

## 26 CUMULATIVE IMPACTS

### 26.1 INTRODUCTION

This chapter provides further assessment and information on cumulative impacts in response to various submissions on the EIS, and refinements/modifications to the Project since publication of the EIS. The information presented builds on the EIS Volume 1, Chapter 26 Cumulative Impacts and should be read in conjunction with the EIS chapter.

### 26.2 METHODOLOGY

The methodology applied for cumulative impact assessment is consistent with that of the EIS Volume 1, Chapter 26 Cumulative Impacts.

### 26.3 KEY INTERACTIONS

#### 26.3.1 INTERACTIONS OF ENVIRONMENTAL ELEMENTS IN VOLUME 1

##### Land use

The Project will have beneficial and adverse cumulative impacts on land use. As noted in the EIS Volume 1, Chapter 26 Cumulative Impacts, section 26.3.1, agricultural land use will be moderately adversely impacted due to the addition of final voids into the landscape and some decrease in land suitability classes.

An assessment into the agricultural value of land as a result of the Project has been conducted for this Supplementary EIS as discussed in Chapter 9 Geology, Mineral Resources, Overburden and Soils, and Chapter 22 Economics.

##### Land clearing

As stated in the EIS Volume 1, Chapter 26 Cumulative Impacts, section 26.3.1, the overall visual amenity impact of the Project relating to loss of vegetation cover has been assigned as a minor adverse cumulative impact over the short term. This impact has been assigned 'minor' because the impact only affects local areas for up to three years, as discussed in section 26.2 of the EIS. However, as discussed in the EIS Volume 1, Chapter 19 Visual Amenity, section 19.7, impacts from given viewer locations (e.g. specific places) may be high during some periods of the mine's operations, and will be mitigated by visual management strategies such as vegetation plantings, that will reduce visual impacts at the point of viewing.

Visual amenity impacts relating to the long-term landform change has been assigned moderately adverse in the EIS Volume 1, Chapter 26 Cumulative Impacts, section 26.3.1. The impact has been assigned 'moderate' because although experienced at a local level, the impact will be long-term being over three years in duration. However, the cumulative impact will not be major, as post-mining similar vegetation communities and land uses will be rehabilitated in the area as existed pre-mining, with the landscape again becoming predominantly agricultural with scattered tree plantings. Topographic forms of the landscape will generally be of similar form (e.g. slope profile and gradient) as existed prior to the Project, but with features potentially in different locations. Final voids will also be present in the final landform.

##### Impact on individual landowners and sensitive receptors

The EIS Volume 1, Chapter 26 Cumulative Impacts, section 26.3.1 listed potential cumulative impacts on adjacent landowners during operations. Table 26-1 below updates the information provided in the EIS, including amendments to the potential properties that may be subject to potential cumulative impacts. Sensitive receptors that are not listed, but were previously listed, have either been purchased or are under negotiation to purchase by the WJV since publication of the EIS and are no longer treated as sensitive receptors, or no longer experience cumulative impacts due to refinements/modifications to the Project.

Sensitive receptors that have been added to the table potentially experience cumulative impacts due to refinements/modifications to the Project. Figure 26-1-SV1.3 depicts the sensitive receptors potentially experiencing cumulative impacts.

Cumulative impacts consider the mitigated impacts and measures, that is the residual impacts, for air quality, noise, vibration and visual amenity. For each of the residual impacts for this cumulative assessment:

- air quality impacts are considered for the PM<sub>10</sub> residual impacts following mitigation
- there are no residual impacts for noise following the implementation of mitigation measures
- vibration impacts are considered for the airblast overpressure impacts greater than 115 dBI, and
- visual amenity impacts are considered for sensitive receptors that require landscape works, and those that may potentially require landscape works.

Table 26-1: Potential cumulative impacts on adjacent landowners as sensitive receptors during operations

Sensitive receptor	Lot	Plan	Potential cumulative impacts
Accommodation facilities*	110	FT487	Air quality Vibration
MLA-168	29	SP167183	Air quality Visual amenity
MLA-300	15	FT161	Air quality Visual amenity
MLA-355 (proposed)	38	CP899702	Air quality Visual amenity
MLA-505	6	FT788	Air quality Visual amenity
MLA-520	36	FT981	Air quality Vibration
MLA-595	38	AB188	Air quality Vibration Visual amenity

Note: \* accommodation facilities under control of WJV

## Land clearing

### 26.3.4 PROJECTS AND OTHER DEVELOPMENTS

Further to the information provided in Chapter 9 Geology, Mineral Resources, Overburden and Soils, the Wandoan Coal Project will use best practice to return the land to similar agricultural quality post-mining as existed pre-mining. Returning the land to agricultural land will minimise the long-term cumulative impact on good quality agricultural land and land suitability of other mine projects being developed in the area. The Wandoan Coal Project is also co-locating associated infrastructure with other infrastructure in the area, such as existing roads and the proposed Surat Basin Rail to minimise the impacts to surrounding farmland.

#### Other mines and gas fields

A new search of the Department of Employment, Economic Development and Innovation's Interactive Resource and Tenure online maps for coal was conducted for the Project area, as shown in Figure 26-2-SV1.3.

Although not in the Project area, it is relevant to note that a number of coal mining lease applications and mineral development licence applications for coal in the wider Wandoan region have been granted or lodged with the Mining Registrar since the preparation of the EIS. These mining leases and mineral development

licence applications are being proposed by different proponents, and are not related to the Wandoan Coal Project. These mining leases are:

- ML50233 (granted), Cameby Downs, held by Syntech Resources Pty Ltd near Miles
- ML50247 (application), Woori South Mining Lease, held by Surat Coal Pty Limited near Guluguba
- ML50248 (application), Woori North Mining Lease, held by Surat Coal Pty Limited near Guluguba
- ML50254 (application), Elimatta, held by Taroom Coal Proprietary Limited to the west of the Wandoan Coal Project
- MDL406 (application), Juandah, held by Metrocoal Limited, to the south of the Wandoan Coal Project (DEEDI 2009).

Xstrata Coal Queensland Pty Ltd since publication of the EIS submitted mineral development licence applications and exploration permits coal (EPC) to Department of Employment, Economic Development and Innovation (DEEDI, formerly Department of Mines and Energy), being:

- MDL411 (application), Meeleebee, west of Project MLA areas
- MDL412 (application), Cowangah, west of Taroom
- MDL413 (application), Orazabah, south-east of Taroom
- MDL414 (application), Cattle Creek, north-west of Taroom (DEEDI 2009).

As discussed in Chapter 2 Project Needs and Alternatives, section 2.17.6, the proponent for the Woori Coal Mine proposal, previously described as 'Cockatoo Coal, Guluguba Project' has prepared and submitted to the Chief Executive of DERM a draft Terms of Reference (TOR) for carrying out an EIS for the proposal. The draft TOR for the EIS was available for public review and comment from Monday, 23 March 2009, until Wednesday, 6 May 2009.

The following changes to exploration permits for petroleum (EPP) have occurred since the publication of the EIS:

- EPP867 (application) held by Paillard Energy Pty Ltd was deemed unsuccessful
- EPP869 (application) held by Bow Energy Resources Ltd was deemed unsuccessful
- EPP870 (application) held by Pure Energy Resources Limited was deemed unsuccessful.

### *Coal seam gas activities*

Coal seam gas (CSG) producers will be seeking approval for CSG production in and around the MLA areas. The location of CSG production bores is not yet known. CSG production from the Walloon Subgroup coal seams can potentially impact on Great Artesian Basin (GAB) aquifers. Therefore, it is important for the Wandoan Coal Project's groundwater monitoring program to distinguish, if possible, between possible potential impacts from shallow surface mining under the Project, and potential impacts from the deeper CSG activities from other CSG production projects.

The production of CSG involves the extraction of groundwater from coal seams, referred to as depressurisation or dewatering, to reduce the groundwater pressure that keeps the gas trapped in the coal. This water by-product is called associated water (AW).

From a review of the Santos GLNG Project EIS, the drawdown of groundwater heads within CSG aquifers is a necessary process and an unavoidable impact associated with the depressurisation of the target coal seam (Santos 2009).

During the construction of CSG production wells, the overlying aquifers are sealed off and the open section of the production well is located only within the target coal seams. Hence, the pumping well is unlikely to extract water directly from these overlying aquifers. However, pressure differentials between the waters in the coal seam and the waters in other aquifers above or below the coal seam aquifer may result in indirect access by inter-aquifer transfer and a subsequent reduction in water levels in those aquifers. Such inter-aquifer transfer could occur either vertically through the low permeability confining beds between the aquifers or vertically through fault zones if they exist (Santos, 2009).

There is a possibility that this CSG production dewatering will have impacts on existing groundwater users in the area. These impacts can include the drawdown of groundwater in the CSG aquifers and the overlying and underlying aquifer systems, which can lead to the reduction of landholder bore yields (Santos, 2009).

Cumulative impacts associated with coal seam gas development, particularly associated with shallow groundwater and the Great Artesian Basin (GAB), are not considered as part of the Wandoan Coal Project, due to the Project targeting shallow coal seams, while many proposed CSG developments in and around the MLA areas target deeper coal seams. However, as discussed in Chapter 10 Groundwater, section 10.8, the WJV commits to monitoring groundwater in alluvium, coal seam, and weathered Injune Creek sediments, plus the GAB. Cumulative impacts on shallow groundwater and the GAB as a result of CSG development, should be considered by the respective gas developers during impact assessment.

### Coal-fired power station

As discussed in Chapter 2 Project Needs and Alternatives, section 2.17.7, GE Energy has announced that it is working to develop the world's first integrated gasification combined-cycle (IGCC) power plant incorporating 90% carbon (CO<sub>2</sub>) capture and storage (CCS), near the Wandoan Coal Project.

## 26.4 CONCLUSIONS

Following the modifications and refinements to the Project, the number of sensitive receptors adjacent to the MLA areas potentially experiencing cumulative impacts has reduced.

To mitigate key cumulative impacts, the WJV is committed to liaising with individuals, the community and other proponents of projects in the area, so as to minimise adverse and enhance beneficial cumulative impacts.

## 26.5 REFERENCES

Department of Employment, Economic Development and Innovation (DEEDI), 2009, *Interactive resource and tenure maps*, viewed on 19 June 2009 and 26 August 2009, [http://www.dme.qld.gov.au/mines/tenure\\_maps.cfm](http://www.dme.qld.gov.au/mines/tenure_maps.cfm)

Santos, 2009, *GLNG Project Environmental Impact Statement*, [www.dip.qld.gov.au/projects](http://www.dip.qld.gov.au/projects)