



Chapter 4

State legislation and approvals

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Chapter 4 State legislation and approvals

4.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides the statutory basis and framework for planning and environmental assessment in NSW. The EP&A Act includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision-making process.

As outlined in this chapter, the Narrabri Gas Project is permissible with development consent under the *State Environmental Planning Policy (Mining, Petroleum and Extractive Industries) 2007*, and is identified as 'State significant development' under section 89C(2) of the EP&A Act and clause 8 and Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011*.

The project is subject to the assessment and approval provisions of Division 4.1 of Part 4 of the EP&A Act. The Minister for Planning is the consent authority for State significant development. The Minister for Planning has issued a general delegation of the consent authority function to the Planning Assessment Commission (PAC) where:

- More than 25 objection submissions are received by the Department of Planning and Environment;
- The application is objected to by the relevant local Council; or
- There has been a reportable political donation declared in relation to the application.

The Planning Assessment Commission is likely to be the consent authority for the application under this delegation.

Section 79C of the EP&A Act applies to State significant development applications and requires the consent authority to consider a broad range of matters. The matters identified in section 79C of the EP&A Act were considered in the preparation of this environmental impact statement (EIS).

Under Division 4.1, the planning and approval process involves the following key steps:

- The proponent submits a request to the Secretary of the Department of Planning and Environment, including accompanying supporting documentation, seeking the requirements for the content of an EIS (the Secretary's environmental assessment requirements).
- The proponent prepares an EIS to address the Secretary's environmental assessment requirements (refer to Appendix A).
- The proponent submits a development application, accompanied by the EIS.
- The EIS is placed on public exhibition for a minimum of 30 days.
- The proponent prepares a written response to issues raised in submissions made during public exhibition, if requested by the Department of Planning and Environment.
- The Department of Planning and Environment evaluates the EIS and the project and prepares an environmental assessment report.
- The Minister, or the delegated consent authority such as the Planning Assessment Commission, determines the development application and provides conditions of approval if development consent is granted.

Under section 23D(1)(b)(iii) of the EP&A Act, the Minister may also request the Planning Assessment Commission to conduct a review of the project (or any part of the project) and this may include the holding of a public hearing. If a public hearing is to be held it will often occur after the Department completes a preliminary assessment report once the proponent has provided its response to submissions. After the public hearing the Commission will prepare a review report including recommendations for the Minister and Secretary of the Department of Planning and Environment. The Department then finalises its assessment report for the project and refers the application to the Commission for determination. The Commission will then determine the application with or without holding a subsequent public meeting.

The *Environmental Planning and Assessment Amendment (Siding Spring Observatory) Regulation 2016* was made to amend the *Environmental Planning and Assessment Regulation 2000* to, amongst other things:

‘Require the consent authority to take into consideration the *Dark Sky Planning Guideline* prepared by the Secretary of the Department of Environment and Planning when determining a development application for State significant development on land less than 200 kilometres from the observatory’.

4.1.1 Secretary’s environmental assessment requirements

As noted in Section 4.1, the EIS was prepared to consider the Secretary’s environmental assessment requirements issued under the EP&A Act. The Secretary’s environmental assessment requirements request a description of the project, justification for the project, and an assessment of the likely impacts of the project on the environment including consideration of the following key issues; water, land, biodiversity, heritage, air quality, noise, transport, visual, public safety, and social and economic factors.

The Secretary’s environmental assessment requirements also require that consultation with relevant Commonwealth, State and local Government authorities, infrastructure and service providers, community groups and affected landholders be undertaken. This EIS was prepared considering a range of guidance documents from international to local Council level.

4.1.2 Ecologically sustainable development

The EP&A Act adopts the principles of ecologically sustainable development. These principles are also articulated in the *Protection of the Environment Administration Act 1991*, which states that:

‘Ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes.

Ecologically sustainable development can be achieved through the implementation of principles and programs including the precautionary principle; inter-generational equity; conservation of biological diversity and ecological integrity; and improved valuation, pricing and incentive mechanisms’.

The project involves the sustainable development of natural gas resources and has been assessed against the principles of ecologically sustainable development (refer to Chapter 32). The development and use of this energy source is considered rational given the demonstrable associated social and economic benefits at the local, regional and State levels, when considered against the minimal environmental impacts from the project as assessed in this EIS.

4.2 Brigalow and Nandewar Community Conservation Area Act 2005

The *Brigalow and Nandewar Community Conservation Area Act 2005* reserves forested land in the Brigalow and Nandewar area as a Community Conservation Area. The objects of the Act (and the Community Conservation Area) include:

- the permanent conservation of land
- protection of areas of natural and cultural heritage significance to Aboriginal people
- sustainable forestry, mining and other appropriate uses.

The Community conservation area is divided into four zones, namely:

- Zone 1 – Conservation and Recreation Zone
- Zone 2 – Conservation and Aboriginal Culture Zone
- Zone 3 – Conservation, Recreation and Mineral Extraction Zone
- Zone 4 – Forestry, Recreation and Mineral Extraction Zone.

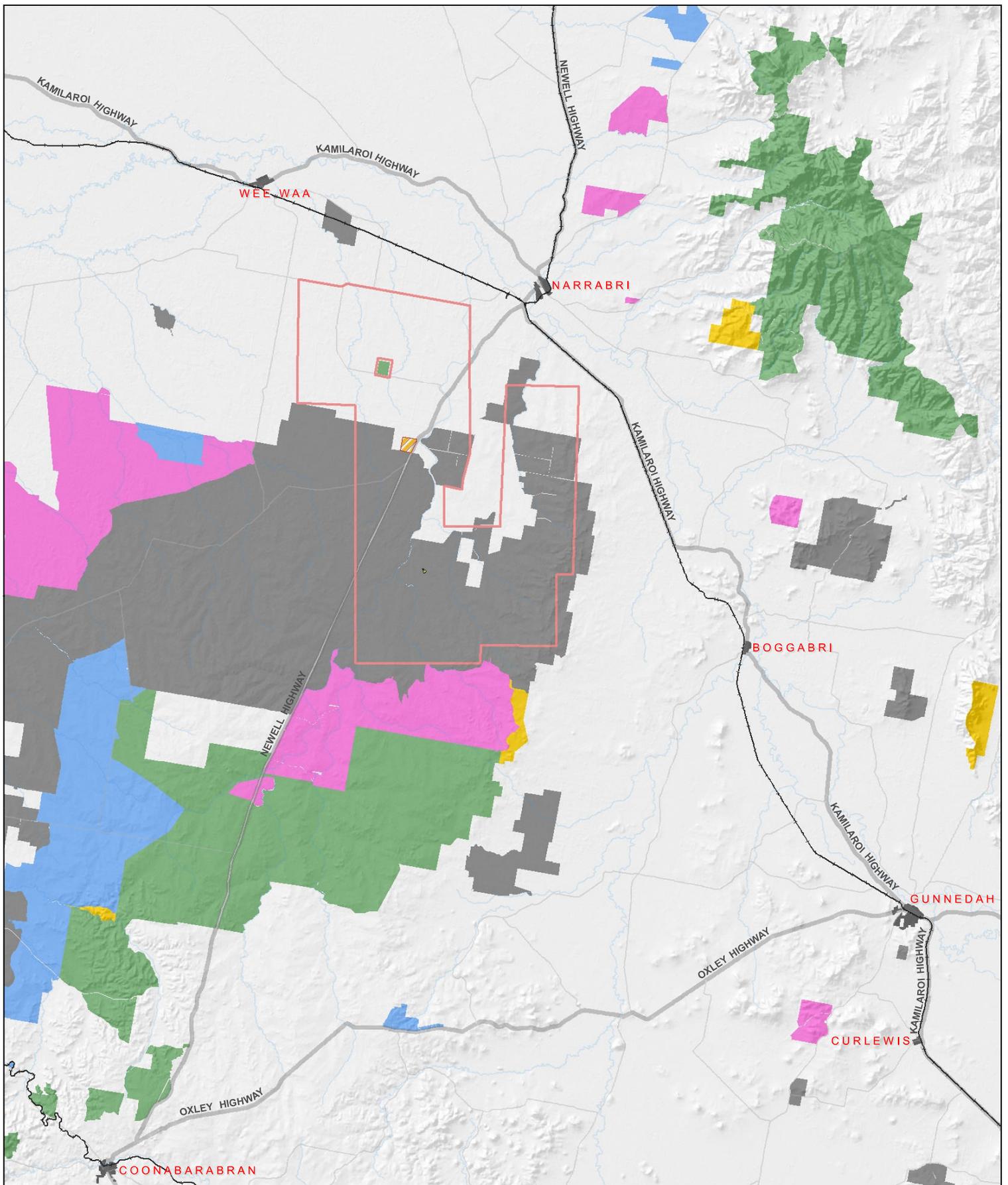
With the project area, the Community Conservation Area is classified as Zone 4. This includes areas of Pilliga East State Forest, Bibblewindi State Forest and Jacks Creek State Forest (refer to Figure 4-1).

The Community Conservation Area Agreement made under the Act provides a co-ordinated framework for the management of land within the Community Conservation Area. The Agreement states the following strategic aims for Zone 4 of the Community Conservation Area:

- 'Provide and encourage the use of timber, products and materials in accordance with the *Forestry Act 1916* and the Integrated Forestry Operations Approval for the Brigalow and Nandewar regions and, where relevant, the *Plantations and Reafforestation Act 1999*.
- Conserve, promote the growth of and utilise timber in the zone to the best advantage of the State.
- Provide for exploration, mining, petroleum production and extractive industry in accordance with the *Mining Act 1992* and the *Petroleum (Onshore) Act 1991* and associated Regulations and guidelines'.

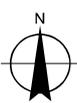
The project is consistent with these strategic aims as it would involve petroleum exploration and production in accordance with the relevant legislation and would be generally compatible with the continuation of forestry in the project area.

The compatibility of the project with other land uses is discussed further in Chapter 17.



LEGEND

- | | | |
|------------------------------------|--------------|--|
| Project area | Watercourses | CCA Zone 1 - Conservation and Recreation |
| Leewood | Roads | CCA Zone 2 - Conservation and Aboriginal Culture |
| Bibblewindi | Train line | CCA Zone 3 - Conservation, Recreation and Mineral Extraction |
| National Parks and Wildlife Estate | | CCA Zone 4 - Forestry, Recreation and Mineral Extraction |



Narrabri Gas Project
Environmental Impact Statement

Zoning under Brigalow
and Nandewar Community Conservation Area Act 2005

Job Number 21-22463
Revision A
Date 14 Jul 2016

Figure 4-1

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NSW Department of Lands, DTDB and DCDB - 2012-13. Santos: Operational and Base Data - 2013.

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4.3 Relevant environmental planning instruments

4.3.1 State environmental planning policies

State Environmental Planning Policy (Mining, Petroleum and Extractive Industries) 2007

State Environmental Planning Policy (Mining, Petroleum and Extractive Industries) 2007 (the Mining SEPP) aims to provide for the proper management and development of mineral, petroleum and extractive material resources for the social and economic welfare of NSW. The Mining SEPP establishes appropriate planning controls to encourage ecologically sustainable development.

Clause 7(2) of the Mining SEPP

Clause 7(2) of the Mining SEPP identifies that development for the following purposes may be carried out only with development consent:

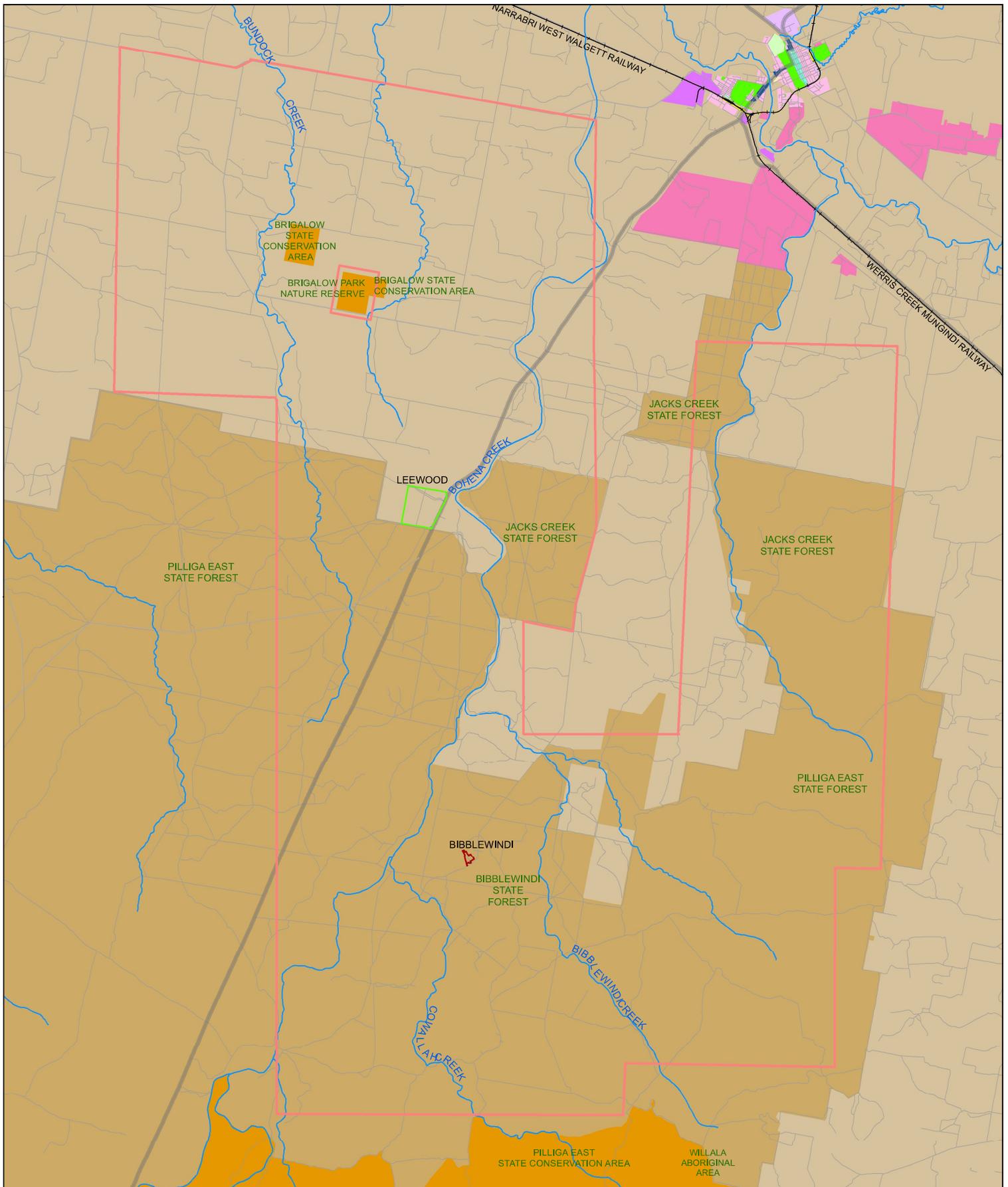
- (a) petroleum production on land on which development for the purposes of agriculture or industry may be carried out (with or without development consent),
- (b) petroleum production on land that is, immediately before the commencement of this clause, the subject of a production lease under the *Petroleum (Onshore) Act 1991*,
- (c) petroleum production in any part of a waterway, an estuary in the coastal zone or coastal waters of the State that is not in an environmental conservation zone,
- (d) facilities for the processing or transportation of petroleum on land on which petroleum production may be carried out (with or without development consent), but only if the petroleum being processed or transported was recovered from that land or adjoining land,
- (e) petroleum production on land that is reserved as a state conservation area under the *National Parks and Wildlife Act 1974*.

With regard to clause 7(2)(a) of the Mining SEPP, the project would be petroleum production and would be on land on which development for the purposes of agriculture or industry may be carried out. As such, the project requires development consent under the Mining SEPP.

The northern part of project area is mainly zoned for primary production under the *Narrabri Local Environmental Plan 2012*. Under the plan, the land is for primary production activities including agriculture. The plan also allows for other uses with development consent, including industry. The southern part of the project area is mainly zoned for forestry under the *Narrabri Local Environmental Plan 2012*. Under the plan, the land is for forestry or other compatible uses. The plan also allows for other uses with development consent under the *Forestry Act 2012*, which can include commercial activities.

The zoning of the project area under the *Narrabri Local Environmental Plan 2012* is shown in Figure 4-2. With regard to clause 7(2)(e) of the Mining SEPP, the project would not occur on land that is reserved as a state conservation area under the *National Parks and Wildlife Act 1974*. The northern part of the project area contains the Brigalow State Conservation Area, however the project does not include development at the surface or within the gazetted depth of this area under the *National Parks and Wildlife Act 1974*.

The extent of the Brigalow State Conservation Area within the project area is shown in Figure 4-2.



Leewood	Lakes and dams	LEP Zoning 2012	RE1, Public Recreation	E3, Environmental Management
Bibblewindi	Watercourses	SP2, Infrastructure	R5, Large Lot Residential	E1, National Parks and Nature Reserves
Parks and reserves	Train line	RU3, Forestry	R1, General Residential	B4, Mixed Use
State forest	Roads	RU1, Primary Production	IN2, Light Industrial	B2, Local Centre
Aboriginal areas		RE2, Private Recreation	IN1, General Industrial	B1, Neighbourhood Centre



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

Narrabri Gas Project
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Zoning under
Narrabri Local Environmental Plan 2012

Figure 4-2

Clause 9A of the Mining SEPP

Clause 9A of the Mining SEPP states that coal seam gas development is prohibited within:

- a coal seam gas exclusion zone, which is land within a residential zone or future residential growth area land, additional rural village land or critical industry cluster land
- a buffer zone, which is land within two kilometres of land within a residential zone, future residential growth area land or additional rural village land.

The project is not located in, or within two kilometres of, a residential zone, future residential growth area, additional rural village land or critical industry cluster land.

Part 3 of the Mining SEPP

Part 3 of the Mining SEPP sets out matters that must be considered before granting development consent. Table 4-1 provides an assessment of the project against the matters for consideration related to petroleum production as outlined in Part 3 of the Mining SEPP.

Biophysical strategic agricultural land

Amendments to the Mining SEPP came into force in September 2013. The amendments established a gateway process for scientific assessment of the impacts of certain State significant mining and petroleum proposals located on biophysical strategic agricultural land (BSAL). The amended Mining SEPP includes regional scale maps of BSAL. According to this mapping, the project is not located on BSAL.

The Mining SEPP defines a site verification process, including soil survey, for land that is not identified as BSAL on regional scale maps. A BSAL assessment of the project area, in accordance with this process, confirmed that BSAL is not present. The BSAL assessment is summarised in Chapter 14. A site verification certificate acknowledging the absence of BSAL in the project area was issued by the NSW Department of Planning and Environment on 1 December 2015 (refer to Appendix I2).

Table 4-1 Mining SEPP consideration

Clause	Consideration	Assessment of project against consideration
<p>Clause 12 – Compatibility of proposed mine, petroleum production or extractive industry with other land uses</p>	<p>The existing uses and approved uses of land in the vicinity of the development.</p> <p>Whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development.</p> <p>Ways in which the development may be incompatible with those existing, approved or likely preferred uses.</p>	<p>The project would be located on predominantly agricultural and forestry land. Major facilities would be established at or near existing and disturbed sites, while the field would have a relatively small and diffuse presence. As such, impacts on forestry and agricultural land would be relatively minimal. No known residential, future residential, rural villages or critical industry cluster land would be located close to the project.</p> <p>The project would not result in works within or below the Brigalow Nature Reserve. Lateral wells would potentially occur below the Brigalow State Conservation Area (at depths of greater than 110 metres). There would be no surface works in the Brigalow State Conservation Area, or works within the gazetted depth of 100 metres. Therefore, the project would also avoid the Brigalow State Conservation Area, and no areas reserved under the <i>National Parks and Wildlife Act 1974</i> would be impacted.</p> <p>The proposed development would be compatible with other existing land uses including Aboriginal land use and recreation. Impacts on land use are discussed in Chapter 17.</p>
<p>Clause 13 – Compatibility of proposed development with mining, petroleum production or extractive industry</p>	<p>The existing uses and approved uses of land in the vicinity of the development.</p> <p>Whether or not the development is likely to have a significant impact on current or future extraction or recovery of minerals, petroleum or extractive materials (including by limiting access to, or impeding assessment of, those resources).</p> <p>Ways in which the development may be incompatible with those existing or approved uses or current or future extraction or recovery.</p>	<p>An existing mine (and the associated mining lease) is located adjacent to the eastern edge of the project area. The project would not affect the operation of this mine and therefore would not affect the ability of the mine to extract or recover minerals, petroleum or extractive materials.</p> <p>The project would involve the installation and operation of gas wells which would temporarily restrict access to target coal seams for the purpose of coal mining during the operation of the project. As each well is decommissioned, the coal seams below would be once again available for mining following consultation and agreement with the Division of Resources and Energy (within the NSW Department of Industry) regarding approved decommissioning and rehabilitation practices according to <i>The Code of Practice for Coal Seam Gas: Well Integrity</i> (DTIRIS 2012).</p> <p>No other minerals suitable for extraction are known to be located within the project area.</p>

Clause	Consideration	Assessment of project against consideration
Clause 14 – Natural resource management and environmental management	Impacts on significant water resources, including surface and groundwater resources, are to be avoided or minimised to the greatest extent practicable.	Potential impacts on groundwater and surface water resources are assessed in Chapter 11 and Chapter 12, respectively. Groundwater would be extracted from coal seams where water quality is typically low compared to shallow aquifers. Impacts on those higher value shallow aquifers are predicted to be negligible. Produced water would be treated and re-used as a dust suppressant, discharged through a managed release scheme to Bohena Creek or re-used for irrigation and stock watering. The managed release and irrigation activities have been assessed in detail (refer to Appendix G1 and Appendix G2, respectively).
	Impacts on threatened species and biodiversity are to be avoided or minimised to the greatest extent practicable.	Major facilities would be established at or near existing and disturbed sites. These facilities would generally avoid and/or minimise potential impacts on threatened species and biodiversity through co-locating and/or using previously disturbed sites. In addition, existing access tracks would be used where practicable. The field would be sited in accordance with a Field Development Protocol, which includes flora and fauna constraints. The Protocol sets a maximum disturbance area for vegetation communities and threatened flora in accordance with their conservation value. The total maximum area where native vegetation would be directly disturbed has been determined at 988.8 hectares (refer to Chapter 15). The complete Field Development Protocol is provided as Appendix C. Additional mitigation and management measures to control biodiversity impacts are prescribed in Chapter 15.
	Greenhouse gas emissions are to be minimised to the greatest extent practicable.	Mitigation and management measures are proposed to control project greenhouse emissions. As a general principle all reasonable and feasible measures to minimise greenhouse gas emissions would be considered and implemented where practicable. Greenhouse gas emissions generated by the project are considered to be reasonable given the nature of the project in that it would provide for up to around 50 per cent of NSW gas demand. Furthermore, gas produced by the project would satisfy a demand that would otherwise be met by other, potentially emissions-intensive, sources.
	The assessment of the greenhouse gas emissions of the development (including downstream emissions) must have regard to applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.	Greenhouse gas emissions were quantified with reference to emission factors, including the Commonwealth Government <i>National Greenhouse and Energy Reporting (Measurement) Determination 2008</i> and <i>National Greenhouse Accounts Factors</i> . A detailed methodology of the greenhouse gas assessment is provided in Chapter 23. Greenhouse gas emissions would be monitored and reported for the life of the project under the <i>National Greenhouse and Energy Reporting Act 2007</i> , or other relevant legislation.

Clause	Consideration	Assessment of project against consideration
	<p>The proposed measures to mitigate or offset the biodiversity impact of the proposed development must have a certification by the Chief Executive of the Office of Environment and Heritage or the Director-General of the Department of Primary Industries that these measures would be adequate.</p>	<p>A draft biodiversity offset strategy has been prepared for the project and is included as Appendix J1. The <i>NSW Biodiversity Offset Policy for Major Projects</i> (OEH 2014c) has been used to guide development of the offsets strategy. The finalisation and implementation of this offset strategy is subject to certification by the relevant regulatory authorities.</p>
<p>Clause 15 – Resource recovery</p>	<p>The efficiency or otherwise of the development in terms of resource recovery.</p>	<p>The proposed development is based on minimising the surface footprint of the field, while maximising resource recovery. This would be achieved by drilling multiple wells from the same well pad, in addition to drilling a number of laterals per well set. Multiple wells on the one well pad would reduce the surface footprint of the field by approximately 30 per cent, while maintaining gas yield.</p> <p>In addition, improvements in drilling sensor technology and global positioning technology have enabled improved directional drilling technology, which has increased the efficiency and reduced the cost of drilling.</p>
<p>Clause 16 – Transport</p>	<p>This clause prescribes responsibilities for the consent authority to consider the potential impacts of the transport of materials on public roads. Specific requirements include providing a copy of the development application to the Roads and Traffic Authority and other road authorities.</p>	<p>The project would involve the transport on materials on public roads. The consent authority would therefore be required to provide a copy of the development application to the Roads and Traffic Authority and other road authorities, along with other responsibilities under the clause.</p>
<p>Clause 17 – Rehabilitation</p>	<p>Preparation of a plan (as part of the conditions of consent) that identifies the proposed end use and landform of the land once rehabilitated.</p>	<p>The process for decommissioning and rehabilitating the project area is presented in Appendix W and Appendix V respectively. Land will be rehabilitated consistent with its pre-existing land use, in consultation with the landholder.</p>
	<p>Waste generated by the development or the rehabilitation must be dealt with appropriately.</p>	<p>The strategy for the management, handling and disposal of waste streams generated by the project is presented in Chapter 28. Waste will be dealt with in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA 2014c). Details of the proposed rehabilitation of the project area are presented in Appendix V.</p>
	<p>Soil contaminated as a result of the development must be remediated in accordance with relevant guidelines (including guidelines under section 145C of the EP&A Act and the <i>Contaminated Land Management Act 1997</i>).</p>	<p>A baseline soil contamination assessment and the proposed mitigation measures for existing soil contamination discovered during activities are described in Chapter 14. No soil is expected to be contaminated by the proposed development.</p>
	<p>Steps must be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation does not jeopardise public safety.</p>	<p>Details of the proposed rehabilitation of the project area are presented in Appendix V. There would be minimal changes to the state of the land and landforms during operations, therefore, the state of the land post site rehabilitation is expected to be similar to pre-development and pose minimal risk to public safety.</p>

Mining SEPP and Strategic Regional Land Use Plans

The Strategic Regional Land Use Policy seeks to provide a regulatory framework to facilitate the assessment of mining and petroleum projects in NSW, while ensuring the protection of the State's valuable agricultural lands and related water sources.

Strategic Regional Land Use Plans (SRLUPs) identify BSAL and critical industry clusters within these regions, which are subject to additional protection through the gateway process.

The SRLUPs state that development of the gas industry in the New England North West and Upper Hunter regions will bring capital investment and economic benefits, and has the potential to play a significant role in the delivery of reliable energy in a carbon constrained economy, provide security of supply for domestic gas, and alleviate the State's reliance on imported gas. The SRLUPs emphasise the importance of protecting valuable agricultural land and natural environments.

The New England North West SRLUP applies to the project area. Mapping in this SRLUP indicates that the project area does not contain BSAL and this has been verified through the issue of a site verification certificate by the NSW Department of Planning and Environment (refer to Appendix I2). Though there a number of important agricultural industries in the New England North West Region, none of these industries meet the definition of critical industry clusters.

State Environmental Planning Policy (State and Regional Development) 2011

Section 89C(2) of the EP&A Act provides that a SEPP may declare a development or a class or description of development, to be State significant development. *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) identifies development that is 'State significant development' for this purpose.

Clause 8(1) of the State and Regional Development SEPP states that development is State significant development if:

- (a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the [EP&A] Act, and
- (b) the development is specified in Schedule 1 or 2.

Clause 8(2) of State and Regional Development SEPP further states that:

If a single proposed development the subject of one development application comprises development that is only partly State significant development declared under subclause (1), the remainder of the development is also declared to be State significant development except for:

- (a) so much of the remainder of the development as the Director-General determines is not sufficiently related to the State significant development, and
- (b) coal seam gas development on or under land within a coal seam gas exclusion zone or land within a buffer zone (within the meaning of clause 9A of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*).

Clause 6 of Schedule 1 specifies the following petroleum (oil and gas) development to be State significant development:

- (1) Development for the purpose of petroleum production.
- (2), (3) (Repealed)
- (4) Development for the purpose of petroleum related works (including pipelines and processing plants) that:
 - (a) is ancillary to or an extension of another State significant development project, or
 - (b) has a capital investment value of more than \$30 million.

Therefore, as outlined above, the project is permissible with development consent and is development for the purposes of petroleum production. Therefore, the project is State significant development under clause 8(1) of the State and Regional Development SEPP. The exploration and appraisal activities that are proposed to be included in the development application would also form part of the State significant development under clause 8(2) of the State and Regional Development SEPP.

The NSW Department of Planning and Environment has prepared sets of standard conditions to inform proponents of the kinds of conditions likely to be attached to approvals for State significant developments. These include conditions for gas production (NSW Department of Planning and Environment 2016a).

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33) requires developers and consent authorities to assess the hazards and risks associated with a proposed development before approval is given for construction and operation. To this end, SEPP 33 defines two categories of development: potentially hazardous industry and potentially offensive industry.

Under SEPP 33, a potentially hazardous industry means a development for the purposes of an industry which, if the development were to operate without employing measures to reduce or minimise its impact, would pose a significant risk to human health, life or property, or to the biophysical environment. SEPP 33 requires developments that are potentially hazardous to have a preliminary hazard analysis prepared to determine the risk to people, property and the biophysical environment at the proposed location and in the presence of controls.

The project is considered to be a potentially hazardous industry under SEPP 33 requiring a preliminary hazard analysis. A preliminary hazard analysis for the project is included in Chapter 25.

Under SEPP 33, a potentially offensive industry means a development for the purposes of an industry which, if the development were to operate without employing measures to reduce or minimise its impact, would emit a polluting discharge in a manner which would have a significant adverse impact. Development that requires an environment protection licence from the NSW Environment Protection Authority (NSW EPA) is considered to be potentially offensive.

As identified in Section 4.4.5, the project requires an environment protection licence from the NSW EPA under the *Protection of the Environment Operations Act 1997*. The project is therefore considered to be a 'potentially offensive industry'. However, the mitigation and management measures proposed in this EIS would serve to prevent significant adverse impacts. These measures would be consistent with conditions of an environmental protection licence under the *Protection of the Environment Operations Act 1997*.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44) aims to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline'.

The project is located within the Narrabri LGA which is listed in Schedule 1 of SEPP 44 as an LGA to which SEPP 44 applies. SEPP 44 requires that before granting consent for development on land over one hectare in area, a consent authority must be satisfied as to whether or not the land is 'potential' or 'core' koala habitat. Identifying whether land is potential koala habitat may act as a preliminary step to identifying core koala habitat. Where core koala habitat is found to occur, SEPP 44 requires that a site-specific Koala Plan of Management be prepared in association with development consent.

Potential koala habitat is defined as 'an area of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15 per cent of the total number of trees in the upper or lower strata of the tree component'. Core koala habitat is defined as 'an area of land with a resident breeding population of koalas, evidenced by attributes such as breeding females and recent sightings and historical records of a population'.

As determined through the terrestrial ecology impact assessment (refer to Chapter 15), the study area contains areas of potential koala habitat but these areas do not constitute core koala habitat as defined in SEPP 44.

State Environmental Planning Policy No. 55 – Remediation of land

State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55) aims to promote the remediation of contaminated land to reduce the risk of harm to human health and the environment. The policy applies to the whole of the State.

Clause 7 of SEPP 55 requires that contamination and remediation of land be considered by a consent authority in determining a development application.

A contamination assessment has been prepared as part of the EIS. This assessment concludes that the project area is not considered to be subject to widespread contamination. Prior incidents in the project area have generally been localised, low risk and / or remediated. Additional sources of potential land contamination occurred sparsely throughout the project area. The overall risk of the project interacting with land contamination was assessed to be low. Further discussion of pre-existing contamination or sources of potential land contamination within the project area is presented in Chapter 14. A copy of the contamination assessment is provided in Appendix I3.

State Environmental Planning Policy (Rural Lands) 2008

State Environmental Planning Policy (Rural Lands) 2008 (Rural Lands SEPP) aims to facilitate the orderly and economic use and development of rural lands for rural and related purposes, and applies to the Narrabri LGA.

Clause 7 of the Rural Lands SEPP identifies rural planning principles and clause 8 identifies rural subdivision principles. Both clauses must be considered in the preparation of local environmental plans. The project does not involve the preparation of a local environmental plan. Clause 7 therefore does not apply to the project.

Clause 10 identifies matters to be considered in determining development applications for rural subdivisions or rural dwellings. The project does not involve rural subdivision or construction of a rural dwelling. Clause 10 therefore does not apply to the project.

There are no other provisions relevant to the project contained in the Rural Lands SEPP.

4.3.2 Local environmental plans

Permissibility

The project is located within Narrabri LGA and is subject to the Narrabri LEP. The project is located within the RU1 Primary Production RU3 Forestry and E1 National Parks and Nature Reserves zones under the Narrabri LEP. Zoning under the Narrabri LEP is mapped in Table 4-2. The objectives of each of the abovementioned zones are presented in Table 4-2, together with an assessment of the project against these objectives, while Table 4-3 outlines the permissibility of certain uses.

Table 4-2 Narrabri LEP zone objectives

Zone	Objectives	Consistency of the project with the objectives
RU1 Primary Production	<ul style="list-style-type: none"> To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. To encourage diversity in primary industry enterprises and systems appropriate for the area. To minimise the fragmentation and alienation of resource lands. To minimise conflict between land uses within this zone and land uses within adjoining zones. To allow for non-agricultural land uses that will not restrict the use of other land for agricultural purposes. 	<p>The project would result in some relatively minor changes and restrictions to agricultural land uses during construction and operation for those landholders choosing to host project infrastructure.</p> <p>As outlined in Chapter 17, these changes are not considered to be significant due to the relatively small and diffuse presence in the project area, the progressive rehabilitation that would occur over the life of the project, and the available agricultural land in the project area and within the region. A farm management plan would be developed with each landholder to minimise the impact of activities. In addition, where practicable, pipes and access tracks will be co-located with existing access tracks to further minimise impacts.</p> <p>The operation of the project would not restrict the agricultural use of land adjacent to land hosting project infrastructure.</p> <p>The project would be decommissioned following operation, with land to be rehabilitated and returned for agricultural use, consistent with pre-existing site conditions.</p>

Zone	Objectives	Consistency of the project with the objectives
RU3 Forestry	<ul style="list-style-type: none"> To enable development for forestry purposes. To enable other development that is compatible with forestry land uses. 	<p>The project is considered to be compatible development as the project would only occupy a relatively small and diffuse area of State forest land, and would not impede continued forestry operations. Current exploration activities are being successfully undertaken in close consultation with the Forestry Corporation of NSW.</p> <p>The proponent would continue to consult with the Forestry Corporation of NSW with regard to potential impacts and would retain the right to timber.</p>
E1 National Parks and Nature Reserves	<ul style="list-style-type: none"> To enable the management and appropriate use of land that is reserved under the <i>National Parks and Wildlife Act 1974</i> or that is acquired under Part 11 of that Act. To enable uses authorised under the <i>National Parks and Wildlife Act 1974</i>. To identify land that is to be reserved under the <i>National Parks and Wildlife Act 1974</i> and to protect the environmental significance of that land. 	<p>No areas reserved under the <i>National Parks and Wildlife Act 1974</i> would be impacted.</p> <p>The Brigalow Nature Reserve has been excluded from the project area. There would be no surface works in the Brigalow State Conservation Area (located across two parcels of land within the project area), or works within the gazetted depth of 100 metres.</p>

Table 4-3 Permissibility under the Narrabri LEP

Zone	Permissibility of petroleum production	Permissibility of agriculture or industry	Permissibility of petroleum production under other policies
RU1 Primary Production	Prohibited.	<p>Agriculture – permissible with or without consent depending on the type of agriculture.</p> <p>Industry – rural industries permissible with consent.</p>	Permissible with consent under Mining SEPP.
RU3 Forestry	Prohibited.	Agriculture and industry – permissible without consent if subject to a permit under section 60 of the <i>Forestry Act 2012</i> .	Permissible with consent under Mining SEPP.
E1 National Parks and Nature Reserves	Permissible without consent only if authorised under the <i>National Parks and Wildlife Act 1974</i> . Section 47J of the <i>National Parks and Wildlife Act 1974</i> may authorise certain petroleum production activities in State conservation areas.	Agriculture and industry prohibited unless otherwise authorised under the <i>National Parks and Wildlife Act 1974</i> .	NA.

As outlined in Table 4-3, petroleum production is not permissible in the RU1 and RU3 zones. However, as discussed in Section 4.3.1, the provisions of the Mining SEPP permit petroleum production with consent on land on which agriculture is permitted.

Heritage

Clause 5.10 of the Narrabri LEP outlines the provisions that relate to Aboriginal and historic heritage within the Narrabri LGA. Clause 5.10(2) outlines the consent requirements for impact on heritage, including Aboriginal objects, Aboriginal places of heritage significance, and archaeological sites. Schedule 5 of the Narrabri LEP lists heritage items that are located within the Narrabri LGA.

The key potential Aboriginal heritage impact of the project would be damage or removal of items or places of cultural heritage significance (including sacred sites). A number of Aboriginal cultural heritage values were identified in the project area through a review of existing reporting and databases, supplemented with a pilot site verification of a subset of the identified sites (refer to Chapter 20). None of the identified values are currently listed in Schedule 5 of the Narrabri LEP.

Potential impacts on items or places of cultural heritage significance would be managed through the implementation of a cultural heritage management plan—with complete avoidance of all currently known sites and complete avoidance of the most sensitive site types. Potential impacts and mitigation and management measures with regard to Aboriginal heritage are discussed further in Chapter 20.

A total of 53 sites of potential historic heritage significance were identified in the project area through a review of existing reporting and databases, supplemented with a site visit (refer to Chapter 21). The identified sites include components of the Sydney University Giant Air-shower Recorder array and numerous timber extraction areas, sawmills, camps sites and access tracks associated with historic logging. None of the identified values are currently listed in Schedule 5 of the Narrabri LEP.

Potential impacts on items or places of historic heritage significance would be managed through the implementation of a historic heritage management plan—primarily by proportional avoidance such that these heritage features are preserved at a landscape scale. Potential impacts and mitigation and management measures with regard to historic heritage are discussed in Chapter 21.

Tree preservation

Clause 5.9 of the Narrabri LEP outlines the requirement to preserve trees and other vegetation. The clearance of vegetation forms part of the project and therefore approval for this clearance would be covered by the consent issued for this development.

Earthworks

Clause 6.1 of the Narrabri LEP states that development consent is required for earthworks. Clause 6.1(3) outlines the matters that must be considered by the consent authority prior to granting development consent. Table 4-4 outlines the relevance of each matter to the project.

Table 4-4 Clause 6.1(3) of Narrabri LEP matters for consideration

Matter for consideration	Relevance
The likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development	Potential impacts on hydrology and geomorphology may occur as a result of a number of activities including trenching through watercourses, construction of access tracks, and the managed release scheme to Bohena Creek. Potential impacts, mitigation and management measures regarding hydrology and geomorphology in the project area are assessed in Chapter 13.

Matter for consideration	Relevance
The effect of the development on the likely future use or redevelopment of the land	<p>The project would be located on predominantly agricultural and forestry land.</p> <p>Major facilities would be established at or near existing and disturbed sites, while the field would have a relatively small and diffuse footprint that would not generally preclude the continuation of agriculture or forestry. As such, impacts on forestry and agricultural land would be relatively minimal.</p> <p>Project infrastructure would ultimately be decommissioned and disturbed areas would be progressively rehabilitated consistent with pre-existing land use. As such, the project is not considered to adversely affect future uses or redevelopment of land.</p>
The quality of the fill or the soil to be excavated, or both	<p>A soil survey undertaken on cleared land within the project area identified a mix of soil types named Brigalow Grey Clays, Sandy Sodic Duplex soils, Acidic Sands, Recent Alluvium, Red-brown Clays and Red-brown Earths. Soil sampling confirmed that the surveyed soils were generally limited in their fertility and productive capacity. Accordingly, the project area was not found to contain BSAL. Potential impacts on soil are assessed in Chapter 14 and Appendix I1.</p> <p>Soil excavated and found to be contaminated will be managed in accordance with the contaminated land procedure developed for this project. If fill is required, it will be sourced from legal sources in the local area.</p>
The effect of the development on the existing and likely amenity of adjoining properties	<p>Key potential amenity impacts of the project include air quality (see Chapter 18), noise and vibration (see Chapter 19) and visual amenity (refer to Chapter 23).</p> <p>Air quality and noise and vibration were assessed in this EIS in Chapters 18 and 19 respectively.</p> <p>All reasonable and feasible measures would be implemented to ensure that project emissions would not exceed the relevant air quality criteria at occupied residences on private land.</p> <p>Project activities would be managed to ensure that noise would not exceed the relevant criteria at occupied sensitive receivers, unless a private negotiated agreement is in place.</p> <p>Visual amenity was assessed in Chapter 23 of this EIS with residual (post mitigated) risk found to be negligible to low for sensitive receivers.</p>
The source of any fill material and the destination of any excavated material	<p>It is not anticipated that it would be necessary to import significant volumes of fill material from outside the project area for the construction of major facilities. Gravel, sand, road base or other materials would be imported as required.</p> <p>It is proposed that drill cuttings would be re-used on well pads using a mix, turn, bury strategy in accordance with advice from the NSW Environment Protection Authority (refer to Appendix E). The application of drill cuttings at well pads would be carried out with regard to the volume and characteristics of the drill cuttings, the characteristics of the receiving soil, and the volume and nutrient requirements of growth media. A balance of these factors would be implemented to ensure successful rehabilitation. Drill cuttings not appropriate for beneficial reuse on well pads for rehabilitation purposes would be transported off site and disposed of at an appropriately licensed waste management facility.</p>

Matter for consideration	Relevance
The likelihood of disturbing relics	<p>The key potential Aboriginal heritage impact of the project would be damage or removal of items or places of cultural heritage significance (including sacred sites). A number of Aboriginal cultural heritage values were identified in the project area through a review of existing reporting and databases, supplemented with a pilot site verification of a subset of the identified sites (refer to Chapter 20). None of the identified values are currently listed in Schedule 5 of the Narrabri LEP.</p> <p>A total of 53 sites of potential historic heritage significance were identified in the project area through a review of existing reporting and databases, supplemented with a site visit (refer to Chapter 21). The identified sites include components of the Sydney University Giant Air-shower Recorder array and numerous timber extraction areas, sawmills, camp sites and access tracks associated with historic logging. None of the identified values are currently listed in Schedule 5 of the Narrabri LEP.</p> <p>Potential impacts on items or places of historic heritage significance would be managed through the implementation of a historic heritage management plan – primarily by proportional avoidance such that the cultural landscape is preserved. Potential impacts and mitigation and management measures with regard to historic heritage are discussed in Chapter 21.</p>
The proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area	<p>Potential impacts on groundwater and surface water resources are assessed in Chapter 11 and Chapter 12, respectively.</p> <p>Detailed watercourse mapping of the project area has been undertaken. Under the Field Development Protocol, riparian buffers have been applied based on stream size (Strahler order). All non-linear infrastructure, such as well pads, and ponds and dams will be excluded from these buffers.</p> <p>A surface development exclusion zone of 200 metres would be established around Yarrie Lake and its reserve area.</p> <p>Produced water would be treated and re-used through an irrigation scheme, for stock watering, as a dust suppressant, or discharged through a managed release scheme to Bohena Creek under certain flow conditions. The managed release and irrigation schemes have been assessed in detail (refer to Chapter 12, Appendix G1 and Appendix G2, respectively).</p> <p>Groundwater would be extracted from coal seams where groundwater quality is typically inferior compared to shallow aquifers. The groundwater impact assessment demonstrates that impacts to higher value shallow aquifers would be negligible.</p> <p>The project would not impact upon a drinking water catchment.</p> <p>The project is situated in an area of the Pilliga set aside for the purposes of forestry, recreational and mineral extraction under the <i>Brigalow and Nandewar Community Conservation Area Act 2005</i>. No areas reserved under the <i>National Parks and Wildlife Act 1974</i> would be impacted.</p>
Any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development	A summary of all mitigation measures to be implemented as part of the project is presented in Chapter 31.

Flood planning

Clause 6.2 of the Narrabri LEP outlines the requirements for developments located in flood planning areas. The project is not located in a flood planning area and therefore clause 6.2 of the Narrabri LEP does not apply.

4.4 Other NSW policy, legislation and approvals

4.4.1 The NSW Gas Plan

In response to recommendations made in the independent review of coal seam gas activities in NSW by the NSW Chief Scientist and Engineer (NSW Chief Scientist and Engineer 2013 and 2014), the NSW Government released the NSW Gas Plan (NSW Government 2014). In her review, the NSW Chief Scientist and Engineer, Mary O’Kane, found that ‘provided drilling is allowed only in areas where the geology and hydrogeology can be characterised adequately, and provided that appropriate engineering and scientific solutions are in place to manage the storage, transport, reuse or disposal of produced water and salts—the risks associated with CSG exploration and production can be managed’. The review also found that CSG extraction ‘is not significantly more likely to be damaging or dangerous than other extractive industries’ (NSW Chief Scientist and Engineer 2014).

The NSW Gas Plan accepts all recommendations made by the NSW Chief Scientist and Engineer. Under the Plan, the NSW Government pledged to:

- make better science and information available to decision-makers and the community
- take a more strategic approach to issuing petroleum exploration titles
- introduce strong and certain regulation with a lead regulator responsible for compliance and enforcement of conditions of approval for gas activities in NSW
- share the benefits of gas development with landholders and local communities
- secure gas supplies by exploring all supply options.

In the NSW Gas Plan, the NSW Government highlights the Narrabri Gas Project as a key existing Strategic Energy Project. As part of their policy review, the NSW Government has released updated and improved environmental guidelines which are applicable to the project and are referenced in this EIS (NSW Department of Industry, Skills and Regional Development 2015, 2015a, 2015b, 2015c).

4.4.2 The Dark Sky Planning Guideline

The *Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* (NSW Department of Planning and Environment 2016) recently came into effect. The Guideline informs development controls that apply to land within the local government areas of Coonamble, Dubbo, Gilgandra and Warrumbungle and the assessment of State significant development within 200 kilometres of the observatory. It supports the design and operation of development in the region and provides key information to ensure that lighting used in development does not impact on the effectiveness of the observatory. The Guideline has been considered in the visual impact assessment (refer to Chapter 23).

4.4.3 Guidelines for developments adjoining land managed by the Office of Environment and Heritage

The *Guidelines for developments adjoining land managed by the Office of Environment and Heritage* (Office of Environment & Heritage 2013c) guides consent authorities when assessing development applications that adjoin land managed by the Office of Environment and Heritage. The guidelines prescribe issues to be considered by consent authorities, including:

- erosion and sediment control
- stormwater runoff
- wastewater
- pests, weeds and edge effects
- fire and asset protection zones
- boundary encroachments and access
- visual, odour, noise, vibration air quality and amenity
- ecological connectivity
- groundwater-dependent ecosystems
- cultural heritage.

Land managed by the Office of Environment and Heritage within adjoining or near the project area includes the Brigalow State Conservation Area, Brigalow Nature Reserve and Pilliga East State Conservation Area. There will be no direct disturbance on land managed by the Office of Environment and Heritage, while indirect impacts would be avoided, mitigated and managed.

Brigalow Park Nature Reserve has been excluded from the project area and no project activities will occur in this area. The Pilliga State Conservation area is outside the project area and no project activities will occur in this area. The Brigalow State Conservation Area is a designated surface development exclusion zone (including a buffer of at least 50 metres), with no surface infrastructure to be located within this area.

Erosion and sedimentation would be managed through the implementation of erosion and sediment controls and rehabilitation of impacted areas. Given there will be no direct disturbance on land managed by the Office of Environment and Heritage, erosion or movement of sediment onto the land is not expected.

Stormwater runoff regimes are also not expected to be affected given there will be no direct disturbance. Impacts to surface water quality are not expected as they would be avoided through the implementation of erosion and sediment controls and measures to prevent spills or leaks as discussed in Chapter 25 (Hazard and risk).

Wastewater would be managed as described in Chapter 7 (Produced water management) and Chapter 28 (Waste management), including onsite treatment. As such, wastewater generated by the project is not expected to affect land managed by the Office of Environment and Heritage.

Pests and weeds would be managed in accordance with a Pest, Plant and Animal Control Plan as discussed in Chapter 15 (Terrestrial ecology). No pest and weed impacts associated with the project are expected on land managed by the Office of Environment and Heritage.

Bushfire risks associated with the project have been assessed in Appendix S and summarised in Chapter 25 (Hazard and risk). The assessment found that the likelihood of the project starting a bushfire would be remote.

A Bushfire Management Plan would be prepared in conjunction with landholders and the NSW rural Fire Service to control risks. The Plan would include asset protection zones around project components, which would be contained to the project area. The implementation of the Bushfire Management Plan including the establishment of asset protection zoned would not affect fire management regimes on land managed by the Office of Environment and Heritage. The Plan is discussed further in Appendix S and Chapter 25 (Hazard and risk).

The project would not impact the visual amenity of land managed by the Office of Environment and Heritage, however there is potential for elements of the gas field to be visible from this land.

Field development also has the potential to generate air quality or noise impacts that may occur at land managed by the Office of the Environment and Heritage. During construction, these impacts would generally be intermittent and short term. Air quality during operation is not predicted to exceed the relevant air quality criteria, however noise impacts have the potential to persist. Noise levels are predicted to meet the relevant noise criteria at around 218 metres from a well pad under worst case conditions, as discussed in Chapter 18. As such, there is potential for noise above the relevant criteria to occur on some land managed by the Office of Environment and Heritage, providing a well pad is situated sufficient close to the boundary of the land through implementation of the Field Development Protocol (refer to Appendix C).

Given the separation of surface works, the project will not involve clearing on land managed by the Office of Environment and Heritage. Clearing across the project area is not considered to be at a scale likely to result in isolation or fragmentation of ecological populations, and would be progressively rehabilitated over the life of the project as discussed in Chapter 15 (Terrestrial ecology).

Potential impacts of the project on groundwater dependent ecosystems, including those on land managed by the Office of Environment and Heritage, were assessed to be minor and low risk. Potential groundwater impacts are discussed in detail in Chapter 11 (Groundwater and geology).

Potential impacts to cultural and historic heritage are discussed in Chapter 20 (Aboriginal heritage) and Chapter 21 (Historic heritage) respectively. Given there will be no surface disturbance on land managed by the Office of Environment and Heritage, impacts to Aboriginal heritage would not occur.

4.4.4 Approvals that do not apply

Section 89J of the EP&A Act specifies certain authorisations which are not required for State significant development that is authorised by development consent. These include the following authorisations, which may otherwise have been relevant to the project:

- Permit for work or structures within a waterway under the *Fisheries Management Act 1994* – the project has the potential to require works within water courses, and permits for dredging or reclamation (under section 201 of this Act), and for blocking fish passage (under section 219) would have otherwise been required.
- Approval to disturb a State heritage-listed item or an excavation permit to impact on a relic under the *Heritage Act 1977* - there is potential for direct and indirect impacts on relics occurring in the project area, and excavation permits under section 139 would have otherwise been required.
- Aboriginal heritage impact permit under the *National Parks and Wildlife Act 1974* –there is potential for direct and indirect impacts on items of Aboriginal cultural heritage, and an Aboriginal heritage impact permit may have been required under section 90 of this Act.
- Consent to clearing native vegetation under the *Native Vegetation Act 2003* –the project would involve clearing native vegetation. While native vegetation clearing within the Pilliga State Forest is excluded from the operation of the *Native Vegetation Act 2003*, authorisation for native vegetation clearing outside of the State Forest under section 12 of this Act may have otherwise been required.

- Bushfire safety authority under the *Rural Fires Act 1997* – the project includes the expansion of the workers' accommodation at Westport, which is located on bushfire prone land. A bushfire safety authority under section 100B of the *Rural Fires Act 1997* would have otherwise been required in accordance with clause 46 of the *Rural Fires Regulation 2013*.
- Water use approval, water management work approval or activity approval (other than an aquifer interference approval) under the *Water Management Act 2000* – the project would require works within 40 metres of watercourses and a controlled activity approval under section 91 of this Act would have otherwise been required. In addition, the extraction of water would have otherwise required a water use approval under section 89 of this Act.

The above authorisations would not be required if the Minister for Planning grants development consent to carry out the project under Division 4.1 of Part 4 of the EP&A Act.

Subsection 89J(3) states that a reference in section 89J to approved State significant development includes a reference to investigative or other activities that are required to be carried out for the purpose of complying with the environmental assessment requirements in connection with an application for approval to carry out the State significant development. Should the investigations required to comply with environmental assessment requirements involve activities that may trigger the need for the approvals discussed above, these approvals would not be required.

4.4.5 Legislation to be applied consistently

Under section 89K of the EP&A Act, the following authorisations cannot be refused if necessary for the carrying out of State significant development that is authorised by development consent and are to be substantially consistent with the consent:

- *Petroleum (Onshore) Act 1991* – a petroleum production lease (PPL) under Division 5 of Part 3
- *Protection of the Environment Operations Act 1997* – an environment protection licence under Chapter 3
- *Roads Act 1993* – a permit under section 138 to impact on public roads
- *Pipelines Act 1967* – a licence under section 11 to construct and/or operate a pipeline.

It is noted that a decision regarding a petroleum title (including a PPL) is also subject to the applicant being a 'fit and proper person' under Section 24A of the *Petroleum (Onshore) Act 1991*, even if the title is necessary for the carrying out of State significant development.

The authorisations under these acts are discussed further below.

Petroleum (Onshore) Act 1991

The *Petroleum (Onshore) Act 1991* regulates the onshore exploration for and production of petroleum.

Part 3, Division 1 of the Act outlines the requirements for making applications for petroleum titles.

Part 3, Division 5, section 41 of the Act states that:

'The holder of a production lease has the exclusive right to conduct petroleum mining operations in and on the land included in the lease together with the right to construct and maintain on the land such works, buildings, plant, waterways, roads, pipelines, dams, reservoirs, tanks, pumping stations, tramways, railways, telephone lines, electric power lines and other structures and equipment as are necessary for the full enjoyment of the lease or to fulfil the lessee's obligations under it'.

The project would be undertaken in accordance with the requirements or conditions of applicable PPLs. Four PPLs within the project area have been applied for including the conversion of all of petroleum assessment lease (PAL) 2 to a PPL and the creation of three other PPLs to the north, east and south of what is currently PAL 2. These PPLs would each be less than four graticular blocks, which is the maximum allowable area for a PPL under section 44 of the Act.

The conditions of the future PPLs are likely to require activities to be undertaken in accordance with an approved Petroleum Production Operations Plan. This plan would be developed to guide the operation of the project and would be submitted to the NSW Department of Industry, Division of Resources and Energy and other agencies, as required.

Approval would also be required under section 70 of the *Petroleum (Onshore) Act 1991* for those operations within the State forest.

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* establishes, amongst other things, the procedures for issuing licences for environmental protection on aspects such as waste, air, water and noise pollution control. The occupier of premises at which 'scheduled activities' are carried out is required to hold an environment protection licence and comply with the conditions of that licence.

Under section 48 of the Act, all scheduled activities are required to hold an environment protection licence. 'Petroleum exploration, assessment and production' is a scheduled activity listed in Schedule 1 of the Act. The proponent currently holds an environmental protection licence for its petroleum exploration, appraisal and production activities in the Narrabri area.

The environment protection licence will likely cover a range of issues, including air and noise emissions, groundwater monitoring, and discharges to surface waters, as well as the ongoing monitoring and reporting of activities. The existing environment protection licence may be amended to include the proposed activities.

The Narrabri Gas Project proposes managed release of treated water to Bohena Creek under flow conditions equal to or greater than 100 megalitres per day as measured at the Newell Highway gauging station. A comprehensive environmental assessment of the proposed managed release has been undertaken, including ecological risk assessment, direct toxicity assessment, aquatic ecology impact assessment and mixing zone analysis (see Appendix G1).

Prior to managed release to Bohena Creek occurring, the project proponent would seek inclusion of a licence condition, consistent with the NSW EPA Licensing Fact Sheet: *Using Environment Protection Licensing to Control Water Pollution*.

Pipelines Act 1967

Section 11 of the *Pipelines Act 1967* outlines licensing requirements for pipelines. Under section 11, a licence is required to:

- commence, or continue, the construction of a pipeline
- alter or reconstruct a pipeline
- operate a pipeline.

However, as noted in section 5 of the Act, a licence is not required for the following pipelines:

(f) a pipeline constructed or to be constructed:

- (i) for returning petroleum to a natural reservoir,
- (ii) for conveying petroleum for use for the purposes of petroleum exploration operations or operations for the recovery of petroleum,
- (iii) for conveying petroleum that is to be flared or vented,

(g) a pipeline, or a pipeline belonging to a class, for the time being declared by a notification under subsection (2) or by such a notification, as varied by a notification under subsection (9), to be a gathering line.

The buried gas gathering system and the Bibblewindi to Leewood underground gas pipeline is part of a system for conveying petroleum as part of operations to recover petroleum and do not require a licence under the *Pipelines Act 1967*.

However, the gas transmission pipeline, which will be subject to a separate approvals process and does not form part of the project for the purposes of this State significant development application, does require a licence under the *Pipelines Act 1967*.

Roads Act 1993

The *Roads Act 1993* provides the statutory framework for the management of public roads within NSW. The Act is administered by:

- NSW Roads and Maritime Services (RMS), which has jurisdiction over major roads
- Councils, which have jurisdiction over minor roads
- NSW Department of Lands, which has jurisdiction over Crown road reserves or Crown roads.

Section 138 of the *Roads Act 1993* requires that a person obtain the consent of the appropriate roads authority for the erection of a structure, or the carrying out of a work in, on or over a public road, or the digging up or disturbance of the surface of a public road.

Construction of the project may require works within public roads. Such works would require consent of the appropriate roads authority under section 138 of the Act.

4.5 Other approvals required

4.5.1 Water Management Act 2000

The *Water Management Act 2000* is intended to provide for the sustainable and integrated management of water sources for the benefit of both present and future generations. It also establishes a formal means for the protection and enhancement of the environmental qualities of watercourses and their catchments.

The Act applies to areas of NSW that have a water sharing plan. Water sharing plans relevant to the project include:

- Namoi Unregulated and Alluvial
- NSW Upper and Lower Namoi Groundwater Source
- NSW Great Artesian Basin Groundwater Sources
- NSW Murray Darling Basin Porous Rock Groundwater
- NSW Murray Darling Basin Fractured Rock Groundwater Sources.

In accordance with section 91F of the *Water Management Act 2000*, an aquifer interference approval is required for an aquifer interference activity.

An aquifer interference activity means an activity involving one of the following:

- (a) the penetration of an aquifer,
- (b) the interference with water in an aquifer,
- (c) the obstruction of the flow of water in an aquifer,
- (d) the taking of water from an aquifer in the course of carrying out mining, or any other activity prescribed by the regulations,
- (e) the disposal of water taken from an aquifer as referred to in paragraph (d).

The project would encounter groundwater and would therefore penetrate an aquifer. The NSW Government maintains its *Aquifer Interference Policy* (NSW Government 2012a) that defines minimal impact considerations necessary before obtaining licenses for aquifer interference activities under the *Water Management Act 2000*. The project was assessed against the policy as part of the groundwater impact assessment (refer to Chapter 11).

Section 88A of the *Water Management Act 2000* provides that section 91F applies to each part of the State or each water source and each type or kind of approval that relates to that part of the State or that water source that is declared by proclamation.

At the time of writing, no proclamation had been made declaring that Part 3 of Chapter 3 of the *Water Management Act 2000* applies in relation to aquifer interference approvals. Accordingly, an aquifer interference approval under Section 91F of the *Water Management Act* would not be required for the proposed development.

Although an approval Section 91F of the *Water Management Act* is not required, the provisions of the *Aquifer Interference Policy* (NSW Government 2012a) have been addressed through the impact assessment undertaken for the project (refer to Chapter 11).

Under Part 2 of Chapter 3 of the *Water Management Act 2000*, it is an offence to take water from a source regulated by the Act unless in accordance with a water access licence. The proponent would obtain the necessary water access licences for water taken as part of the project, consistent with other users of groundwater.

4.5.2 Forestry Act 2012

The *Forestry Act 2012* provides for the dedication, management and use of State forests and other Crown timber land for forestry and other purposes. Under the act, the land manager of a forestry area may issue an occupation permit that authorises non-forestry use.

Santos holds an occupation permit enabling land use for access and activities associated with petroleum titles, issued under the now repealed *Forestry Act 1916*. In accordance with this permit, Santos may use the area subject to the permit (defined in Schedule 1 of the permit) for activities it is authorised to carry out under the *Petroleum (Onshore) Act 1991*, including access through the permit area. The existing permit would be revised as needed to accommodate the project.

4.5.3 Radiation Control Act 1990

The *Radiation Control Act 1990* provides for the regulation and control of radioactive substances, radioactive sources and radiation apparatus. Caesium-137 (also referred to as CS-137) is present in density measuring devices that are used to monitor and measure various activities during the drilling, well logging and well completion processes. In NSW, the use of CS-137 is governed by the *Radiation Control Act 1990* (as amended) and the *Radiation Control Regulation 2013* with regulation from the NSW EPA.

4.5.4 Crown Lands Act 1989

The *Crown Lands Act 1989* provides for the administration of Crown land. Crown land means land that is vested in the Crown or was acquired under the *Closer Settlement Acts* and has not been dedicated for a public purpose, sold or lawfully contracted to be sold. The project area contains a number of areas of crown land including certain parcels, waterways and roads (NSW Department of Industry 2017). Licences or easements under the *Crown Lands Act 1989* may be required for project activities on Crown land.