

# Chapter 3 Project

## **Project Alternatives**

#### Water infrastructure

Lake Hume and the Murray River are both located relatively close to the target area. Lake Hume is approximately 10 km, and the Murray River is only 5 km away.

As for Wagga Wagga, a reasonably mature water trading and allocation market exists for securing water in the quantities required.

#### NEM regions and constraints

It is expected that there would be scenarios under which the development would be unable to export at full capacity as a result of network constraints.

Furthermore, whilst the Albury area is currently in the NSW region this may change as a result of foreshadowed changes to NEM regional boundaries in the future. It is some distance from the key demand area of NSW.

#### Land and availability

The Albury Development Corporation and Norske Skog (the owner of the paper mill) own the main target land packages.

#### Permitting and regulatory

The area of interest falls within Albury City LGA. The land is zoned as an 'employment area'. This zoning places no specific restrictions on land use. All proposals are considered on their merits.

No known residents are located within 1 km of the area of interest; however there is a paper mill and foundry nearby.

#### Competing developments

The AEMO Statement of Opportunities notes a publicly announced generation proposal in the Wagga Wagga area from Wambo Power Ventures (WPV). The proposed development is in the Uranquinty area south west of Wagga Wagga. This development could impose additional constraints on a development in this area.

Whilst no other specific developments are committed, it is understood that the Snowy Mountains Hydro Electric Scheme is considering re-powering and developing additional hydro capacity. This could have a material impact on the ability of a development located in this area to export power. Additionally, development in this area is vulnerable to further development of electrical interconnectors and is reliant on ongoing development of the local transmission network and local load to secure its ability to export.



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#### Preliminary Environmental Assessment

No other environmental issues have been identified that differ significantly from alternate sites.

### 3.4.8 Central Coast

The Central Coast was identified as a region to be assessed as the area has gas infrastructure and good electrical infrastructure. It was also important for AGL to understand the implications of locating a power station in this location as the NSW state owned generators have peaking power developments in this area.

#### General

The following sites have received development consent to develop a power station in the locations indicated:

- Munmorah: Delta Electricity's Munmorah power station is located 160 km north of Sydney.
- Tomago: Located just north of Newcastle, the area is within an existing industrial estate.

Refer to Figure 3-7 for the areas under consideration.

#### Performance

The effects of the local climate and altitude of the Central Coast locality on the performance of the turbines are listed in **Table 3-7**.

#### Table 3-7 Turbine Performance for Central Coast Locality

Feature	Value	Relative De-rating (%)
Altitude	20 m	+0.90
Mean daily maximum	27.4 °C	+1.80
Total de-rating (%) <sup>1</sup>		+2.70

<sup>1</sup> Note: compared to notional reference site

#### Gas infrastructure

The Central Coast / Newcastle area is serviced by the Newcastle to Sydney pipeline and is at the end of the gas network. The gas network in the region would require supplementary compression.

There is no competitive tension with other gas or pipeline operators from any committed or built pipeline.





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#### Electricity infrastructure

There are 330 kV transmission lines in the Central Coast region.

#### Water infrastructure

Water sources are available.

#### NEM regions and constraints

The connection of additional generation in the region according to TransGrid reports is limited to 300 MW until the network is upgraded.

#### Land and availability

The target land packages are owned either by Macquarie Generation (Tomago) or Delta Electricity (Munmorah Power Station). It is unlikely land would be made available to AGL.

#### Permitting and regulatory

Both sites already have the required planning approvals.

#### Competing developments

Other proposed developments in NSW are unlikely to constrain or otherwise impact a development in either location.

#### Preliminary Environmental Assessment

No environmental issues have been identified that differ significantly from alternate sites in EIS's prepared by the proponents.

### 3.4.9 Lithgow

NSW State and Regional Development identified Lithgow for assessment as both gas and electrical infrastructure is located there.

#### General

Lithgow is located approximately 152 km south-west of Sydney. The area is semi-rural with significant local coal fired power generation. Refer to **Figure 3-8** for the general area under consideration. The area was considered due to its proximity to gas and electricity infrastructure.



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#### Performance

The effects of the local climate and altitude of Lithgow on the performance of the turbines are listed in **Table 3-8**.

#### Table 3-8 Turbine Performance for Lithgow Locality

Feature	Value	Relative De-rating (%)
Altitude	900 m	-9.70
Mean daily maximum	25.4 °C	+3.20
Total de-rating (%) <sup>1</sup>		-6.50

<sup>1</sup> Note: compared to notional reference site

#### Gas infrastructure

Lithgow is serviced by a spur line off the Moomba to Sydney pipeline at Young. The diameter of this pipeline is around 150 mm. Supplementary compression is being considered for the current loads in the area. The pipeline is not considered adequate to supply a power station development at Lithgow. Upgrade costs to cater for power generation are in the order of \$100M.

There is no competitive tension with other gas or pipeline operators.

#### Electricity infrastructure

No specific feeders have been identified as points of electrical connection, however, there is 330 kV infrastructure in the area.

#### Water infrastructure

No water source has been identified although the existing power stations draw from local water supply schemes and the Cox's River.

#### NEM regions and constraints

No specific network constraints are anticipated for a development in this area.

#### Land and availability

No specific land has been identified for a development in this location given the high altitude and poor gas infrastructure.





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# Chapter 3 Project Alternatives

### 3.4.10 Moss Vale

This region has the required infrastructure with a site having previously been investigated by others. Urban and rural residential density has since increased.

#### General

Moss Vale is located approximately 107 km south west of Sydney. Refer to **Figure 3-9** for the areas under consideration. The area was considered due to its proximity to gas and electricity infrastructure.

#### Performance

The effects of the local climate and altitude of Moss Vale on the performance of the turbines are listed in **Table 3-9**.

#### Table 3-9 Turbine Performance for Moss Vale Locality

Feature	Value	Relative De-rating (%)
Altitude	700 m	- 7.0
Mean daily maximum	25.8 °C	+ 2.9
Total de-rating (%) <sup>1</sup>		- 4.1

<sup>1</sup> Note: compared to notional reference site

#### Gas infrastructure

Moss Vale is located on the route of the Moomba to Sydney gas pipeline. There is no competitive tension with other gas or pipeline operators.

#### Electricity infrastructure

The Moss Vale area is crossed by TransGrid's Marulan - Dapto 330 kV feeder. This line may be subject to some congestion that could restrict export from a power station located in this area, however, this would have to be confirmed by load flow studies.

#### Water infrastructure

The Wingecarribee Reservoir is located near this site. Access to this resource is not known.





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## **Project Alternatives**

#### NEM regions and constraints

The Moss Vale area is in the NSW region close to the Sydney load centre and its NEM region is extremely unlikely to change as a result of foreshadowed changes to NEM regional boundaries in the future.

#### Land and availability

Existing rural residential development may constrain power generation as residences generally exist at most within 500 m of each other. AGL determined a 500 m criterion for the minimum distance to residences for a power development. Site procurement would be difficult as a number of lots would be required plus easements for gas and transmission access.

#### Permitting and regulatory

The area of interest falls within the Wingecarribee Shire LGA. The land zoning has not been confirmed but is expected to be general rural. Power generation is expected to be a permissible use.

#### Competing developments

The AEMO Statement of Opportunities does not note any potential developments or expansions for the Moss Vale area.

#### Preliminary Environmental Assessment

Due to proximity of residential receivers, noise and visual impact will require additional mitigation to that normally anticipated for such a development.

No other environmental issues have been identified that differ significantly from alternate sites.

### 3.4.11 Canberra

Canberra was assessed as a region as it possesses the required infrastructure and also was the subject of discussions between ActewAGL and AGL regarding the siting of a small peaking power station. Refer to **Figure 3-10** for the areas under consideration.

#### General

Canberra is located approximately 281 km southwest of Sydney. Two locations were considered:

 Location A - One area under consideration was identified during the Hume power station development phase for ActewAGL. The proposed power station at this location was less than 100 MW.



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• Location B - A second generic location was considered to the north of Canberra at the intersection of the 330 kV transmission lines and the Dalton offtake.

#### Performance

The effects of the local climate and altitude of Canberra on the performance of the turbines are listed in **Table 3-10**.

#### Table 3-10 Turbine Performance for Canberra locality

Feature	Value	Relative De-rating (%)
Altitude	575 m	- 5.5
Mean daily maximum	27.8 °C	+1.5
Total de-rating (%) <sup>1</sup>		- 4.0

<sup>1</sup> Note: compared to notional reference site

#### Gas infrastructure

A spur line from the Moomba Sydney pipeline at the Dalton offtake supplies Canberra.

The capacity of the spur line to take the additional load is not known but an enhanced pressure service is expected to be required. Supplementary compression has not been assumed.

There is no competitive tension with other gas or pipeline operators.

#### Electricity infrastructure

At Location A, it has been assumed that the power station would be connected into the 132 kV system. As noted elsewhere in this report, the 132 kV network has limited capacity. This limits the size of a power station in this area.

At Location B, a 330 kV connection has been assumed on the Canberra to Marulan line. A 330 kV connection is expected to be suitable for the size of development being considered subject to network constraints.

#### Water infrastructure

Location A is around 12 km north-west of Googong Reservoir. This reservoir could provide a source of water for a conversion to combined cycle generation technology.

Location B is not located close to a suitable reservoir.





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