

## ES 1 Introduction

The Ellensfield Coal Mine Project (ECMP) is the development of an underground longwall coal mine in the Bowen Basin coal field in Central Queensland. Targeting the thick Leichhardt coal seam of the Rangals Coal Measures, the mine is forecast to produce up to 4.7 Mtpa of export coking and thermal coal from 5.5 Mtpa run-of-mine (ROM) coal with a project life of approximately 20 years.

## ES 2 Project Proponent

The ECMP is managed by Ellensfield Coal Management Pty Ltd which is a wholly-owned subsidiary of Vale Australia Pty Ltd (Vale - the Proponent).

## ES 3 Project Description

The ECMP is located within the northern region of the Bowen Basin, approximately 175 km south west of the major regional coastal city of Mackay. The project area lies on the northern side of the Peak Downs Highway approximately midway between the local towns of Coppabella and Moranbah and is 3,388 ha in size.

The aim of the project is to develop an underground coal mine utilising a longwall system to extract the Leichhardt coal seam. In summary the project comprises of the following components.

- A customised box cut which will provide the entrance to an underground coal mine utilising a longwall system.
- A coal handling and preparation plant (CHPP) with the capacity to process up to approximately 5.5 Mtpa of raw coal and deliver two products (thermal and coking coal).
- Two separate mine waste emplacement areas.
- Site water storage facilities (dams).
- A truck load-out facility and haul road for the transportation of coal product.
- Construction of an 8 to 20 Mega Watt (MW) power plant and site electricity network.
- The mine infrastructure area (MIA) which will consist of administration and operations buildings, fuel storage areas, equipment maintenance areas, laboratories, hardstand areas, workshops and associated services.

Prior to the CHPP being fully operational in 2012 all ROM coal will be washed and processed at the Carborough Downs Coal Mine CHPP for transport to Dalrymple Bay Coal Terminal (DBCT) for export.

After 2012, product coal will either be transported to DBCT or to Abbott Point Coal Terminal (APCT) via the Northern Missing Link railway project if it is fully operational.

## ES 4 Location

### **Regional Context**

The ECMP is located in the northern Bowen Basin coalfields in Queensland, Australia. The project is approximately 35 km north-east of the town of Moranbah and serviced by the major regional coastal city of Mackay.

## Local Context

The project site lies on the northern side of the Peak Downs Highway approximately midway between the local towns of Coppabella and Moranbah. Site access is gained via the Carborough Downs and Broadlea turnoff from the Peak Downs Highway and then by travelling north along the privately owned Broadlea and Ellensfield mine access road. Mines in the near vicinity include the Burton open cut mine to the north-west, the Broadlea open cut mine to the south-west, the South Walker Creek open cut mine to the east, and the Carborough Downs underground mine to the south.

## ES 5 Environmental Impact Statement

This EIS has been prepared in accordance with the provisions of the *Environmental Protection (EP) Act 1994* as they relate to the requirements of an Environmental Impact Statement (EIS). The principal objective of the EIS is to identify and assess the environmental impacts that could occur as a result of the construction and operation of the project. Impacts have been considered for all relevant aspects of the natural, social and economic environments, and where appropriate, controls and safeguards are proposed to mitigate potential impacts. The ECMP has been determined by the Commonwealth Department of Water, Environment, Heritage and the Arts (DEWHA) as a 'controlled action' and under the existing bilateral agreement between the Commonwealth and Queensland Governments the EIS will be assessed by both the Queensland Environmental Protection Agency (EPA) and DEWHA.

## ES 6 Project Needs and Benefits

Global coal production and consumption is increasing each year. With the availability of abundant and affordable reserves, coal is able to provide secure and reliable supplies of affordable energy and coking coal for the steel industry worldwide. As an important fuel for electricity generation and an integral component in the steel industry, coal will have a major role to play in both social and economic development worldwide. The proposed ECMP is aimed at assisting in filling the widening gap between existing global coal production and worldwide demand.

The proposed ECMP through direct employment and indirect economic stimulus during both construction and operational phases of the project will benefit the Isaac Region, Mackay Statistical Division and Queensland economies. The export revenue from the project will have a positive impact on the national trade balance and the Queensland Government will benefit through royalties and infrastructure charges.

## ES 7 Consequences of not proceeding

The consequences of not proceeding with the project would be the loss of the project benefits and the avoidance of the adverse impacts.

The world has a long term growing need for more coal, primarily due to the increasing demand for stainless steel and power generation. If the project did not proceed, the opportunity for filling the widening gap between existing global coal production and worldwide demand would be lost.

The cost of not proceeding would include:

- loss of employment opportunities during the construction and operational phases;
- loss of flow-on jobs across the region and state;
- loss of the community benefits; and
- loss of market opportunity for Vale and its stakeholders.

The major benefits of not proceeding would be that the potential environmental impacts of the project would not be incurred. However, to meet global demand for coal, other projects around the world will proceed, and there is no guarantee that these projects will be designed based on the ecological sustainable development principles being proposed at the ECMP.

## ES 8 Project Alternatives

The following alternatives (options) were considered by the Proponent when planning and designing the project.

- mine access and mining method;
- CHPP design;
- rejects handling and disposal;
- coal transport;
- coal seam gas utilisation; and
- accommodation.

## ES 9 Project Schedule

All construction and mine development activities required to enable the commencement of the longwall production are dependent on a successful approvals process and are expected to occur between late 2009 and early 2012. Longwall production and coal processing at the on-site CHPP is due to commence in 2012. The life of mine is expected to be approximately 20 years.

## ES 10 Environmental Values and Impact Management

### **Land**

A soil survey and land resource assessment was undertaken for the ECMP. Seven soil units were identified within the project area, which is dominated by yellow duplex and brown clay soil types. Other soil types present on the project area include dark clay, shallow gradational clay, alluvial soils, rock and sandy lithosols.

The ECMP site is currently used for low intensity cattle grazing. As a result of this historical and current land use, there has been extensive tree clearing throughout the area. The land use is consistent with that of the adjoining land, which is also predominantly used for low intensity cattle grazing.

The majority of land (1,542 ha) within the EMCP area is agricultural suitability Class 2 - land suitable for low intensity grazing, with minor limitations that lower production or require management practices. This includes the well drained areas of flat to gently sloping yellow duplex soils. The majority of the brown clays, shallow gradational clays, and the minor area of dark clays (854 ha) are Class 3 - land with minor limitations, which either reduce production or require more intensive management practices. The alluvial soils associated with Spade Creek are limited to Class 4 - marginal land, due to the potential for flooding and the dissected nature of the soils, resulting from the numerous creek gullies and multi-channelled nature of Spade Creek. The steep rocky slopes, hills and ridgelines within the project area are limited to Class 5 - unsuitable for selected land use. No Good Quality Agricultural Land was identified within the ECMP area.

In the areas impacted by significant landscape modification, agricultural suitability class will decrease. The remaining void will decrease to Class M – not suitable for agricultural uses. The waste emplacement facilities batters are intended to be returned to Class 4 land. The tops of the waste emplacement facilities are intended to return to Class 3 land.

### **Land Use**

Given that ECMP is located in an area surrounded by mining operations, the proposed mining use reflects the predominant land use for the immediate surrounding area. There is not expected to be any impact on the viability of agricultural land use in the region with the resumption of this land for mining purposes.

The proposed development is considered to be consistent with the regulatory and statutory framework. The site is zoned as rural under applicable planning schemes and the proposed development is consistent with the schemes desired environmental outcomes. The proposed development also suits the desired outcomes set out in The Whitsunday, Hinterland and Mackay (WHAM) Regional Plan.

Native title under the *Native Title Act 1993* still exists over Lot13 on SP178466 (leasehold) which covers the majority of the ECMP area.

### **Visual Amenity**

The assessment of scenic values includes a baseline against which proposed development or changes to the current land use are evaluated. Key results of the assessment of scenic values are summarised by the following points:

- there are no public roads within or adjoining the ECMP from which the project could potentially be visible;
- there are no rural homesteads adjoining the ECMP area;
- the landscape character of the ECMP area is visually dominated by remnant woodland covering approximately half of the area as well as the ridges and slopes surrounding the site, while patches of grazing grassland/shrubland cover the remainder half of the ECMP area;
- landscape quality of the ECMP area has been evaluated as moderate in the baseline assessment of scenic values;
- the viewshed of the ECMP area is limited by the combination of surrounding ridges and hills together with stands of woodland vegetation that occur on the site and surrounding areas; and
- the capacity of the ECMP area to visually accommodate significant change to land use is relatively high due to the visually enclosed landscape character and the absence of public roads, homesteads or townships on or in the vicinity of the ECMP area.

Potential visual impacts from the ECMP are greatly reduced due to the nature of the mining operation (underground) and the relatively remote location of the project and its above ground facilities from sensitive receptors.

### **Transport**

The transport of the required infrastructure and movement of the workforce for the construction and operation phases of the project will be along the Peak Downs Highway. Due to the estimated volume of site generated heavy commercial vehicle movements on the Peak Downs Highway during construction the Department of Main Roads (DMR) required a pavement impacts assessment to be undertaken. The pavement assessment showed that the total proponent contribution associated with the increased traffic is minimal.

Traffic volumes along the Peak Downs Highway were derived for the year construction commences (2009) and a selected year of operation (2020) from the traffic count provided by the DMR. It was found that the overall traffic generated for the operations phase is less than 5% and is therefore considered to have only minor impacts on the state controlled road network traffic operation.

The safety checklist provided in the DMR's Guideline for Assessment of Road Impacts of Development, was used to check the safety aspects of the Peak Downs Highway intersection associated with the ECMP. The ECMP traffic was estimated to account for less than 3% of the average annual daily traffic on the Peak Downs Highway and so the anticipated potential accident risk is low. As a result, no additional development works will be required at the Peak Downs Highway intersection.

## Surface Water and Watercourses

The ECMP is situated in the catchment of three relatively small ephemeral creeks and associated drains. These catchment areas will be impacted by surface mining infrastructure and subsidence. A water management plan will be implemented to recycle and reuse as much of the impacted surface run-off and mine generated water as practical so reducing the need for off-site releases or the need to import large quantities of raw water.

Due to subsidence, some of the ephemeral streams are expected to pond water and the erosion and sedimentation regime may change. These streams are expected to naturally return to equilibrium, and this process will be monitored as part of a subsidence management plan.

All mine water structures will be designed and managed within the storm retention allowances. The site sediment dam has a designed storage allowance of a 1 in 10 year event. Clean catchment water will be diverted to existing ephemeral creeks to maintain environmental flows.

## Groundwater

Groundwater investigations of the ECMP indicate that mine dewatering associated with the underground operations will lower the coal seam aquifers groundwater elevation and create a cone of depression around the mine. Where the depth of mining is relatively shallow vertical cracking is expected to extend to the surface with modelling indicating there is potential for the dewatering of overburden aquifers above these longwall blocks. The investigations also found the potential for groundwater contamination to occur to the shallow aquifer as a result of rejects disposal, workshops, waste disposal and to the coal seam aquifer as a result of mining.

While these potential impacts were identified, the impact is not expected to be significant because:

- There were no groundwater dependant ecosystems (GDEs) or operational farm bores within the project area or surrounds.
- The Broadlea Mine to the south of the ECMP obtains water from a borefield in the basalt aquifer; however the basalt aquifer does not extend into the area of the ECMP.
- Groundwater quality data obtained from the project area indicate that the groundwater is naturally brackish to saline and as such is unsuitable for human consumption, and is typically too saline for livestock watering.
- The potential for groundwater contamination may occur, however, it is considered unlikely that leachate generated from mine wastes will adversely impact groundwater quality.
- While longwall mining will fracture the overlying strata providing larger surface areas and exposure of the rock surface to air, the geochemical assessment suggests that this will not result in poorer quality water in the aquifer systems as the overburden is benign and groundwater levels will recover following the end of mining.

## Air

The air quality assessment for the ECMP has comprised a comprehensive assessment of existing air quality, estimation of dust emissions from mining activities, estimation of other air pollutants such as sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>) from the power plant and the use of dispersion modelling tools to predict potential impacts from the project. An impact assessment has been completed for two project development phases: box cut construction and normal operation. Even though the box cut construction is projected to only last for a short period of time (approximately 18 months), a full assessment was conducted. The assessment for normal operation was conducted for year 2019 with a ROM production of 5.5 Mtpa.

It was found that impacts at residential receptor locations will satisfy the air quality guidelines for TSP, PM<sub>2.5</sub> and dust deposition. Predicted concentrations of PM<sub>10</sub> will meet the EPP (Air) 2008 objectives during construction or operation at residential locations, except in unlikely circumstances when the background concentration of PM<sub>10</sub> is elevated at the same time as adverse meteorological conditions. The uninhabited area immediately to the west, north-west and north-east of the box cut will have off-site

exceedances of PM<sub>10</sub> during construction and operation of the project. The potential air pollutants from power plant, including NO<sub>2</sub> and CO, have been considered in the assessment and determined to not have an off-site impact.

Mitigation measures have been proposed for the project. Some of these measures have been incorporated into the air quality modelling, such as the engineering controls and dust suppression measures, consequently reducing the impacts from the site. Other measures need to be implemented during project operation, such as operational procedures, rehabilitation strategy and an ambient air quality modelling program.

The ECMP greenhouse emissions were estimated and it was determined that due to the project size and mitigation measures to be incorporated the project is unlikely to have a significant impact on Queensland government emissions targets.

### **Noise and Vibration**

The existing environmental noise has been measured and noise criteria have been determined based on the EPA Guideline, "Planning for Noise Control", the World Health Organisation, "Guidelines for Community Noise" and the Australian Standard AS 2107:2000. Noise from the proposed construction and operational phases of the ECMP has been predicted using a computer based noise model of the ECMP area.

The closest sensitive receptor is the unoccupied Ellensfield homestead located approximately 5 km north-east of the project area. The existing background noise level at this receptor was 35.5 dB(A) during the day and between 33 to 39.5 dB(A) in the night and evening respectively. The predicted project noise levels indicate that construction and operational noise emissions are expected to comply with the adopted criteria and are not expected to cause noise intrusion during the day, evening or night at the closest sensitive receptors.

Airblast overpressure and vibration from blasting activities have been assessed against criteria derived from the EPA Guideline, "Noise and Vibration from Blasting". Predicted airblast overpressure and ground vibration from blasting are expected to comply with the adopted criteria at the closest sensitive receptors during both the construction and operational phases of the project.

### **Waste**

Waste management will be an integral component of the ECMP. The Proponent will be committed to waste management through adoption of its Waste Management Plan. The main targets of the plan will be to reduce the creation of waste, meet legislative requirements, minimise costs associated with waste management, and adopt procedures that reduce the risk of environmental impact.

As a generator of waste, Vale will ensure it meets its obligations under the *Environmental Protection Act 1994* (EP Act), *Environmental Protection (Waste Management) Policy 2000* and the *Environmental Protection (Waste Management) Regulation 2000* during construction and operation of the ECMP. The major waste streams likely to be generated during construction and operation include excavation waste, bulky construction materials and general wastes.

The material that will be classified as mine waste for the ECMP will include; overburden material, coarse rejects, dewatered fine rejects and fine rejects. All of this material will be disposed of on site in engineered emplacement facilities. The amount of overburden and coarse rejects and dewatered fine rejects expected to be generated over the LOM is 23,000,000 m<sup>3</sup> and 11,300,000 m<sup>3</sup> respectively.

The geochemical assessment found that the overburden and potential rejects generated by the proposed ECMP are likely to be relatively benign and are expected to generate slightly alkaline and low-to-moderately saline runoff and seepage following surface exposure.

The concentration of metals in overburden and potential reject materials for the ECMP are, in most cases, likely to be well below the applied guideline criteria for soils and are unlikely to present any environmental issues associated with revegetation and rehabilitation of the emplacement facilities.

## Nature Conservation

The assessment of ecological values of the ECMP comprised of a desktop assessment and flora, terrestrial vertebrate fauna and aquatic vertebrate fauna surveys. The desktop assessment identified ten significant fauna species and three significant flora species and one endangered vegetation community listed under the Queensland *Nature Conservation Act, 1992* and/or the Commonwealth *Environmental Protection and Biodiversity Conservation Act, 1999* as potentially present within the ECMP area. Of these identified significant fauna species, only the squatter pigeon (*Geophaps scripta scripta*) was definitely located. The little pied bat (*Chalinolobus picatus*) was tentatively identified at the site. None of the significant flora species identified in the desktop assessment were recorded as occurring in the ECMP area. However two other significant species, *Cerbera dumicola* and *Xerothamnella parvifolia*, listed as Rare and Vulnerable respectively under the *Nature Conservation Act, 1992*, were found at the site. The 'Endangered' brigalow (*Acacia harpophylla*) community was identified on the ECMP area.

The flora survey results identified a relatively high native floral diversity considering the long-term impacts of clearing, grazing and weed infestation on the site. Four exotic plant species of management concern were identified during the flora survey.

Apart from a small area of mature riparian vegetation, all environmentally sensitive areas suitable for fauna are remote from the ECMP operations. It is considered unlikely that the ECMP will affect existing environmentally sensitive areas. The identified brigalow communities will not be affected by the proposed ECMP operations.

It is expected that subsidence will result in changes in stream bed morphology and ponding of some site watercourses. However, given the ephemeral nature of the streams in the ECMP area, impacts to aquatic fauna should not be significant. Opportunities for aquatic fauna may actually be improved in places where deeper ponding of water occurs.

## Cultural Heritage

### Indigenous

The Barada Barna Kabalbara and Yetimarla People #3 (BBKY#3) and Barada Barna Kabalbara and Yetimarla People #4 (BBKY#4) indigenous groups have been identified as the Traditional Owner representatives of the ECMP area. A Cultural Heritage Management Plan (CHMP) was finalised and signed by all parties and their representatives on the 15 September 2008.

It has been established through desktop and field surveys that the ECMP area has landscape features that are considered to be culturally and/or archaeologically sensitive. These primarily include the creeks and watercourses and their associated banks and rocky bars, a range of vegetation types, rock shelters in the mesas and escarpments and any large rock outcrops or unusual landscape features.

The ECMP area will be disturbed as a result of activities including excavation of the box cut, subsidence of the land surface above the underground mine, creation of emplacement facilities and the construction of infrastructure. Most of these activities will be localised and their potential impacts on the cultural landscape can be anticipated. Potential impacts on Indigenous cultural heritage that may result from construction activities will vary according to the nature of the activity, with minor impacts predicted in areas of potential mine subsidence and significant impacts more likely in areas of the box cut and emplacement facilities.

### Non-Indigenous

The field survey identified no sites of non-indigenous cultural heritage significance and four places of historical interest within the ECMP area. Places of historical interest are not considered to contain enough heritage value to warrant further assessment or specific mitigation strategies, but are indicators of historical activity in the region.

Limited historic material and the low levels of historic activity evidenced within the surveyed area indicate that the ECMP area has none to low archaeological potential. It is concluded that there is some potential for further historic places/items to exist within the ECMP area and these are likely to be remnant sites relating to pastoral and settlement activities, such as historic survey trees, roads and stock routes,

remnant boundary fence lines and station dumps. Elements associated with early roads, such as mile markers and historic camp remnants, may also exist within the ECMP area.

From a non-indigenous heritage perspective, the ECMP area is likely to contain low levels of local cultural heritage significance. There were no sites or places located within the project area that contain levels of cultural significance important to Queensland under Section 35 of the *Queensland Heritage Act 1992*.

### **Social Environment**

The ECMP social impact assessment (SIA) was conducted on the basis of an Isaac Regional Council initiative to expand the community of Moranbah. The assessment examined the community's current social setting and conditions to assess potential impacts. The current and planned future development of the town by Isaac Regional Council was included as the driver behind the consideration of Moranbah as the primary option for project accommodation, in conjunction with MAC Camp accommodation for fly-in, fly-out (FIFO) or drive-in drive-out (DIDO) employees.

The SIA determined that Moranbah is and has always been predominantly a mining community, and will not be significantly impacted by the addition of mining employees and their families from the ECMP given the planned community expansion. There are some underlying social concerns in the community, however the Proponent will take steps to work with key stakeholders and opinion leaders to assess these concerns as appropriate.

The current level of development in the community at Isaac Views Residential Development is not considered sufficient to handle the anticipated population increase from ECMP, combined with relieving the baseline housing stress (demand far exceeds supply) already impacting the community. Development of the proposed expansion of the town on the western side of the Goonyella Road south of Grosvenor Creek would be required to accommodate the current housing needs in the community combined with the housing requirements for ECMP.

### **Community Consultation**

During the community consultation for the EIS, a number of stakeholders that could be affected or interested in the ECMP were identified and broadly categorised into the following groups:

- Local Government;
- State Government;
- Federal Government;
- State Corporations;
- Local Interest Groups;
- Native Title Claimants;
- Land Holders and Neighbouring Landholders;
- Community Service Providers; and
- Community.

A range of consultation tools and activities were utilised to aid communication between Vale and stakeholders and the community. Use of these tools and activities reflected the different needs of each group or person, and their likely interest in the ECMP or its impact on them. These tools and activities included:

- Community Consultation Database;
- Free-call 1800 Number;
- Email;
- Newsletters and Feedback Forms;

- Meetings with Community;
- “Face to Face” Stakeholder Meetings; and
- Meetings with Referral Agencies.

A number of issues were raised throughout the consultation program. The issues have been broadly categorised into the following groups:

- Socio-economic- the impact of the ECMP on the broader community regarding social or economic aspects;
- Human Resources- the ability of the ECMP to recruit and maintain employees;
- Cultural Heritage- the impact of the ECMP on cultural heritage, and negotiations regarding native title;
- Powerline Easement Management- the impact of the project on the powerline easement that crosses the ECMP area;
- Traffic on Peak Downs Highway- the additional traffic generated by the ECMP on the Peak Downs Highway;
- Waste Water- the generation of waste water by the ECMP;
- Rehabilitation- the restoration of the land following closure of the mine; and
- Aquatic Ecology- the plants and animals within the waterways that could be impacted by the project, particularly given the potential impact to waterways by subsidence.

### **Health and Safety**

The Proponent has developed and implemented a Safety Management System for the current mine exploration activities. The system has been developed so that it can be continuously improved and expanded to encompass both construction and operational activities. The Safety and Health Management System Overview Plan will ultimately be the document which includes the strategies, systems and procedures that apply to the ECMP. The Safety and Health Management System is based on AS/NZS4801 Occupational Health and Safety Standard and reflects the Proponent’s belief that all injuries and environmental exposures are preventable through demonstrated leadership and the application of this system though policy and operating philosophy. The system has been designed to meet the company’s legislative requirements under the *Queensland Coal Mining Safety and Health Act 1999* and *Coal Mining Safety and Health Regulation 2001*.

### **Economic Environment**

The ECMP is projected to involve capital expenditure of \$640 million over a 28 month period, and an annual operating budget (once full production is achieved) of around \$250 million. The ECMP will directly employ a workforce of approximately 160 contractors for the construction phase with an operational workforce of approximately 280 permanent employees and 60 full-time equivalent contractors. The ECMP, situated within the Isaac Region and the regional economy of the Mackay Statistical Division (SD), is expected to have a positive flow-on impact on these economies as well as the local and the Queensland economies. The economic impact of the project in terms of the loss of grazing land, and loss of ecosystem services is expected to be relatively small.

### **Hazard and Risk**

A preliminary hazard assessment (PHA) was conducted for the ECMP. The preliminary hazard and risk assessment was undertaken in accordance with AS/NZS 4360:2004 *Risk Management*. The assessment outlines the implications for the ECMP and the potential hazards and risks to people and property. It also provides controls by which the potential risks will be reduced to acceptable levels. All identified hazards and risks on the project site are able to be adequately controlled.

### ***Rehabilitation and Decommissioning***

A rehabilitation and decommissioning strategy has been prepared and objectives set for the rehabilitation of the disturbed land that will result from the proposed ECMP. The rehabilitation and decommissioning strategy includes the key objectives of; achievement of acceptable post-disturbance land use suitability, creation of stable post-disturbance landform and preservation of downstream water quality.

## **ES 11 Environmental Management**

A draft Environmental Management Plan (EM Plan) has been produced which provides measures to mitigate any adverse effects on the environment were identified as required within the EIS. The EM Plan also specifies measures for continual improvement, training, monitoring, auditing and reporting.