Contents

MALABAR COAL

MAXWELL PROJECT

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

ES1 BACKGROUND

This executive summary supports an Environmental Impact Statement (EIS) for a proposed underground coal mining operation, referred to as the Maxwell Project (the Project). The Project would produce high-quality coals over the period of approximately 26 years.

At least 75 percent (%) of coal produced by the Project would be capable of being used in the making of steel (coking coals). The balance would be export thermal coals suitable for the new-generation High Efficiency, Low Emissions power generators.

The Project is in the Upper Hunter Valley of New South Wales (NSW), east-southeast of Denman and south-southwest of Muswellbrook (Figure ES-1). The Project is located wholly within the Muswellbrook Local Government Area, and adjacent to the Singleton Local Government Area.

The applicant for the Project is Maxwell Ventures (Management) Pty Ltd, a wholly owned subsidiary of Malabar Coal Limited (Malabar).

The EIS provides:

- a description of the Project;
- a summary of the engagement with Project stakeholders;
- an assessment of potential impacts;
- the Project environmental management strategy; and
- a Project justification, including consideration of the requirements of relevant policies and legislation.

ES2 THE PROJECT

ES2.1 Project History

The area within and surrounding Exploration Licence (EL) 5460 has long been identified as having a significant *in-situ* coal resource. Prospecting for coal within EL 5460 and surrounds commenced in the late 1940s, with exploration intensifying during the 1960s and 1970s.

In May 2017, Malabar publicly announced its intention to acquire EL 5460 and the substantial, existing infrastructure within Coal Lease (CL) 229, Mining Lease (ML) 1531 and CL 395 associated with the former Drayton Mine open cut operation (now known as the 'Maxwell Infrastructure').

Malabar is committed to development of the resource in EL 5460 solely as an underground mine.

The underground mining methods proposed for the Project significantly reduce environmental impacts, including dust, noise and surface disturbance, in comparison to open cut mining methods.

Malabar's commitment to an underground mining operation has been reaffirmed through:

- a public statement in May 2017, when Malabar first announced its intention to acquire EL 5460 and the Maxwell Infrastructure, that the resource would only be developed as an underground mine;
- voluntary acceptance of conditions that prevent any open cut development that were imposed on EL 5460 as part of the licence renewal process in December 2017;
- a public submission in December 2017 in support of changes to a State Environmental Planning Policy (SEPP) that prohibit any development application for open cut mining in EL 5460;
- consistent communication of Malabar's intentions through interactions with stakeholders and public statements;
- Malabar's significant investment in technical and environmental studies into the development of the site solely as an underground mining operation; and
- Malabar's recent addition to the team of a highly experienced underground mine manager to take responsibility for the delivery of the Project.

ES2.2 Design Philosophy for the Project

This Project is substantially different to previous proposals in EL 5460.

Measures to address stakeholder concerns and perceptions of previous proposals have been incorporated into the Project design and Malabar's operating philosophy.

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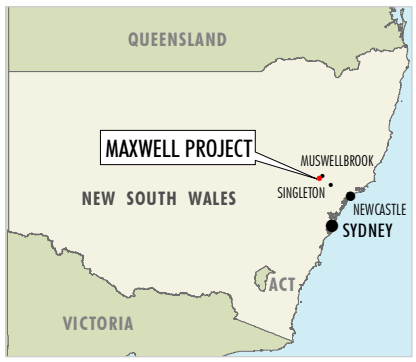

LEGEND

- Mining Operation
- Proposed Mining Operation
- Railway
- Local Government Boundary
- State Forest
- National Parks and Wildlife Service Estate
- Maxwell Project Exploration Licence Boundary
- Maxwell Project Mining and Coal Lease Boundary
- Indicative Extent of Underground Development

Source: © NSW Department of Planning and Environment (2019); NSW Department of Finance, Services and Innovation (2019); Office of Environment and Heritage NSW (2019)

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MAXWELL PROJECT

Regional Location

Figure ES-1

Malabar has sought to address previous feedback by committing to underground mining, other significant Project design measures, genuine community engagement and successful environmental management over time.

Malabar has approached the design of this Project and its conduct in the local community with the following aims:

- being aware of the points of view and perceptions of neighbouring landholders;
- developing a Project that can operate as a sustainable long-term enterprise;
- maintaining and enhancing agricultural activity on land that Malabar owns (Plate ES-1) that is not required for mining activities, the Maxwell Solar Project or biodiversity conservation;
- encouraging and being supportive of other community and government proposals or initiatives for the use of Malabar land or infrastructure that can co-exist with the Project; and
- supporting local employment and local businesses.

In addition, Malabar is also:

- making key senior Malabar personnel available for consultation to allow for direct consideration of stakeholder feedback;
- being a positive contributor to the local community through community contributions, assistance programs and sponsorships;
- proactively progressing rehabilitation of previous open cut mining areas at the Maxwell Infrastructure; and
- actively improving Malabar's agricultural properties and viticultural operation in the region, so that these will be long-term sustainable and productive businesses that can co-exist with underground mining operations.

Malabar is continuing to progress the separate approval process for a 25 Megawatt solar farm on a rehabilitated open cut disturbance area at the Maxwell Infrastructure (known as the 'Maxwell Solar Project').

Plate ES-1 – Angus-Charolais Cross Steers on Rehabilitation of Former Open Cut Mining Areas at the Maxwell Infrastructure

ES2.3 Project Summary

The Project would involve an underground mining operation that would produce high-quality coals over a period of approximately 26 years.

The Project would involve extraction of run-of-mine (ROM) coal from four seams within the Wittingham Coal Measures using underground mining methods.

The substantial existing Maxwell Infrastructure would be used for handling, processing and transportation of coal for the life of the Project. The Maxwell Infrastructure includes an existing coal handling and preparation plant (CHPP), train load-out facilities and other infrastructure and services (including water management infrastructure, administration buildings, workshops and services).

A mine entry area would be developed for the Project in a natural valley in the north of EL 5460 (Plate ES-2 and Figure ES-2) to support underground mining and coal transfer activities and to provide for personnel and materials access.

The entry area to the underground mine would not be visible from the Golden Highway or nearby equine and viticulture enterprises.

ROM coal brought to the surface at the mine entry area would be transported to the Maxwell Infrastructure area. Early ROM coal would be transported via internal roads during the construction and commissioning of a covered, overland conveyor system.

Subsequently, ROM coal would be transported via the covered, overland conveyor system.

The Project would support continued rehabilitation of the previously mined areas at the Maxwell Infrastructure.

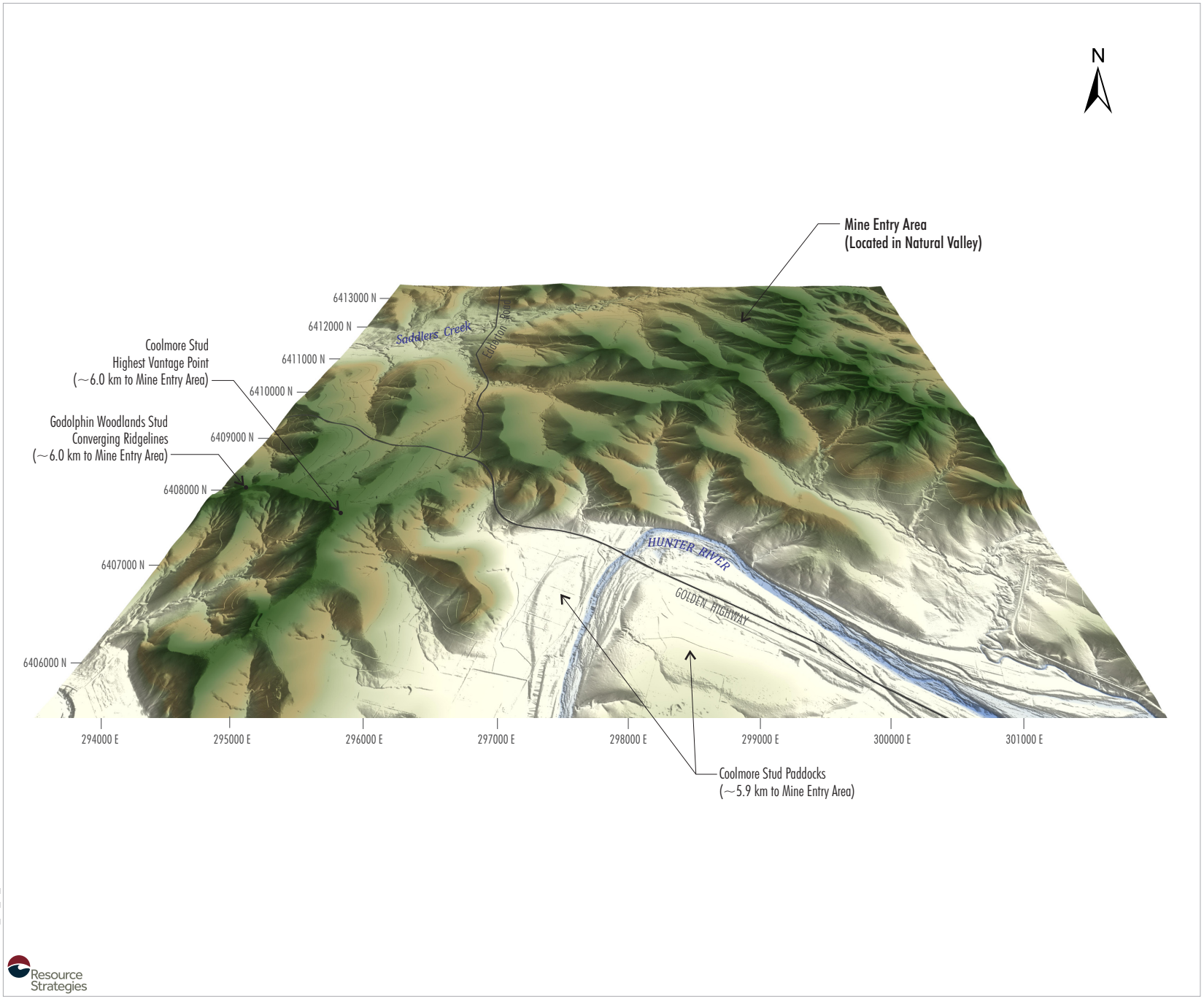
The volume of the legacy East Void would be reduced through the emplacement of reject material generated from processing activities and would be capped and rehabilitated at the completion of mining.

The Project area comprises the following main domains:

- Maxwell Underground – comprising the proposed area of underground mining operations and the mine entry area within EL 5460.
- Maxwell Infrastructure – the area within existing mining leases comprising the substantial existing infrastructure (including the CHPP) and previous mining areas.
- The transport and services corridor between the Maxwell Underground and Maxwell Infrastructure – comprising a site access road, a covered, overland conveyor, power supply and other ancillary infrastructure and services.
- A potential realignment of Edderton Road.

Table ES-1 provides a tabulated summary of the key characteristics of the Project. The location of key Project components is shown on Figure ES-3.

Plate ES-2 – Location of Underground Mine Entry Area



LEGEND

Elevation (m AHD)

275
250
225
200
175
150
125
100
75

Source: Fluvial Systems (2019); NSW Department of Industry (2019)

MALABAR COAL

MAXWELL PROJECT

Surface Topography and Location of the Mine Entry Area

Figure ES-2

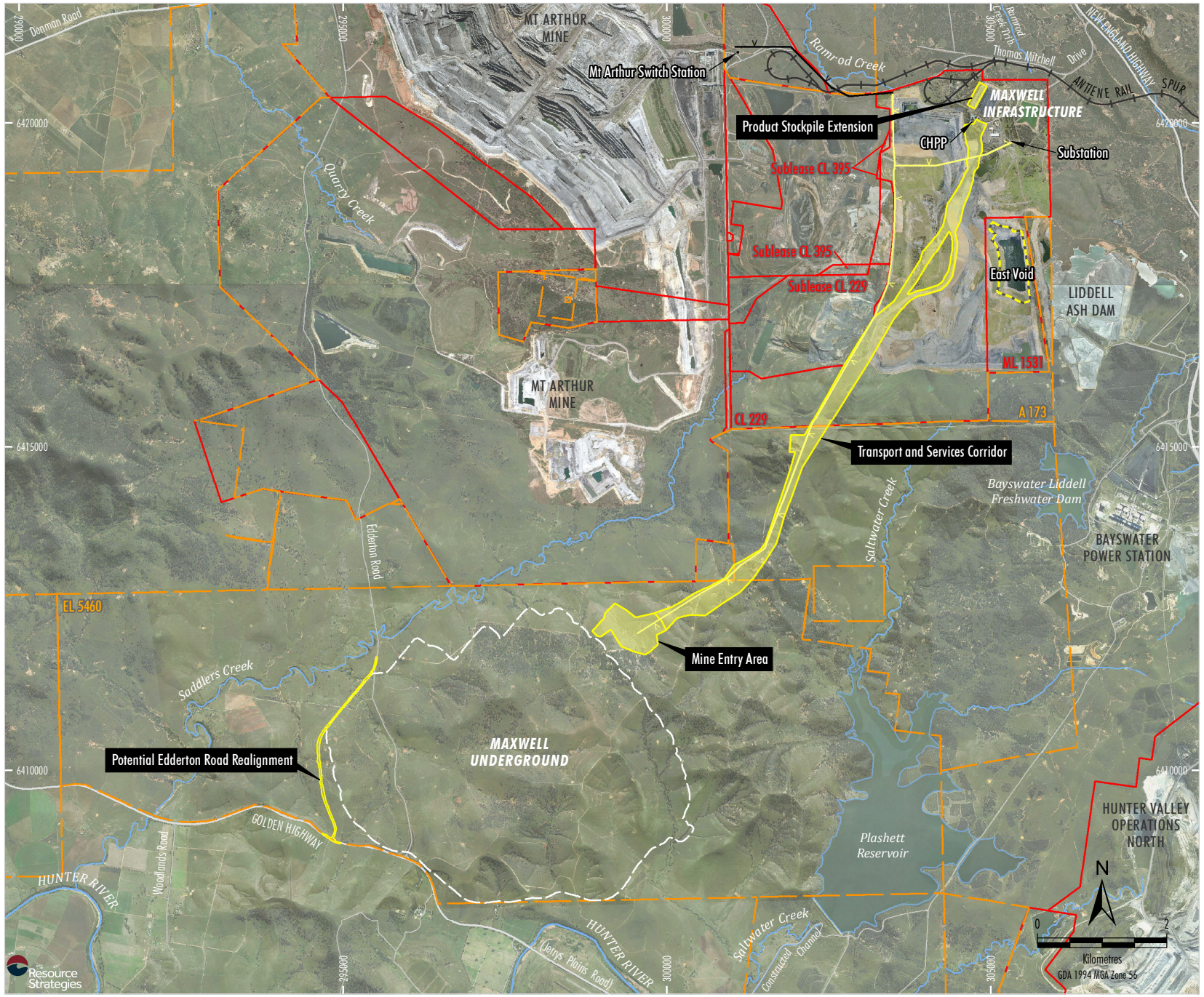
Resource Strategies

SHM-18-03 Maxwell_EIS_ES_001B

Table ES-1
Overview of the Project

Component	Description
Mining Method	Underground extraction using “bord and pillar” and “longwall” mining methods.
Resource	Coal seams in the Wittingham Coal Measures within EL 5460 (Whynot Seam, Woodlands Hill Seam, Arrowfield Seam and Bowfield Seam).
Annual Production	Up to 8 million tonnes of ROM coal per annum. At least 75% of product coal produced by the Project would be capable of being used in the making of steel (coking coals). The balance would be export thermal coals suitable for the new-generation High Efficiency, Low Emissions power generators.
Mine Life	26 years of coal extraction.
Total Resource Recovered	Approximately 148 million tonnes of ROM coal (i.e. an annual average of approximately 5.7 million tonnes of ROM coal, yielding an annual average of approximately 4.8 million tonnes of product coal).
Coal Handling and Preparation	Handling and processing of up to 8 million tonnes of ROM coal per annum. Transport of coal from underground faces to the mine entry area via an underground conveyor network. Use of a surge stockpile and coal sizing facilities at the underground mine entry area prior to transporting ROM coal to the Maxwell Infrastructure CHPP. Transportation of early ROM coal via internal roads to the Maxwell Infrastructure CHPP, while a covered, overland conveyor is constructed and commissioned. Subsequently, ROM coal would be transported via the covered, overland conveyor system. Use of the existing Maxwell Infrastructure CHPP with upgrades to coal handling and processing infrastructure.
Management of Reject Material (i.e. Stone-derived Material)	Emplacement of coarse rejects and tailings primarily within the existing “East Void” in ML 1531 at the Maxwell Infrastructure precinct.
General Infrastructure	Use of the existing Maxwell Infrastructure with upgrades. Development of an underground mine entry area and associated facilities that support the underground mining activities and provide for personnel and materials access to the underground mine. Development of infrastructure for power supply, ventilation and gas management for the underground mine.
Product Transport	Transport of product coal to market or to the Port of Newcastle for export via the existing Antiene Rail Spur and Main Northern Railway or via conveyor to the Bayswater and/or Liddell Power Stations.[1] Transport of up to 7 million tonnes of product coal per annum along the rail loop (up to 12 train movements per day).
Water Management	On-site water management system, including: recycling of water on-site; storage of water on-site (including in voids); water treatment; irrigation; and sharing of water with Mt Arthur Mine and other users. Augmentations and extensions to existing water management infrastructure and development of new water management storages, sumps, pumps, pipelines, sediment control, mine dewatering, water treatment and wastewater treatment infrastructure.
Workforce	During operation, the Project would directly employ approximately 350 personnel. Initial construction activities would require an average of approximately 90 personnel, and a maximum of approximately 250 personnel. Additional contractors would also be required during short periods over the life of the Project; for example, during longwall change-outs, periods of higher underground development activities, scheduled plant shutdowns or other maintenance programs. These activities may require up to approximately 80 additional personnel.
Hours of Operation	Operated on a continuous basis, 24 hours per day, seven days per week.

1 Consistent with the current approval for the Antiene Rail Spur (DA 106-04-00), coal may be hauled on public roads under emergency or special situations with the prior written permission of the Secretary of the Department of Planning, Industry and Environment, NSW Roads and Maritime Services and Muswellbrook Shire Council.



LEGEND

- Railway
- Exploration Licence Boundary
- Mining and Coal Lease Boundary
- Indicative Surface Development Area
- CHPP Reject Emplacement Area
- Extent of Conventional Subsidence from Underground Mining
- Proposed 66 kV Power Supply
- Proposed Ausgrid 66 kV Power Supply Extension #

Subject to separate assessment and approval.

Source: © NSW Department of Planning and Environment (2019); NSW Department of Finance, Services & Innovation (2019); MSEC (2019)
Orthophoto Mosaic: 2018, 2016, 2011

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MAXWELL PROJECT

Location of Key Project Components

Figure ES-3

SHM-18-03 Maxwell_EIS_ES_202A

ES2.4 Project Construction

The level of construction activity for the Project is reduced through the use of the substantial, existing Maxwell Infrastructure.

Additional infrastructure and upgrades to existing infrastructure required to support the Project would be progressively developed during the life of the Project. Key construction activities include:

- extension of the existing site access road to provide access to the mine entry area, and sealing along the full length during the first year of mining operations;
- development of the mine entry area for the Maxwell Underground and its access drifts;
- establishment of infrastructure associated with mine ventilation and gas management, with surface facilities located at the mine entry area;
- development of a transport and services corridor from the Maxwell Underground to Maxwell Infrastructure, including a covered, overland conveyor system;
- upgrades to ROM and product coal handling facilities at the Maxwell Infrastructure; and
- construction of power transmission infrastructure, including power lines and substations.

ES2.5 Mining Operations

The Project would use the following underground mining methods:

- bord and pillar with partial pillar extraction in the Whynot Seam; and
- longwall extraction in the Woodlands Hill, Arrowfield and Bowfield Seams.

Underground mining activities would be undertaken 24 hours per day, seven days per week.

The annual average ROM coal production from the Project would be approximately 5.7 million tonnes per annum, yielding an annual average of approximately 4.8 million tonnes per annum of product coal.

Underground mining methods involve extraction of only the coal seams (each approximately 2 – 3 metres thick) at depths ranging between 40 and 425 metres below the surface.

Extraction of this coal would result in changes in the level of the land surface, which are generically referred to as subsidence effects. Subsidence of the land surface would be hard to recognise visually as the landscape is undulating and of high relief.

The underground mine layout has been constrained:

- to avoid direct subsidence impacts on the Hunter River, the Hunter River alluvium and Saddlers Creek (noting these features were identified as important by the Aboriginal community, nearby landholders and other stakeholders); and
- to be wholly beneath the extent of freehold land owned by Malabar (i.e. there would be no direct subsidence impacts to land owned by neighbouring equine enterprises).

The Project would include underground and surface infrastructure associated with the ventilation of air, removal of excess water and the management of entrained carbon dioxide and methane. This infrastructure would maintain a safe working environment within the underground workings.

To address stakeholder concerns about visual impacts, the Project has been designed to limit surface disturbance for ventilation, gas management and mine dewatering to within the extent of the mine entry area.

ES2.6 ROM Coal Transport and Coal Processing

The Project would include the use of the substantial existing Maxwell Infrastructure for handling, processing and transportation of coal for the life of the Project.

ROM coal from the Maxwell Underground would be temporarily placed on surge stockpiles at the mine entry area prior to reclaiming and transportation to the CHPP at the Maxwell Infrastructure.

Sized ROM coal would be transported to the Maxwell Infrastructure via:

- a covered, overland conveyor, which would be operational prior to the commencement of transport of coal extracted by longwall mining machinery; or
- trucking along the site access road while the overland conveyor is constructed and commissioned.

Trucks used for coal haulage would be units that are purpose-built for the transport of bulk materials, such as the truck shown in Plate ES-3. The large off-road coal haul trucks in general use at open cut mines would not be used.

Plate ES-3 – Road Registerable Bulk Haulage Truck

Source: Oldknow Earthmoving & Haulage (2019).

The ROM coal would then be handled, sized and processed at the existing CHPP to produce coking coal (also known as metallurgical coal) and export-quality thermal coal for sale.

ES2.7 Product Coal Transport

The Project has direct rail access via the existing train load-out facility, Antiene Rail Spur and the Main Northern Railway (part of the Hunter Valley coal rail network) to transport product coal to the Port of Newcastle for export or to local markets.

A portion of coal may also be reclaimed from the product coal stockpile and transported via conveyor or rail to the Bayswater and/or Liddell Power Stations.

The Antiene Rail Spur is owned by a Joint Venture between BHP and Malabar.

Plate ES-4 – Existing Train Load-out Facility

The Project would operate within current rail limits on the Antiene Rail Spur for the Maxwell Infrastructure with continued use of the existing infrastructure.

Anticipated coal production from the Project has been included in forecast volumes for the Hunter Valley coal rail network and rail network capacity is expected to be available for the Project.

Similarly, sufficient port capacity at the Kooragang and Carrington Coal Terminals (both of which load ships for export of coal through the Port of Newcastle) is expected to be available for the Project.

ES2.8 Management of CHPP Reject Material

In the course of processing ROM coal into coal products, a CHPP reject material is produced, which generally consists of a mixture of shale and mudstone with minor proportions of sandstone and coal.

The Project would involve pumping the CHPP reject material into the existing legacy East Void within the Maxwell Infrastructure, via a pipeline.

The Project would reduce the volume of the legacy East Void at the Maxwell Infrastructure and result in a better rehabilitation outcome.

Malabar will continue to investigate beneficial uses for the legacy voids at the Maxwell Infrastructure. This will include emplacing CHPP reject material from possible future underground mining activities undertaken by Malabar within EL 5460 and EL 7429 (Spur Hill Underground Coking Coal Project) and engagement with other mining and industrial facilities in the region (subject to separate assessments and approvals).

ES2.9 Workforce

Initial construction activities would occur over a period of approximately 12 months. These activities would be expected to require an average of approximately 90 personnel, and a maximum of approximately 250 personnel.

At full development, the Project would employ approximately 350 operational personnel.

Additional employment may also be generated through support functions (e.g. cleaners, security personnel).

Additional contractors would also be required during short periods over the life of the Project; for example, during longwall change-outs, periods of higher underground development activities, scheduled plant shutdowns or other maintenance programs.

Malabar has a strong local employment and diversity commitment. The Project's planned recruitment would include approximately 50% of the operational workforce from those outside the underground mining sector.

ES2.10 Water Management

The Project would use water treatment systems, such as Reverse Osmosis, to maximise the re-use of water on-site.

The Project also includes provision for the transfer of water between the Project and BHP's adjacent Mt Arthur Mine, providing appropriate commercial terms are in place. This also allows for the beneficial re-use of water collected by the Project, and is part of a hierarchy of measures to manage any excess water that may accumulate at the Project.

The Project's water management system has sufficient capacity and flexibility to accommodate a wide range of groundwater inflows and climate scenarios while:

- providing security of supply for mine operations, with no requirement to source water externally for mining operations (e.g. from the Hunter River); and
- avoiding the need for controlled release of mine-affected water to the Hunter River.

Plate ES-5 – Malabar Employees

ES2.11 Infrastructure and Services

Key existing assets at the Maxwell Infrastructure (Plate ES-6) include:

- site access road from Thomas Mitchell Drive;
- CHPP, which includes:
  - ROM coal stockpile and ROM hopper;
  - coal processing plant; and
  - product coal stockpiles;
- train load-out facility and rail loop (connecting to the Antiene Rail Spur);
- administration, employee amenities, training centre, emergency services, workshops, washdown bays, store, parking facilities and explosives storage facilities;
- electrical distribution infrastructure;
- CHPP reject emplacement facilities; and
- site water management infrastructure (including water storages, pumps and pipelines and a wastewater treatment facility).

The use of the Maxwell Infrastructure for the Project results in less disturbance and a significantly lower initial capital cost, than would otherwise be required for a 'greenfield' project to access the coal resource within EL 5460.

In the absence of approval for the Project, this existing infrastructure would be decommissioned and the potential benefits of its use would be lost.

In addition to the use of the Maxwell Infrastructure, other infrastructure and services for the Project would be concentrated at the mine entry area (not visible from the Golden Highway) and along the transport and services corridor.

Employees of the Project and deliveries would use the existing site access to the Maxwell Infrastructure from Thomas Mitchell Drive. This would limit Project traffic movements on the Golden Highway and Edderton Road.

The extended site access road would be progressively sealed during the first year of mining operations.

Plate ES-6 – Existing Maxwell Infrastructure

ES3 APPROVAL PROCESS

ES3.1 New South Wales

The Project is a 'State Significant Development' to which Part 4 of the NSW *Environmental Planning and Assessment Act, 1979* applies.

The EIS has been prepared to accompany a Development Application made for the Project, in accordance with Part 4 of the NSW *Environmental Planning and Assessment Act, 1979*.

The EIS considers the potential environmental impacts of the Project in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment (now the Department of Planning, Industry and Environment), including input from the Commonwealth Department of the Environment and Energy.

Malabar is seeking development consent for the Project from either the NSW Minister for Planning and Public Spaces or the Independent Planning Commission.

ES3.2 Commonwealth

Malabar referred the relevant elements of the Project to the Commonwealth Minister for the Environment and Energy (EPBC 2018/8287) (the proposed Action). A delegate of the Commonwealth Minister determined on 12 November 2018 that the proposed Action is a 'controlled action' and the Action also requires approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*.

Therefore, the EIS provides an assessment of potential impacts on the following controlling provisions considered by the Commonwealth Minister to be relevant to the proposed Action:

- threatened species and communities listed under the *Environment Protection and Biodiversity Conservation Act, 1999*; and
- water resources.

The proposed action will be assessed under the NSW accredited assessment process (that is, under Part 4 of the *Environmental Planning and Assessment Act, 1979*).

ES3.3 Determination

Following public exhibition of the EIS by the Department of Planning, Industry and Environment, submissions from the community and government agencies will be addressed by Malabar.

The Project will then be determined by the NSW Minister for Planning and Public Spaces or the Independent Planning Commission under the *Environmental Planning and Assessment Act, 1979*.

Following completion of the NSW assessment process, the Project will then also be determined by the Commonwealth Minister under the *Environment Protection and Biodiversity Conservation Act, 1999*.

ES4 ENGAGEMENT

Malabar is committed to continuing open and constructive dialogue with the local community and stakeholders.

Feedback obtained through engagement with the local community, government agencies and other stakeholders has provided the opportunity to identify issues of concern or interest, and to consider these issues within the Project design and the EIS.

Malabar has consulted with:

- key State government agencies;
- Muswellbrook Shire Council and Singleton Council;
- the Commonwealth Department of the Environment and Energy;
- neighbouring landholders (including mining and power generation operations, equine enterprises and a viticulture enterprise);
- infrastructure owners and service providers; and
- the local community, including representatives of the Aboriginal community.

Malabar maintains open lines of communication with the community through a number of community initiatives and local involvement (Plate ES-7). In addition, Malabar undertook the following specific consultation activities for the EIS:

- distributing community newsletters to local residents and other stakeholders;
- conducting community information sessions;
- meeting directly with neighbouring landholders;
- providing briefings to Malabar's Community Consultative Committees (CCCs);
- directly consulting with representatives of the Aboriginal community;
- consulting local community groups;
- proactively providing information through local media; and
- briefing Malabar's locally based staff and contractors.

Plate ES-7 – National Tree Day at Muswellbrook Public School (Supported by Malabar)

The outcomes of extensive stakeholder consultation have been considered in the development of the Project and the EIS.

ES5 KEY ENVIRONMENTAL ISSUES AND PROJECT MITIGATION

The EIS is supported by a number of specialist studies that include detailed impact assessments covering all environmental, social and economic aspects that may be potentially impacted by the Project.

The following sub-sections provide a summary of the key environmental issues raised during EIS consultation and the proposed Project mitigation measures that would avoid, minimise and offset any potential impacts.

ES5.1 Subsidence

Natural and built features located above the underground mine layout include:

- undulating Malabar-owned agricultural land primarily used for cattle grazing, with areas of remnant vegetation;
- small, unnamed drainage lines that flow for short periods following rainfall;
- Aboriginal heritage sites (in particular, open artefact sites);
- Edderton Road (a local rural road);
- an 11 kilovolt power line owned by Ausgrid;
- State survey control marks; and
- Malabar-owned infrastructure and improvements, including unsealed tracks, fences, farm dams, groundwater bores, land contours and cattle yards.

There would be no subsidence impacts on privately-owned land.

Potential subsidence impacts on natural and built features can be managed through standard monitoring and mitigation measures.

Malabar has mitigated concerns about potential impacts on Edderton Road by presenting two alternatives that would maintain both the safety and operability of Edderton Road.

The two proposed options are: (i) normal subsidence management and road maintenance techniques along the existing alignment; or (ii) the realignment of the road around the Maxwell Underground area. Malabar is seeking consent for both of these options as part of the Project.

The environmental impact assessment and engagement processes did not identify any other potential subsidence impacts on built or natural features that would warrant consideration of avoidance or further minimisation of subsidence impacts.

ES5.2 Water Resources

The Project is located in the Hunter River catchment. The Maxwell Infrastructure is located in the upper headwaters of a number of tributaries of the Hunter River, including Ramrod Creek, Bayswater Creek, Saltwater Creek and Saddlers Creek.

The main drainage feature in the vicinity of the Maxwell Underground is Saddlers Creek located to the north and west (Plate ES-8). The eastern side of the Maxwell Underground area drains to Saltwater Creek downstream of Plashett Reservoir.

Plate ES-8 – Saddlers Creek

Source: Mine Subsidence Engineering Consultants Pty Ltd (2019).

The streams in the Maxwell Underground area primarily have ephemeral flow regimes (i.e. a very short flow duration during storm events only).

The Hunter River and Saddlers Creek are located outside the Maxwell Underground area and would not be subject to direct subsidence impacts.

The Project is located outside the extent of flooding associated with the Hunter River and Saddlers Creek.

The main groundwater systems in the vicinity of the Project are:

- alluvium associated with the Hunter River;
- alluvium associated with Saddlers Creek; and
- low productivity Permian strata, including coal seams.

The Hunter River alluvium is the most productive aquifer in the region.

The stratigraphy of the alluvium along Saddlers Creek varies along the reach. The yield of the Saddlers Creek alluvium near the confluence with the Hunter River is expected to be similar to that of the Hunter River alluvium, while the yield further upslope is expected to be lower due to the dominant silts and clays.

Alluvium is mapped along Saltwater Creek and an unnamed tributary to the east of the Maxwell Underground. The alluvium comprises a sandy creek bed surrounded by steeply incised banks of colluvium and weathered basalt.

Potential impacts of the Project on flow and water quality in the Hunter River would be negligible.

The Project would result in negligible incremental change to the existing cumulative impacts on flow in Saddlers Creek, Saltwater Creek, Ramrod Creek or Bayswater Creek associated with the Mt Arthur Mine, existing Maxwell Infrastructure and Bayswater and Liddell Power Stations.

The Project would result in minimal impact (i.e. less than 2 metre drawdown) in the highly productive Hunter River alluvium.

An assessment of potential impacts of the Project on groundwater also concluded:

- minimal impact at all bores in alluvial aquifers;
- negligible adverse impact on groundwater quality in the alluvium;
- no change to the beneficial uses of the Permian hard rock aquifers in or around the Project area during or following mining; and
- negligible impacts to groundwater dependent ecosystems.

The Project is also predicted to have no adverse effect on surface water quality in downstream receiving waters.

Final void modelling indicates the existing legacy open cut voids at the Maxwell Infrastructure would not spill and would remain groundwater sinks in the long-term.

Malabar is currently seeking to obtain sufficient water access licences for the Project in the Sydney Basin-North Coast Groundwater Source, which is regulated under the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016*. Malabar currently holds sufficient licences to cover the estimated licensing requirements for the Project in all other relevant water sources.

Malabar would implement an extensive groundwater and surface water monitoring program over the life of the Project. Monitoring results would be regularly reviewed and used to refine modelling predictions and implement an adaptive management and continuous improvement approach.

ES5.3 Visual and Landscape Character

The existing Maxwell Infrastructure lies within a region of disturbance due to previous open cut mining activity. The facilities at the Maxwell Infrastructure are located on flat land and vegetation buffers separate and screen the Maxwell Infrastructure from Thomas Mitchell Drive.

The proposed mine entry area is positioned in a natural valley around 9 km south-west of the processing facilities at the Maxwell Infrastructure. The valley encloses this operational facility within natural topography.

Malabar imposed design criteria so that infrastructure at the mine entry area would not be visible from the Golden Highway, Coolmore Stud or Godolphin Woodlands Stud.

The additional capital costs associated with these specific design criteria are approximately $9 million.

There would be no views of the Project from the Golden Highway, Hollydene Estate Wines, Jerrys Plains, the majority of the Coolmore property or the majority of the Godolphin Woodlands property.

At the highest vantage point on the Coolmore Stud and Goldolphin Woodland Study properties, a section of the transport and services corridor would be potentially visible as it crosses distant ridgelines, along with the potential Edderton Road realignment (Figure ES-4).

The transport and services corridor would be approximately 7.5 km from the viewer and would take up a very small portion of the primary view (<1%), which significantly reduces discernible components. The assessed visual impact is low and would be in the context of existing views of the Mt Arthur Mine from this location.

There would also be limited views of Project infrastructure from a low-lying section of Edderton Road near Saddlers Creek. These components would be at a distance of approximately 3.8 km and, therefore, visual impacts would be low.

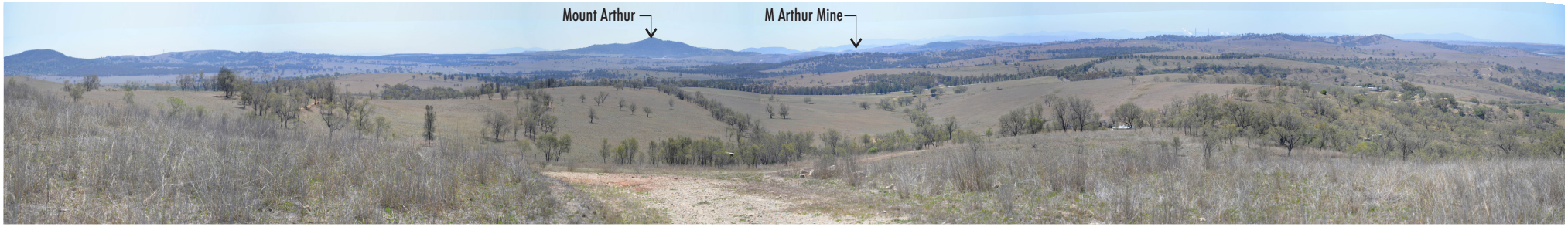
Aerial views of the mine entry area, transport and services corridor and Maxwell Infrastructure are shown on Figure ES-5. Surface infrastructure for the Project would be seen in the context of the broader mined landscape, which includes significant areas of existing mine-related disturbance.

The addition of the small proportion of disturbed area from the Project to this overall landscape containing existing open cut mines is considered insignificant, and would not materially contribute to potential cumulative impacts on landscape and visual character.

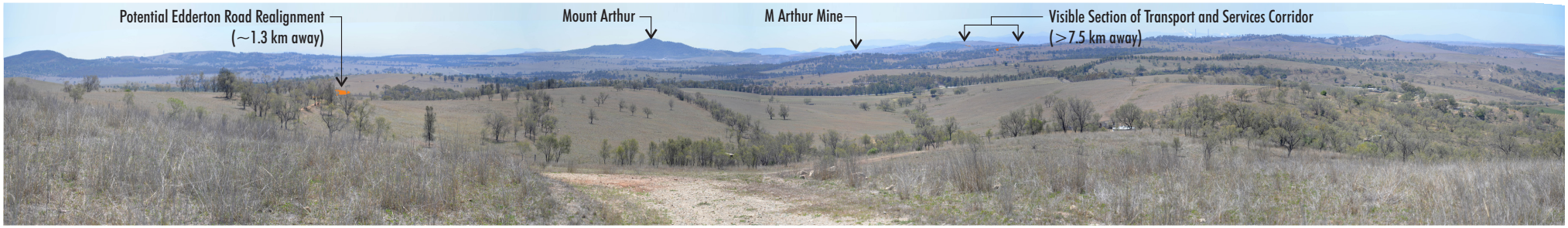
Notwithstanding the limited potential visual impacts, the following on-site treatments would be implemented for the Project:

- Earthwork batters within the transport and services corridor would be vegetated.
- Areas disturbed for construction laydown areas and access would be revegetated as soon as practicable after the completion of construction.
- Where feasible, landscaping would be undertaken to emulate existing landscape patterns, colours and texture continuums.
- The mine entry area would include landscaping to create tonal variations when viewed from the air.
- Compatible tones would be used for the covered, overland conveyor infrastructure and cladding colours.
- Power line design would consider the placement of poles in locations of high visual absorption, where possible.

Planting of screening vegetation has been undertaken adjacent to the mine entry area, on the west slope of the bounding ridgeline. This would, when established, significantly reduce the visual effect of the Project on Edderton Road.



COOLMORE STUD HIGHEST VANTAGE POINT - EXISTING VIEW



COOLMORE STUD HIGHEST VANTAGE POINT - PROJECT COMPONENTS (HIGHLIGHTED)

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COOLMORE STUD HIGHEST VANTAGE POINT - PROJECT SIMULATION

LEGEND
Visual Simulation

Source: VPA (2019)

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Project Visual Simulation –
from Highest Vantage Point on Coolmore Stud

Figure ES-4

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Orthophoto Mosaic: 2018, 2016, 2011

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Aerial Simulation of Project Infrastructure (During Operations)

Figure ES-5

ES5.4 Air Quality and Noise

Potential air quality and noise impacts are significantly mitigated by the adoption of underground mining methods and other Project design measures.

The assessment of potential air quality and noise impacts is based on modelling that incorporates a number of conservative assumptions (such as the continual operation of the Project at a maximum production rate).

The modelling indicates there would be negligible amenity impacts on equine and viticulture enterprises, in particular:

- Changes in particulate matter concentrations in the air at Coolmore and Godolphin Woodlands Studs and Hollydene Estate Wines would be negligible.
- Changes in dust deposition on pastures at Coolmore and Godolphin Woodlands Studs and vines at Hollydene Estate Wines would be negligible.
- Noise contributions from the Project at the Coolmore and Godolphin Woodlands Studs and Hollydene Estate Wines would be indistinguishable from background noise.

The Project would comply with all relevant criteria for Project-only 24-hour average dust concentrations, cumulative annual average dust concentrations and dust deposition levels at all privately-owned receivers.

The Maxwell Infrastructure is located in the vicinity of residences in the Antiene and East Antiene residential areas located north of Thomas Mitchell Drive and near the New England Highway.

Noise generated by the Maxwell Infrastructure during the Project life would generally be less than previously approved levels for open cut operations at the former Drayton Mine, which operated for over 30 years.

With the implementation of appropriate Project mitigation measures, negligible or no exceedance of the Project noise trigger levels is predicted at all but four privately-owned receivers to the north of the Maxwell Infrastructure.

These four properties would experience marginal exceedances of the Project-specific noise trigger levels and would have the right to mitigation measures at their property on request, such as mechanical ventilation/comfort condition systems to enable windows to be closed.

A Human Health Risk Assessment has been conducted for the Project in accordance with relevant guidelines and based on the outcomes of the air quality and noise modelling. No health risk issues of concern were identified for the population in the vicinity of the Project.

ES5.5 Road Transport

The Project would use the existing site access to the Maxwell Infrastructure from Thomas Mitchell Drive (Plate ES-9). The site access road would be extended along the transport and services corridor to the mine entry area, and would be used by Project employees and for deliveries to the Project.

The site access point would limit Project traffic movements on the Golden Highway and Edderton Road.

The existing road network can satisfactorily accommodate the forecast traffic demands resulting from the Project without any specific additional road upgrade requirements.

Potential impacts on travel time along Edderton Road would depend on the direction of travel and the final subsidence management approach adopted by Malabar. The changes in travel time would be minimal (less than 2.5 minutes).

Malabar would provide Jerrys Plains residents, Coolmore and Godolphin Woodlands Studs and Hollydene Estate Wines with notice of upcoming relevant Project works on Edderton Road throughout the life of the Project.

ES5.6 Biodiversity

Underground mining methods significantly reduce vegetation and habitat disturbance, in comparison to open cut mining methods. In addition, Project elements have been located and designed to avoid or minimise impacts to vegetation and habitat disturbance and fauna species.

Plate ES-9 – Existing Site Access Road from Thomas Mitchell Drive

Source: Van Pelt Allen Visual Planning and Assessment (2019).

The majority of the Project area has been cleared and used for agricultural grazing purposes for well over 100 years (with the exception of the Maxwell Infrastructure area that has been a mining complex since 1983).

The Project would involve disturbance of approximately 321 hectares. Due to former and present land use, the footprint is mostly derived native grassland (approximately 42%), along with fragmented native woodland/forest vegetation, post-mining landforms undergoing rehabilitation, planted trees, cleared land and dams.

The area provides habitat for fauna species and approximately half of the vegetation to be cleared is listed as threatened under State and/or Commonwealth legislation (despite its degraded nature).

Malabar would implement a number of measures to mitigate potential impacts on biodiversity, such as protocols for vegetation clearance and rehabilitation and revegetation of disturbed areas.

Potential biodiversity impacts have been assessed and would be offset in accordance with the NSW *Biodiversity Assessment Method* (BAM). The BAM sets a standard that would result in no net loss of biodiversity values in NSW.

ES5.7 Aboriginal Cultural Heritage

Consultation with the Aboriginal community regarding the Project has been extensive and involved multiple opportunities to provide feedback and comment.

Culturally significant landscape features identified by registered Aboriginal parties included Mount Arthur, the Hunter River and Saddlers Creek. All three features are located outside the Project area and would not be directly impacted by the Project.

The Project would result in 39 open artefact sites being wholly or partially impacted by surface development associated with the Project. All of the Aboriginal heritage sites that would be impacted by surface development are open artefact sites that have been assessed to be of low or moderate significance.

The impact of the Project on the potential Aboriginal archaeological resource of the region would not be significant in the context of known and potential heritage resources.

Potential impacts on Aboriginal heritage sites would be managed in consultation with the Aboriginal community through salvage of sites and other management measures.

ES5.8 Rehabilitation and Mine Closure

Malabar is proactively progressing rehabilitation of previous open cut mining areas at the Maxwell Infrastructure (Figure ES-6). Following Malabar formally taking control of the Maxwell Infrastructure on 26 February 2018, Malabar resumed rehabilitation work on former mining areas as quickly as possible.

The first bulldozer commenced rehabilitation work on the Maxwell Infrastructure site in early March 2018. Approximately 644 hectares of the Maxwell Infrastructure area has been rehabilitated to date.

The Project would involve continued rehabilitation activities at the Maxwell Infrastructure. The EIS outlines the rehabilitation and mine closure strategy for the life of the Project.

In the long-term, all sites will be rehabilitated to a safe, stable and sustainable landform of a similar character to surrounding areas. A conceptual post-mining land use of a combination of agriculture and nature conservation has been selected for the majority of the Project domains.

Over the life of the Project, rehabilitation performance measures and completion criteria will, periodically, be updated and refined in consultation with relevant regulatory authorities and stakeholders to reflect evolving mine site rehabilitation practices and standards.

ES5.9 Economic Effects and Social and Community Infrastructure

The potential for the Project to create increased local employment options and support local businesses was a key benefit identified in local community and other stakeholder engagement.

Annual export sales of product coal from the Project would be in the vicinity of $500 million to $700 million[1] per annum, on average.

The Economic Assessment indicates the Project would result in a total net benefit to the NSW economy of over $1 billion in net present value terms, which:

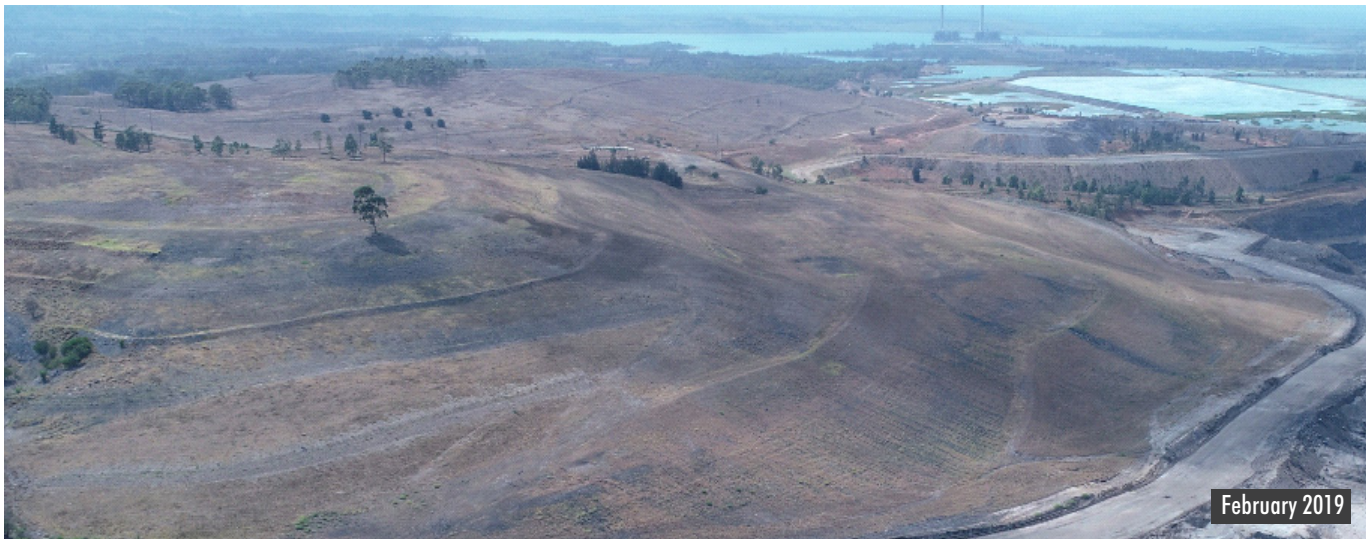
- is inclusive of the estimated costs for environmental externalities and internalisation of environmental management costs by Malabar; and
- conservatively excludes any indirect economic impacts associated with benefits to workers or suppliers.

The Project would contribute between $110 million and $140 million[1] per annum on average to the Commonwealth, NSW and local governments, in the way of company tax, coal royalties, payroll tax, land taxes and council rates.

In addition, the Project would produce the following other socio-economic benefits:

- generation of approximately 350 new direct, long-term jobs for the region, with consequent social benefits at family and community levels;
- development of local workforce capacity with Malabar's proposed focus on local employment and the recruitment of personnel from outside of the underground mining sector (including women and Indigenous people);
- indirect (flow-on) employment as the result of increased wages and participation of regional businesses in the supply chain;
- continued support for the vitality and growth of local and regional businesses (e.g. through the provision of non-labour inputs such as maintenance supplies and professional services);
- support and funding contributions to local community programs and groups during the life of the Project;
- support for local community objectives and aspirations (including objectives to support job growth and diversify from reliance on thermal coal production);
- positive economic flow-on effects associated with the use of the Hunter Valley coal rail network and coal export terminals at the Port of Newcastle; and
- certainty over future development plans at the Maxwell Infrastructure and within EL 5460.

[1] Range is based on coal price forecasts used by Deloitte Access Economics and Malabar's coal price forecasts.



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Resource Strategies

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MAXWELL PROJECT

Progress of Rehabilitation
at the Maxwell Infrastructure

Figure ES-6

There is potential for increased demand or competition for rental housing and skilled labour if the Project overlaps with other local and regional developments. Malabar would work with local government and the local community to minimise potential social impacts of the Project and maximise potential opportunities.

Malabar will continue to engage with near neighbours and the local community to respond to any concerns or reservations about potential Project impacts during the assessment phase and throughout the life of the Project.

ES6 CONCLUSION

The Project has attributes which are akin to a 'brownfield' project, in particular:

- the beneficial use of the substantial existing Maxwell Infrastructure for coal handling and processing, water storage and CHPP reject emplacement;
- access to existing rail and port infrastructure;
- an established site access point; and
- extensive geological and geotechnical data providing a high level of confidence in the coal resource.

The benefits of coal mining in the Hunter Valley is recognised at the State, regional and local levels.

Local community and other stakeholder engagement for the Project identified increased local employment opportunities and support for local businesses as key Project benefits.

Engagement with the Muswellbrook Shire Council has also identified the benefits of the Project's proposed coking coal product and underground mining techniques in providing industry diversity in the Muswellbrook LGA.

It is Malabar's intention to be a long-term employer in the region, with underground operations delivering predominantly metallurgical (coking) coal to the global metals market.

To achieve this outcome, Malabar recognises the importance of contributing positively to the community, undertaking genuine community engagement and demonstrating successful environmental management over time.

Malabar is actively improving its agricultural properties and viticultural operation (the Merton Vineyard, Plate ES-10), so that these will be long-term sustainable and productive businesses that can co-exist with underground mining operations.

Plate ES-10 – Malabar's Merton Vineyard (Not Impacted by the Project)
Source: Muswellbrook Chronicle (2019).

Through the voluntary adoption of the proposed Project design measures and operating philosophy, Malabar is confident that the Project would be compatible with existing and future surrounding land uses, including existing equine and viticulture enterprises.

Potential impacts of the Project have been assessed against established thresholds of acceptability contained in relevant guidelines and policies. Potential impacts have been avoided or minimised as far as is reasonable or feasible, and mitigation measures and offset strategies are proposed where residual impacts are predicted.

In weighing up the main environmental impacts (costs and benefits) associated with the proposal as assessed and described in the EIS, the Project is, on balance, considered to be in the public interest.