

17.1 Introduction

This chapter describes the land use patterns present in the areas surrounding the proposed EnergyAustralia Gas Turbine Facility and assesses the expected impacts of the construction and operation of the proposal on adjoining land uses. One of the main focuses of this section of the Environmental Assessment is to discuss the land use implications of the project.

17.2 Existing Land Use

17.2.1 Development Site

The proposed EnergyAustralia Facility located on the Marulan Site is within the Upper Lachlan Shire Local Government Area (LGA). The Facility will form part of a development which includes the proposed Delta Electricity Facility also on the Marulan Site.

The Site is subject to the provisions of the *Mulwaree Local Environmental Plan (MLEP) 1995*. Under MLEP 1995 the Site is zoned 1(a) General Rural and the proposed development is permissible subject to the granting of consent by the relevant consent authority.

17.2.2 Surrounding Areas

The majority of the land immediately adjacent to the Marulan Site is zoned 1(a) General Rural.

Marulan is historically a rural farming area. In recent years the area has experienced increasing levels of rural residential development and other commercial operations such as quarrying operations (the ReadyMix Holdings Pty Limited quarry, located approximately 12 km south west of the Site). The topography varies from flat valley areas which have typically been cleared for grazing to steeper ridges where vegetation has been retained. A 330 kV and 66 kV transmission line corridor, with lattice towers and transmission lines runs approximately parallel to the Canyonleigh Road corridor.

The land immediately surrounding the Site is predominantly rural in nature. Land has been historically cleared for pasture, although trees have been retained along a number of the drainage lines in the surrounding landscape that flow to the Wollondilly River, and on a number of surrounding hilltops and ridgelines. Trees have also been retained on the embankments alongside the Wollondilly River.

The existing landscape surrounding the Marulan Site contains a number of constructed elements including:

- a 330 kV and 66 kV transmission line corridor, with lattice towers and transmission lines running approximately parallel to the Canyonleigh Road corridor;
- TransGrid Switchyard;
- local sealed and unsealed roads; and
- residential dwellings and agricultural structures.

A small number of residences are located in the rural landscape around the Site.

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17.2.3 Potential Future Land Use Conflicts

Residential Development

The potential for future residential development on land surrounding the Marulan Site is restricted as a 40 hectare minimum allotment size restriction applies to proposed residential development. A six lot subdivision was approved by Goulburn Mulwaree Council on 6 July 2007. This subdivision affects Lots 240, 176, 172 and 191, DP 750053. The affected Lots are located to the south-east of the Marulan Site,

Draft Goulburn Mulwaree Local Environmental Plan 2007

It is expected that at some point in the future the MLEP 1995 will be repealed by the *Goulburn Mulwaree Local Environmental Plan 2007* (GMLEP 2007), which is currently in draft form but is expected to be gazetted by mid to late 2008. The Site does not fall within the new Goulburn Mulwaree Council boundaries. Of the proposed development, only the gas pipeline corridor falls within the new Goulburn Mulwaree Council boundaries and, therefore, it is the only component of the development that is potentially affected by the GMLEP 2007. Under the GMLEP 2007 the area south of the Site is zoned RU2 Rural Landscape.

The objectives of the RU2 Rural Landscape zone in the GMLEP 2007 will be:

- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.
- To protect, manage and restore areas with high conservation, scientific, cultural or aesthetic values.
- To protect and enhance the water quality of receiving watercourses and groundwater systems and reduce their degradation.
- To preserve environmentally sensitive land, including catchment areas, and prevent development likely to result in environmental harm.
- To minimise the potential for conflict between adjoining land uses.

It is likely that applications for subdivision in the area surrounding the Marulan Site will become less common in the future. The Draft GMLEP 2007 increases the minimum lot size for sub-divisions from 40 ha to 100 ha for land zoned RU2 Rural Landscape, with the view to maintaining the rural character of the area. Although the Local Environmental Plan for the Upper Lachlan Shire LGA is not yet available for public viewing, Upper Lachlan Shire Council has indicated that lot sizes within the area surrounding the Marulan Site will be increased to a minimum of 100 ha, to be consistent with the GMLEP 2007.

Neither Goulburn Mulwaree Council nor Upper Lachlan Shire Council is aware of any re-zoning applications lodged for the areas surrounding the Marulan Site.

Goulburn Mulwaree Strategy 2020

The Goulburn Mulwaree Strategy 2020 sets out the visions of the community and other stakeholders for the different regions within the Goulburn Mulwaree LGA. In general, the vision is to encourage growth across the LGA but to maintain and promote the inherent characteristics of the rural landscape. There is no evidence to suggest that Goulburn Mulwaree Council or Upper Lachlan Shire Council or any State authorities have plans to change land use in the areas surrounding the Marulan Site.

Draft Sydney-Canberra Corridor Regional Strategy 2007-31

The Draft Sydney-Canberra Corridor Regional Strategy 2007-31 (NSW Government, September 2007) applies to local government areas including the Goulburn Mulwaree and Upper Lachlan. The Strategy sets the goals for the Sydney-Canberra Corridor as ensuring that the demand for urban growth is directed to major regional centres such as Queanbeyan, Goulburn and Bowral and, through this, enabling growth to occur within the smaller settlements without losing their character as rural settlements. One of the housing challenges listed in the Strategy is to support and reinforce the role of Goulburn as a major regional centre by consolidating housing in this area.

The Strategy also outlines sustainability criteria against which local council and the State Government can assess development proposals

17.3 Assessment of Impacts – Potential Existing and Future Land Use Conflicts – EnergyAustralia Facility

The assessment of potential existing and future land use conflicts was conducted for both Facilities; therefore the assessment for Cumulative Impacts also addresses the EnergyAustralia Facility impacts described in **Section 17.4** and **Section 17.5**.

17.4 Assessment of Impacts – Potential Existing Land Use Conflicts – Cumulative Impacts

17.4.1 Construction

The main potential for environmental impacts of construction activities on surrounding existing land uses include:

- air quality;
- soil erosion;
- traffic flow effects; and
- noise impacts.

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The potential impacts of the construction phase of the Common Shared Works on surrounding land uses are discussed in relevant chapters of the Environmental Assessment, including **Chapter 7** (Air Quality), **Chapter 8** (Noise), **Chapter 9** (Soils and Geology), **Chapter 10** (Traffic), **Chapter 11** (Flora and Fauna), **Chapter 12** (Heritage) and **Chapter 16** (Bush Fire). The potential effects of the proposed construction activities on surrounding land uses are briefly summarised below.

Air Quality

A range of dust suppression measures and soil and erosion controls would be implemented during the construction phase of the proposed Common Shared Works. These controls would be incorporated in a construction Soil and Water Management Plan to be developed as part of a Construction Environmental Management Plan (CEMP).

Soils and Geology

The Soil and Water Management Plan would include procedures and controls to ensure that water runoff from construction activities is minimised, contained and disposed of appropriately (if required), and to prevent chemical spillages from construction equipment from entering water channels. Appropriate measures would be used to control dust generated during construction activities.

Traffic and Transport

As a result of the proposed traffic impacts and existing road constraints the following mitigation measures will be required to mitigate these impacts the upgrades will include the following:

- further assessments to:
 - review what works may be required to bridges, causeways, traffic islands, intersections and drainage culverts along Canyonleigh and Brayton Roads to facilitate the construction and operation of the Facilities;
 - identify and cater for any necessary remedial treatments to facilitate passage to the Site along Canyonleigh and Brayton Roads once the actual weight and dimensions of the proposed plant are known; and
 - be undertaken in consultation with Goulburn Mulwaree and Upper Lachlan Shire Councils.
- pre construction evaluation of pavement condition of Brayton Road (between George Street intersection and Canyonleigh Road intersection) to be undertaken;
- post construction evaluation of pavement condition of Brayton Road (between George Street intersection and Canyonleigh Road intersection) to be undertaken to determine remedial action required following passage of oversized vehicles; and
- transport of over-mass and over- dimensional loads to be undertaken under RTA and NSW Police permit conditions and approved routes.

Noise

A preliminary assessment of noise during the construction phase shows general compliance with the construction noise criteria. These levels would be confirmed once the construction contractor is appointed and the final composition of the construction fleet is confirmed. A Construction Noise Management Plan would be developed to ensure that appropriate noise levels are met.

17.4.2 Operation

The main potential for environmental impacts associated with the operation of the proposed Facilities on surrounding land uses include:

- air quality;
- noise impacts;
- visual impacts;
- traffic flow effects;
- hazard; and
- bush fire risk.

The potential impacts of the operational phase of the proposed Facilities on surrounding land uses are discussed in relevant chapters of the EA, including **Chapter 7** (Air Quality), **Chapter 8** (Noise), **Chapter 10** (Traffic), **Chapter 11** (Flora and Fauna), **Chapter 13** (Visual), **Chapter 14** (Water) and **Chapter 15** (Preliminary Hazard Analysis).

Air Quality

The air dispersion modelling assessment for the combined Facilities concluded that all emissions were below NSW DECC regulatory criteria. No additional mitigation measures are considered necessary.

Noise

An assessment of the noise likely to be generated by the Facilities during the operational stages shows that there are likely to be exceedances of the noise criteria at a number of residential receivers.

Notwithstanding the feasible and reasonable noise control measures considered for both Facilities and included in the proposal, the assessment of operational noise concluded that two neighbouring residential dwellings are predicted to have noise levels that exceed the relevant noise criteria. One neighbouring residential dwelling is predicted to have a marginal exceedance. EnergyAustralia and Delta Electricity have entered into negotiations with these residences to address the noise impacts. One neighbouring residential dwelling is predicted to have a minor exceedance of 1 dB.

Noise impacts due to extra traffic for the Marulan Site along Canyonleigh Road (both during construction and operation) were found to be negligible.

No vibration impacts are envisaged to occur at the residential receivers.

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Visual

The assessment of visual amenity concluded that the majority of potential view locations assessed were determined to have nil or low visibility. One view location was determined to have a medium visibility rating. Two view locations were determined to have a high visibility rating.

The visual impact assessment concluded that both Facilities would have an overall Medium visual impact on people living in, or travelling through, the local area, although the potential visual impact would be generally Low for the majority of people, including residential view locations, in areas surrounding the Facilities.

A number of mitigation measures such as vegetation screening, choice of colour and lighting selection are proposed to reduce impacts further.

Traffic

It is anticipated that the road upgrade works undertaken during the Common Shared Works would address the issues arising out of the construction of the Facilities.

Hazard

Despite the fact that many of the assumptions in the PHA are highly conservative, the results show that the risk associated with this development is very low. The most stringent risk criteria, as required by the Department of Planning, are adhered to.

Bush Fire Risk

A Bush Fire Management Plan would be prepared, which could include measures such as management and maintenance of APZs, landscaping and vegetation management water supply, access and other bush fire protection measures for the Site.

17.4.3 Potential Existing Land Use Conflicts

The existing value of land surrounding the Marulan Site is based on its current use, which as shown is currently zoned as 1(a) General Rural.

Neither Goulburn Mulwaree Council nor Upper Lachlan Shire Council is aware of any re-zoning applications lodged for the areas surrounding the Marulan Site.

The impacts of the Facility are proposed to be managed through the mitigation measures summarised above. Where the impacts cannot be sufficiently mitigated, as is the case with the noise impacts, EnergyAustralia and Delta Electricity have entered into negotiations with the affected residences to negotiate agreements or in, the most extreme cases, acquire residential dwellings.

17.4.4 Implications for Future Land Value

The existing value of land surrounding the Marulan Site is based on its current use, which is 1(a) General Rural.

It is considered that other impacts of the Facilities are proposed to be mitigated such that there is no further impact on future land value.

17.5 Assessment of Impacts – Potential Future Land Use Conflicts – Cumulative

17.5.1 Potential Future Land Use Conflicts

It is likely that applications for subdivision in the area surrounding the Marulan Site will become less common in the future. The Draft GMLEP 2007 increases the minimum lot size for sub-divisions from 40 ha to 100 ha for land zoned RU2 Rural Landscape, with the view to maintaining the rural character of the area. Although the Local Environmental Plan for the Upper Lachlan Shire LGA is not yet available for public viewing, Upper Lachlan Shire Council has indicated that lot sizes within the area surrounding the Marulan Site will be increased to a minimum of 100ha, to be consistent with the GMLEP 2007.

Neither Goulburn Mulwaree Council nor Upper Lachlan Shire Council is aware of any re-zoning applications lodged for the areas surrounding the Marulan Site.

It is not anticipated that the Facilities would preclude or hinder the urban growth in the regional centres (Queanbeyan, Goulburn or Bowral) described in the draft Sydney Canberra Corridor Strategy. The development of the Facilities may assist in encouraging growth in the Goulburn and Marulan areas through direct and indirect employment (see **Chapter 18** for more detail) and through supply of housing for the workforce.

Table 17-1 addresses the Project response to the Sustainability Criteria outlined in the Sydney Canberra Corridor Strategy.

Table 17-1 Project Response to Draft Sydney Canberra Corridor Strategy Sustainability Criteria

Draft Sydney Canberra Corridor Strategy Sustainability Criteria	Project Response
1. Infrastructure Provision	
Mechanisms in place to ensure utilities, transport, open space and communication are provided in a timely and efficient way.	Project provides power generation infrastructure to meet the forecasted State demand.
2. Access	
Accessible transport options for efficient and sustainable travel between homes, jobs, services and recreation to be existing or provided.	The traffic assessment for the Project has recommended further investigation of remedial measures to be undertaken to ensure no net negative impact on performance of the existing subregional road network.
3. Housing Diversity	
Provide a range of housing choices to ensure a broad population can be housed.	Not applicable
4. Employment Lands	
Provide regional/local employment opportunities to support the Sydney– Canberra Corridor's expanding role in the wider regional and NSW economies.	Regional / local employment opportunities to be provided where practicable. Project may positively influence indirect employment opportunities particularly during construction phase.

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Draft Sydney Canberra Corridor Strategy Sustainability Criteria	Project Response
5. Avoidance of Risk	
Land use conflicts, and risk to human health and life, avoided.	Potential land use conflicts for the facilities would be addressed through the implementation of mitigation measures. EnergyAustralia and Delta Electricity have entered into negotiations with the noise affected residences. The results of the PHA show that the risk associated with this development is very low.
6. Natural Resources	
Natural resource limits not exceeded/ environmental footprint minimised.	Open cycle gas turbines (EnergyAustralia and Delta Electricity Stage 1) have a similar thermal efficiency to coal fired power stations but with lower greenhouse gas emissions per unit of energy generated. Combined cycle gas turbine units (Delta Electricity Stage 2) have the advantage of offering greater thermal efficiencies than open cycle gas turbine power stations and coal-fired power stations. Recycling of water has been incorporated into the Project to reduce the raw water requirements. Wastewater would be managed on site to maintain zero discharge from the site. The Marulan site was determined to be the preferred site due to access and proximity to existing infrastructure such as the TransGrid substation and Moomba Sydney pipeline.
7. Environmental Protection	
Protect and enhance biodiversity, air quality, heritage and waterway health.	The development would require the clearing of approximately 22 ha of Tableland Grass Hills Woodland. Mitigation of impacts have been proposed and an offset strategy proposed. Recycling of water has been incorporated into the Project to reduce the raw water requirements. Wastewater would be managed on site to maintain zero discharge from the site. Disturbance to Aboriginal archaeological material would be avoided if possible. A Cultural Heritage Management Plan would also be prepared. The air dispersion modelling assessment for the combined Facilities concluded that all emissions were below NSW DECC regulatory criteria
8. Quality and Equity in Services	
Quality health, education, legal, recreational, cultural and community development and other government services are accessible.	The proposed Delta Electricity and EnergyAustralia Facilities are expected to have positive economic and social impacts during both construction and operation phases. Given the relatively small construction workforce and the focus of organisation on workforce health and safety it is not anticipated that the construction phase of the project will have a significant impact on the health services of the region.

17.5.2 Implications for Future Land Value

The existing value of land surrounding the Marulan Site is based on its current use, which as shown is currently zoned as 1(a) General Rural. The zoning of the surrounding area that falls within the Goulburn Mulwaree LGA is expected to change to RU2 Rural Landscape. Future zoning for surrounding land that falls within the Upper Lachlan Shire Council LGA is unknown, as the draft Local Environment Plan has not yet been made available to the public. However, given Goulburn Mulwaree Council's move towards promoting the rural characteristics of the landscape, it is unlikely the any of the land surrounding the Marulan Site will be zoned Residential in the future. There is little potential, therefore, for the land to be developed for housing purposes.

The likely impacts to land values are forecasted to be limited on the basis of existing planning and zoning restrictions.

17.6 Mitigation Measures

The proposal would result in changes to the land use of the Site itself as the site is currently used primarily for grazing. However, the Site is located in an area that is zoned rural and development for the purposes of 'generating works' is permissible with development consent. Mitigation measures detailed in this Environmental Assessment relating to the control of noise levels, air and water quality, traffic and transportation, visual amenity and other environmental matters, as detailed in **Chapter 7** through **Chapter 18**, would be implemented to ensure that the proposal is managed in an effective and efficient manner, with minimal impact on existing surrounding land uses.

