Initial Advice Statement

ambreCTL

A Coal-to-Liquids Project

July 2010

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Table of Contents

1 Introduction 6
1.1 Project background and location 6
1.2 The proponent 7
1.3 Project need 7
1.4 Purpose and scope of this Initial Advice Statement 8
2 Project description 9
2.1 General layout 9
2.2 The resource 9
2.3 Project tenement details 11
2.4 Coal mining 11
2.5 Coal-to-liquids conversion 14
2.6 Water supply 17
2.7 Infrastructure and transport 17
2.8 Project investment and significance 18
2.8.1 Macro-economic impact 18
2.8.2 Employment 19
3 Existing environment, potential impacts and environmental management strategies 20
3.1 Land resources 20
3.1.1 Topography and land use 20
3.1.2 Soils 20
3.2 Surface water 21
3.3 Ground water 22
3.4 Flora 22
3.5 Fauna 24
3.6 Air quality 25
3.7 Greenhouse gas 25
3.8 Noise and vibration 26
3.9 Native Title and cultural heritage 26
3.10 Visual amenity 26
3.11 Socioeconomics 27
3.12 Hazard and risk 27
3.13 Stakeholder engagement and consultation 27
3.14 Environmental management 28
4 Commonwealth, state and local government requirements 28
4.1 *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) 28
4.2 *Queensland Mineral Resources Act 1989* (MRA) 29
4.3 *Queensland State Development and Public Works Organisation Act 1971* (SDPWO Act) 29
4.4 *Queensland Environmental Protection Act 1994* (EP Act) 29
4.5 *Queensland Sustainable Planning Act 2009* (SPA) 30
4.6 *Queensland Water Act 2000* 30
4.7 *Queensland Aboriginal Cultural Heritage Act 2003* (ACHA) 30
4.8 *Queensland Heritage Act 1992* 30
4.9 *Queensland Nature Conservation Act 1992* (NC Act) and the *Nature Conservation (Wildlife) Regulation 1994* (NCWR) 30
4.10 *Queensland Land Act 1994* 31
4.11 *Queensland Transport Infrastructure Act 1994* 31
4.12 *Queensland Forestry Act 1959* 31
4.13 *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act) 31
4.14 Local government requirements 31
5 Contact details 32
6 Glossary 33

Ambre CTL Limited
ACN 138 224 647

GPO Box 3288, Brisbane QLD 4001 Level 27 AMP Place, 10 Eagle St Brisbane QLD 4000 Australia	Tel: +61 (0)7 3009 9180 Fax: +61 (0)7 3009 9181

Executive Summary

Ambre Energy Limited subsidiary, Ambre CTL Limited, proposes to develop Australia's first commercial scale coal-to-liquids project at Felton, 30km south west of Toowoomba, Queensland. The project, ambreCTL, will have an overall footprint of 2,000ha and will incorporate an eight million tonnes per annum open cut mine to supply four million tonnes per annum of feed coal to an above ground coal gasification facility for on-site liquid fuel production.

The facility will utilise proven commercial technologies to produce the following primary outputs:

- 940 million litres per year of zero-sulphur unleaded petrol (ULP) - equivalent to 4.9 percent of Australia's total consumption and more than 20 percent of Queensland's consumption of ULP

- 150 million litres per year of liquefied petroleum gas (LPG) – a mixture of butane and propane

In addition to the coal-to-liquids facility and open cut mine, the site will contain a coal preparation plant, dams, conveyor systems, and a power generation plant.

Ambre Energy is an unlisted Australian mining and technology company based in Brisbane, with offices in Salt Lake City, USA. As of May 2010, the company had over 230 shareholders and had invested more than $60 million to develop low cost clean energy technologies and acquire suitable coal and oil shale deposits.

The development of ambreCTL will address an increasing domestic reliance on imported crude oil for unleaded fuel production. Coal-derived unleaded petrol, using Australia's ample coal reserves, could contribute positively to the country's energy security in the short, medium and long-term.

A resource of 500 million tonnes of coal has been identified within Ambre Energy's tenements at the Felton North coal deposit, the site for ambreCTL. Mining will begin on the western side of Hodgson Creek and progress in a westerly direction using conventional truck and loading unit open cut mining methods. The mine and processing facility will be designed for a life exceeding 30 years.

The on-site fuel production facility will process coal to produce unleaded petrol and LPG in three primary stages (1) gasification of coal to syngas (2) syngas to methanol (3) methanol to unleaded petrol and LPG. Each stage will utilise proven commercial technologies, including methanol-to-gasoline technology licensed by ExxonMobil.

The $3.5 billion+ required for the project represents a substantial investment in the Darling Downs and Queensland economies over a three to four year period. Data provided by ACIL Tasman estimates that the project will increase Queensland's Gross State Product by 3.3 percent and Australia's Gross Domestic Product by 0.68 percent when compared with 2008-09 figures.

The project is expected to generate approximately 1,880 jobs in Queensland during peak construction and approximately 530 permanent jobs in the Darling Downs during operation. The project will also

contribute significantly to local and regional economies through indirect employment and investment expenditure.

An Environmental Impact Statement (EIS) will be completed for ambreCTL to address key environmental issues including: rehabilitation and land management, water, flora and fauna, air quality, greenhouse gas emissions, noise and vibration, cultural heritage and visual amenity. Ambre Energy is also aware that addressing the needs of our community stakeholders will be critical to this project. Community issues such as housing, population increases and demographic change, the availability of community services and community infrastructure will also be addressed in the EIS process.

Management of environmental issues during planning, design and construction will be a significant driver for this project. Ambre Energy's approach to sustainable development involves generating economic value for local communities and managing environmental and social impacts.

1 Introduction

1.1 Project background and location

Ambre CTL Limited, a wholly-owned subsidiary of coal mining and technology company, Ambre Energy Limited, is proposing to construct Australia's first commercial scale coal-to-liquids (CTL) project at Felton, 30km south west of Toowoomba and 10km south east of Pittsworth.

The project, to be publicly promoted as ambreCTL, will have an overall footprint of 2,000ha. Eight million tonnes per annum (Mtpa) of coal and interburden material will be extracted, crushed and washed to supply 4 Mtpa of feed coal to a coal-to-liquids facility for the production of about 940 million litres per year (ML/yr) of zero-sulphur, unleaded petrol (ULP).

In addition to zero-sulphur ULP, the facility will have the following expected outputs:

- 150 ML/yr of liquefied petroleum gas (LPG) – a mixture of butane and propane
- 3.4 Mtpa of high purity CO_2 (more than 79 percent of the facility's total CO_2 output) which would be suitable for use in enhanced oil recovery or industrial uses and
- 20,000 tpa of sulphur.

The project will be self sufficient with regards to power, with a power generation facility constructed on-site as part of the project.

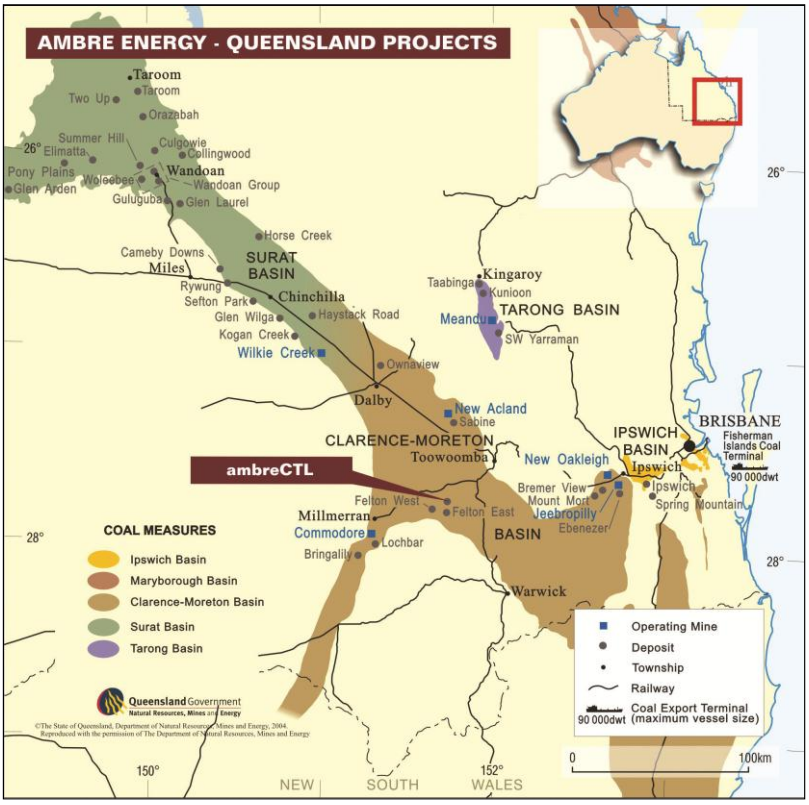

Figure 1.1 - Location of ambreCTL

1.2 The proponent

The project will be undertaken by Ambre CTL Limited (the proponent), a subsidiary of Ambre Energy Limited. Ambre Energy is an unlisted Australian public company with its headquarters based in Brisbane, and an office in Salt Lake City which supports the company's research and exploration activities in the US.

Ambre Energy was formed in June 2005 following the sale by the company's founding shareholders of their stake in the Millennium Coal Project, a project they had previously founded in Queensland's Bowen Basin. Ambre Energy's objectives are to:

- acquire and develop efficient, low cost clean coal technologies that convert marginal or uneconomic low grade coal into higher value and cleaner energy forms (particularly liquid fuels)
- identify and acquire coal deposits which are suitable for Ambre Energy's technologies and
- develop coal projects with strategic partners to create environmental and financial benefits from the conversion of low value coal into higher value energy products.

As of May 2010, the company had over 230 shareholders and had expended more than $60 million developing its technologies and projects, including over $1 million in the Toowoomba region.

The company is led by an experienced management team with a depth of engineering, mining, legal and financial skills. The team utilises established, long-term relationships with respected consultants and contractors.

Ambre Energy is committed to creating sustainable projects through consultation with local communities and government to meet their expectations and concerns in the areas of environmental, safety and risk management.

1.3 Project need

Current transportation fuels in Australia are based on traditional crude oil, the ongoing importation of which is likely to become increasingly regionally and politically dependent. It is becoming more apparent that crude oil-derived transport fuels will need to be supplemented by fuels derived from alternative sources.

ULP produced from coal can address the concerns of energy security, energy conservation and the environment. Most importantly, these concerns can be addressed in a relatively short time and in a cost-effective manner by using currently available commercial technologies, and without a total reliance on future, as yet undeveloped, technologies.

Coal-derived ULP is currently not included as part of Australia's fuel security strategy. Given Australia's ample coal reserves, the strategic use of coal-derived ULP for fuel could contribute positively to the country's energy security in the short, medium and long term.

This project, ambreCTL, will play a major role in the evolution of coal-to-liquid fuel. In particular, it is expected to:

- utilise established technologies to convert domestic coal to around 940 ML/yr of ULP, which is equivalent to 4.9 percent of Australia's total consumption and more than 20 percent of Queensland's consumption of ULP[1]

- contribute significantly to local and state economies both directly and indirectly, through associated mining and processing-related expenditure, investment, employment and other opportunities for external support businesses and

- maintain employment for an estimated 1,880 people during peak construction and 530 people during operation, which will further boost local economies.

1.4 Purpose and scope of this Initial Advice Statement

The purpose of this Initial Advice Statement (IAS) is to provide sufficient information about the nature and scope of the project so as to:

- enable the Coordinator-General to determine whether the project meets the criteria for declaration as a 'significant project' under the *State Development and Public Works Organisation Act 1971*

- facilitate consultation with stakeholders including governments, landowners and the wider community

- allow the determination of the appropriate Environmental Impact Assessment (EIA) process and Development Approval requirements and

- assist the preparation of Terms of Reference (ToR) for the project's Environmental Impact Statement (EIS).

This IAS addresses the project location, background, resources required, technologies and processes to be used, logistics, employment, benefits and costs. It also provides an outline of the existing environment and offers a preliminary assessment of the mitigation measures required to control potential environmental impacts from mining and fuel production.

[1] Schultz, A. *Energy Update 2009*. Canberra: ABARE, 2009.

2 Project description

2.1 General layout

The project is located at Felton which lies in the Clarence-Moreton Basin in south east Queensland to the west of the Great Dividing Range. The basin extends from northern New South Wales trending north west to Dalby in Queensland, and from Toowoomba in the east to Millmerran in the west.

The Felton North coal deposit is located approximately 30km south west of Toowoomba and 10km south east of Pittsworth.

The project boundary (shown in Figure 2.1) will incorporate the Felton North coal mine, the coal handling facilities, the out-of-pit tailings dam and the CTL processing plant. The exact location of these components is still under investigation and will be determined once project feasibility is completed.

2.2 The resource

Ambre Energy (Felton) Pty Ltd, also a wholly owned subsidiary of Ambre Energy Ltd, has applied for mining leases MLA 50245 and MLA 50246 (see Figure 2.1). It is proposed that mining lease applications will be lodged over AEF 3 and AEF 4 covering land within EPC 935, EPC 1810 and EPC 761 (see Figure 2.1). Ambre CTL Ltd has an agreement with the holder of EPC 761 to conduct environmental studies over land within the north west corner of the site.

A measured, indicated and inferred resource of 500 million tonnes (Mt) of coal with an average ash of 35 percent has been identified within EPC 935 and EPC 1810. The coal specifications shown in the following table verify the availability of a substantial resource which is ideally suited to coal-to-liquids conversion.

Permits	JORC Code Classification						Total Tonnes	Average Ash
EPC 935 & 1810	Measured		Indicated		Inferred			
	Million Tonnes	Avg. Ash (%)	Million Tonnes	Avg. Ash (%)	Million Tonnes	Avg. Ash (%)		
Total	**49.48**	**34.74**	**97.94**	**34.81**	**351.69**	**35.42**	**499.1**	**35.23**

Table 2.1 - JORC Reported Resource

The resource within the project footprint comprises ridge capping tertiary basalt flows, Walloon Coal Measures and Marburg Formation sandstones. The Walloon Coal Measures consist of lustrous coal, carbonaceous shale and mudstones, grey siltstones and fine-to-medium grained grey lithic sandstones.

Several carbonaceous zones are scattered within these sediments ranging in thickness from tens of metres to less than a metre. The carbonaceous zones are made up of mudstones (varying in carbonaceous content), carbonaceous shales, both tuffaceous and carbonaceous claystones and various

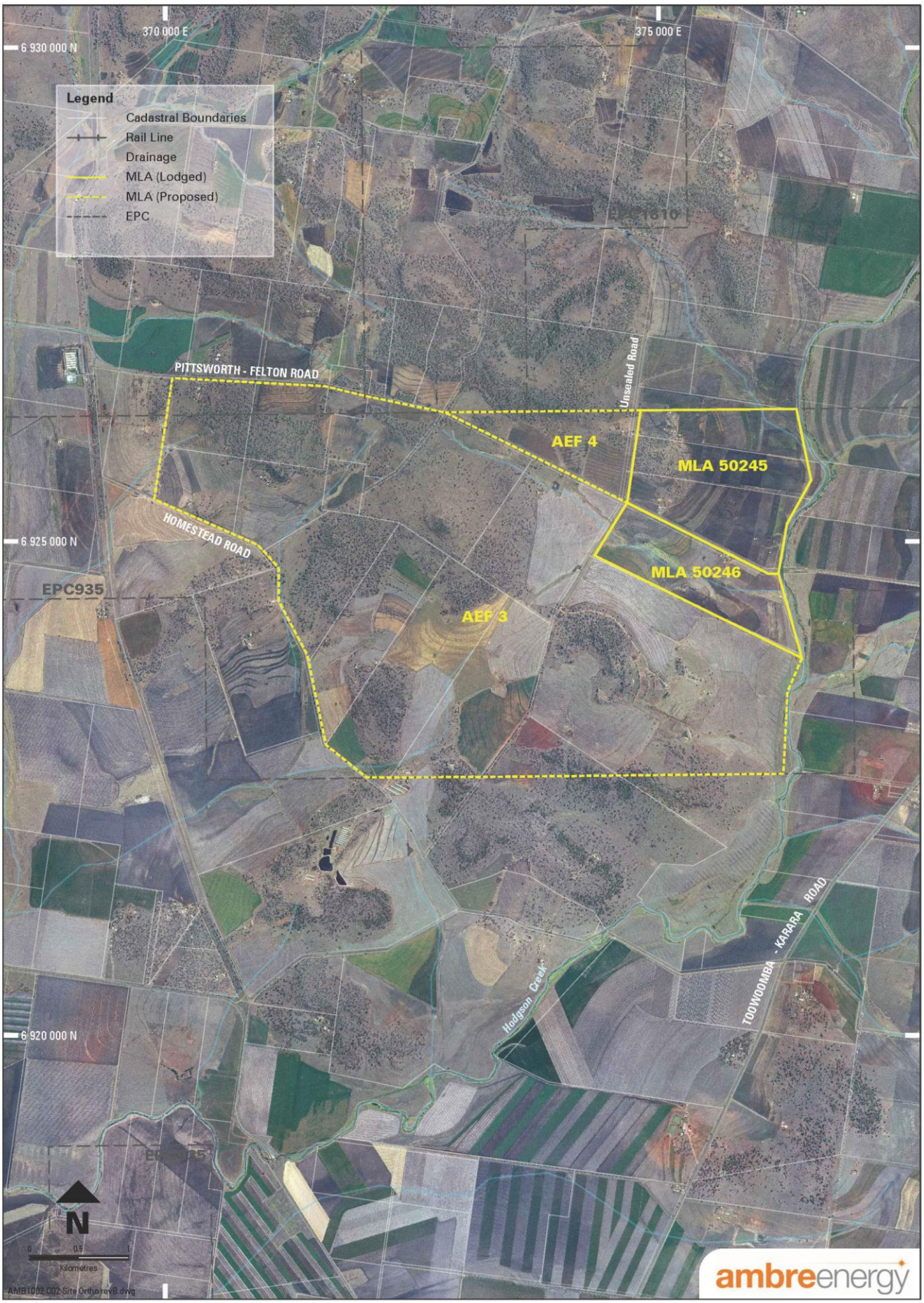

Figure 2.1 – ambreCTL boundaries

coal grades. The sediments within these carbonaceous zones merge and coalesce laterally over relatively short distances.

The underlying Marburg Formation consists principally of cross-bedded medium-to-coarse quartz sandstones interbedded with grey shale and claystones. The tertiary basalts were deposited as a series of flows and exist as capping along remnant ridge lines.

2.3 Project tenement details

The lodged and proposed mining lease applications (shown in Figure 2.1) encompass the following areas:

Project footprint division	Approximate Area
MLA 50245	233ha
MLA 50246	129ha
AEF 3	1,546ha
AEF 4	92ha
Total	**2000ha**

Table 2.2 - Mining leases in project area

The main site access road enters the project area on the eastern and northern boundaries. The project site connects with the Gore Highway to the north and the New England Highway to the east. The project will be located on land currently owned by 14 landowners. Ambre Energy owns 96ha within MLA 50245 and holds an option agreement over the remainder of this lease.

2.4 Coal mining

The Felton North coal mine will produce approximately 4 Mtpa of product coal from 8 Mtpa of Run of Mine (ROM) coal via conventional truck and loading unit open cut mining methods. The conceptual mine pit limits are defined by Hodgson Creek to the south and east, Pittsworth-Felton Road to the north and the ability to extract the coal economically to the west.

The mining sequence will generally progress in a westerly direction starting approximately 1km west of Hodgson Creek. An out-of-pit waste dump would initially be required until adequate pit floor area has been generated to enable in-pit dumping.

A selective mining approach, based on separating coal and waste plys down to 150mm, will be adopted to produce a ROM coal product of a specified target ash.

After mining, ROM coal will be dumped by trucks into a coal hopper located on the north western side of the pit boundary. ROM coal will then be crushed down to a nominal size suitable for feeding the coal handling and preparation plant (CHPP) or stockpiled onto a raw coal pad for intermediate storage.

The CHPP will receive the crushed feed via overland conveyor and the coal will be washed to remove clay and other mineral matter, thereby making it suitable for conversion into fuel in the CTL processing plant. CHPP rejects from the washing of the coal will be separated into coarse and fine fractions.

The coarse fractions will be trucked back into the waste dumps for disposal and the fine tailings fraction will be pumped into a tailings dam located in the western area of the project site. Alternate wet and dry co-disposal options for coarse and fine rejects will be investigated and incorporated into the EIS as appropriate.

Once the coal has been washed it will be placed onto a stockpile for blending and intermediate storage.

The main elements of the mining and coal preparation operation are shown in Figure 2.2 and include:

- clearing of vegetation ahead of mining and selective stripping of the topsoil to be stockpiled for later use in the rehabilitation program
- drilling and blasting of the overburden
- overburden removal by conventional truck/loading unit methods
- separation of the coal and waste plys with dozers
- mining of the target seams and removal of the waste plys
- processing of the ROM coal through crushers prior to processing through a CHPP plant
- washing of the coal in the CHPP prior to processing in the CTL plant
- disposal of the coal fine and coarse rejects from the CHPP into a tailings dam and/or waste dumps and
- reshaping of waste dumps, replacement of topsoil and revegetation of all mined out and backfilled areas.

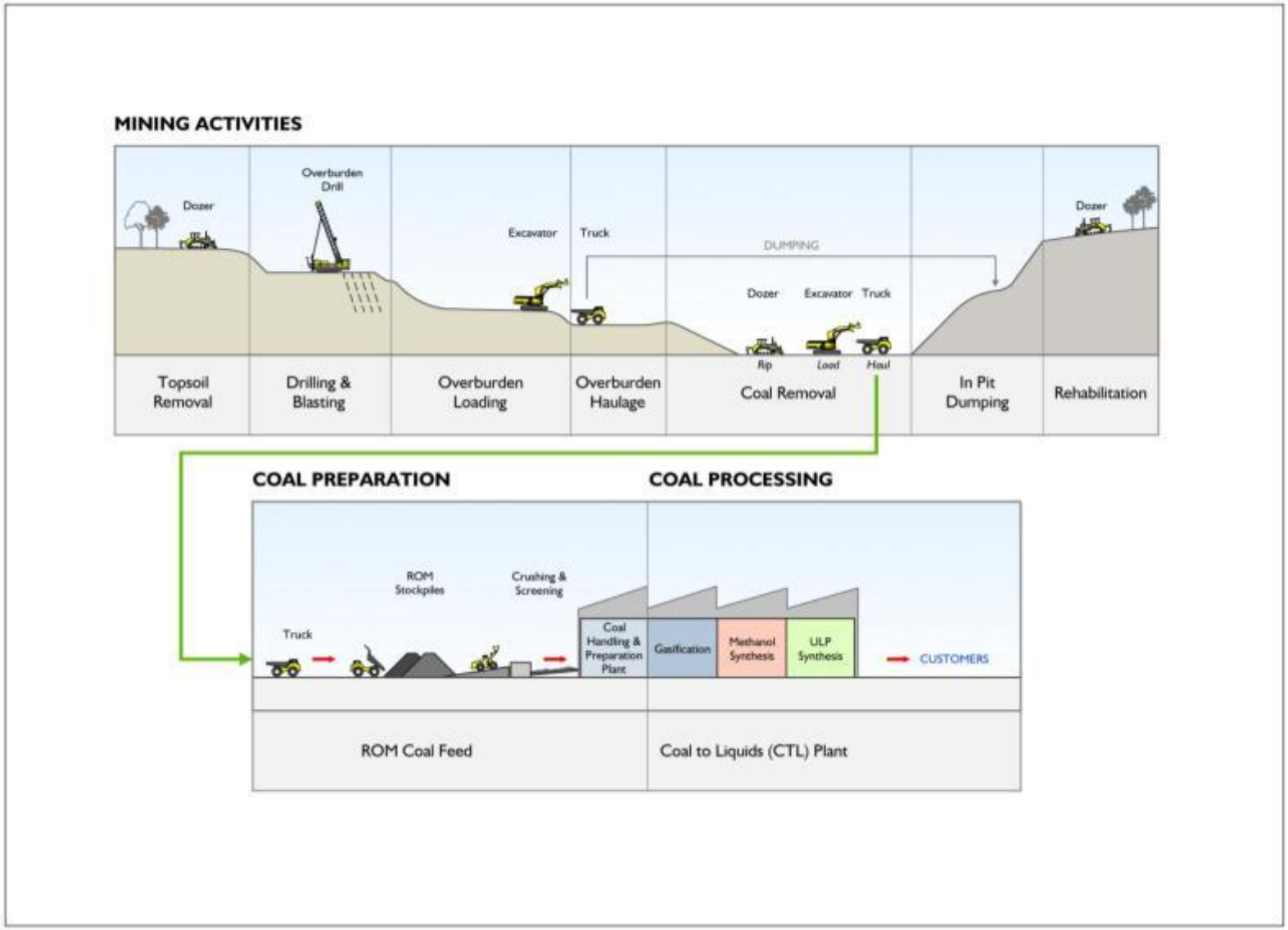

Figure 2.2 - General mining and processing steps

2.5 Coal-to-liquids conversion

The process for converting coal-to-liquid fuels is shown in Figure 2.3.

In the Feed Preparation section, blended coal from the CHPP product stockpile will be crushed to a top size appropriate for use in a fluidised bed gasifier. The coal is then reacted in the Gasification section with steam and oxygen from an Air Separation Unit (ASU).

Worldwide, ASU plants are supplied (at the scale required by ambreCTL) by a number of competent vendors including Linde, Praxair, Air Liquide and Air Products.

Ash contained in the coal does not react with the oxygen and steam, and is continuously withdrawn from the gasifier and transported back to the mine for in-pit disposal. The Gasification section also produces a raw syngas mixture (containing mostly carbon monoxide (CO), hydrogen (H_2) and carbon dioxide (CO_2) with minor quantities of impurities (hydrogen sulphide (H_2S) and carbonyl sulphide (COS), nitrogen (N_2) and particulate).

Optimal gasifier operating conditions depend on coal characteristics and many gasification technology suppliers operate pilot plants which are suited to determine these. Pilot plant trials are also used as the basis of a process guarantee and provide assurance that the technology will work in local conditions. Ambre Energy is currently conducting such trials on coal from the lower Walloon formations in Queensland with selected suppliers of proven, commercial scale, gasification technology.

Optimal ULP production requires a specific ratio of hydrogen to carbon monoxide in the gas feed to the methanol plant and, in this context, the raw syngas from the Gasification section is somewhat deficient in hydrogen. This is rectified in the Water Gas Shift (WGS) section in which some of the carbon monoxide is reacted with water to produce hydrogen. WGS reactors are widely used in industry today and several licensors, including Johnson Matthey, Süd-Chemie and Haldor Topsoe, offer such WGS reactors and/or catalyst commercially.

Methanol production also requires that acid gases (CO_2, H_2S, COS) contained in the syngas be removed prior to synthesis. This is accomplished in the Acid Gas Removal section of the facility, resulting in three product streams (sweet syngas, H_2S and CO_2).

The CO_2 stream (containing most of the CO_2 that was present in the syngas) is very pure and suitable for use in Enhanced Oil Recovery (EOR) or other industrial uses. H_2S is converted to an elemental sulfur product in the Sulfur Recovery section. This is suitable for use in the fertiliser market. The technology utilised in this section of the facility is well proven and provided on a commercial scale by companies such as Linde, Lurgi, Uhde and UOP. A final decision on licensor will be made as detail design on the project proceeds.

Methanol is produced from the sweet syngas in a catalytic reactor in the Methanol Synthesis section of the facility. It is stored in intermediate storage before being sent to the ULP Synthesis section. The methanol industry is highly competitive. Plants in the capacity range required for ambreCTL are offered by multiple licensors including Lurgi Oel Gas Chemie GmbH, the alliance partnership ‘One Synergy’ and Haldor Topsøe. Other technology providers and construction contractors include Uhde

GmbH, Linde, Casale, Mitsubishi Heavy Industries, Jacobs, Toyo and Foster Wheeler. A final decision on licensor will be made as detail design on the project proceeds.

The ULP Synthesis section contains a series of reactors in which the methanol feed is converted to ULP, LPG and fuel gas. The ULP (zero sulphur, low benzene and 92 RON) and LPG are final quality grade products which are stored in intermediate storage prior to transport and sale. The fuel gas from the ULP Synthesis section is combined with the tail gas from the methanol synthesis reactor and sent to the Power Generation section of the facility, producing electricity through the use of combined cycle gas turbines.

The chemistry of ULP synthesis from methanol using shape-selective zeolite catalysts was discovered by Mobil researchers in the 1970s. Mobil (now ExxonMobil), in collaboration with Uhde, conducted subsequent pilot plant research activities in the United States and Germany where both fluid bed and fixed bed reactor designs were developed. The process was commercially realised (at a capacity of 15,000 barrels per stream day (bpsd)) in the first methanol to ULP plant in New Zealand. This plant was based on the fixed bed concept and commenced operation in 1985. The plant ran very successfully for 10 years until market forces favoured chemical grade methanol production.

The methanol-to-ULP process is licensed by ExxonMobil Research and Engineering Company (EMRE) in conjunction with Uhde as engineering partner. Based on experience gained from the New Zealand operation, EMRE has carried out a number of improvements to the process which reduce operating and capital costs. These improvements have been incorporated in recent designs including those for a project currently being commissioned by China's Jincheng Anthracite Mining Company (JAMC).

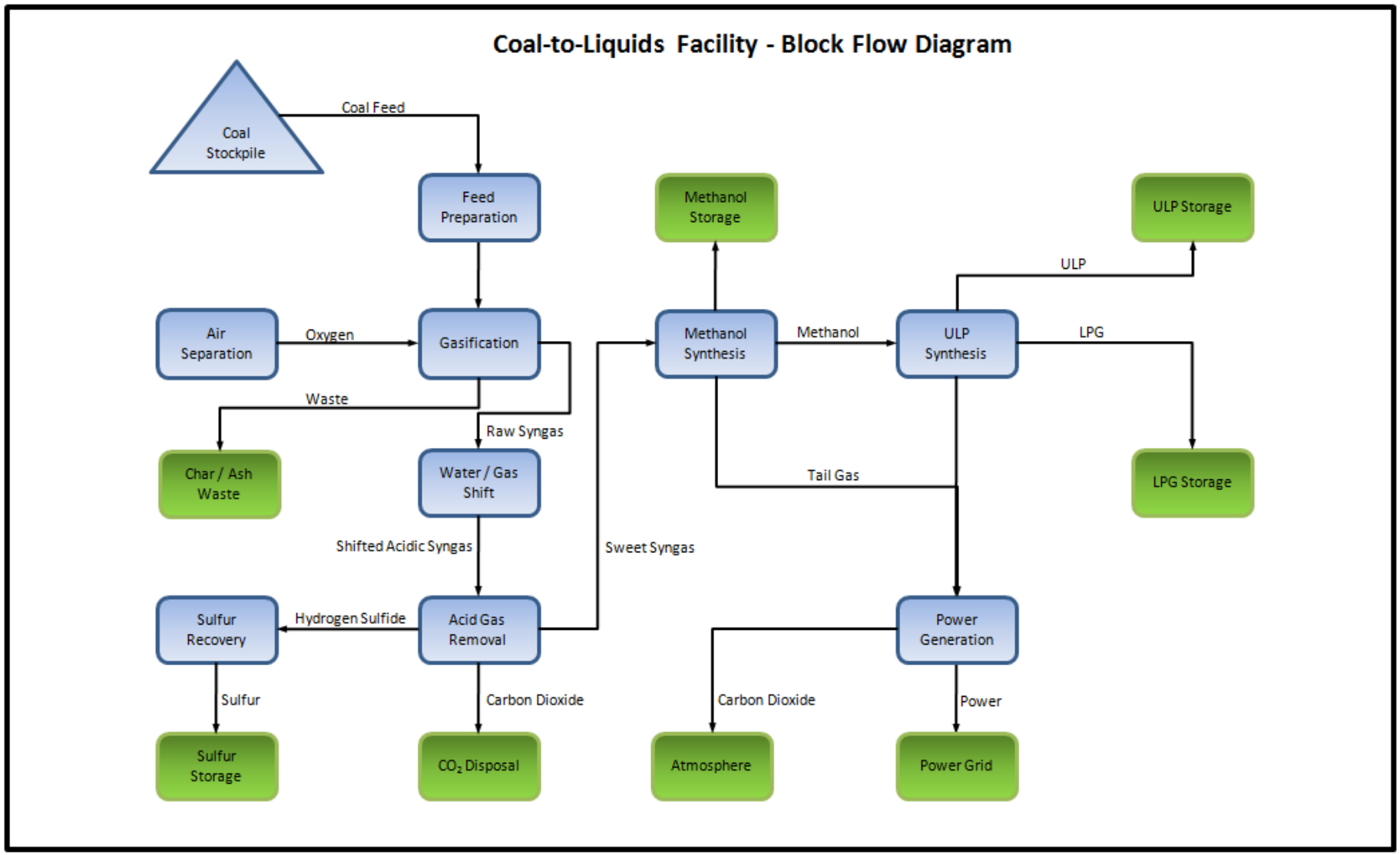

Figure 2.3 – CTL facility block flow diagram

2.6 Water supply

Water will be required for the coal mining, CHPP and CTL process operations. Potential sources of water for the project include the following:

- recycled water from the South East Queensland water grid
- wastewater from water treatment plants in the Toowoomba region
- water harvesting on-site and
- other government-controlled sources.

Ambre Energy does not intend to extract groundwater for the operation of the plant.

Engineering studies have commenced to determine the most appropriate water supply configuration and these will be addressed in a separate EIS.

The options will be explored fully in the development of the EIS.

2.7 Infrastructure and transport

Infrastructure and transport requirements include:

- road access to transport CTL plant and mining equipment components to the site
- road access to bring workers to site on a continuous roster
- road access for the transport of final product (ULP, LPG and sulphur) to market
- pipelines for transporting water to site and, potentially, CO_2 to markets
- high voltage power transformers, power switch yards and high voltage power lines connecting the site with the national grid and
- a construction camp during construction.

It is expected that much of the equipment and material needed to construct ambreCTL will be brought into the site by the existing rail link or by road via the New England or Gore Highways.

Traffic during the operation phase of ambreCTL is not expected to be significantly heavy. Typical traffic will consist of commuter cars used by staff and delivery trucks carrying parts and materials needed for operation as well as finished product to local markets. Deliveries of finished product to non-local markets will be transported via the existing road and/or rail network.

It is unlikely that all of the necessary workforce can be sourced from the local area; therefore it is likely that a construction camp will be required.

It is anticipated that the plant will be self sufficient with power during normal operation, however the overall concept will allow for power provision from an external source during start-up.

Expected infrastructure and transport options and impacts will be addressed fully in the EIS.

2.8 Project investment and significance

The preliminary estimate of the capital cost to take the project to full production is approximately $3.5 billion.

ACIL Tasman, an independent consultancy providing economic analysis, policy and strategic advice, was engaged to determine the macro-economic impact of the project.

2.8.1 Macro-economic impact

The results of the macro-economic evaluation are shown in Table 2.3:

Region	Real Economic Output		Real Income	
	Total 2009 $m	NPV (7%) 2009 $m	Total 2009 $m	NPV (7%) 2009 $m
Darling Downs	17,387	5,919	6,137	2,127
Rest of Queensland	6,550	2,105	9,199	3,170
Rest of Australia	2,035	518	9,462	3,017
Total Queensland	**23,937**	**8,024**	**15,335**	**5,297**
Total Australia	**25,972**	**8,542**	**24,789**	**8,314**

Table 2.3 – ambreCTL economic impact (2010 – 2040)[2]

In total, it is projected that ambreCTL will increase the real Gross State Product (GSP) of Queensland over the period 2010-2040 by $23.9 billion, while the real Gross Domestic Product (GDP) of Australia will increase by $26.0 billion. In net present value (NPV) terms (using a 7 percent discount rate), it is projected that the project will increase Queensland's real GSP by $8.0 billion and Australia's real GDP by $8.5 billion.

To place these numbers in perspective, the discounted present values are equivalent to 3.3 percent of the level of Queensland's GSP and 0.68 percent of the level of Australia's GDP in 2008-09. This is a significant amount of economic activity generated by a project.

Cumulatively, the real income of Queensland residents is projected to increase by $15.3 billion as a result of ambreCTL, with around 40 percent of this additional income potentially going to the residents in the Darling Downs region. At the national level, ambreCTL is projected to increase total Australian real income by $24.8 billion over the projection period (2010-2040), with a discounted present value of $8.3 billion.

The magnitudes of these impacts show that this project will generate major economic benefits to the Queensland and Australian economies.

[2] ACIL Tasman. *Economic Impacts of the ambreCTL project.* Melbourne: ACIL Tasman, 2010.

2.8.2 Employment

Projections of the future employment benefits associated with a project depend on (1) the pool of labour which can be drawn upon to supply the direct workforce required by the project and (2) the indirect employment generated by the increased economic activity and wealth in the local economy.

On average, total Queensland full-time equivalent (FTE) employment is projected to increase by approximately 1,350 jobs per year as a result of ambreCTL. A significant proportion of these jobs will be located in regional Queensland, with about 530 jobs projected to be created in the Darling Downs region.

At peak construction, the project is expected to increase total FTE employment across Queensland by almost 1,880 jobs. Australia-wide, the operation phase of the project is projected to increase total FTE employment by about 1,600 jobs per year.

ACIL Tasman considered this to be a realistic, although conservative, estimate of the potential future employment to be generated as a result of the proposed project — particularly in light of the assumed tight labour markets in the Darling Downs region and in Queensland more broadly.

3 Existing environment, potential impacts and environmental management strategies

3.1 Land resources

3.1.1 Topography and land use

The project footprint includes a small area of the alluvial plains of Hodgson Creek rising to the low slopes of Walloon sandstones and finally to the steep slopes of the remnant basalt ridges and plateaus.

The Central Darling Downs Land Management Manual published by the former Department of Natural Resources and Water (now DERM) has identified the following Land Resources Areas (LRA) in the project site:

- older alluvial plains: broad level plains of basaltic alluvium with open grasslands
- basaltic uplands: undulating rises and rolling low hills rising to steep hills with coolabah open woodlands and
- Poplar Box Walloons: undulating rises and low hills on Walloon sandstone with poplar box open woodlands.

To minimise disturbance to the land occupied by ambreCTL, proposed land management will involve:

- appropriate best practice farm management of the land acquired by the project until required by the mining operations
- rehabilitation of the mined land to pre-mine cropping or grazing potential
- appropriate farm management of the rehabilitated land to return productivity
- decommissioning of the final mine voids to a stable landform and
- decommissioning of infrastructure and processing facilities and the return of land to its pre-mining land use.

Appropriate strategies developed prior to construction and mining will ensure that land acquired by the project is managed correctly and that the return of appropriate land suitability classes will be an integral part of the rehabilitation and decommissioning program.

3.1.2 Soils

Predominant land patterns in the area have remained cash and forage cropping, in addition to grazing of improved pastures. Whilst sections of the project area are classified as Good Quality Agricultural Land as defined under the State Planning Policy 1/92, other factors as outlined in Harris et al[3] have identified the area as having a range of limiting factors to agricultural and pastoral production.

[3] Harris, P.S., Biggs, A.J.W. and Stone, B.J. (Ed.) (1999). *Central Darling Downs Land Management Manual*.

In the Felton area, factors impacting on agriculture stability include slope gradient (susceptibility to erode), soil depth (soil moisture availability), nutrient availability and the presence of soluble salts within the soil profile.

Soil surveys will be carried out to classify and describe the different soil types relevant to the project footprint. These will be described fully in the EIS.

Mining activities will follow a conventional mining approach in which areas disturbed by mining, including spoil dumps, will be cleared first, with topsoil removed and stockpiled for later rehabilitation use in accordance with a topsoil management program.

3.2 Surface water

Hodgson Creek starts approximately 15km south of Toowoomba and travels 30km before flowing south west along the eastern boundary of the project area. Hodgson Creek then flows south west for a further 15km to join the north branch of the Condamine River. The catchment at Balgownie (about 2km downstream from Felton) is approximately 560sq km with an annual discharge range of 333-154,523ML over an 18 year period.

As part of the EIS, a hydrologic and hydraulic model of the surface water catchment will be developed to determine the most appropriate location for mine infrastructure and the location of any flood mitigation measures considered necessary for the project. In this context, the project elements will be designed to isolate the mining and processing areas from Hodgson Creek.

The project will therefore include the construction of a flood protection levee on the western side of Hodgson Creek to prevent flooding of the pits and to ensure that properties upstream of the project are not impacted adversely during flood events.

Water run-off from mining activities has the potential to carry sediment which may impact on the local environment. Run-off from the mining activities will be managed via a series of sediment dams and will be influenced by the requirement to maximise the storage and recycling of water.

Redirection of run-off around the mining activities from project-controlled land also has the potential to generate sediment loads from the erosion of waterways and cultivated paddocks. Waterways and diversion banks will be designed and constructed using conservative design criteria to minimise water velocities, and waterways will be stabilised with grass cover or the placement of rock mulch to minimise erosion. Where possible, a proportion of this water will be directed to storage dams.

The overall facility will be designed as a zero liquid discharge facility, to maximise the reuse and recycling of water. As such, the CTL facility configuration includes a wastewater treatment plant which will receive all waste streams from the process areas and any rainfall run-off considered contaminated. The extent of treatment of various water sources will depend on contaminant levels and the quality requirements for the treated water.

An overall water balance will also be developed and fully outlined as part of the EIS.

3.3 Ground water

The ground water sources in the project area are the alluvial plains of Hodgson Creek, the Walloon sandstones, the Hutton (Marburg) sandstones and the basalts. All ground water resources in the area have been allocated for use by landowners. The exploration activities have located ground water in the overburden above the coal measures, which is not associated with the alluvial of Hodgson Creek. The quality of this water is suitable for stock, but not for irrigation.

Ground water studies will be conducted prior to the start of mining operations to quantify aquifers and to ascertain the impacts of mining on these aquifers. The water from these resources is fully allocated to the farming community and Ambre Energy will follow the processes required by the Department of Environment and Resource Management (DERM) to protect these resources.

Water extracted by the mining process will be used for such purposes as process water and dust suppression.

3.4 Flora

The regional ecosystem map presented in Figure 3.1 shows remnant vegetation currently mapped in the area of the proposed mining leases. The remnant vegetation areas shaded green are considered to be of 'least concern'. The remnant vegetation area shaded pink is classified as 'endangered' under the *Queensland Vegetation Management Act (1999).* The remainder of the landscape has been intensively cleared and used for grazing and cropping.

The regional ecosystem map shows a small area of dominant endangered RE11.3.21, Queensland Bluegrass (*Dicanthium sericeum*) Grassland (shaded pink) and there has been a recording of a threatened plant species, Finger Panic Grass (*Digitaria porrecta).* Additional rare or threatened flora taxa may be present in the project area, including;

- Belson's Panic (*Homopholis belsoni*)
- Austral Cornflower (*Rhaponticum australe*)
- Austral Toadflax (*Thesium australe*)
- *Solanum papaverifolium*
- *Picrus evae*
- *Cyperus clarus.*

The presence or absence of these species will be clarified through field survey.

As well as being listed as an Endangered Regional Ecosystem in Queensland, RE 11.3.21 is a component of the Critically Endangered Ecological Community 'Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland', protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as a matter of national environmental significance.

Mining will result in the removal of remnant native vegetation, predominantly Coolabah (*Eucalyptus coolabah*) and Mountain Coolabah (*Eucalyptus orgadophila*) woodland as well as a smaller area of Queensland Bluegrass dominated grassland. There are also small areas of Poplar Box (*Eucalyptus*

populnea) and Brigalow (*Acacia harpophylla*) Woodland in the south of the project area, representing an 'of concern' regional ecosystem. The mixed Poplar Box and Brigalow Woodland is not a component of the Brigalow EEC as listed by the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA).

The impacts of the project on these communities will be considered at length in the EIS and a range of mitigation approaches will be developed to ensure consistency with state and Commonwealth policies which relate to biodiversity protection.

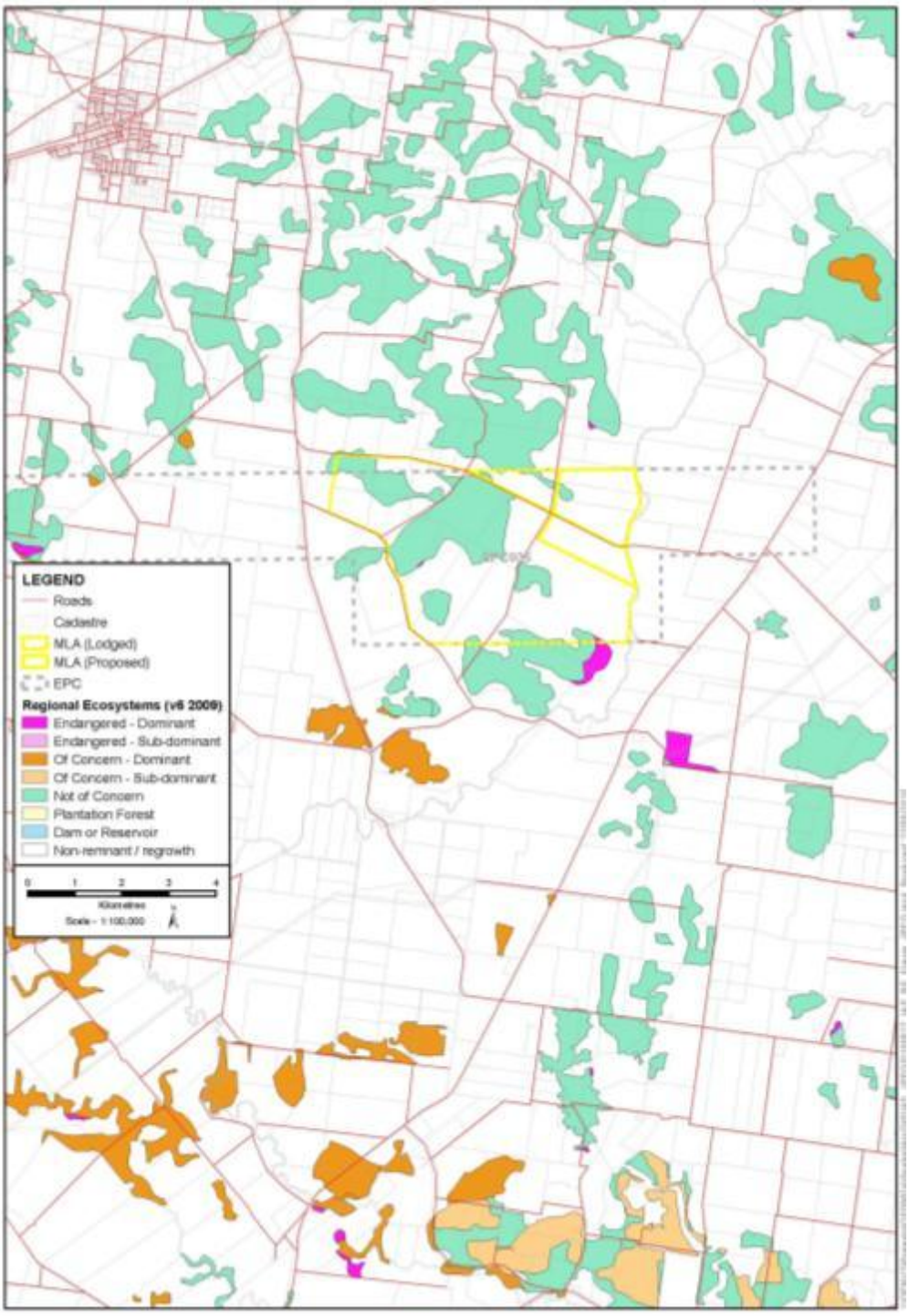

Figure 3.1 – Regional ecosystem map

3.5 Fauna

Typical of much of the Darling Downs, native fauna habitats in the Felton area have been impacted by agricultural development. Much of the remnant vegetation is highly fragmented and occurs as small patches within a matrix of cleared land. Remnant native grasslands are present in easements and road reserves and are generally subject to intensive grazing pressure elsewhere. Two small patches of remnant grassland occur in the project area.

DERM records indicate the presence of the following threatened (rare, vulnerable or endangered) species within 25km of Felton East, listed under the *Nature Conservation Act 1992* (Queensland) and/or the EPBC Act (Australia):

- Grey Goshawk (*Accipiter novaehollandiae*)
- Major Mitchell's Cockatoo (*Cacatua leadbeateri*)
- Glossy Black Cockatoo (*Calyptorhynchus lathami*)
- Painted Honeyeater (*Grantiella picta*)
- Swift Parrot (*Lathamis discolor*)
- Lewin's Rail (*Rallus pectoralis*)
- Powerful Owl (*Ninox strenua*)
- Black-breasted Button-quail (*Turnix melanogaster*)
- Bulloak Jewel (butterfly) (*Hypochrysops piceata)*
- Spotted-tailed Quoll (*Dasyurus maculatus*)
- Brush-tailed Rock-wallaby (*Petrogale penicillata*)
- Five-clawed Worm-skink (*Anomalopus mackayi*).

A number of additional rare or threatened species are potential occurrences in the project area, including the following:

- Rough Frog (*Cyclorana verrucosa*)
- Brigalow Scalyfoot (*Paradelma orientalis*)
- Dunmall's Snake (*Furina dunmalli*)
- Grey Snake (*Hemiaspis damelii*)
- Little Pied Bat (*Chalinolobous picatus*).

A desktop review of the habitat preferences of these species suggests that several are potential occurrences. Comprehensive fauna surveys will be completed to determine whether these species currently occur in the project area, or are likely to occur over time.

In addition to the species listed above, a population of small Agamid lizards thought to represent the Grassland Earless Dragon (*Tympanocryptis pinguicolla*) was discovered in recent years on the Darling Downs to the east of Pittsworth. This species had been considered extinct in Queensland until its rediscovery and has been listed as 'endangered' (*Nature Conservation Act 1992, EPBC Act 1999*). There is currently considerable taxonomic uncertainty around the *Tympanocryptis* population on the Darling Downs and it appears to have closer affinities with *Tympanocryptis tetraporophora* (Melville

et al 2007)[4]. At this stage the species remains listed as endangered and is considered a potential occurrence in the project area.

3.6 Air quality

The region surrounding the project site is rural with intensive cropping, cattle grazing, lot feeding of cattle and intensive poultry farming. Emissions from these activities will be dust from cultivation and harvesting activities and odour from cattle lot feeding and poultry farming. Monitoring sites have been established at appropriate locations around the project area.

Records indicate the most predominant winds at the site are easterly to northeasterly. These winds are particularly predominant during the night when stable conditions and low wind speeds are common.

During operation, impacts on air quality will be generated by the following activities:

- dust from the mining operations and coal handling processes
- flue gas emissions from the CTL processing facility and
- plant odours.

The principal dust sources will include heavy mining equipment movements, topsoil stripping, coal handling and coal haulage to the rail load out. During mining operations, dust generation will be managed by the use of water for haul road watering, sprays on crushers and transfer points, and progressive rehabilitation.

Flue gas emissions from the processing facility will contain standard combustion products including CO_2, H_2O, N_2 and trace amounts of other pollutants including NO_x, SO_x, CO and VOCs. Appropriate plant design and operational controls will ensure that these emissions are maintained within acceptable limits and legislative requirements. Emissions modelling will be carried out as part of the EIS.

Fugitive emissions are often the source of odour complaints and this will be prevented through appropriate plant design and the development of standard operating procedures for maintenance activities.

3.7 Greenhouse gas

The project is expected to produce approximately 4.2 Mt/yr of CO_2, of which more than 79 percent (3.4 Mt/yr) will be captured in a high purity form during processing.

The large quantity of high purity CO_2 is ideally suited for use in Enhanced Oil Recovery (EOR), widely used in the USA, and proposed in the Santos Moomba carbon dioxide storage project (2007). Alternatively, it may be used as a concentrated source for large scale geo-sequestration trials or other industrial uses. Ambre Energy will continue working with government to find solutions related to CO_2 storage; but until such options are available, the captured CO_2 will be safely vented on-site.

[4] Melville, J. Goebel, S. Starr, C. Keogh, S. J. Austin, J. J. (2007). Conservation genetics and species status of an endangered Australian dragon, *Tympanocryptis pinguicolla* (Reptilia: Agamidae). *Conservation Genetics*. 8(1):p185-195.

In addition, Ambre Energy will investigate means to offset CO_2 emissions by:

- working with universities and research organisations to investigate options for the bio-conversion of CO_2
- investigating the benefits and cost of planting soft and hard wood plantations within the buffer zone around the processing plant and mine, and on the waste dumps reclaimed after open cut coal mining and
- investigate planting carbon sink forest plantations in Australia and in other countries**.**

3.8 Noise and vibration

The agricultural practices in the project area generate noise and vibration typical of a rural community and are generally accepted by the community. There are currently no industries in the area that generate the noise and vibration associated with mining activities.

Noise sources from ambreCTL will include mining (trucks, shovels, blasting) and processing activities (conveyors, crushers, screens, CHPP and CTL processing plant). The level of noise at a given receptor will vary depending on the type of machinery in use and traffic in the area. A baseline noise survey will be undertaken, and information from this and additional studies will be used to develop mitigation strategies for the project. This will include identifying noise sensitive receptors in the vicinity of the project area.

Sensitive receptors may also be affected by blasting. The mine design processes will confirm the nature and frequency of blasting. This will also be assessed to determine appropriate mitigation measures. Noise and vibration impacts will be further addressed in the EIS.

3.9 Native Title and cultural heritage

The land in the project is freehold and as such, Native Title has been extinguished. The bed of Hodgson Creek would appear to be open to claim as the freehold blocks do not abut in the centre of the creek, however a Native Title search conducted on 20 August 2007 identified there was no Native Title on this land. Hodgson Creek was included in the area claimed by the Western Wakka Wakka People on 27 January 1999. This claim has been finalised, so Hodgson Creek is not under claim.

Hodgson Creek will be protected by a buffer zone and levees. A cultural heritage survey will be conducted over the project area and depending on the results, will lead to the development of a Cultural Heritage Management Plan.

3.10 Visual amenity

Due to the topography, the ambreCTL site is highly visible from adjacent public roads and presents a vista of cultivated paddocks extending up to vegetated hill tops. Due to the small rural population, there is a limited amount of domestic lighting. This results in a clear night sky. This landscape will be

progressively removed as activities associated with mining and the work areas will need to be illuminated continuously.

The progressive loss of the vista will be partially offset by the construction and rehabilitation of the flood levees on the western side of Hodgson Creek, which will partially hide the mining operations. Where practical, tree plantings will be established along roadsides to reduce the visual impact of the project. The processing areas will be landscaped and lights will be subject targeted and time limited to minimise annoyance to those in off-site dwellings.

3.11 Socioeconomics

The project is expected to boost economic activity in the Felton region and provide employment opportunities for the local workforce during construction and operation. Such economic benefits are outlined briefly in section 2.8 and will be quantified in greater detail in the EIS.

Ambre Energy will undertake a stakeholder engagement and consultation program to identify and inform stakeholders of the proposed project, EIS timeframes and decision-making processes, and to provide adequate opportunities for stakeholders to raise issues, voice concerns, ask questions and contribute to the studies.

Mitigation measures will be developed to minimise adverse impacts and maximise benefits to local and regional communities.

3.12 Hazard and risk

In addition to the potential hazards already identified as associated with an open cut mining operation, there are potential hazards associated with the production, storage and transportation of ULP and LPG.

There are well established procedures for dealing with hazards associated with mining, chemical and petroleum product processing and gas storage and transport. These will be identified and actions taken to reduce or mitigate potential impacts. This issue will be the subject of detailed investigation during EIS development.

3.13 Stakeholder engagement and consultation

Engagement and consultation will be undertaken throughout the EIS development process through:

- identifying and monitoring stakeholder groups, organisations and individuals who may impact or be impacted by the proposed project
- selecting effective communication and engagement methods and processes that meet stakeholder information needs
- ensuring that adequate information is available about the project, activities under way, EIS process and timeframes, opportunities for input and consultation events

- ensuring communication and consultation activities are scheduled at appropriate milestones and

- providing mechanisms (i.e. email, free call 1800 number, freepost address) to maximise opportunities for public input and information provision.

Stakeholder comments, issues and questions, along with any resulting mitigation measures or responses, will be recorded and included in the final EIS report.

3.14 Environmental management

The strategies and techniques to mitigate environmental impacts will be incorporated in an appropriate Environmental Management System (EMS) which will operate from the start of construction. Over time, this system will be modified to comply with the essential elements of the ISO 14001 standard and, if considered appropriate, certification of the EMS to the ISO standard will be sought.

4 Commonwealth, state and local government requirements

The Commonwealth, state and local government requirements relevant to ambreCTL are described below.

4.1 *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The EPBC Act requires assessment and Commonwealth approval for any activity that will have, or is likely to have, a significant impact on a matter of national environmental significance.

The Act identifies eight matters of national environmental significance, of which 'nationally threatened species and communities' and 'migratory species protected under international agreements' have some relevance to the project. The Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) is responsible for management of the EPBC Act.

The potential impact on matters of national environmental significance means that a referral will need to be made to the Commonwealth for a determination as to whether the proposed relevant action would be a 'controlled action' under the EPBC Act.

It is likely that the project will be deemed a 'controlled action'; consequently the Commonwealth will request a specific level of environment impact assessment depending on the nature of the proposed activity.

As ambreCTL will be preparing an EIS under Queensland legislation, the environmental impact assessment process will be coordinated by the state under a bi-lateral agreement. Under this arrangement, the Commonwealth has input at the required times in the environmental impact assessment process and is responsible at the end of the process for issuing a separate conditioned approval for the proposed activity.

The Commonwealth is also responsible for management of compliance matters relating to their approvals.

4.2 *Queensland Mineral Resources Act 1989* (MRA)

The *Mineral Resources Act 1989* (MRA) provides for the assessment, development and utilisation of mineral resources to the maximum extent practicable consistent with sound economic and land use management. The principal objectives of this Act include encouraging and facilitating the mining of minerals and encouraging environmental responsibility in mining. The Department of Employment, Economic Development and Innovation (DEEDI) is responsible for management of the MRA.

Amongst other things, the MRA provides that the Governor in Council may grant a mining lease for all or any of the following purposes:

- to mine the mineral or minerals specified in the lease and for all purposes necessary to effectually carry on that mining and

- for such purposes, other than mining, as specified in the mining lease and that are associated with, arising from, or promoting the activity of mining.

The MRA provides for the advertisement of an application for the grant of a mining lease, with a call for objections to the grant. At least 28 days is provided for the lodgement of objections. Valid objections may be heard in the Land Court. The MRA also provides for the surrender of mining leases, and for the amendment of conditions of a mining lease.

4.3 *Queensland State Development and Public Works Organisation Act 1971* (SDPWO Act)

The Coordinator-General may declare a project to be a 'significant project' under Section 26 of the SDPWO Act that may or may not need an EIS. The matters considered by the Coordinator-General before making such a declaration are set out in Section 27 of the Act.

Ambre Energy Limited is seeking declaration of ambreCTL as a 'significant project' and has prepared this Initial Advice Statement in support of this application.

4.4 *Queensland Environmental Protection Act 1994* (EP Act)

The granting of a mining lease application under the *Mineral Resources Act 1989* is contingent upon the successful issuing of a non-standard environmental authority (mining activities) under the EP Act.

The granting of an application for a non-standard environmental authority (mining activities) typically cannot occur until (a) the relevant EIS process is complete (in this case the SDPWO Act EIS process), (b) an EM Plan has been submitted, (c) a Draft Environmental Authority is prepared, (d) the notice of application is publicly advertised, and (e) any objections are dealt with by the Land Court.

DERM is responsible for management of the EP Act. Ambre Energy will prepare the necessary EP Act documentation for ambreCTL as part of the EIS process.

4.5 *Queensland Sustainable Planning Act 2009* (SPA)

Activities authorized under the *Mineral Resources Act* and activities authorised under an environmental authority (mining activities) under the EP Act are deemed to be exempt development under the SPA. However, the project will involve certain assessable development such as operational works for (a) any off-site infrastructure related to the project, (b) installation of bores and (c) the construction of 'referable dams' and building works.

4.6 *Queensland Water Act 2000*

The *Water Act 2000* requires that a licence to take water be obtained before (a) water is taken from watercourses or ground water aquifers, and (b) flow in a watercourse is interfered with. A licence to take water will be required for the dewatering of bores. Dams above certain specified heights and volumes require failure impact assessment under the *Water Act*. A dam that has a Category 1 or 2 failure impact rating would require licensing as a 'referable dam'. DERM is responsible for management of the *Water Act*. Ambre Energy will consult with DERM in relation to ground water and surface water related matters.

4.7 *Queensland Aboriginal Cultural Heritage Act 2003* (ACHA)

The duty of care provisions under the *Aboriginal Cultural Heritage Act 2003* (Qld) (ACHA) requires those carrying out activities in areas of significance to take all reasonable and practicable measures to avoid harming cultural heritage. A Cultural Heritage Management Plan (CHMP) required for the project will be prepared with the Traditional Owners under the processes of this Act.

Consultation with identified Aboriginal parties has commenced and will continue during design and construction phases. This will continue during the final detail design and subsequent construction phases of this project.

4.8 *Queensland Heritage Act 1992*

The *Queensland Heritage Act 1992* provides for the conservation and protection of places and items of historical and/or non-indigenous cultural heritage i.e. all places that derive from the post-settlement history of Queensland. Under this Act, places and items must be entered into a Queensland Heritage Register in order to be protected. Substantial penalties may apply for damage to a place or item that has been entered on the Register.

4.9 *Queensland Nature Conservation Act 1992* (NC Act) and the *Nature Conservation (Wildlife) Regulation 1994* (NCWR)

The NC Act prohibits the taking or destruction, without authorisation, of certain listed flora and fauna species. The impact assessment process for the project will need to assess the extent of the impact on relevant species listed under the NCWR. DERM is responsible for management of the NC Act and NCWR.

4.10 *Queensland Land Act 1994*

Opening new road reserves and closing existing road reserves is regulated under the *Land Act*. All other land dealings in relation to changes in land tenure (e.g. sub-division of leasehold land, permit to occupy and easements) are regulated under the Act, which is administered by DERM.

A permit to clear vegetation on state-owned land is required under the *Land Act.*

4.11 *Queensland Transport Infrastructure Act 1994*

This Act provides a strategic framework for management of the national and state road network. A permit is required to work in, or interfere with, a state-controlled road. This may be required in the event that the project requires road or intersection upgrades. The Department of Transport and Main Roads is responsible for management of the *Transport Infrastructure Act.*

4.12 *Queensland Forestry Act 1959*

A permit to extract quarry material would be required under this Act if such material is to be used to construct road diversions off the mining leases (e.g. such as the haul road). The *Forestry Act* is administered by the Department of Employment, Economic Development and Innovation.

4.13 *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act)

The following licences and permits under the P&G Act (Qld) are required as a result of the petroleum facility licence for the CTL facility.

Petroleum tenures can be applied for at any time during the SDPWO Act (Qld) process but will not be issued until an Environmental Authority (EA) has been granted. An EA to authorise project activities will not be granted until the CG Report is issued.

4.14 Local government requirements

Ambre Energy will need to negotiate with the Toowoomba Regional Council and gain approvals for works in local government administered roads and road reserves. Ambre Energy will continue to work closely with the Toowoomba Regional Council throughout the project to ensure that benefits to the council are maximised and potentially adverse impacts are prevented or mitigated.

5 Contact details

For further information concerning ambreCTL, please contact:

Neil McGregor
General Manager Business Development and Marketing
Ambre Energy Limited
Ph: 07 3009 9191 (or 0412 970 320)
Email: n.mcgregor@ambreenergy.com

6 Glossary

ACHA:	Queensland Aboriginal Cultural Heritage Act 2003
AEF:	Ambre Energy Felton
ASU:	Air Separation Unit
CHMP:	Cultural Heritage Management Plan
CHPP:	Coal handling and preparation plant
CoG:	Coordinator-General
CTL:	Coal-to-Liquids
DEEDI:	Department of Employment, Economic Development and Innovation
DERM:	Department of Environment and Resource Management
DEWHA:	Department of Environment, Water, Heritage and the Arts
DIP:	Department of Infrastructure and Planning
EEC:	Endangered Ecological Communities
EIA:	Environmental Impact Assessment
EIS:	Environmental Impact Statement
EMS:	Environmental Management System
EOR:	Enhanced Oil Recovery
EPBC:	Environment Protection and Biodiversity Conservation Act 1999
EPC:	Exploration Permit for Coal
FTE:	Full Time Equivalent
GDP:	Gross Domestic Product
GSP:	Gross State Product
IAS:	Initial Advice Statement

JORC:	Joint Ore Reserves Committee
LPG:	Liquefied Petroleum Gas
LRA:	Land Resource Areas
MDL:	Mineral Development Licence
MLA:	Mining Lease Application
MRA:	Mineral Resources Act 1989
MTG:	Methanol-to-gasoline
NCWR:	Nature Conservation (Wildlife) Regulation 1994
NPV:	Net Present Value
PAF:	Proposed Acquisition Felton
ROM:	Run of Mine
RON:	Research Octane Number
SDPWOA:	State Development and Public Works Organisation Act 1971
SEQ:	South East Queensland
SPA:	Queensland Sustainable Planning Act 2009
ToR:	Terms of Reference
ULP:	Unleaded petrol
VMA:	Vegetation Management Act 1999
WGS:	Water Gas Shift