Roma	Roma (Roma Regional Council) Bungil (Roma Regional Council) Bendemere (Roma Regional Council) Booringa (Roma Regional Council) Waroo (Roma Regional Council) Murilla (Dalby Regional Council)	Class A: 48.20 % Class B:0.55 % Class C:42.56 %
Roma Other	Taroom (Banana Shire)	Class A:49.39 % Class B: 33.45 % Class C: 17.16 %
Scotia	Taroom (Banana Shire) Taroom (Dalby Regional Council)	Class A: 67.52 % Class B: 32.48 %

Section 6.3 provides further analysis on the location of GQAL.

SPP 1/03 - Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

SPP 1/03 aims to mitigate the adverse impacts of flood, bushfire and landslide for assessable development. This SPP applies generally throughout Queensland; however the bushfire and landslide outcomes apply only to local governments listed in Annex 2 of the SPP. Bushfire outcomes apply for most shires in the CSG fields (excluding Waroo, Roma and Dalby Shires). Landslide outcomes only apply to Banana and Taroom Shire.

SPP1/03 sets out outcomes for development that is subject to the policy. Land use related outcomes which are relevant to the GLNG Project include:

- *"Within natural hazard management areas, development to which this SPP applies is compatible with the nature of the natural hazard";*
- *"Development that is not compatible with the nature of the natural hazard but is otherwise consistent with Outcome 1:*
  - *Minimises as far as practicable the adverse impacts from natural hazards; and*
  - *Does not result in an unacceptable risk to people or property".*

The policy is also applicable to development that:

- Increases the number of people in a natural hazard management area; and/or
- Involves the manufacture or storage of hazardous goods.

Based on the available mapping of bushfire hazard, high fire risk areas are generally situated around more vegetated areas. Appendix V includes some of the bushfire hazard maps available.

SPP2/07 - Protection of Extractive Resources

SPP2/07 identifies those extractive resources of state or regional significance where extractive industry development is appropriate in principle. It also aims to protect those resources from developments that might prevent or severely constrain current or future extraction when the need for utilisation of the resource arises. Two key resource areas are located within the Roma CSG field - the Marbango and Warrian basalt quarries. Use and operation of these resources will not be affected by the GLNG Project.

6.11.3.3 Local Government Planning Schemes

The CSG fields are located within numerous local government areas (LGAs). These LGAs were formed in March 2008 as part of the local government reform process initiated by the Queensland Government. Numerous shires were amalgamated into larger LGAs, commonly referred to as regional councils. Table 6.11.2 lists the former shires within the CSG fields that now form the new regional councils.

Table 6.11.2 LGAs - CSG Fields

Regional Council	Former Shires
Roma Regional Council	Bendemere, Booringa, Bungil, Warroo and Roma
Dalby Regional Council	Chinchilla, Murilla, Tara, Wambo, Dalby and division two of Taroom (Wandoan area).
Banana Shire Council	Banana and Taroom
Central Highlands Regional Council	Bauhinia, Duaringa, Emerald and Peak Downs

Note: Chinchilla, Wambo, Dalby (Dalby Regional Council) and Peak Downs (Central Highlands Regional Council) form part of the Regional Council areas but do not include identified CSG fields.

Under the transitional arrangements for the amalgamated councils, the planning schemes for the former shires remain applicable in assessing development applications until the regional councils' planning schemes are prepared. Each of the shires listed in Table 6.11.2 has an existing or transitional planning scheme.

However, under the IPA, development for an activity authorised under the *Petroleum Act 1923* (Petroleum Act) or the *Petroleum and Gas (Production and Safety) Act 2004* (P&G (PSA)) is exempt from assessment against a local government planning scheme. Likewise, all aspects of development for a petroleum activity as defined in Section 77(1) of the *Environmental Protection Act 1994* (EP Act) are exempt from assessment against a local government planning scheme. (The reference to Section 77(1) of the EP Act is now a reference to Section 309A of the EP Act.).

Regulatory and planning framework for the gas transmission pipeline (Section 7) and LNG facility (Section 8) are captured in their respective sections.

6.11.4 Existing Environmental Values

The following section describes the existing environmental values of the CSG fields in terms of current land use, land tenure, infrastructure and services, native title, regional planning framework, state planning policies, and local government planning schemes.

6.11.4.1 Current Land Use

Figures 6.11.1a and 6.11.1b show existing land use across the CSG fields based on the mapping from Queensland Land Use Mapping Program (QLUMP) mapping. The predominant land use is cattle grazing. Cropping, including irrigated and dryland cropping, occurs around more fertile areas. Other land uses across the CSG fields include:

- Forestry;
- Conservation and recreation;
- Ecotourism;
- Mining/Petroleum;
- Extractive resources; and
- Residential/Urban.

Appendix V provides a breakdown of land use based on QLUMP classifications for each of the CSG fields.

Agricultural Land

The majority of the CSG fields are used for grazing. As shown in Figures 6.11.1a and 6.11.1b, cattle grazing is the predominant land use for most of the CSG tenements. CSG tenements containing significant proportions of cropping land include the Scotia (23 %), Denison (16 %) and Roma (12 %) CSG fields (refer Appendix V).

Cropping primarily occurs on the alluvial floodplains around watercourses including:

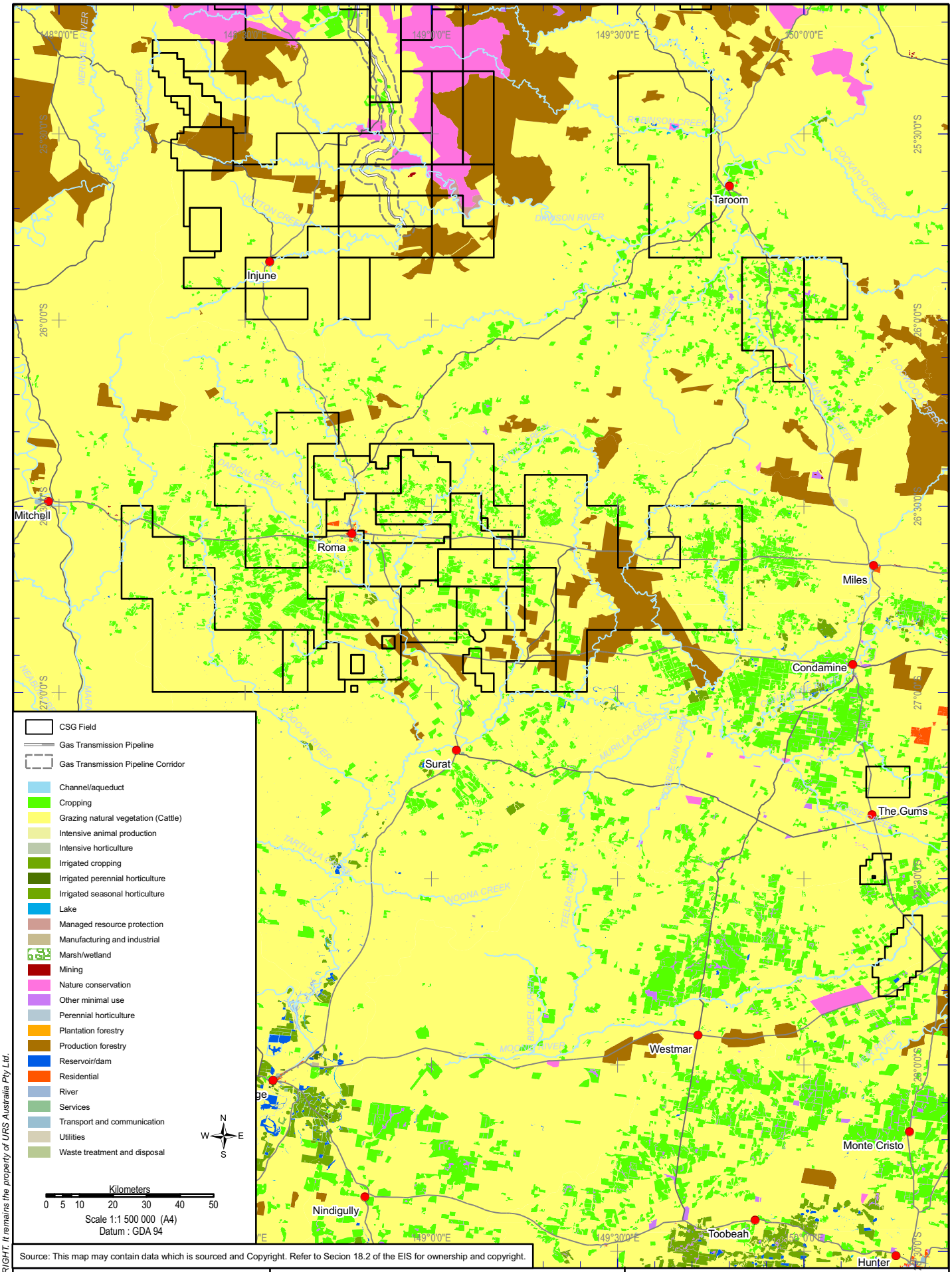
- Comet River (east of Emerald, Springsure and Rolleston);
- Planet and Conciliation Creeks (between Rolleston and Bauhinia);
- Dawson River (west of Theodore, Moura and Baralaba);
- Eurombah Creek, Horse Creek and Hutton Creek (around Roma, Injune and Taroom area); and
- Balonne and Condamine Rivers (around Roma, Miles).

Large areas of land within the CSG fields are considered GQAL, including Class A and B land, as defined under the State Planning Policy 1/92.

Some farms in the area participate in quality certification programs such as *Cattlecare,* and *Flockcare* or may be certified organic farms. Santos is currently identifying farmers participating in these programs through their landholder liaison process.

Forestry

As shown in Appendix V, forestry comprises a large component of the land use within the Arcadia Valley (19 %), Comet (18 %), Fairview (16 %) and Mahalo (18 %) field areas. These areas are classified as “production” forestry. Some of these areas have been/will be transferred from forestry to protected area designations under the South East Queensland Forests Agreement signed in 1999.



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Project
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ENVIRONMENTAL IMPACT STATEMENT

Title
LAND USE
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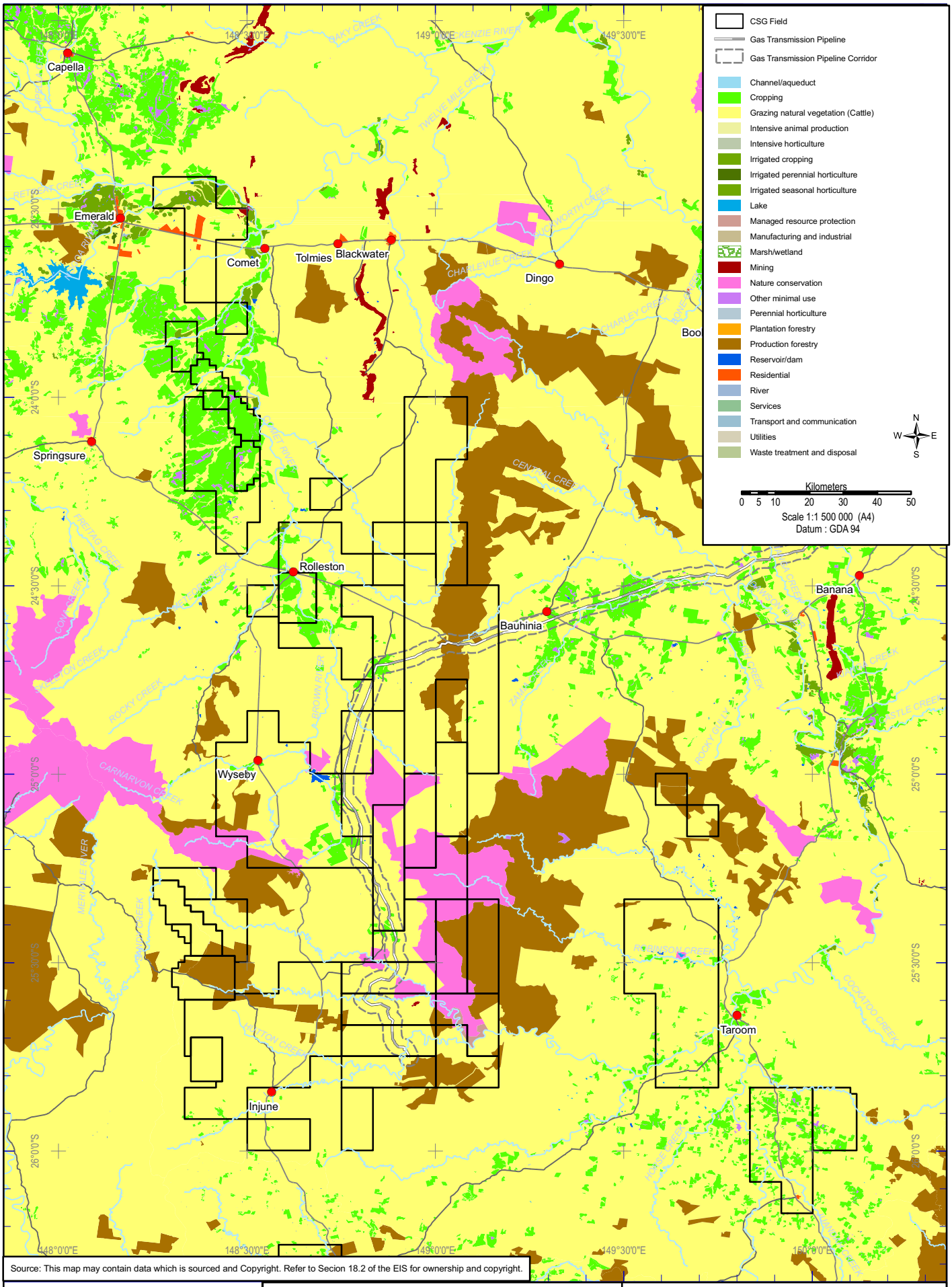

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Conservation and Recreation Areas

A number of conservation areas and reserves are located within or adjacent to the CSG fields. Table 6.11.3 below lists the national parks and reserves within the CSG tenements and within a five kilometre buffer of the tenements. Almost 40 % of the Arcadia Valley CSG field is classified as nature conservation or a managed resource protection area.

Table 6.11.3 Conservation and Forestry Areas - CSG Fields

Conservation/Forestry Areas	
Within CSG Tenements	**Within 5km buffer of tenements**
National Parks, Conservation Areas	
Expedition N.P. Carnarvon N.P. Carraba Conservation Park; Lake Murphy Conservation Park; Nuga Nuga N.P. Palmgrove N.P. (Scientific)	Blackdown Tableland N.P. Southwood N.P.
State Forests	
Bandana S.F. Beilba S.F. Bellington Hut S.F Boxvale S.F. Brucedale S.F. Doonkuna S.F. Expedition S.F. Forrest S.F. Gubberamunda S.F. Gwambagwine S.F. Hallett S.F. Howe S.F. Inglebogie S.F. Mount Nicholson S.F. Presho S.F. Serocold S.F. Shotover S.F. Stephenton S.F. Theodore S.F. Tinowon S.F. Trinidad S.F.1 & 2 Wallabella S.F. 1 & 2 Yalebone S.F.1 Yuleba S.F.	Combabula S.F. Eden S.F. Howe S.F. Mebir S.F. Mount Pleasant S.F. Mundell S.F. Tinowon S.F. Wallabella S.F. 1 Wooduck S.F. 1 Yalebone S.F. 2 Yuleba S.F.
Other Reserves	
Expedition Resources Reserve Rainbow Nature Refuge	CR ‘George’ Telford Nature Refuge Cometside Nature Refuge

Conservation and forestry areas within tenements and within a five kilometre buffer of the tenements are labelled on Figures 6.11.2a and 6.11.2b.

Most of the national parks and reserves allow for various types of recreation activities as outlined in their relevant management plans. Recreational activities are permitted in state forests as per the applicable management plans. State forests generally allow for a wider range of recreational activities to be carried out than those allowed in national parks. Section 6.11.4.4 describes the project's impacts on conservation areas.

National Park and State Forests reserves can also allow for ecotourism to occur in the nearby surrounds. This is evident in the Carnarvon Gorge area with several small ecotourism businesses operating in the region.

Mining, Petroleum and Extractive Resource Areas

Figures 6.11.3a and 6.11.3b shows mining leases around the CSG fields. Mining leases for Blackwater and South Blackwater mine are within 10 km of the Mahalo field. The Togarra North mining lease (ML70149) is approximately 15 km east of the Denison field. A small portion of Rolleston mining lease ML70307 overlaps with ATP337P which is within the Denison field. In addition, a small mining lease (ML50207) run by Kokstad Mining Pty Ltd is located within PL13 (Roma field). A number of other small mining leases are located east of the Roma field.

A number of mineral development licences (MDLs) overlap or are adjacent to the CSG fields as shown on Figures 6.11.4a and 6.11.4b. Exploration permits for coal (EPC) cover much of the northern fields and some of the southern fields (refer Figures 6.11.5a and 6.11.5b). A number of exploration permits for minerals (EPMs) are also located within the CSG fields (refer Figures 6.11.6a and 6.11.6b).

There are a number of other CSG explorers operating within the area apart from Santos, including Origin Energy, Sunshine Energy, Bow Energy, Blue Energy and Queensland Gas Company. Figures 6.11.7a and 6.11.7b shows petroleum leases around the CSG fields.

The Marbango and Warrian basalt quarries are located in the Roma field. These quarries are identified in SPP 2/07 as key resource areas.

Homesteads / Residential Areas

There are approximately 140 homesteads recorded within the CSG fields (excluding town areas). The Roma field contains approximately half of these homesteads. Most properties are limited to one homestead and a number of outhouses and improvements. Appendix V lists homesteads by name within each of the fields.

A number of towns are located within or nearby the CSG fields (refer Figures 6.11.9a and 6.11.9b) including:

- Emerald - (west of ATP553P - Denison);
- Rolleston - (within PL42 - Denison);
- Taroom - (east of EPP803);
- Wandoan - (within EPP869 - Scotia);
- Injune - (south of ATP337P);
- Roma - (within PL6 - Roma); and
- Wallumbilla - (within PL5 - Roma).

A description of these towns is provided in Appendix V.

Heritage / Historic Areas

Searches were made of statutory and non-statutory heritage registers and databases for items of known heritage significance within the CSG fields. Heritage registers reviewed included:

- World Heritage List;

- National and Commonwealth Heritage Registers;
- Register of the National Estate;
- Queensland Heritage Register; and
- National Trust of Australia (Qld) Register.

A number of natural and cultural heritage places in the CSG fields are recorded in the Register of the National Estate, Queensland Heritage Register and National Trust of Australia Register.

Details of the cultural heritage features of the CSG fields are given in Section 6.13.

6.11.4.2 Land Tenure

Figures 6.11.8a and 6.11.8b shows land tenure across the CSG fields as at February 2009. The predominant tenure is freehold. The range of tenures and their percentage of the CSG fields are as follows[1]:

- Freehold – 56.5 %;
- Leasehold – 26.5 %;
- Reserve – 0.5 %;
- State Forest - 9 %;
- State Land - 1 %;
- National Park - 4 %.
- Easements – 2.5 %

A detailed break down of land tenure within each of the tenements is shown in Appendix V.

6.11.4.3 Infrastructure and Services

Roads

Major roads in the northern CSG fields include the Capricorn Highway, Gregory Highway, Dawson Highway, Leichhardt Highway and Carnarvon Development Road. The major road network around the southern section of the CSG fields includes the Carnarvon Highway, Warrego Highway, Leichhardt Highway and Moonie Highway. These highways provide access to the ATPs/PLs and pass though some of the PLs/ATPs.

Figures 6.11.9a and 6.11.9b shows the locations of major and secondary roads within the CSG fields.

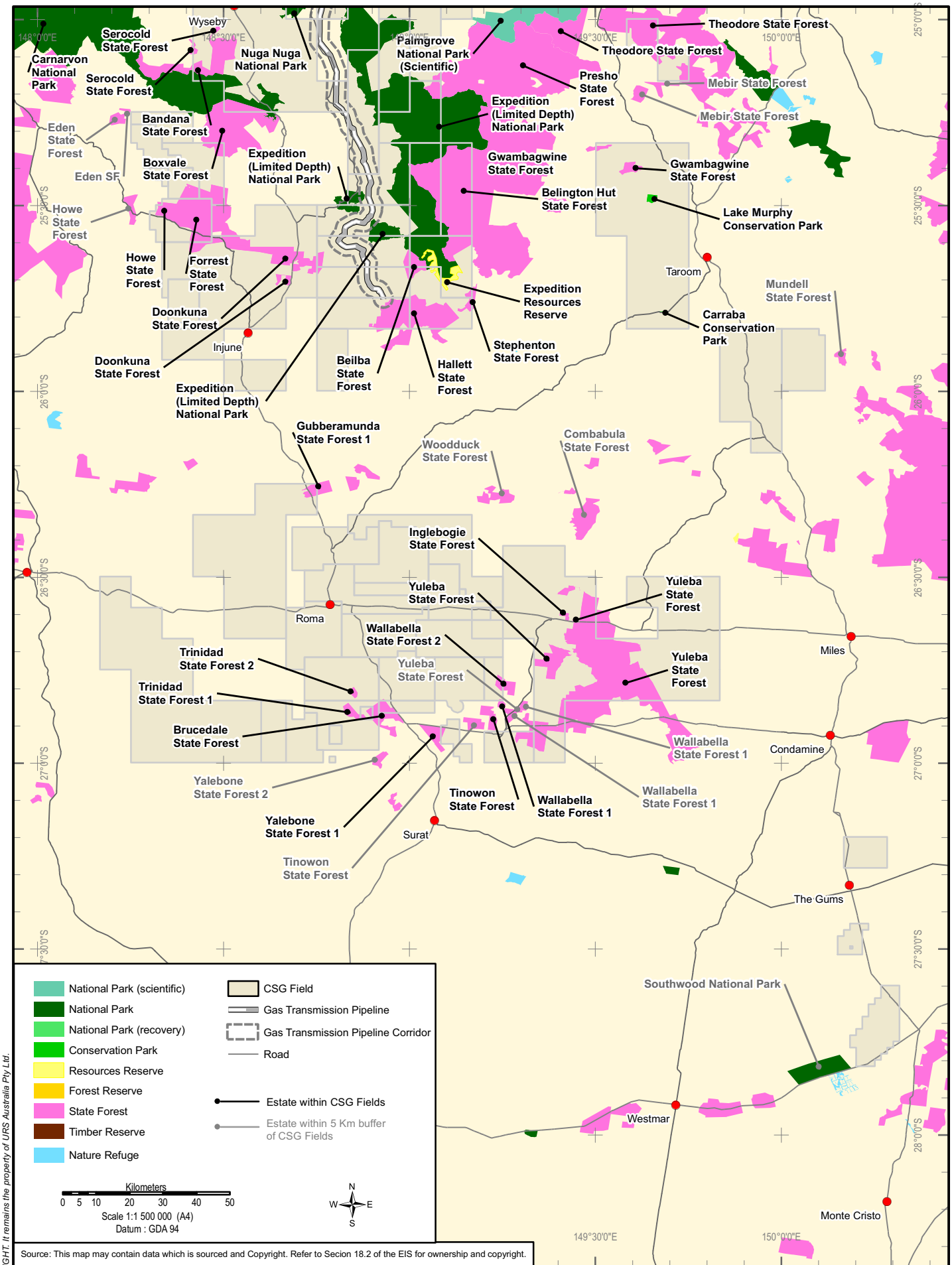
Railways

The Western Line running from Brisbane to Cunnamulla services Roma and passes through the southern CSG fields. The North Coast Line services Gladstone, Blackwater, Springsure and Emerald and runs north of the CSG fields. A number of dedicated coal haulage routes are located in the area including one servicing Blackwater Mine. The locations of these rail lines are shown on Figures 6.11.9a and 6.11.9b.

Pipeline and Powerlines

Figures 6.11.9a and 6.11.9b show the location of pipelines and powerlines across the CSG fields.

[1] Some tenures overlap.



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CONSERVATION AREAS AND FORESTRY AREAS CSG FIELDS (SOUTHERN SECTION)

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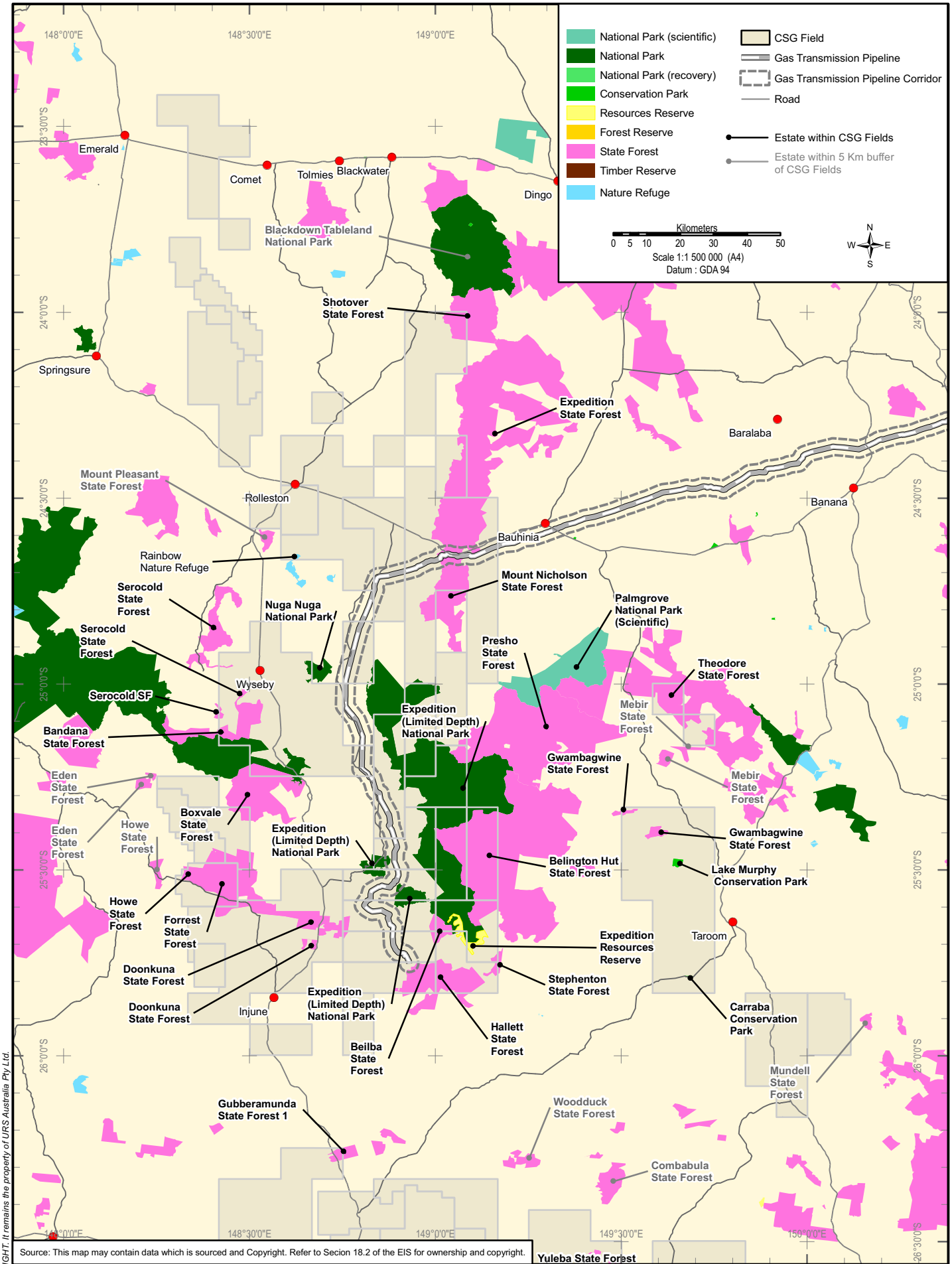

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6.11.4.4 Native Title and Aboriginal Cultural Heritage

The Aboriginal parties within the CSG fields have been identified as belonging to one of the following three categories

- Groups that have a current registered native title application;
- Groups that have a previously registered native title application; and
- Areas where there are no registered or previously registered native title application.

Within the CSG fields, the first group is made up of Karingbal (QC06/019), Karingbal #2 (QC06/005), Bidjara (QC08/005), and Iman #2 (QC97/55). The Mandandanji was in the second group with a previously registered native title application that has been dismissed. The third group consists of 68 endorsed parties. Refer to Figures 6.11.10a and 6.11.10b.

Further details on native title are given in Section 6.13.

6.11.5 Potential Impacts and Mitigation Measures

6.11.5.1 Impacts on Existing Land Use

Agriculture

The CSG fields are primarily located on rural land used for crop production and grazing. Potential impacts include:

- Loss/reduction of agricultural land, including fragmentation of land;
- Disruption to farming activities and practices; and
- Reduced economic viability.

Positive impacts include the availability of improved infrastructure and economic benefits from employment opportunities, and compensation.

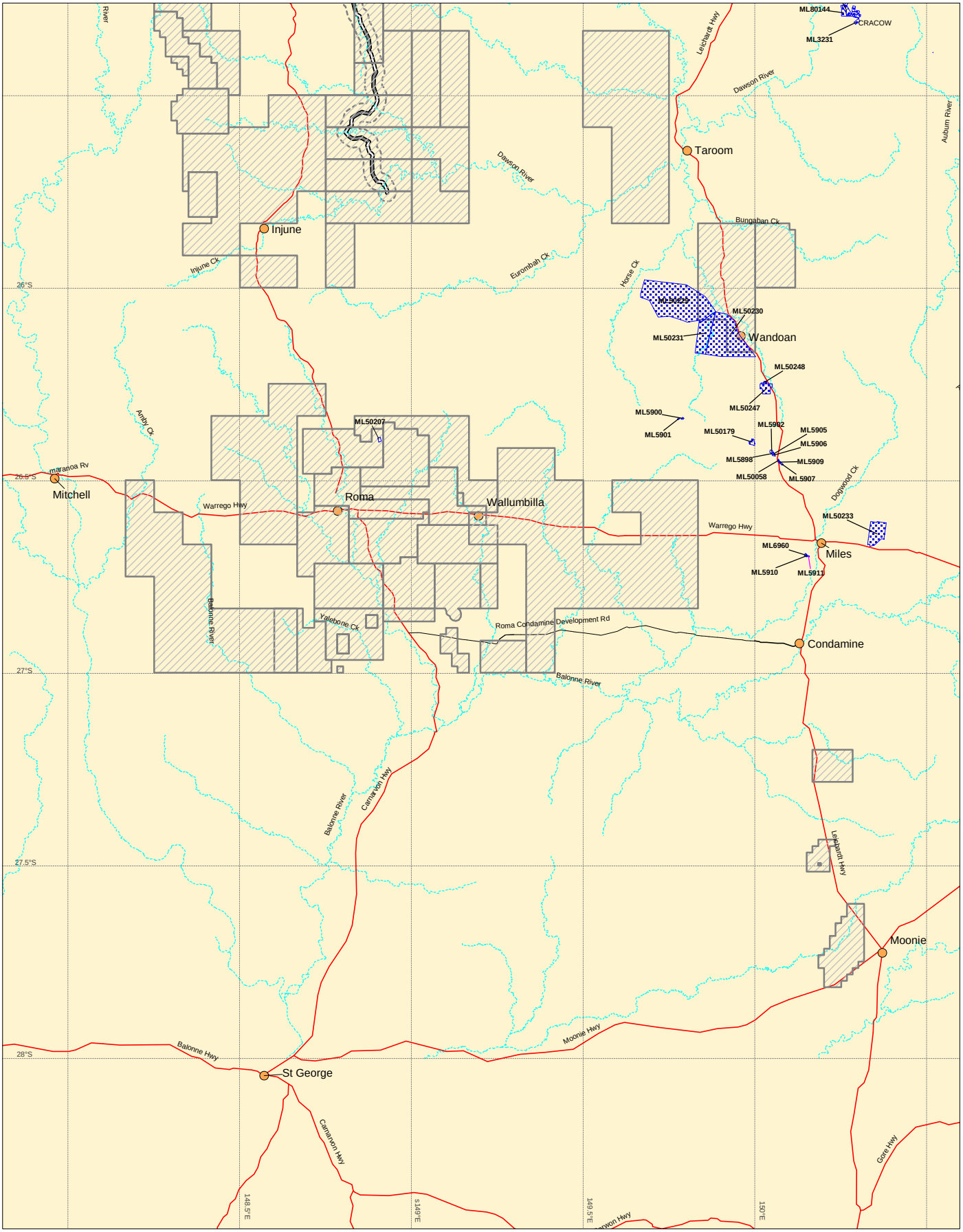
The level of impact on farming practices will depend on a number of factors including:

- The amount of land required;
- Location of project infrastructure in relation to the farming activities;
- The area and duration of disruption/disturbance;
- The ability to modify farming practices to accommodate project infrastructure; and
- The type of farming activities being carried out.

Reduction in Useable Land

As discussed in Section 3, following the exploration activities appraisal wells are drilled to confirm the presence of the CSG. The drill sites (referred to lease areas) can be up to 100 m x 110 m (11,000 m^2) in area. However, depending upon the drilling rig type and specific site constraints this area can be significantly reduced to approximately 65 m x 80 m (5,200 m^2).

If the well does not contain any commercial gas reserves, it is likely to be plugged downhole with several cement plugs and a steel plate welded over the conductor pipe with the details of the well inscribed onto the plate. This will be negotiated with the landholder at the time of drilling. The site will then be fully rehabilitated by re-contouring and actively promoting vegetation regrowth. Disposal of drill cuttings will be by means of burial onsite.



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Title

MINING LEASES (ML)
CSG FIELDS
(SOUTHERN SECTION)

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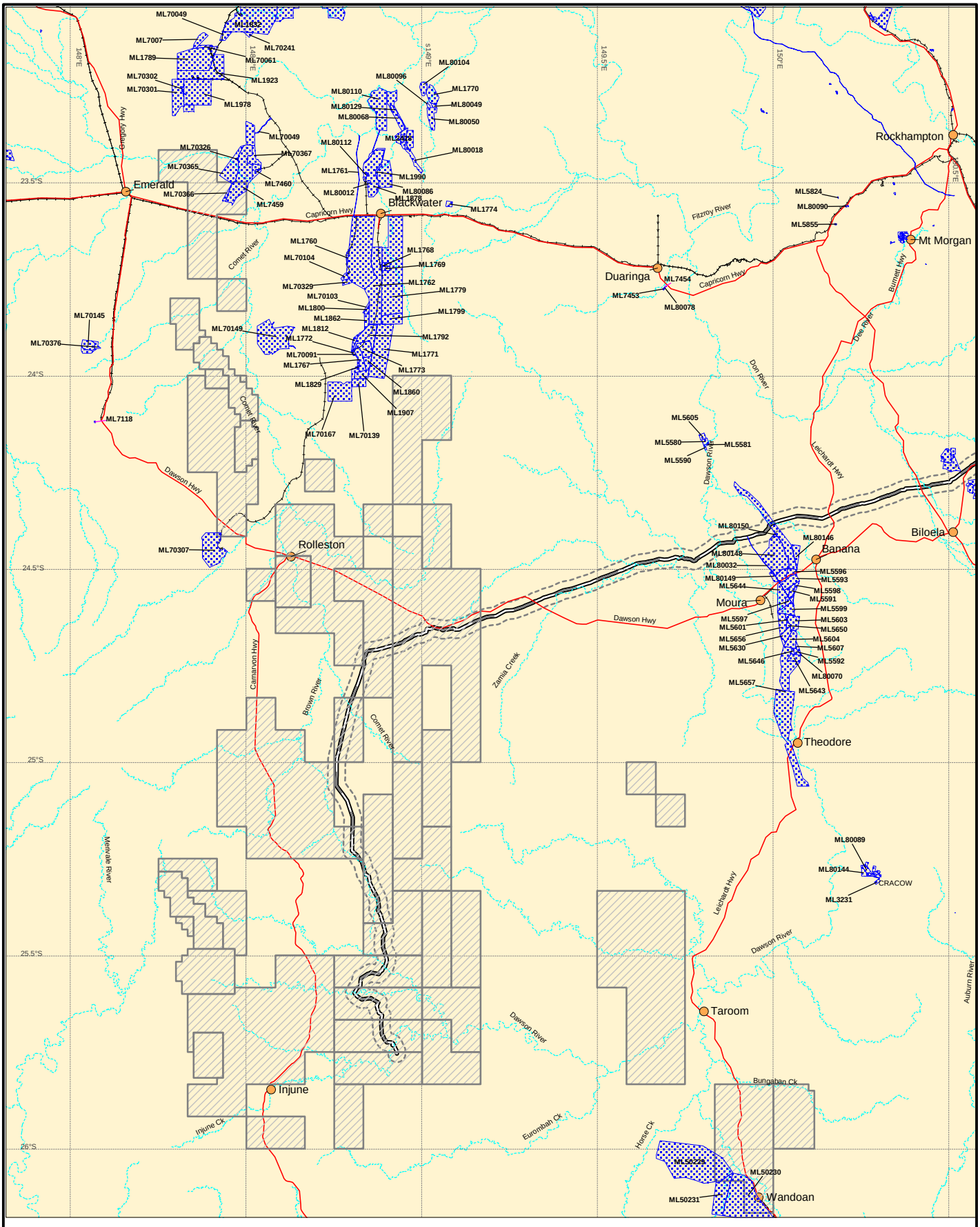

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ENVIRONMENTAL IMPACT STATEMENT

Title

MINING LEASES (ML)
CSG FIELDS
(NORTHERN SECTION)

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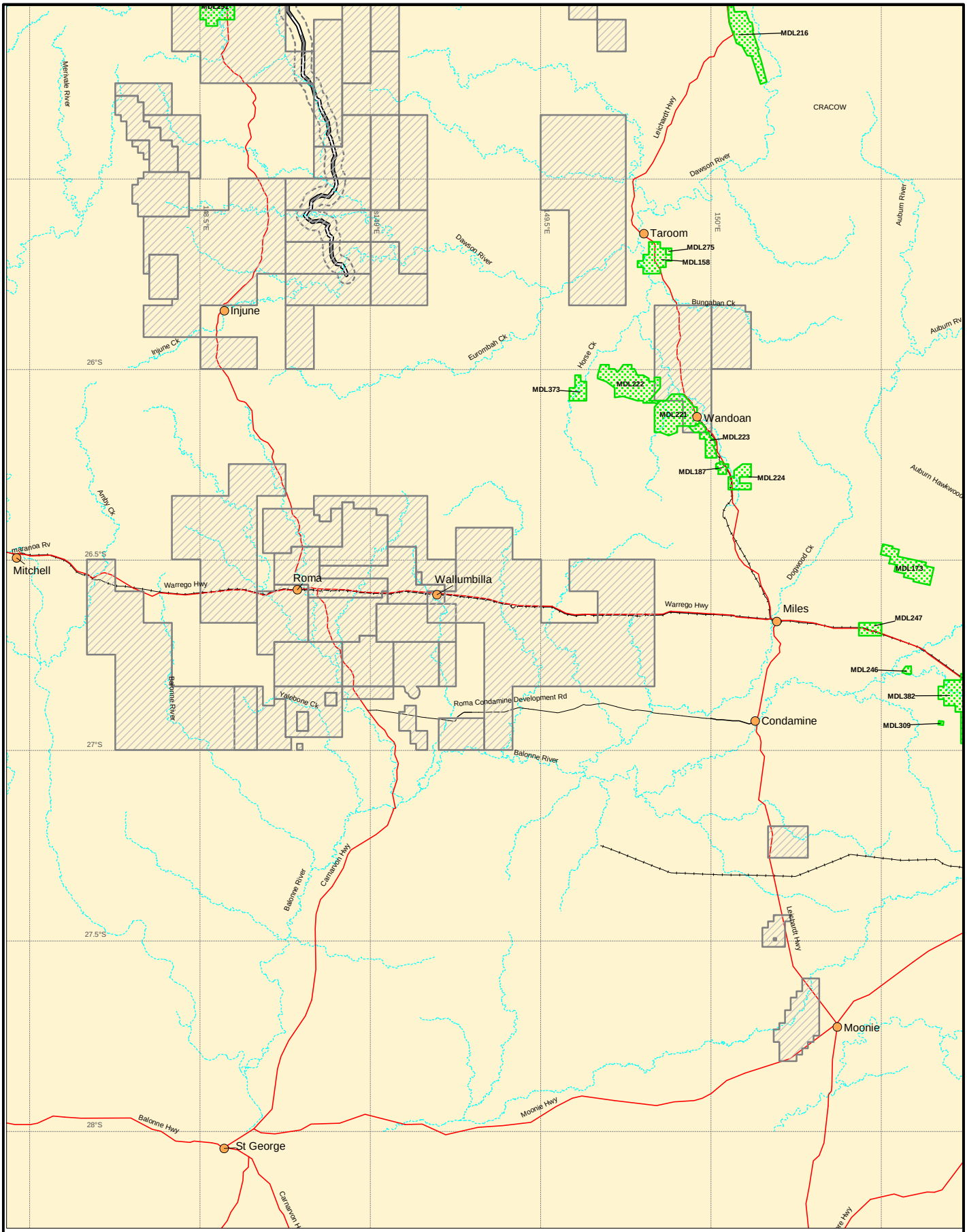

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Title
MINERAL DEVELOPMENT LEASES (MDL) CSG FIELDS (SOUTHERN SECTION)

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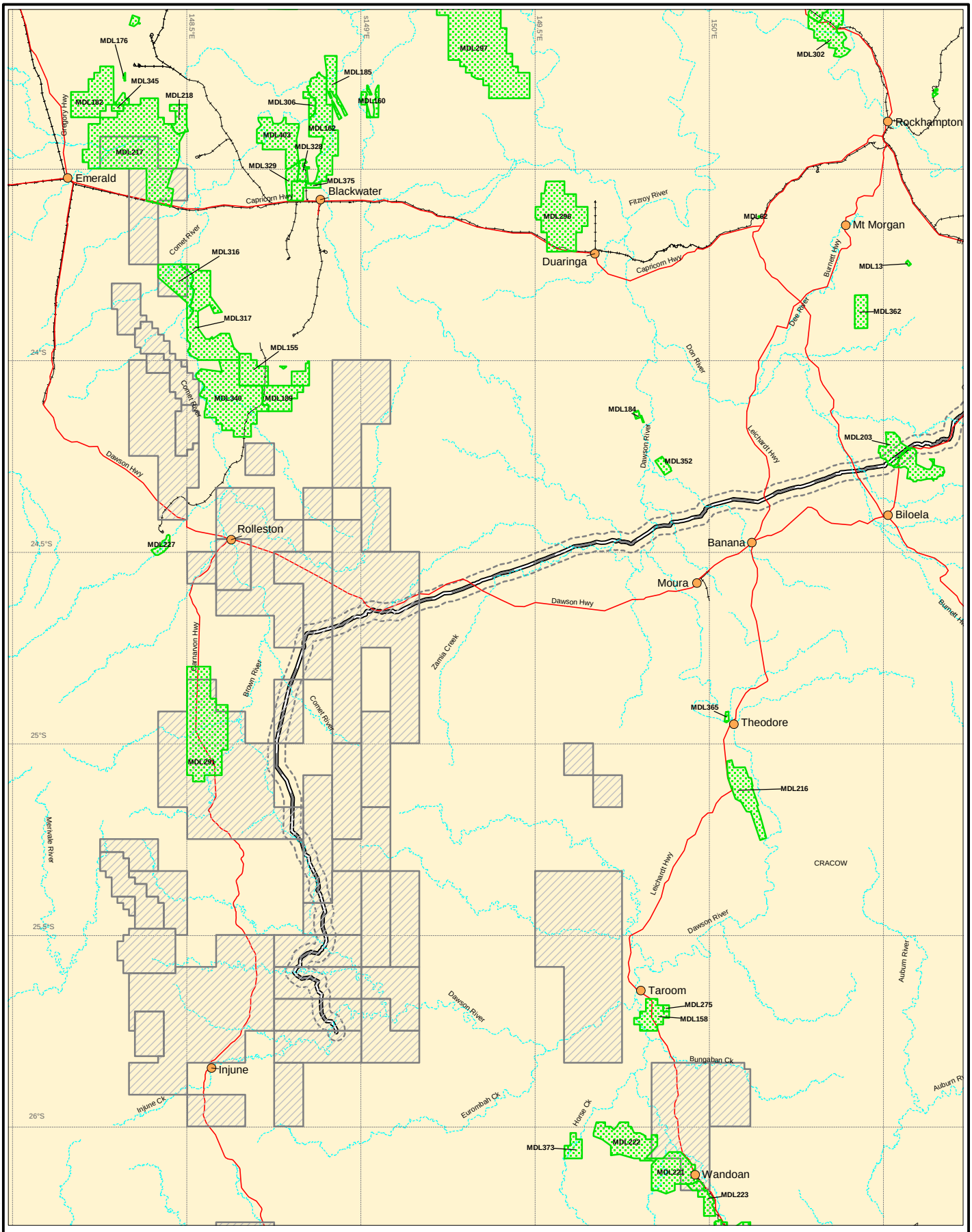

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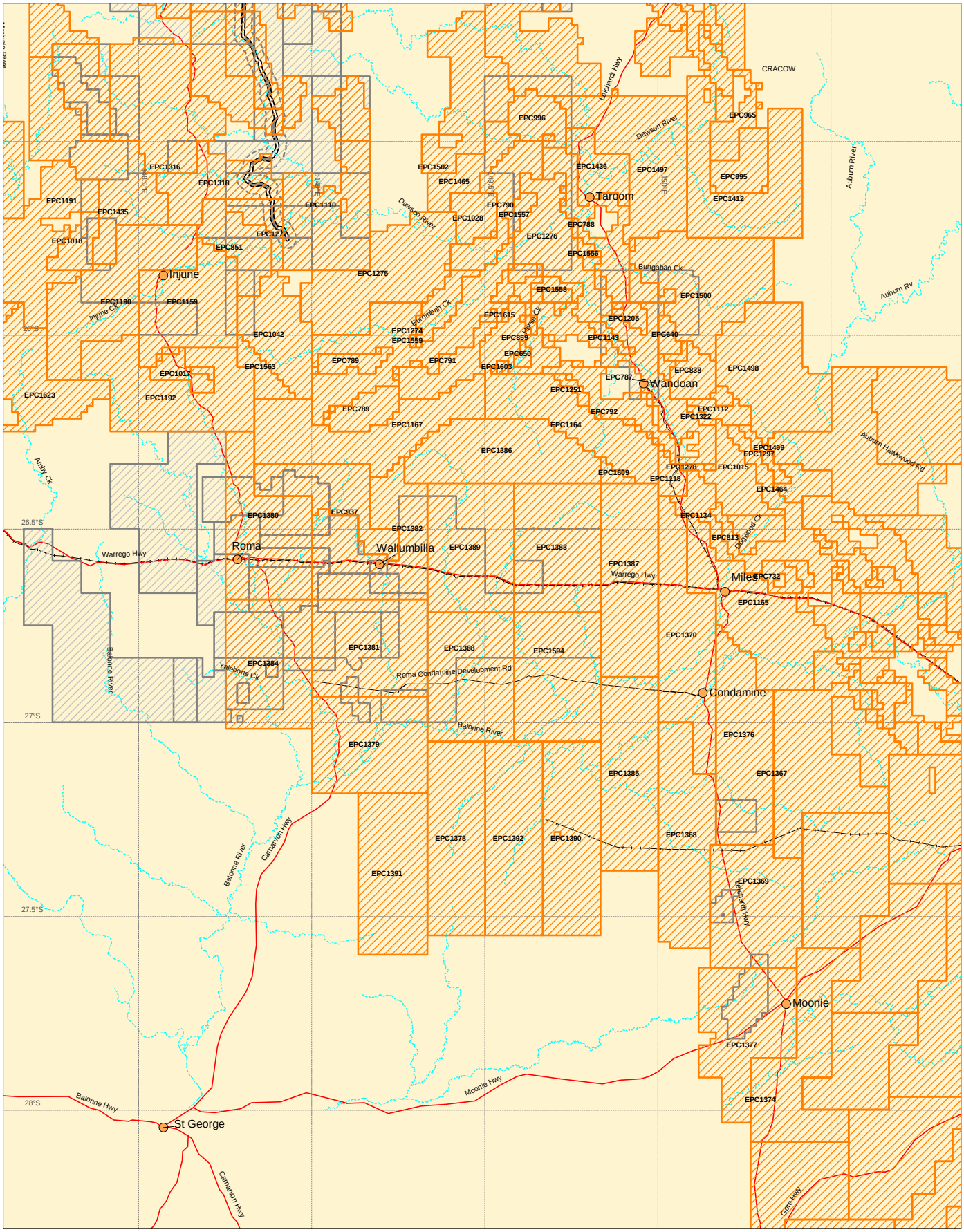
Drawn: CA	Approved: JB	Date: 06-02-2009	Figure: **6.11.4b**	Rev:A
Job No: **4262 6220**	File No: 42626220-g-818.wor			**A4**



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Client

Project

GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

EXPLORATION PERMITS COAL (EPC) CSG FIELDS (SOUTHERN SECTION)

Drawn: CA	Approved: JB	Date: 06-02-2009	Figure: **6.11.5a**	Rev:A
Job No: **4262 6220**	File No: 42626220-g-819.wor			**A4**

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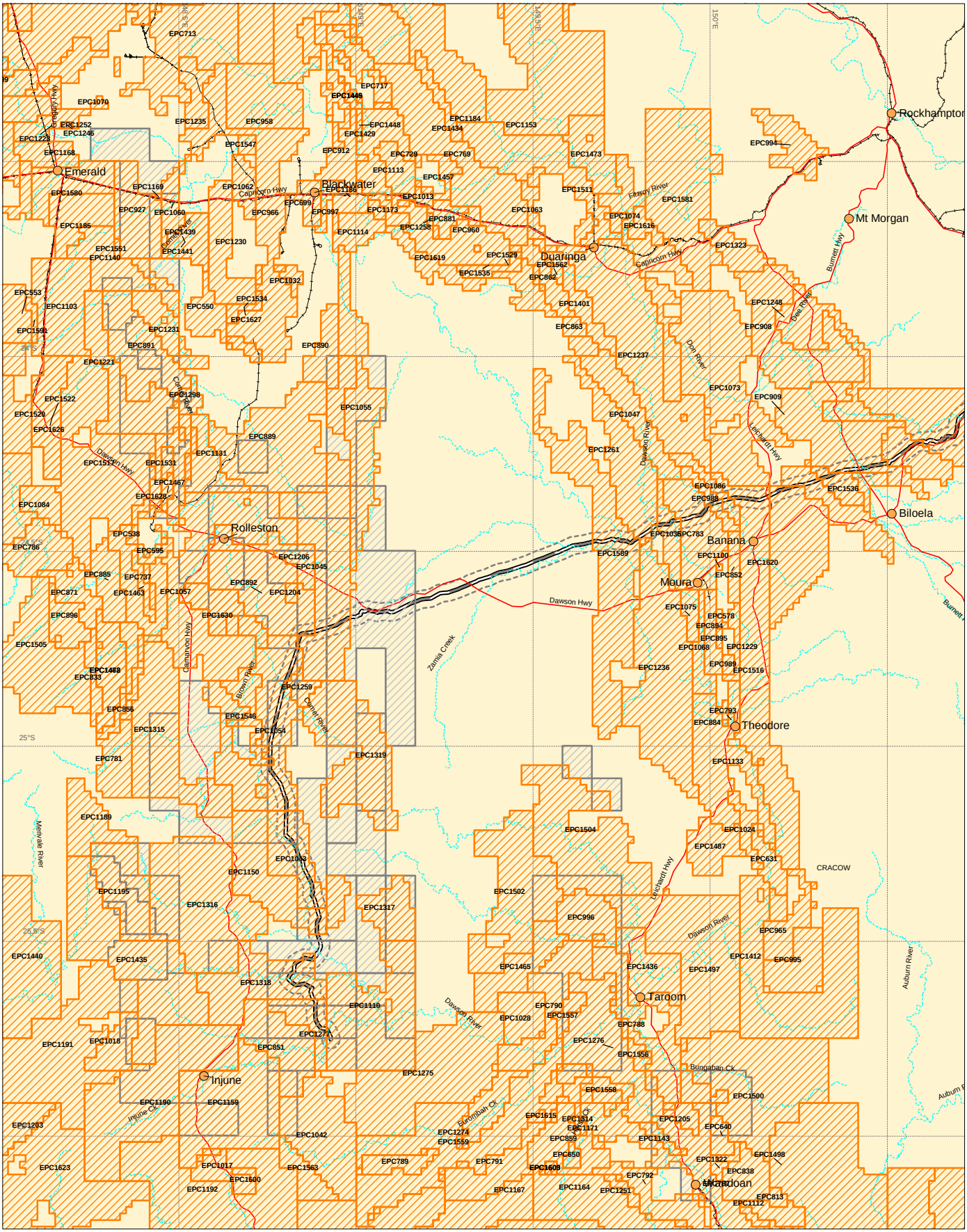

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Project

GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title

EXPLORATION PERMITS COAL (EPC)
CSG FIELDS
(NORTHERN SECTION)

Drawn: CA	Approved: JB	Date: 06-05-2009
Job No: **4262 6220**	File No: 42626220-g-819.wor	

Figure: **6.11.5b**

Rev:A

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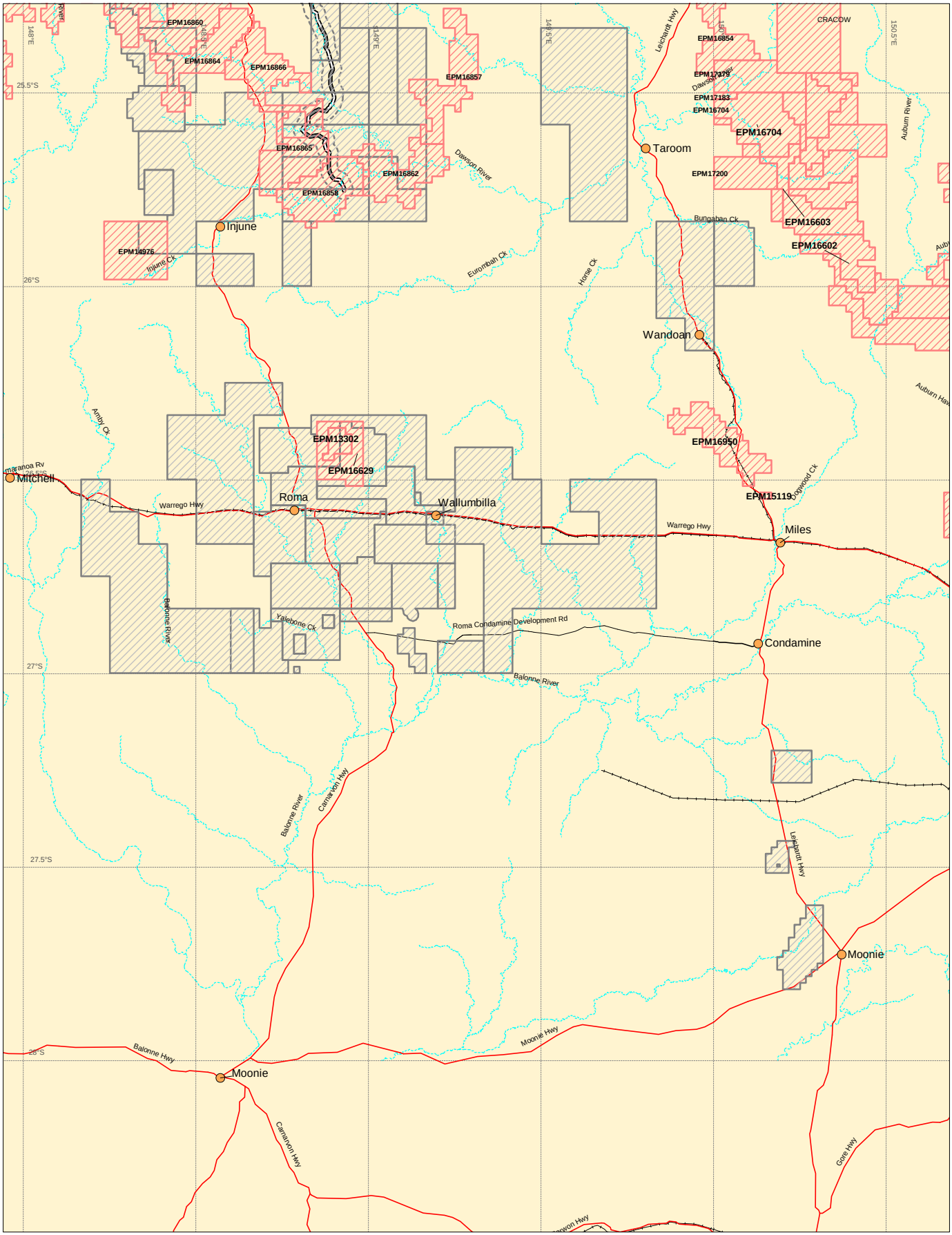

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Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
EXPLORATION PERMITS MINERALS
CSG FIELD
(SOUTHERN SECTION)

Drawn: CA	Approved: JB	Date: 14-11-2008
Job No: **4262 6220**	File No: 42626220-g-820.wor	

Figure: **6.11.6a**

Rev:A

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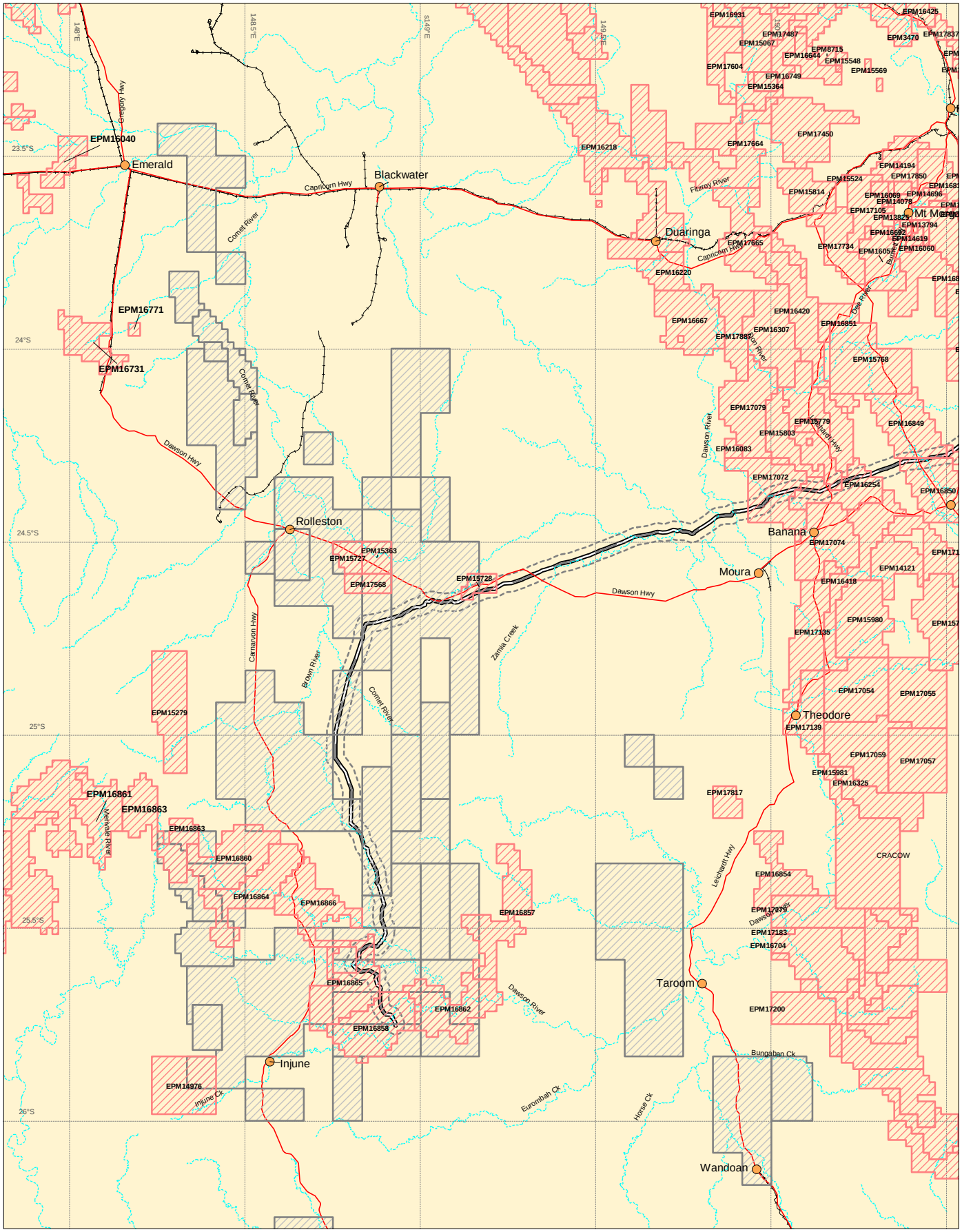

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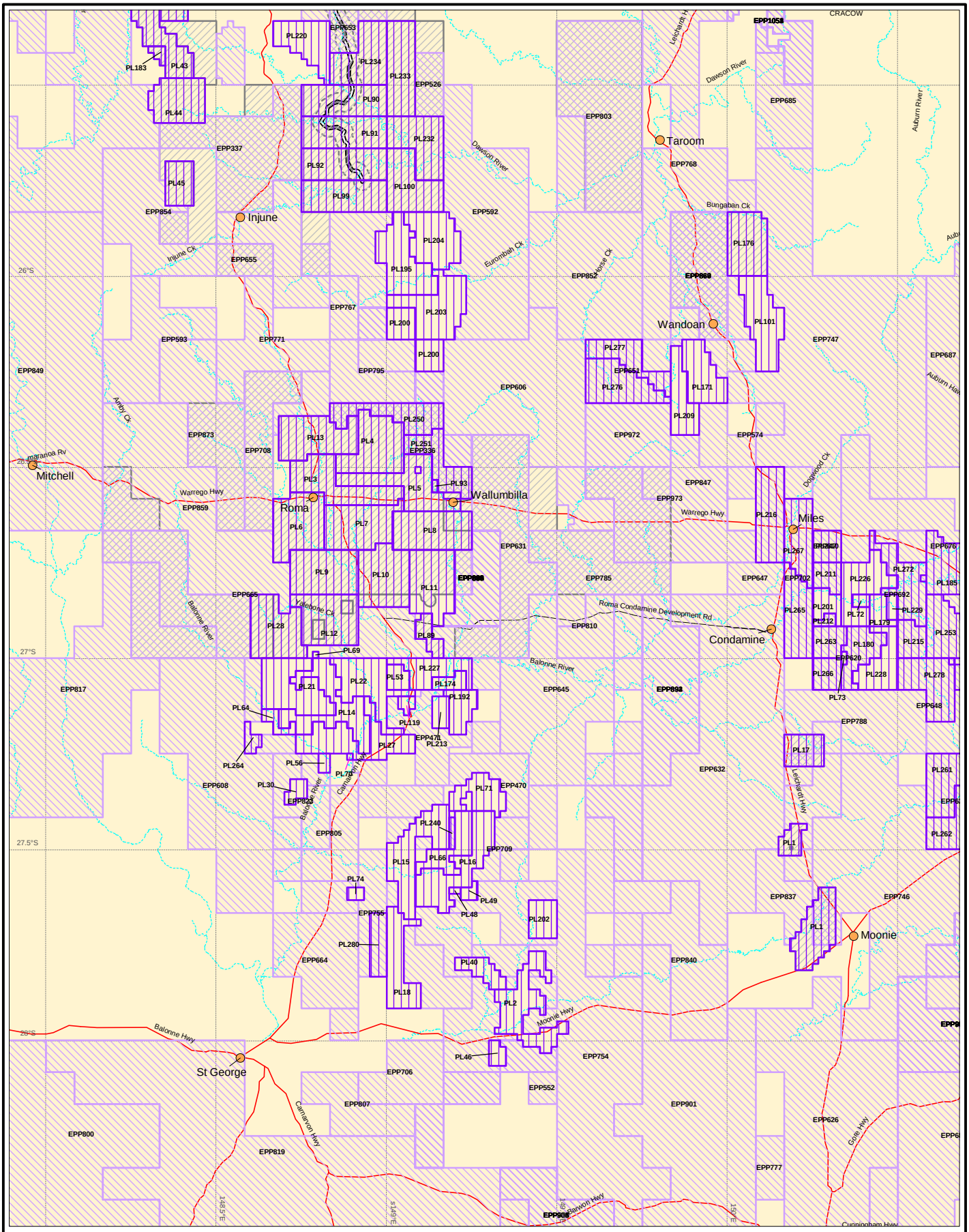
Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
EXPLORATION PERMITS MINERALS
CSG FIELD
(NORTHERN SECTION)

Drawn: CA	Approved: JB	Date: 06-02-2009	Figure: **6.11.6b**	Rev:A
Job No: **4262 6220**	File No: 42626220-g-820.wor			**A4**



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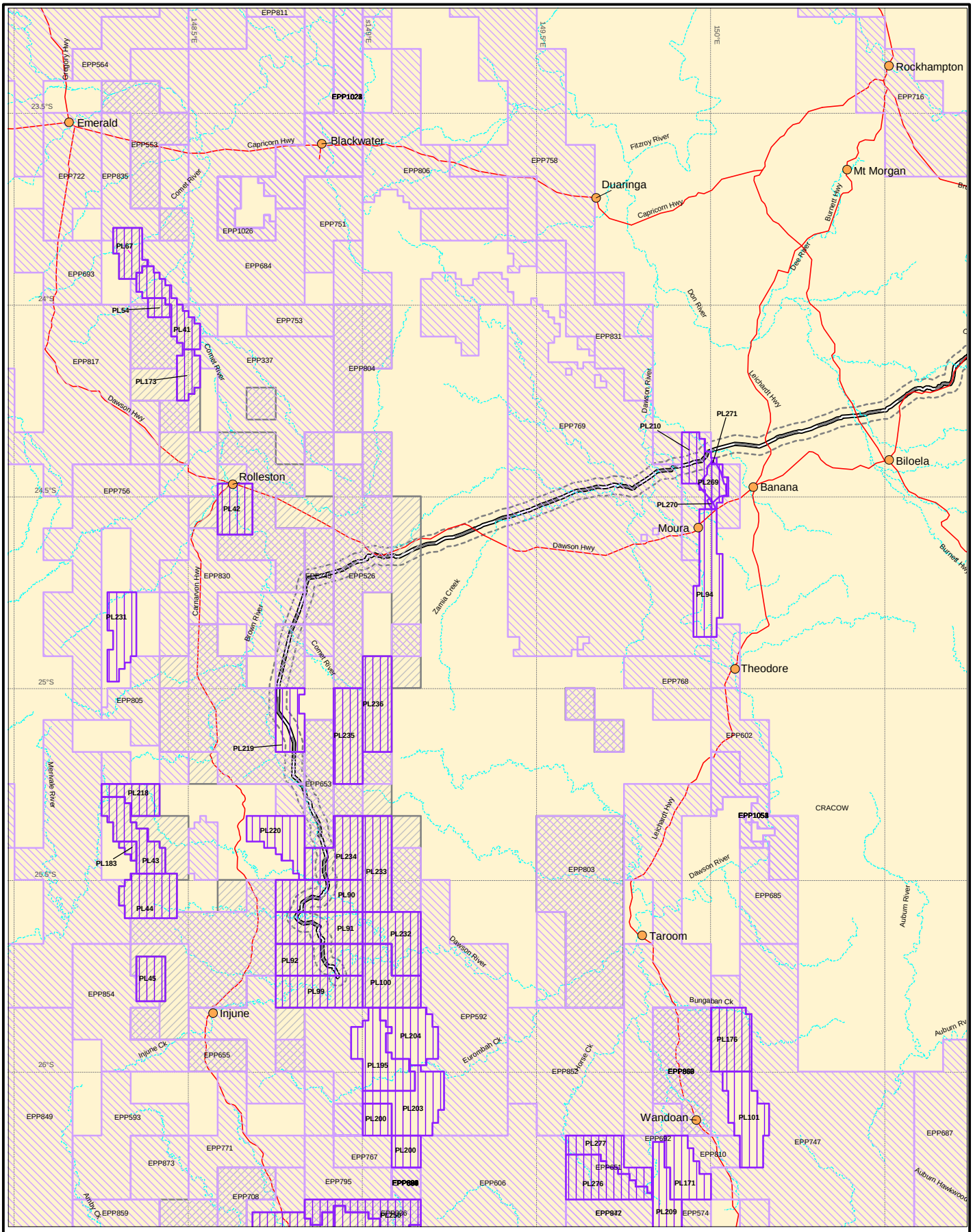
Client: LNG	Project: GLADSTONE LNG PROJECT ENVIRONMENTAL IMPACT STATEMENT	Title: **PETROLEUM TENURES CSG FIELD (SOUTHERN SECTION)**
URS	Drawn: CA | Approved: JB | Date: 06-02-2009 Job No: **4262 6220** | File No: 42626220-g-821.wor	Figure: **6.11.7a** Rev:A **A4**



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Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
PETROLEUM TENURES
CSG FIELD
(NORTHERN SECTION)

Drawn: CA	Approved: JB	Date: 06-02-2009
Job No: **4262 6220**	File No: 42626220-g-821.wor	

Figure: **6.11.7b**

Rev:A

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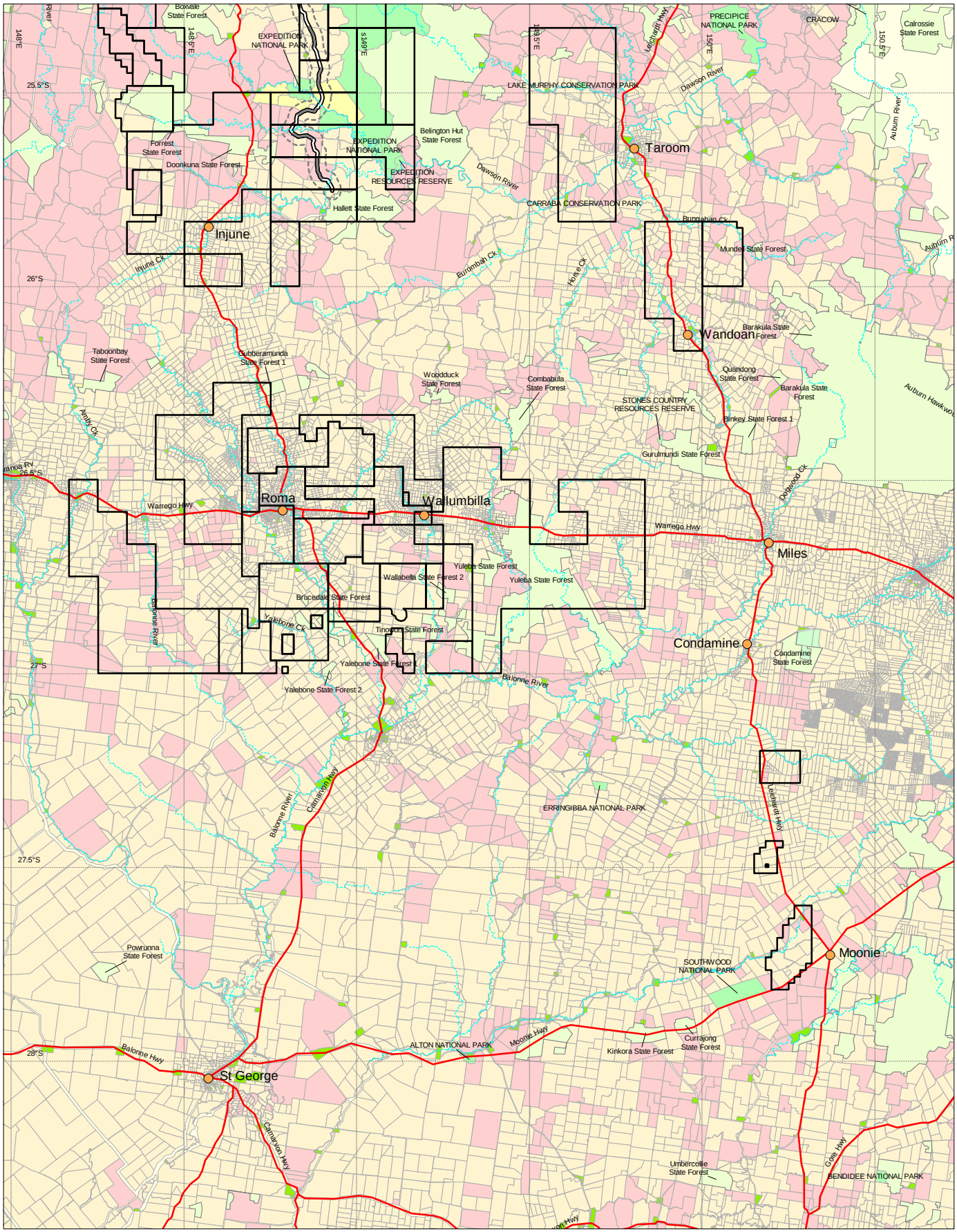

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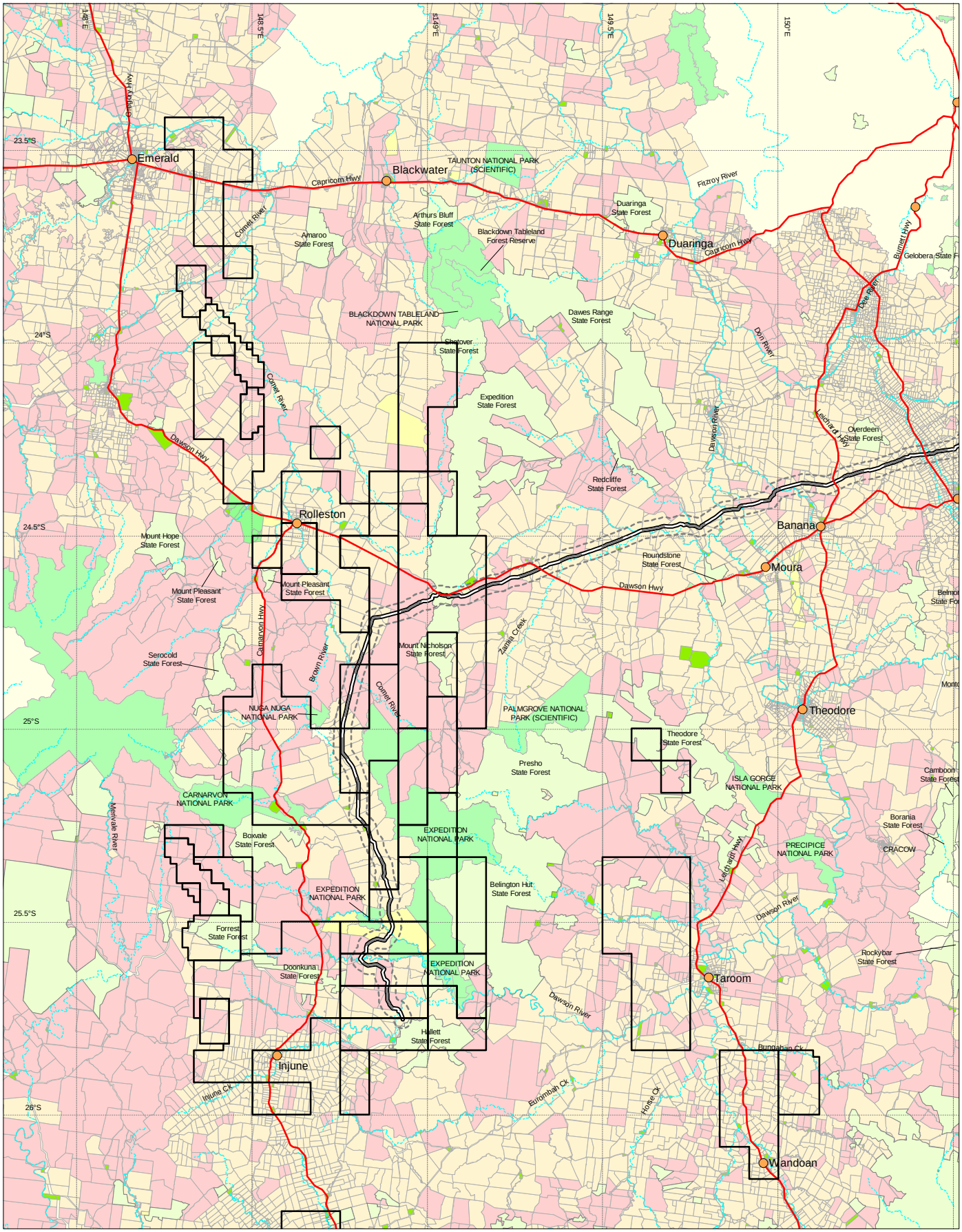
Project

GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

LAND TENURE CSG FIELD (SOUTHERN SECTION)

Drawn: CA	Approved: JB	Date: 23-02-2009	Figure: **6.11.8a**	Rev:B
Job No: **4262 6220**	File No: 42626220-g-822.wor			**A4**



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Datum : GDA94

- Reserve
- National Park
- State Forest
- Freehold
- Leasehold
- State Land
- Gas Transmission Pipeline
- Gas Transmission Pipeline Corridor
- CSG Field

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Client: LNG

URS

Project: GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

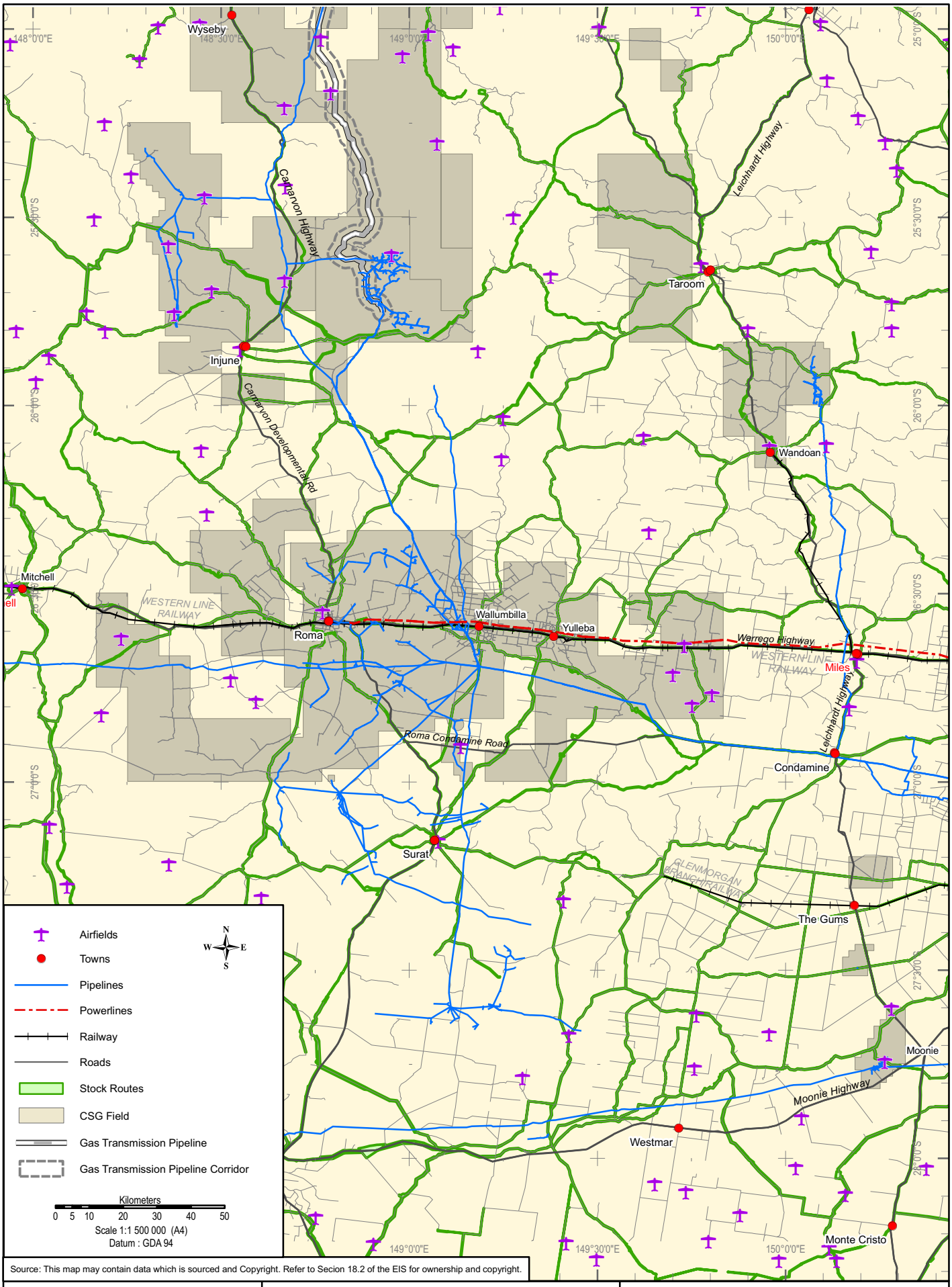
Title: **LAND TENURE**
CSG FIELD
(NORTHERN SECTION)

Drawn: CA	Approved: JB	Date: 23-02-2009
Job No: **4262 6220**	File No: 42626220-g-822.wor	

Figure: **6.11.8b**

Rev:B

A4



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Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
INFRASTRUCTURE AND SERVICES
CSG FIELDS
(SOUTHERN SECTION)

Drawn: MG	Approved: JB	Date: 60-02-2009	Figure: **6.11.9a**	Rev. A
Job No.: **4262 6220**	File No.: 42626220-g-823.mxd			A4

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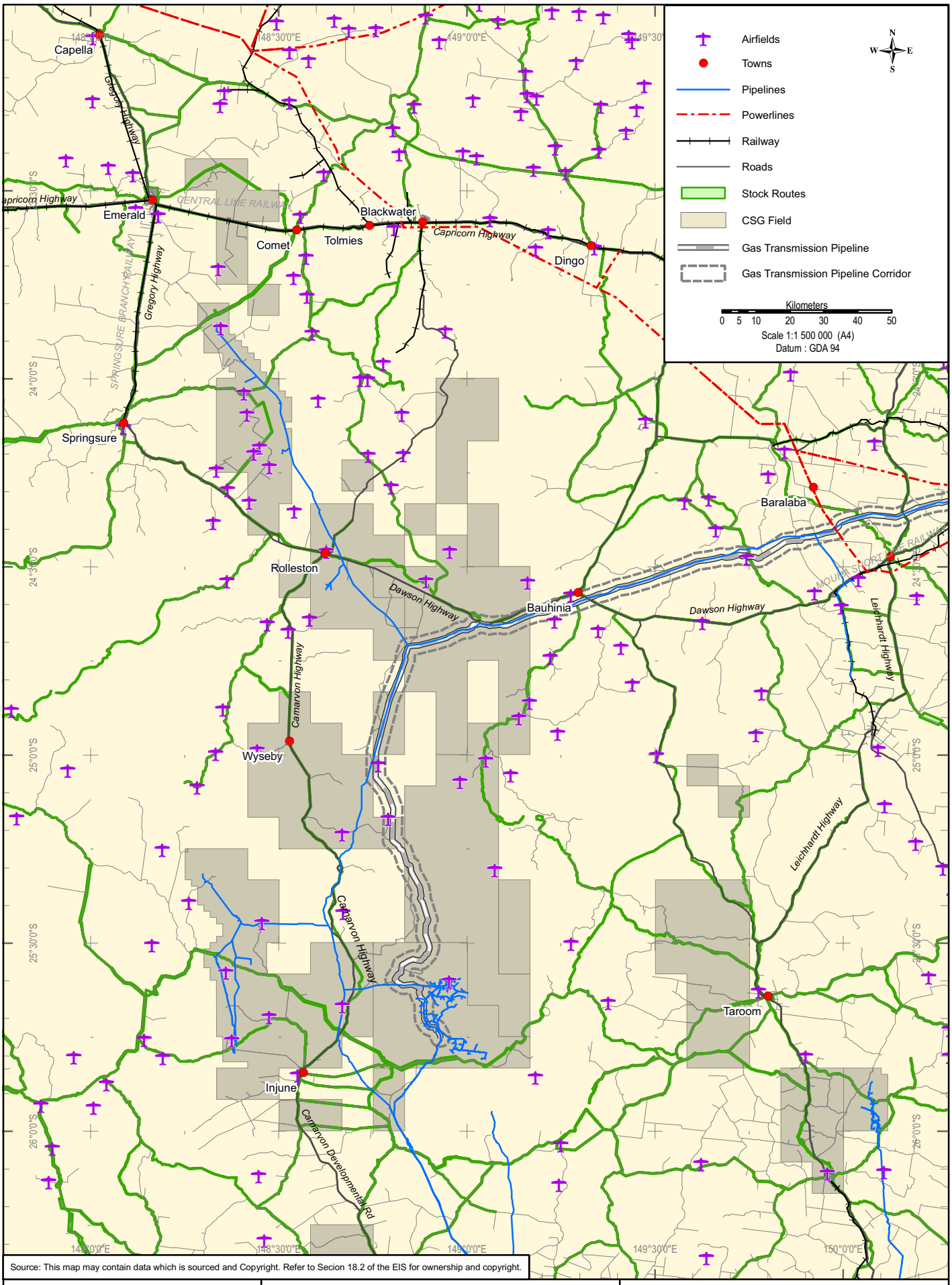

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Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
INFRASTRUCTURE AND SERVICES
CSG FIELDS
(NORTHERN SECTION)

Drawn: MG	Approved: JB	Date: 06-02-2009	Figure: **6.11.9b**	Rev. A
Job No.: **4262 6220**	File No.: 42626220-g-824.mxd			A4

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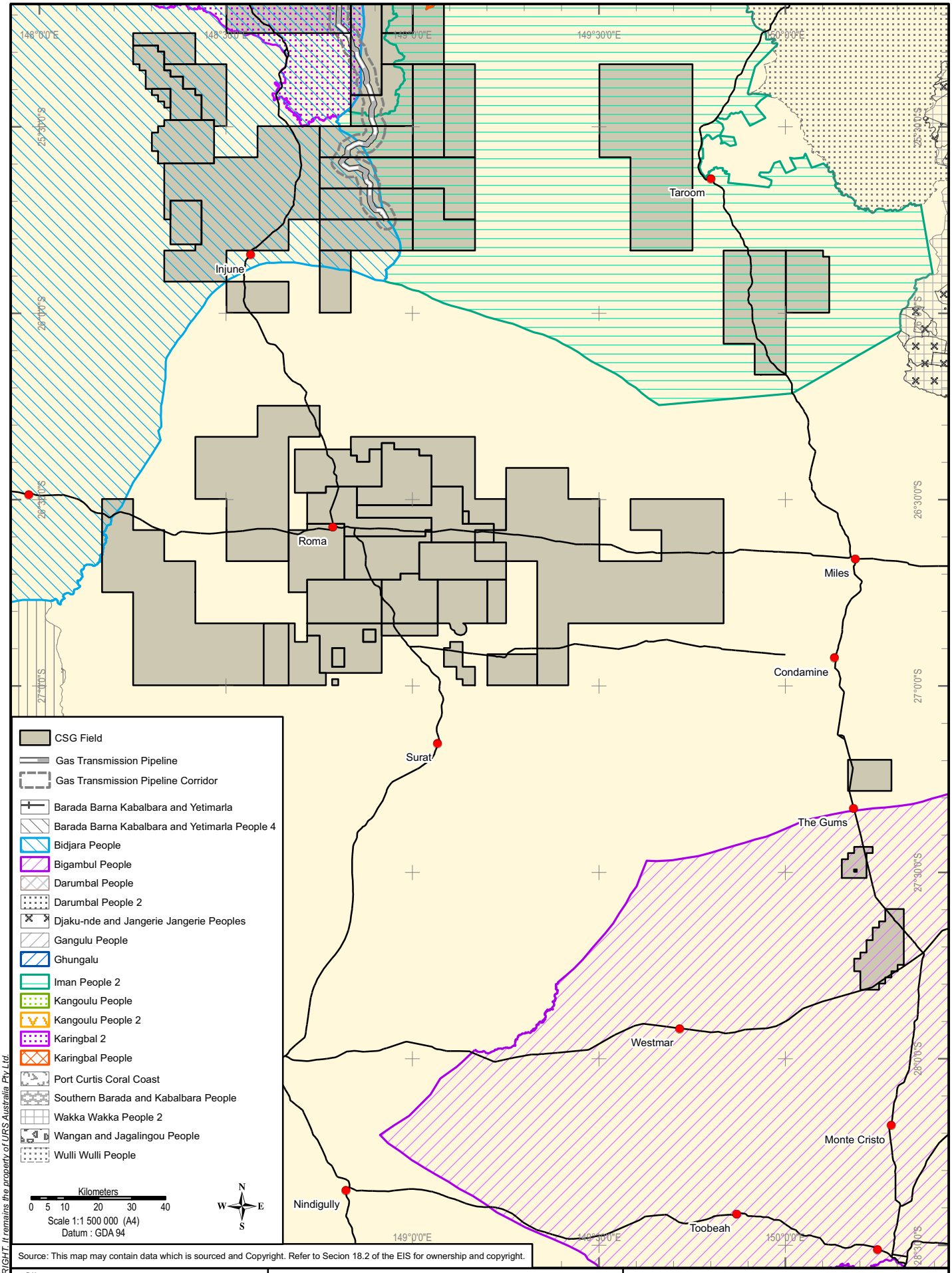

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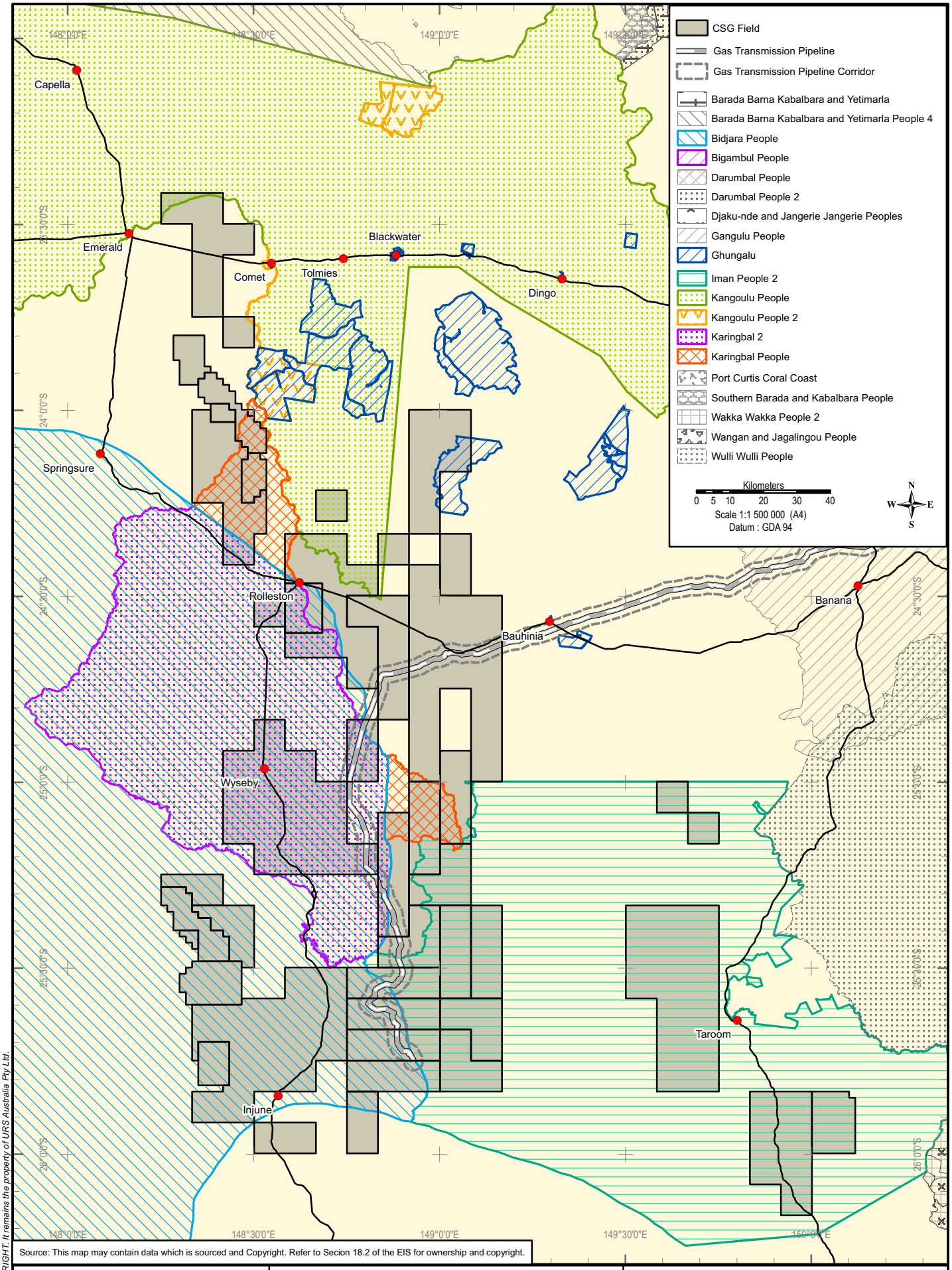
Client

Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
NATIVE TITLE CLAIM AREAS
CSG FIELDS
(SOUTHERN SECTION)

Drawn: MG	Approved: JB	Date: 06-02-2009	Figure: **6.11.10a**	Rev. A
Job No.: **4262 6220**	File No.: 42626220-g-825.mxd			A4



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Project
GLADSTONE LNG PROJECT
ENVIRONMENTAL IMPACT STATEMENT

Title
NATIVE TITLE CLAIM AREAS
CSG FIELDS
(NORTHERN SECTION)

Drawn: MG	Approved: JB	Date: 06-02-2009	Figure: **6.11.10b**	Rev. A
Job No.: **4262 6220**	File No.: 42626220-g-848.mxd			A4

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If economic gas reserves are confirmed, the lease area is converted to an operational well. Once the wells become operational, the appraisal and pilot facilities are removed and the wellhead assembly and lease area becomes considerably smaller. The surface facilities at an operational well will include a well pump, gas engine (used to drive the pump), separator (which separates associated water from the gas), and a flare stack. An operational well lease area is typically 0.1 ha. It is generally fenced to exclude stock and the surface rehabilitated and revegetated to control erosion.

In addition road access to the each lease is required which will require further land disturbance. Roads will be placed in areas that best suit both the landholder and Santos. Roads will typically be placed along fence lines to minimise disturbance. For the most part, they will be planned to avoid large standing timber, steep slopes, erosion prone soils and sensitive ecosystems.

The expected clearing requirement for the production wells and associated roads and facilities within the CSG fields is approximately 2,500 ha. This includes approximately 6,800 km of access roads which generally will be built to a low volume, unpaved, rural road standard in accordance with relevant local government requirements. Compared to the total CSG fields which are approximately 6,800 km^2, the total area of clearing required is less than 0.37 %. This clearing will be widely dispersed over the area and will occur gradually over a 25+ year period. Rehabilitation of the disturbed areas will also occur gradually over the life of the project so that the total area cleared at any one time will be less than the above area.

The concentration of wells across the CSG fields will vary and will be largely dependent on the productivity of the area. This will be investigated during the exploration stages that will be undertaken progressively over the life of the project as new fields are planned and developed. It is estimated that on average across the CSG fields, production wells could be spaced between 750 - 2,000 m apart.

The relative impact of the loss of available land due to CSG fields development will vary according to the nature of the land use. Grazing land is likely to be impacted to a lesser extent than cropping as animals can still graze up to the fence around any physical structure that may be erected and the marginal effect on stocking capacity is likely to be minimal. Crop production could experience some constraint due to the presence of the wells. Strategies to be implemented to mitigate these impacts will include:

- Avoiding (where practicable) good agricultural land;
- Avoiding (where practicable) smaller land parcels where the relative impact will be greater;
- Locating (where practicable) gathering pipelines and access roads along fence lines and property boundaries;
- Locating (where practicable) development activities away from the more intensively used areas of the property;
- Liaising with each relevant landholder regarding their site-specific land use practices and ways to minimise interference from project activities;
- Minimising the lease area required for well development; and
- Rehabilitating as quickly as possible the areas no longer required following drilling and well development.

Disruption to Farming Activities

Disruption to farming operations may occur as a result of:

- Increased traffic movement on properties;
- Spread of weeds;
- Inefficient operating practices (e.g. irrigation and harvesting machinery needing to be reset to manoeuvre around CSG infrastructure); and
- Livestock escaping from paddocks.

Santos will work with landholders to minimise disruptions to farming operations. Mitigation measures proposed to be implemented as appropriate include:

- Speed limits established for all lease access roads;
- Vehicles to give way to all non-project traffic including farming equipment;
- Access roads to be located wherever possible along fence lines and property boundaries;
- Vehicle wash down facilities to be provided and wash down procedures enforced;
- Consultation with landholders to identify mutually suitable locations for infrastructure; and
- Fences and cattle grids to be maintained and gates to be kept closed/open as requested by landholder.

Quality and Organic Certification

From the consultation activities undertaken during the preparation of the EIS, it was identified that some farmers within the CSG fields are involved with quality assurance programs including the Livestock Production Assurance Quality Assurance Program (incorporating Cattlecare and Flockcare). Organic farming operations are also understood to be located in the area. Common organic certification programs include Biological Farmers Australia and the National Association of Sustainable Agriculture.

Some landholders expressed concern that CSG development may affect their certification status under such quality assurance and certification programs, which often require farms to be free of certain chemicals. Santos is currently identifying landholders associated with these programs. Once the requirements of each relevant property are known, Santos will plan their exploration, construction, operation and remediation procedures to ensure that properties remain compliant with the relevant certifications. This may involve:

- Restricting use of certain products (e.g. chemicals) identified under the certifications;
- Restricting or modifying maintenance activities (e.g. spot spraying using herbicides);
- Bunding operations to contain any potential spills; and
- Remediating any affected land.

Fire Management

During the consultation activities, landholders noted that fire remains one of the greatest risks to their operations. The hazard and risk assessment undertaken for the project (refer Section 10) identified a number of fire risks from the CSG activities. These include blow-out of gas at a well head and subsequent fire; gas leak from infrastructure; uncontrolled camp fire; and diesel fire from a mobile fuel tanker. The management and mitigation measures proposed to be implemented to minimise the risk of fire from each of the potential risk sources are discussed in Table 6.11.4.

Table 6.11.4 CSG fields Hazards

Risk	Cause	Safety Management
Blow out of gas at a well head and subsequent fire	• During construction drilling • Mechanical failure of the well head • Vehicle impact • Earthquake • Wildfire	• Design standards for potential earthquake loads. • Quality assurance of installed equipment. • Inspection and condition monitoring program. • Area around well heads cleared of vegetation. • Remote monitoring of pressure and flow. • Remotely operated isolation within the well and downstream of the well. • Emergency response procedures.

Risk	Cause	Safety Management
Gas leak from pipeline infrastructure	• Faulty valve • Faulty flange/seal • Earthquake	• Design standards for potential earthquake loads. • Gas leak detection. • Quality assurance of installed equipment. • Inspection and condition monitoring program. • Secured area around aboveground pipeline infrastructure. • Emergency response procedures.
Worker accommodation area fire involving combustible construction, LPG or diesel	• Electrical fault • Naked flame • Hot oil or surfaces in kitchen	• Smoke detection in worker accommodation buildings. • Manual fire fighting equipment. • Separation of diesel storage. • Emergency response procedures.
Diesel fire involving mobile fuel tanker	• Vehicle engine fire as an ignition source to the fuel tank • Naked flame • Vehicle collision/ roll over	• Suitably qualified fuel transport operator (giving consideration to vehicle maintenance, driver training and procedure).

Groundwater Drawdown

The extent of the drawdown and potentially affected users are discussed in Section 6.6 and Appendix P1 and P2.

Improved Infrastructure

For some landholders, infrastructure constructed as part of the CSG development such as fencing, access tracks, hardstand areas, and some dams may be considered an asset which they may wish to retain following decommissioning. Santos will discuss any re-use options with the landholders prior to the development's decommissioning plan being developed. If the infrastructure is not required by the landholder, it will be removed and the site rehabilitated.

Forestry and Millable Timbers

The CSG development program is currently working in two state forests. Pipelines, wells and roads in these areas have been sited in consultation with the Queensland Parks and Wildlife Service (DPWS) and the Department of Primary Industries and Fisheries (DPIF) to avoid forestry areas where practicable and to minimise the need to clear millable timber. These procedures will also be implemented for all of the field development required for the GLNG Project.

The extent of forestry areas within the CSG fields is shown in Figures 6.11.2a and 6.11.2b.

Management controls will also be implemented in line with relevant guidelines and permit conditions. Santos will advise the DPIF about any areas of state owned land likely to be affected by the development activities in the CSG fields. The DPIF will be able to survey for millable timber in these areas and arrange for their prior removal if required.

Similarly, should there be any millable timber on private land that is likely to be affected by the project, Santos will liaise with the landholder to provide the opportunity for the removal of such timber prior to construction occurring.

Environmentally Sensitive Areas

The CSG fields encompass areas of national parks, conservation reserves and state forests and other areas identified as environmentally sensitive. The CSG fields nature conservation studies undertaken as part of this EIS (refer Section 6.4) have identified such areas based on a comprehensive desktop review of existing information and targeted field surveys. This has provided high level constraints information which will be further refined as part of the ongoing Phase 2 impact assessment program. Santos intends to avoid development in environmentally sensitive areas wherever possible. If wells are proposed to be located within sensitive areas, more comprehensive surveys will be undertaken if necessary to further assess site status and a variety of construction techniques will be considered to minimise disturbance.

Remediation plans will be implemented when production ceases to return any disturbed environments back to their pre-disturbance condition or as directed by approval conditions and in agreement with landholder requirements. Details of the impacts on areas of conservation value and the proposed mitigation measures are given in Section 6.4.

Mineral Resources and Extractive Industries

As discussed previously, two mining leases (ML70307 and ML50207) are located within the CSG fields, and a number of other mining leases are nearby. Santos will liaise with the holders of these leases should they consider developing exploration or production wells in proximity to these leases. CSG development will not affect the Marbango and Warrian quarries.

Generally, CSG development is unlikely to sterilise underlying mineral or energy resources. Extraction of coal resources is currently not economically feasible within much of the CSG area due to the depth of the resource. There is unlikely to be demand to extract this coal for some time due to the availability of more easily accessible resources in other regions. Nevertheless, extraction of the CSG does not preclude the future mining of the coal. In fact, it can facilitate its future mining by removing the issue of having to deal with the gas during mining.

The CSG industry is predominately focused around the Surat and Bowen Basins with several companies conducting exploration and production in the areas adjacent to Santos tenements. Activities that are currently undertaken by neighbouring companies range from exploration and appraisal to fully operating CSG fields.

Residential and Commercial Use

Construction and operation of gas wells and associated infrastructure has a number of potentially adverse impacts on residential or commercial areas including:

- Increased noise levels;
- Visual amenity issues,
- Increased dust; and
- Increased traffic and road safety concerns.

During the EIS consultation program, landholders raised concerns about the above potential impacts. A number of management and mitigation measures are proposed to minimise negative impacts on residents, including:

- Field development activities will be remote from township areas;
- All rural residences will be identified during the scouting phase of field development planning so that roads and well developments are located an appropriate distance away to minimise any impacts;
- Drilling and well development activities will comply with relevant construction noise regulations;
- Noise reduction devices will be fitted to machinery used in the vicinity of residential areas and noise sensitive locations;

- Dust suppression measures such as watering down access roads will be implemented during construction when required;
- Vehicle speeds will be limited on all lease access roads;
- Lease access roads will be separated from property access roads, as appropriate and will not be located in the vicinity of residences unless there is no alternative. In some cases the lease access road may need to use the property access road, which will be negotiated with the landholder; and
- All project vehicles will be required to give way to non-project vehicles to ensure safety.

Further details are provided in the Sections 4, 6.8 and 6.10.

Heritage Sites

Section 6.13 provides details on cultural heritage sites (Indigenous and non-indigenous) identified within the CSG fields. These sites have been assessed for significance and field development activities will be undertaken in such a way as to minimise any impacts on identified sites.

6.11.5.2 Impacts on Land Tenure

The development of CSG fields is conducted over Santos' petroleum tenures. These petroleum tenures allow certain petroleum rights to occur over other existing land tenures. An authority to prospect (ATP) is a large tenure that is granted by the state government to allow for the exploration of gas reserves. Based on the results of this exploration, the ATP can be converted to a petroleum lease (PL). A PL allows for further development of the gas reserve by allowing more wells to be drilled.

As part of the development of the CSG fields Santos will undertake extensive and ongoing consultation with all relevant landholders in the areas of proposed development. As with the rest of the oil and gas industry, Santos works on a multiple-land use premise and realises that it must work with local communities to ensure that while the gas reserve can be developed, other land uses can continue.

6.11.5.3 Impacts on Infrastructure and Services

Roads

As discussed in Section 6.11.4.3, road access is required to each drill lease. Roads will be placed in areas that best suit both the landholder and Santos. As part of the infrastructure planning process, opportunities for utilitising or upgrading existing tracks or roads (to reduce the extent of disturbance to new ground) will be investigated, taking into account any operational and/or design constraints. Roads will typically be placed along fence lines to minimise disturbance. For the most part, they will be planned to avoid large standing timber, steep slopes, erosion prone soils and sensitive ecosystems. Full development of the reasonably foreseeable development (RFD) area will result in development of approximately 6,800 km of access roads. They will generally be built to a low volume, unpaved, rural road standard in accordance with relevant local government requirements.

Traffic capacity impacts to the local road network by development of the proposed CSG fields are not expected to be significant because of the relatively low levels of traffic generated over a relatively large area. Additionally, the existing traffic volumes on most roads in the vicinity of the CSG fields are at such low levels that the roads operate with significant spare capacity and the proposed field development traffic will not trigger capacity upgrades.

Further details on potential impacts from the project on the existing road network are discussed in Section 4.3.2.1.

Railways

Development of the CSG fields is not expected to result in any significant use of the rail system for passenger or freight purposes. Any increases that may occur are expected to be within the capacity of the existing rail system.

CSG field development activities may require construction of linear infrastructure in the vicinity of existing railway lines. Where this is required, opportunities for co-locating such infrastructure alongside or parallel to existing railways (to reduce the extent of disturbance to new ground) will be investigated, taking into account any operational, safety and/or design constraints such as required set-back distances as stipulated in AS 2885.

Pipelines and Powerlines

Due to the relatively small size and flexible location requirements of the various project components (i.e. gas wells, infield pipelines/gathering networks etc.) no significant interference with existing pipelines, powerlines or water infrastructure across the CSG fields is expected, although (subject to any design and/or operational constraints) opportunities to locate any proposed linear infrastructure alongside existing pipeline or powerlines to reduce the extent of disturbance to new ground will be investigated.

As the CSG fields are gradually developed over the next 25+ years, an on-going impact assessment process will be implemented in advance of field design to identify the preferred locations of the various project components. This process will include identification and, where practicable, avoidance of all existing pipelines, powerlines and water infrastructure. In the rare instances where avoidance is not possible, Santos will enter into negotiations with the relevant facility owner to reach agreement on the future development of the area.

Telecommunications

As discussed in Section 3.6.6.7, telecommunications services to be provided for the CSG fields will include voice and data network services and telemetry services. Santos will use existing carrier services where available, otherwise alternative methods will be used such as:

- Santos' fibre network will be extended from existing facilities and installed parallel with piped gathering networks;
- Communications equipment will be accommodated in operational or administration buildings; and
- Satellite communications will be used in inaccessible locations.

Water Supply

The majority of the CSG workforce will be accommodated in field based accommodation facilities. These facilities will be self-contained with single status workers housed in modular structures, catering for one worker per unit. Each unit will include a private toilet, shower and sink. Stand - alone water supply systems will be provided. Due to the remote nature of these facilities no reliance will be made on existing water supply systems.

Water will be sought from local surface water or groundwater supplies as appropriate. The contractor providing the accommodation facilities will be responsible for obtaining all necessary approvals for the extraction of water and will be responsible for complying with any conditions attached to the extraction licence.

As small number of the field workers (approximately 60) will be based in Roma. It is expected that these workers will also live in Roma and will use the existing water supply system.

Sewerage

As with the water supply, all field accommodation facilities will be provided with stand-alone sewerage systems. Sewage will be treated in package sewage treatment plants. All relevant approvals will be

obtained by the construction contractor in conjunction with the accommodation facilities' development approvals. Treated effluent will generally be disposed of by irrigation.

Where sewage effluent absorption beds and/or irrigation fields are used, they will be located and designed to ensure that:

- Sensitive areas are avoided;
- Soil erosion and soil structure damage is avoided;
- There is no surface ponding or runoff of effluent; and
- The quality of groundwater is not adversely affected.

Areas where treated sewage effluent is discharged to absorption beds or irrigation fields will be fenced and clearly marked with warning notices of the purpose of the area and not to use or drink the effluent.

Effluent treatment systems will be designed to include alternate measures for effluent storage and/or disposal, where conditions prevent the absorption of treated effluent to land (e.g. rain events). This may include wet weather storage or disposal off site. There will be no discharge of treated effluent from wet weather storage to any waters.

Again, the relatively small number of employees who will be living in Roma (approximately 60) will rely on the town's existing sewerage system.

Common User Facilities

Santos agrees that the costs of infrastructure development should be borne by those who benefit. However, Santos also recognises that there has been a long history in Queensland of government support for coal, alumina, gas and other resource projects. The Queensland (and Federal) Governments have played leading roles in the development of some of these industries and associated common user infrastructure. Examples of common user infrastructure facilities that may be relevant for the CSG field development could include road, water supply and telecommunications facilities.

6.11.5.4 Impacts on Regional Planning Framework

Central Queensland Regional Growth Management Strategy

The Central Queensland Regional Growth Management Strategy (CQRGMS) sets out the objectives and outcomes to achieve a number of strategic "outcomes". Of particular relevance to the GLNG Project are the *Resource, Conservation and Management* objectives and the *Economic Development* objectives. Details of the objectives and outcomes in relation to the CSG fields are outlined in Table 6.11.5.

Table 6.11.5 CSG Fields Compatibility with CQRGMS

Outcome	Objectives	Compatibility of CSG fields
Resource Use, Conservation and Management		
Land use planning and management	The promotion of, and adherence to, best practice land management for sustainable and profitable land use.	The CSG fields will be designed to enable best practice land management for sustainable use.
Pests and diseases	The economic prosperity, competitive advantage and biodiversity of the region are protected from introduced and endemic pests and diseases.	Pest and weed control strategy to address threat of pests and diseases will be developed.

Outcome	Objectives	Compatibility of CSG fields
Water use planning and management	The promotion of, and adherence to, sustainable use of water resources while maintaining and enhancing environmental values.	The project will be a net provider of water to the region. The proposed water management strategy addresses sustainable use of water resources while maintaining environmental values.
Air quality	Air quality is maintained at levels which ensure sustainable regional communities, protection of the natural environment and opportunities for continuing economic growth.	Air quality will not be significantly affected by the project.
Climate change and Greenhouse Gas (GHG) emissions	Development takes place with a focus on efficiency to achieve economic progress with minimisation of GHG emissions and with an understanding of the potential impact of climatic conditions.	CSG is an energy source with significantly lower GHG emissions than other hydrocarbon energy sources.
Biodiversity conservation	Biodiversity in terrestrial, freshwater, marine and estuarine ecosystems is maintained, with native species and communities conserved and linked by viable networks of wildlife habitat across the landscape.	The project will minimise impacts on biodiversity by conserving and avoiding sensitive ecosystems, and limiting habitat fragmentation.
Coastal planning and management	The region's coastal resources and values have been identified and promoted to ensure they are used in a sustainable manner.	The CSG fields development will not affect coastal resources.
Economic Development		
Existing and emerging industries	The region supports existing and emerging industries and encourages diversification ensuring growth and a viable and ecologically sustainable economy in the region.	The project will support long term economic growth in the region.
Investment and capital markets outcome	There is a measurable increase in the understanding and the flow of capital within the local and regional economies and how this applies to the state, national and international economies.	The project will provide a considerable input of investment capital into the region.
Labour market	The provision of a flexible and skilled workforce meeting industry requirements which is capable of responding to both industry and personal changes.	The project will encourage a skilled workforce into the region and promote upskilling of the existing workforce.
Export development	It is recognised there is an increased capacity of the region to engage directly with international markets which increases our global perspective and enhances the viability of organisations based in the region.	The project will be a significant contributor to exports from the region.

Outcome	Objectives	Compatibility of CSG fields
Energy	A region which promotes its capacity to meet high energy demand in an efficient and competitive manner to support economic growth and improvement in lifestyle.	The project will develop a significant resource to meet the growing demand for lower carbon energy.

The GLNG Project will support the outcomes of the CQRGMS and implement management strategies that reflect those contained within the CQRGMS.

Central Queensland Strategy for Sustainability

Table 6.11.6 outlines the key issues relevant to the project, objectives to address the issues, and how the project influences these issues and objectives.

Table 6.11.6 CQSS - Project Compatibility

Regional Issues	Sustainability Objectives	Compatibility of Project
Water Resources Management • The equitable allocation of water resources; • Ecological needs of the river, estuary and marine environments; and • Water infrastructure developments harvesting and storing of water.	Regional water resources managed in an ecologically, economically and socially sustainable way. Water use efficiency and water conservation practices adopted by water users. Whole-community participation in water resources decisions.	The project will be a net provider of water to the region. The proposed water management strategy addresses sustainable use of water resources while maintaining environmental values.
Weeds • Spread of weeds; • Impacts on rural productivity as well as on natural ecosystems; and • Awareness.	Limit the introduction of new weeds to the region, restrict the spread of existing weeds and eradicate where practicable. Integrate weed management with other natural resource management activities.	Weed identification surveys have been carried out as part of the EIS. A weed management strategy has been outlined in Section 6.4.
Salinity • The potential for salinity to contribute to land degradation in the region.	Minimise the potential for soil and water salinity in the region. Contain or reverse salinity in existing problem areas.	Saline produced water will be treated and/or managed so that impacts on soil and water salinity will be minimised.
Degradation of the Soil Resource • Soil erosion; • Soil fertility and structural decline; and • Development of areas of salinity associated with tree-clearing and irrigation.	Management of the region's land resources (soils and vegetation) in an ecologically, socially, and economically sustainable manner. Address institutional and structural factors which constrain the achievement of integrated sustainable resource management.	Appropriate siting of infrastructure to minimise soil erosion. Soil management techniques will be implemented to control erosion.

Regional Issues	Sustainability Objectives	Compatibility of Project
Vegetation Management • Native plants becoming woody weeds; • Pasture management; • State of natural riparian and remnant vegetation ; • The rights of owners of freehold land; and • Economic benefits to landholders through the productive use of cleared timber.	Not stated.	All affected landholders will be consulted and where practicable, the project will be designed to avoid significant vegetation areas. Opportunities for milling timber will also be undertaken.
Land Use Planning • Loss of GQAL to other land uses.	Management of the region's land resources (soils and vegetation) in an ecologically, socially, and economically sustainable manner. Address institutional and structural factors which constrain the achievement of integrated sustainable resource management.	The project is planned to avoid loss of GQAL where practicable. Infrastructure will be appropriately located so that it minimises loss of agricultural land or disruption to farming activities.
Ecosystem Health and Biodiversity • Fragmentation of habitat; • Introduction of potential weed species; and • Maintaining biodiversity.	Healthy regional ecosystems where biodiversity is maintained. Regional activities managed for healthy ecosystems reflecting stakeholders' understanding of the region's natural environment. Biodiversity and ecosystem health integrated with natural resource management decision making.	The project will be planned to avoid where practicable loss of biodiversity. Weed management techniques will be implemented to minimise and manage introduction of weeds.
Economic Viability of Industries • Decline of primary industry viability; • Development of regional industries; and • Farm income diversification.	A robust and well-balanced regional economy which is economically, socially and ecologically sustainable in the long-term, and able to withstand external pressures.	The project provides an opportunity for diversification of the regional economy.

Draft Maranoa and Districts Regional Plan

The draft regional plan contains regional policies and strategies which set out outcomes and objectives for a sustainable development of the region. Details of the outcomes, objectives and the compatibility of the GLNG Project to these areas are summarised in Table 6.11.7.

Table 6.11.7 Draft Maranoa and Districts Regional Plan - Project Compatibility

Plan Outcome	Plan Objectives	Compatibility of Project
Natural Environment		
The region's natural assets are valued and managed to maintain a healthy functioning natural environment.	Maintain and improve the extent, diversity and condition of the region's biodiversity, ecological integrity and ecological process.	Studies have been carried out to identify areas and corridors of high ecological significance. The GLNG Project will be developed to avoid adverse impacts where practicable. Otherwise development will be designed and operated to minimise and offset residual impacts.

Plan Outcome	Plan Objectives	Compatibility of Project
Natural Resource Management		
The productive capacity and social and cultural values of the region's landscapes and supporting ecosystems are maintained through the stewardship of informed resource managers.	Ensure use of surface and groundwater resources is sustainable.	The project will be a net provider of water to the region providing opportunity for beneficial reuse of water. Studies are being carried out to identify options for beneficial reuse.
	Ensure long term prosperity and sustainability of primary production	GQAL has been identified and will be avoided where practicable.
Economic Development		
A robust dynamic regional economy building on historic strengths, operating within the limits of natural systems and responsive to new opportunities, and accruing balanced economic, social and environmental dividends from sound business investments.	To strengthen rural industries in a sustainable manner by increasing adaptability and producing, value adding and expanding market access.	Beneficial reuse of water may provide opportunities for new agricultural activities and supporting industries.
	To broaden the region's economic base, employment and business investment through taking advantage of the opportunities afforded by development of the oil, mineral and gas extraction industry.	The project provides significant employment and regional economic development opportunities for businesses to provide services to the project.

6.11.5.5 Impacts on State Planning Provisions

SPP 1/92 - Development and Conservation of Agricultural Land

Measures to be implemented by the GLNG Project to minimise impacts on GQAL include:

- Focussing development on land with lower agricultural potential (e.g. Class C and D land) and avoiding land of higher value/potential such as cropping land (Class A and B land) where practicable;
- Avoiding fragmentation within individual land parcels and across areas of high agricultural value;
- Restricting development on properties which will become non viable for farming due to the project infrastructure (e.g. development on small land parcels); and
- Placing project infrastructure on the boundaries of properties or outside of active farming areas (e.g. outside of fields).

Further details of management measures are discussed in Section 6.3.

SPP 1/03 - Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

Bushfire Management

Santos will minimise development in high bushfire and landslide risk areas. Where development is located in these areas, Santos will employ safety management procedures to minimise the likelihood of the project initiating or spreading bushfire. Management measures include:

- Design standards to control risk of fire occurring;
- Inspection and monitoring;
- Area around well heads cleared of vegetation; and
- Emergency response procedures.

Further details of fire risks and management procedures are provided in Section 10.

Landslide

The SPP states that landslide hazard areas "*include land of 15 % and greater slope and other land known of or suspected by the local government as being geologically unstable*". Landslide hazard areas within the CSG fields include sections of the Carnarvon, Lynd, Bigge, Expedition, Dawson and Gilbert Ranges. Development of the CSG fields and the associated infrastructure will generally be outside of the landslide prone areas. Santos will employ a range of procedures to minimise the risk of landslide including:

- Investigate alternative sites away from landslide risk areas;
- Utilise appropriate construction materials, equipment and techniques;
- Cease work during periods of potential landslide activity (e.g. high rainfall events);
- Minimise vegetation clearing, stabilise slopes;
- Regular inspection and monitoring; and
- Emergency response procedures.

A detailed assessment and identification of bushfire and landslide risk areas will be carried out for each well field development in phase two of the assessment process. As the CSG fields are gradually developed over the next 25+ years, an on-going scouting process will be implemented in advance of field design to identify the preferred locations of the various project components. This process will include identification and where practicable avoidance of bushfire and landslide risk areas. In the rare instances where avoidance is not possible, Santos will implement appropriate management strategies to minimise these risks.

SPP2/07 - Protection of Extractive Resources

Two key resource areas are located within the CSG fields – the Marbango and Warrian basalt quarries. Use and operation of these resources will not be affected by the GLNG Project.

6.11.5.6 Impacts on Local Government Planning Schemes

Planning schemes indicate the desired pattern of development for each local government area (LGA). The majority of the CSG fields are zoned "Rural" within the various planning schemes. The predominant rural uses in the region will be able to continue. Other more intensive town planning zones such as "Urban" or "Town" exist in the town plans for the various towns throughout the CSG fields, but well field development will avoid these residential and built-up areas.

As discussed in Section 1.9, IPA provides that development for an activity authorised under the Petroleum Act or the P&G (PSA) Act (other than an activity relating to the construction and operation of an oil refinery) is exempt from assessment against a relevant local government planning scheme. Likewise, all aspects of development for a petroleum activity as defined in section 77(1) of the EP Act are exempt from assessment against a local government planning scheme. (The reference to section 77(1) of the EP Act is now a reference to section 309A of the EP Act).

It is possible that some CSG related activities such as worker accommodation or other infrastructure facilities may be located outside of petroleum lease areas and hence will not be exempt from assessment against the relevant planning scheme. In such cases Santos will submit the relevant town planning applications as required. However, because the GLNG Project has had an EIS assessed under the *State Development and Public Works Organisation Act* process, the referral, public notification and review stages in respect of certain types of development applications will not need to be repeated.

6.11.6 Cumulative Impacts

Section 1 identifies other CSG development projects planned for the surrounding region. Some of these projects are up to 100 km from the GLNG Project CSG field areas and some may be within the GLNG Project future development (FD) area. There is limited information available as to the planned

development of those projects or the quantity and timing of the development of the wells or associated infrastructure; however, a qualitative assessment can be made of the possible cumulative impacts.

Santos will develop the CSG fields in accordance with the EIS. There will be no other development by other petroleum producers in the tenements described in the CSG fields. Infrastructure impacts will not exceed those stated in the project description.

It is however, possible that other companies may develop CSG facilities within the CSG fields FD area as part of their planned CSG development projects in addition to the existing CSG domestic supply facilities. This will mean that there will be more CSG development in the FD area than the Santos project. As an area is developed, the number of wells will increase, but the spacing of wells will not intensify.

The total land surface area directly impacted by the Santos activities in the CSG fields is estimated at 2,500 ha. This constitutes 0.37 % of the RFD area of 6,800 km^2. The impacted surface area is associated with a network of trunk roads and access roads that connect the CSG wells. Accordingly the impacts described in this section affect a relatively small area of land and the impact on such areas will reduced by the application of the mitigation methods described in this section.

In assessing the possible cumulative impacts upon land use, particular regard has been taken of:

- The temporal impacts of CSG field developments; and
- The area of the land the subject of a petroleum lease that will be impacted by the development.

The other potential CSG development projects are likely to have a similar level of impact upon land use in their respective tenements, as is expected for Santos in their CSG fields. Furthermore, it is expected that the other CSG development projects will include some or all of the proposed mitigation measures in relation to land use described in this section. By utilising the mitigation methods the expectation is that there will be a minimisation of the cumulative impacts on the surrounding environment.

Table 6.11.8 provides a summary of potential land use impacts and mitigation measures for the CSG fields.

Table 6.11.8 Potential Land Use Impacts and Mitigation Measures

Aspect	Potential Impact	Mitigation Measures	Objective
Construction			
Impact to agriculture land use	Loss or reduction of agricultural land, including fragmentation of land.	• Avoiding (where practicable) good agricultural land. • Avoiding (where practicable) smaller land parcels where the relative impact will be greater. • Locating (where practicable) gathering pipelines and access roads along fence lines and property boundaries. • Locating (where practicable) development activities away from the more intensively used areas of the property. • Liaising with each relevant landholder regarding their site-specific land use practices and ways to minimise interference from project activities. • Minimising the lease area required for well development. • Rehabilitating as quickly as possible the areas no longer required following drilling and well development.	To reduce fragmentation of agricultural land.
	Disruption to farming activities and practices	• Speed limits established for all lease access roads. • Vehicles to give way to all non-project traffic. • Access roads to be located wherever possible along fence lines and property boundaries. • Vehicle wash down facilities to be provided and wash down procedures enforced. • Consultation with landholders to identify mutually suitable locations for infrastructure. • Fences and cattle grids to be maintained and gates to be kept closed/open as requested by landholder.	
	Quality and organic certification is lost or comprised.	• Restricting use of products (e.g. chemicals) identified under the certifications. • Restricting or modifying maintenance activities (e.g. spot spraying using herbicides).	To ensure landholders retain current organic certification.

Aspect	Potential Impact	Mitigation Measures	Objective
		• Bunding operations to contain any potential spills. • Remediating any affected land.	
Fire management	Blow out of gas at a well head and subsequent fire.	• Quality assurance of installed equipment. • Inspection and condition monitoring program. • Area around well heads cleared of vegetation for fire break. • Remote monitoring of pressure and flow. • Remotely operated isolation within the well and downstream of the well. • Emergency response procedures.	To prevent fires in the area.
	Gas leak from pipeline infrastructure.	• Design standards for potential earthquake loads. • Gas leak detection. • Quality assurance of installed equipment. • Inspection and condition monitoring program. • Secured area around aboveground pipeline infrastructure. • Emergency response procedures.	
	Worker accommodation area fire involving combustible construction, LPG or diesel.	• Smoke detection in worker accommodation buildings. • Manual fire fighting equipment. • Separation of diesel storage. • Emergency response procedures.	
	Diesel fire involving mobile fuel tanker.	• Suitably qualified fuel transport operator (giving consideration to vehicle maintenance, driver training and procedure).	
Forestry and millable timbers.	Removal of unnecessary millable timber during construction activities.	• Pipelines, wells and roads in these areas will be sited in consultation with the Queensland Parks and Wildlife Service (QPWS) and the Department of Primary Industries and Forestry (DPIF) to avoid forestry areas where practicable and to minimise the need to clear millable timber. • Management controls will also be implemented in line with relevant guidelines and permit conditions. Santos will advise the DPIF about any areas of state owned land likely to be affected by the	To reduce unnecessary millable timber being removed from the area.

Aspect	Potential Impact	Mitigation Measures	Objective
		CSG field development activities. The DPIF will be able to survey for millable timber in these areas and arrange for their prior removal if required. • Similarly, should there be any millable timber on private land that is likely to be affected by the project, Santos will liaise with the landholders to provide the opportunity for the removal of such timber prior to construction occurring.	
Environmental sensitive areas (ESA)	Land disturbance to ESAs	• Avoid development in environmentally sensitive areas wherever possible. • If wells are proposed to be located within sensitive areas, more comprehensive surveys will be undertaken. • Consider construction techniques to minimise disturbance. This could include directional drilling. • Remediation plans will be implemented when production ceases to return any disturbed environments back to their pre-disturbance condition or as directed by approval conditions and in any agreements.	To reduce land disturbance on ESAs.
Mineral resources and extractive industries	Restricted or reduce activities within mineral resources and extractive industry areas.	• Santos will liaise with the holders of these leases should they consider developing exploration or production wells in proximity to these leases.	To liaise with other mineral resource or extractive industries when planning activities
Residential and commercial use	Increased noise levels	• Field development activities will be remote from township areas. • All rural residences will be identified during the scouting phase of field development planning so that roads and well developments are located an appropriate distance away to minimise any impacts. • Drilling and well development activities will comply with relevant construction noise regulations. • Noise reduction devices will be fitted to machinery used in the vicinity of residential areas and noise sensitive locations. • Vehicle speeds will be limited on all lease access roads.	To reduce impacts on surrounding residential and commercial areas.

Aspect	Potential Impact	Mitigation Measures	Objective
	Visual amenity issues	• Field development activities will be remote from township areas.	
	Increased dust	• Dust suppression measures such as watering down access roads will be implemented during construction when required.	
	Increased traffic and road safety concerns.	• Lease access roads will be separated from property access roads, as appropriate and will not be located in the vicinity of residences unless there is no alternative. In some cases the lease access road may need to use the property access road, which will be negotiated with the landholder. • All project vehicles will be required to give way to non-project vehicles to ensure safety.	
Land tenure	Increased development caused by the conversion of an ATP to a PL	• Undertake extensive ongoing consultation with all relevant landholders in the areas of proposed development.	Ensure relevant landholders are consulted during development.
Infrastructure and services	Access roads for CSG Field interfering with existing land use	• Roads will be placed in areas that best suit both the landholder and Santos. • Roads will typically be placed along fence lines to minimise disturbance. • For the most part, they will be planned to avoid large standing timber, steep slopes, erosion prone soils and sensitive ecosystems. • They will generally be built to a low volume, unpaved, rural road standard in accordance with relevant local government requirements.	Minimise interference of infrastructure and services for the CSG fields on existing land uses.
	Proposed activities interfering with existing pipelines and powerlines	• An on-going impact assessment process will be implemented in advance of field design to identify the preferred locations of the various project components. • This process will include identification and, where practicable, avoidance of all existing pipelines, powerlines and water infrastructure. In the instances where avoidance is not possible, Santos will enter into negotiations with the relevant facility owner to reach agreement.	

Aspect	Potential Impact	Mitigation Measures	Objective
	Installation of telecommunications infrastructure interfering with existing land use	• Santos will use existing carrier services where available, otherwise alternative methods will be used such as: – Santos' fibre network will be extended from existing facilities and installed parallel with piped gathering networks. – Communications equipment will be accommodated in operational or administration buildings. – Satellite communications will be used in inaccessible locations.	
	Overuse of local water supply.	• Water will be sought from local surface water or groundwater supplies as appropriate, for administration buildings and workforce accommodation facilities. Appropriate licenses will be sought prior to the taking of water.	
	Improper management of sewage treatment facilities	• Sewage will be treated in package sewage treatment plants. • All relevant approvals will be obtained. Treated effluent will generally be disposed of by irrigation. • Where sewage effluent absorption beds and/or irrigation fields are used, they will be located and designed to ensure that: – Sensitive areas are avoided. – Soil erosion and soil structure damage is avoided. – There is no surface ponding or runoff of effluent. – The quality of groundwater is not adversely affected.	
		• Areas where treated sewage effluent is discharged to absorption beds or irrigation fields will be fenced and clearly marked with warning notices of the purpose of the area and not to use or drink the effluent. • Effluent treatment systems will be designed to include alternate measures for effluent storage and/or disposal, where conditions prevent the absorption of treated effluent to land (e.g. rain events). This may include wet weather storage or disposal off site. There will be no discharge of treated effluent from wet weather storage to any waters.	

Aspect	Potential Impact	Mitigation Measures	Objective
Regional planning framework	Non-alignment of objectives of the GLNG project to Central Queensland Regional Growth Management Strategy (CQRGMS) (*Resource, conservation and management*) objectives	• The CSG fields will be designed to enable best practice land management for sustainable use. • Pest and weed control strategy to address threat of pests and diseases will be developed. • The project will be a net provider of water to the region. The proposed water management strategy addresses sustainable use of water resources while maintaining environmental values. • The project will minimise impacts on biodiversity by conserving and avoiding sensitive ecosystems, and limiting habitat fragmentation.	To develop in alignment with the objectives of the Regional Planning Framework.
	Non-alignment of objectives of the GLNG project to Central Queensland Regional Growth Management Strategy (CQRGMS) objectives and outcomes (*Economic development*) objectives	• The project will support long term economic growth in the region. • The project will provide a considerable input of investment capital into the region. • The project will encourage a skilled workforce into the region and promote upskilling of the existing workforce. • The project will develop a significant resource to meet the growing demand for lower carbon energy.	
	Draft Maranoa and Districts Regional Plan (Natural environment)	• Studies have been carried out to identify areas and corridors of high ecological significance. The GLNG Project will be developed to avoid adverse impacts where practicable. Otherwise development will be designed and operated to minimise and offset residual impacts.	
	Draft Maranoa and Districts Regional Plan (Natural resource management)	• The project will be a net provider of water to the region providing opportunity for beneficial reuse of water. Studies are being carried out to identify options for beneficial reuse. • GQAL has been identified and will be avoided where practicable.	
	Draft Maranoa and Districts Regional Plan (Economic development)	• Beneficial reuse of water may provide opportunities for new agricultural activities and supporting industries. • The project provides significant employment and regional economic development opportunities for businesses to provide services to the project.	

Aspect	Potential Impact	Mitigation Measures	Objective
	Central Queensland Strategy for Sustainability (CQSS)	• The project will be a net provider of water to the region. The proposed water management strategy addresses sustainable use of water resources while maintaining environmental values. • Weed identification surveys have been carried out as part of the EIS. A weed management strategy has been outlined in Section 6.4.	
		• Saline produced water will be treated and/or managed so that impacts on soil and water salinity will be minimised. • Appropriate siting of infrastructure to minimise soil erosion. Soil management techniques will be implemented to control erosion. • All affected landholders will be consulted and where practicable, the project will be designed to avoid significant vegetation areas. Opportunities for milling timber will also be undertaken. • The project is planned to avoid loss of GQAL where practicable. Infrastructure will be appropriately located so that it minimises loss of agricultural land or disruption to farming activities.	
State Planning Policies	Development and conservation of agricultural land	• Focussing development on land with lower agricultural potential (e.g. Class C and D land) and avoiding land of higher value/potential such as cropping land (Class A and B land) where practicable; • Avoiding fragmentation within individual land parcels and across areas of high agricultural value; • Restricting development on properties which would become non viable for farming due to the project infrastructure (e.g. development on small land parcels); and • Placing project infrastructure on the boundaries of properties or outside of active farming areas (e.g. outside of fields).	Santos CSG development will minimise the impact on land use area and avoid building in high risk areas to align with State Planning Policies.
	Mitigating the Adverse Impacts of Flood, Bushfire and Landslide	• Minimise development in high bushfire and landslide risk areas. Where development is located in these areas, employ safety management procedures to minimise the likelihood of initiating or spreading bushfire. Management measures include: – Design standards to control risk of fire occurring;	

Aspect	Potential Impact	Mitigation Measures	Objective
		– Inspection and monitoring; – Area around well heads cleared of vegetation; and – Emergency response procedures.	
Operation			
Impact to agriculture land use	Disruption to farming activities and practices	• Refer to the construction section above.	To have a healthy working relationship with landholders.
	Quality and Organic Certification is lost or comprised.	• Refer to the construction section above.	
Fire management	Gas leak from pipeline infrastructure	• Refer to the construction section above.	Refer to construction section.
	Worker Accommodation area fire involving combustible construction, LPG or diesel.	• Refer to the construction section above.	
	Diesel fire involving mobile fuel tanker.	• Refer to the construction section above.	
Groundwater drawdown	Groundwater drawdown due to the project	• Refer to the construction section above.	Refer to construction section.
Forestry and millable timbers	Removal of unnecessary millable timber during operational activities.	• Refer to the construction section above.	Refer to construction section.
Environmental sensitive areas (ESA)	Land disturbance to ESAs	• Continue to work with local regulators during operational activities. • Remediation plans will be implemented when production ceases to return any disturbed environments back to their pre-disturbance condition or as directed by approval conditions and in any agreements.	Reduce the impacts to ESAs and rehabilitate areas disturbed to approved conditions.
Mineral resources and extractive industries	Restricted or reduce activities within mineral resources and extractive industry areas.	• Refer to the construction section above.	Refer to construction section.
Residential and commercial use	Increased noise levels	• Refer to the construction section above.	Refer to construction section.

Aspect	Potential Impact	Mitigation Measures	Objective
	Visual amenity issues	• Refer to the construction section above.	Refer to construction section.
	Increased dust	• Refer to the construction section above.	Refer to construction section.
	Increased traffic and road safety concerns.	• Refer to the construction section above.	Refer to construction section.
Land tenure	Increased development caused by the conversion of an ATP to a PL	• Refer to the construction section above.	Refer to construction section.
Infrastructure and services	Access roads for CSG field interfering with existing land use	• Refer to the construction section above.	Refer to construction section.
	Proposed activities interfering with existing pipelines and powerlines	• Refer to the construction section above.	Refer to construction section.
	Installation of telecommunications infrastructure interfering with existing land use	• Refer to the construction section above.	Refer to construction section.
	Overuse of local water supply.	• Refer to the construction section above.	Refer to construction section.
	Improper management of sewage treatment facilities	• Refer to the construction section above.	Refer to construction section.
Regional planning framework	Non-alignment of objectives of the GLNG Project to the objectives of the CQRGMS (*Resource, Conservation and Management*)	• Refer to the construction section above.	Refer to construction section.
	Non-alignment of objectives of the GLNG Project to CQRGMS objectives and outcomes (*Economic Development*)	• Refer to the construction section above.	
	Draft Maranoa and Districts Regional Plan (Natural Environment)	• Refer to the construction section above.	

Aspect	Potential Impact	Mitigation Measures	Objective
	Draft Maranoa and Districts Regional Plan (Natural Resource Management)	• Refer to the construction section above.	
	Draft Maranoa and Districts Regional Plan (Economic Development)	• Refer to the construction section above.	
	CQSS	• Refer to the construction section above.	
State planning policies	Development and Conservation of Agricultural Land.	• Refer to the construction section above.	Refer to construction section.
	Mitigating the Adverse Impacts of Flood, Bushfire and Landslide.	• Refer to the construction section above.	
Decommissioning and Rehabilitation			
Impact to agriculture land use	Loss or reduction agricultural land, including fragmentation of land.	• Rehabilitating as quickly as possible the areas no longer required following drilling and well development.	Reduce the impact to agricultural land.
	Disruption to farming activities and practices.	• Refer to the construction section above.	Refer to construction section.
	Quality and organic certification is lost or comprised.	• Refer to the construction section above.	Refer to construction section.
Fire management	Gas leak from pipeline infrastructure.	• Gas leak detection. • Inspection and condition monitoring program. • Secured area around aboveground pipeline infrastructure. • Emergency response procedures.	Reduce risk to infrastructure and other stakeholders.
	Diesel fire involving mobile fuel tanker.	• Manual fire fighting equipment. • Separation of diesel storage. • Emergency response procedures. • Suitably qualified fuel transport operator (giving consideration to vehicle maintenance, driver training and procedure).	Reduce risk to infrastructure and other stakeholders.
Environmental sensitive areas (ESA)	Land disturbance to ESAs.	• When production ceases remediation plans will be implemented to return any disturbed environments back to their pre-disturbance condition or as directed by approval conditions.	Rehabilitate areas disturbed to approved conditions.

Aspect	Potential Impact	Mitigation Measures	Objective
Residential and commercial use	Increased noise levels.	• All rural residences will be identified during the scouting phase of field decommissioning planning so that landholders are aware of potential disturbance. • Noise reduction devices will be fitted to machinery used in the vicinity of residential areas and noise sensitive locations. • Vehicle speeds will be limited on all lease access roads.	To reduce impacts on surrounding residential and commercial areas.
	Increased dust.	• Dust suppression measures such as watering down access roads will be implemented during decommissioning when required.	
	Increased traffic and road safety concerns.	• All project vehicles will be required to give way to non-project vehicles to ensure safety.	
Infrastructure and services	Access roads for CSG field interfering with existing land use.	• A Decommissioning Management Plan will be developed.	Minimise impacts of project on local communities
	Proposed activities interfering with existing pipelines and powerlines.	• A Decommissioning Management Plan will be developed.	
	Reduction of water supply to local users.	• A Decommissioning Management Plan will be developed.	
	Improper management of sewage treatment facilities.	• A Decommissioning Management Plan will be developed.	
Regional planning framework	Non-alignment of objectives of the GLNG project to CQRGMS (*Resource, conservation and management*) objectives.	• Refer to the construction section above.	Ensure total compliance with all local, regional and state planning frameworks
	Non-alignment of objectives of the GLNG project to CQRGMS objectives and outcomes (*Economic development*) objectives.	• Refer to the construction section above.	
	Draft Maranoa and Districts Regional Plan (Natural environment).	• Refer to the construction section above.	
	Draft Maranoa and Districts Regional Plan (Natural resource management).	• Refer to the construction section above.	

Aspect	Potential Impact	Mitigation Measures	Objective
	Draft Maranoa and Districts Regional Plan (Economic development).	• Refer to the construction section above.	
	CQSS	• Refer to the construction section above.	
State Planning Policies	Development and conservation of agricultural land.	• Refer to the construction section above.	Ensure total compliance with all local, regional and state planning frameworks
	Mitigating the adverse impacts of flood, bushfire and landslide.	• Refer to the construction section above.	

6.11.7 Summary of Findings

The predominant land use within the RFD area is cattle grazing. However, cropping, including irrigated and dryland cropping, occurs around more fertile areas and there are large areas classified as Class A and Class B agricultural land as defined under the State Planning Policy 1/92. Other land uses across the CSG fields include forestry, conservation, recreation, mining and petroleum activities and approximately 140 homesteads (excluding town areas).The predominant tenure is freehold.

CSG fields development will include construction of wells (up to 2,650), laying of gas and water pipeline gathering systems (up to 2,500 km) and the use of access roads (both new and existing – up to 8,400 km). Initially the well leases may vary in area from about 0.5 to 1 ha. However once they are developed as production wells the area of disturbance for each well will be reduced to about 0.1 ha with the balance area rehabilitated.

Strategies to be implemented to minimise the impacts to existing land uses include:

- Avoiding (where practicable) good agricultural land;
- Avoiding (where practicable) smaller land parcels where the relative impact will be greater;
- Locating (where practicable) gathering pipelines and access roads along fence lines and property boundaries;
- Locating (where practicable) development activities away from the more intensively used areas of the property;
- Liaising with each relevant landholder regarding their site-specific land use practices and ways to minimise interference from project activities;
- Minimising the lease area required for well development; and
- Rehabilitating as quickly as possible the areas no longer required following drilling and well development.

The CSG fields include areas of national parks, conservation reserves and state forests and other areas identified as environmentally sensitive. Santos intends to avoid development in environmentally sensitive areas wherever possible. If wells are proposed to be located within sensitive areas, more comprehensive surveys will be undertaken if necessary to further assess site status and develop mitigation measures to minimise disturbance.

Development of the CSG fields will be authorised under the Petroleum Act and/or the P&G (PSA) Act and is consequently exempt from assessment against the relevant local government planning schemes. It is possible that some CSG related activities such as worker accommodation or other infrastructure facilities may be located outside of petroleum lease areas and hence will not be exempt from assessment against the relevant planning scheme. In such cases Santos will submit the relevant town planning applications as required.