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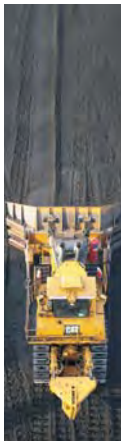
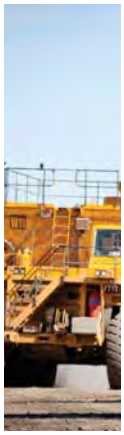
# Duralie Open Pit Modification
## Environmental Assessment





## EXECUTIVE SUMMARY

YANCOAL
兖煤澳大利亚有限公司

Resource Strategies

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## ES1 APPROVED DURALIE COAL MINE

The existing Duralie Coal Mine (DCM) is located approximately 10 kilometres north of the village of Stroud and approximately 20 kilometres south of Stratford in the Gloucester Valley in New South Wales (NSW) (Figure ES-1).

Duralie Coal Pty Ltd (DCPL) is the owner and operator of the DCM. DCPL is a wholly owned subsidiary of Yancoal Australia.

Mining operations at the DCM commenced in 2003 following original granting of Development Consent for the mine by the NSW Minister for Urban Affairs and Planning in 1997.

In 2008 DCPL lodged an application for the Duralie Extension Project (DEP). The DEP was approved by the NSW Land and Environment Court under section 75J of the NSW *Environment and Protection Act, 1979* subject to the conditions of Project Approval (08_0203).

A modification to Project Approval (08_0203) was approved in 2012 for an extension to the hours of operation of the Duralie shuttle train (the Duralie Rail Modification).

The approved activities at the DCM include mining of the Weismantel and Clareval Seams within the Weismantel and Clareval open pits in Mining Lease (ML) 1646 and ML 1427. The open pits are progressively backfilled with waste rock as mining develops.

Other approved activities at the DCM include:

- the transportation of run-of-mine coal to the Stratford Coal Mine via rail on the North Coast Railway;
- development of dewatering bores, pumps, dams, irrigation infrastructure and other water management equipment and structures;
- disposal of excess water through irrigation within ML 1427 and ML 1646;
- supporting infrastructure and facilities;
- establishment of a permanent Coal Shaft Creek Diversion alignment adjacent to the existing DCM mining area; and
- ongoing monitoring and rehabilitation.

The approved extent of surface development is shown on Figure ES-2.

## ES2 MODIFICATION OVERVIEW

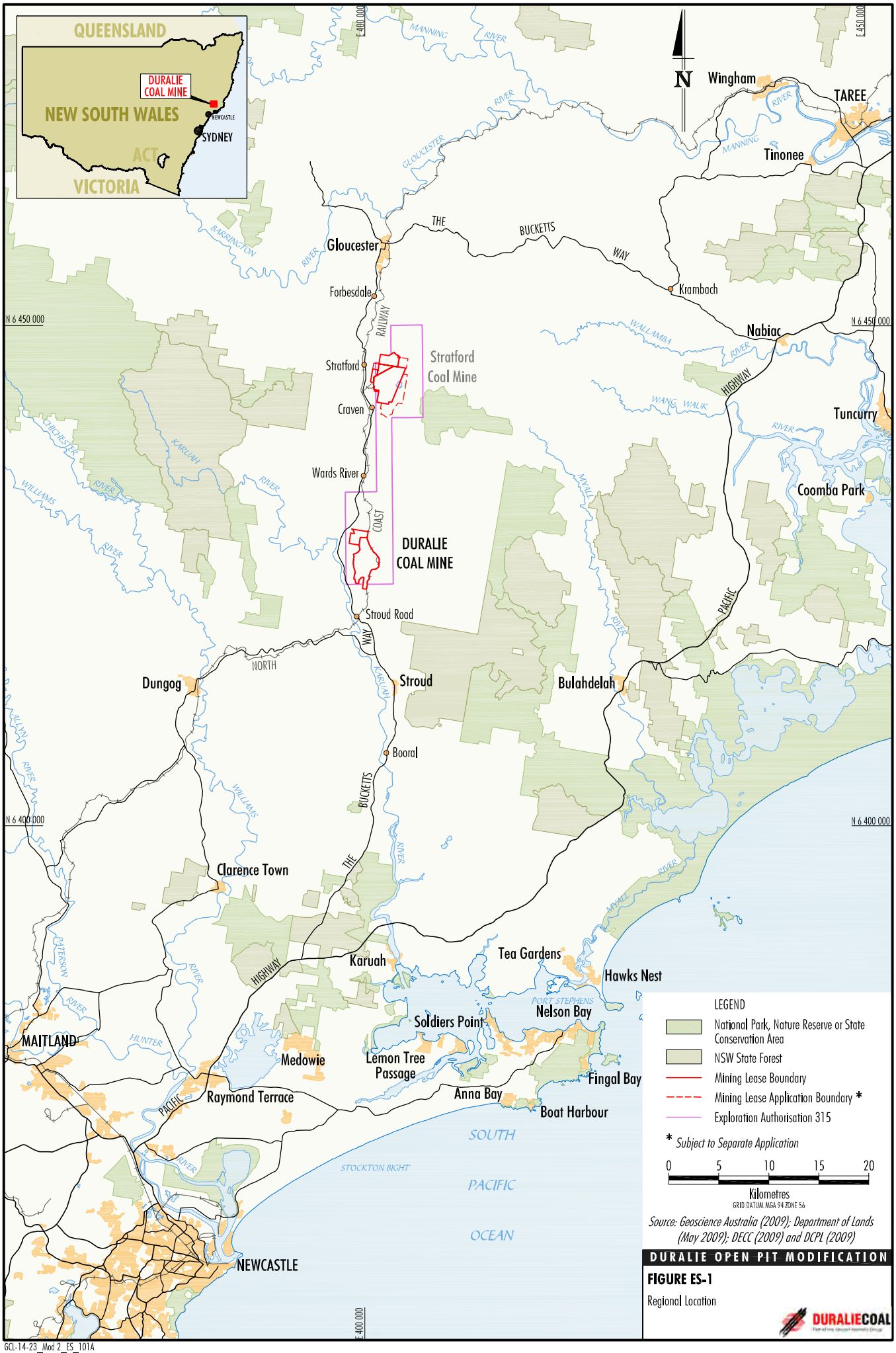
DCPL is seeking to modify Project Approval (08_0203) under section 75W of the NSW *Environmental Planning and Assessment Act, 1979* for the Duralie Open Pit Modification (the Modification).

To reflect the results of ongoing mine exploration and mine planning, the following changes to the currently approved DCM are proposed for the Modification:

- Increase in the maximum depth of the Clareval open pit.
- A minor increase in the extent of surface development of the DCM of approximately 2.5 hectares (ha) (Figure ES-2), resulting from:
  - a reduction in low wall angles of the Clareval open pit and the removal of a pillar between the Clareval and Weismantel open pits to improve geotechnical stability; and
  - associated relocation of the up-catchment diversion to the west of the Clareval open pit.
- Revised mining sequence (i.e. progression of mining in the Clareval and Weismantel open pits).
- Increased height of the waste rock emplacement (i.e. the backfilled open pit) from the currently approved elevation of approximately 110 metres Australian Height Datum (m AHD) to approximately 135 m AHD.

The Modification would result in **no change** to the following key elements of the currently approved DCM:

- Maximum annual ROM coal production.
- Maximum annual waste rock extraction.
- Mine life.
- Mining tenements (i.e. MLs 1427 and 1646).
- Mining method (i.e. conventional open pit mining methods and equipment).
- Coal seams mined.
- Duralie shuttle train rail movements or hours.
- Waste rock geochemical management measures.
- Extent and use of irrigation areas for the disposal of excess water.
- Rehabilitation of surface disturbance areas.
- Operational workforce or deliveries.
- Power supply.

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**DURALIE OPEN PIT MODIFICATION**

**FIGURE ES-2**
Modification
General Arrangement

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## ES3 MODIFICATION JUSTIFICATION AND BENEFITS

The Modification is required to enable the efficient extraction of coal, continuation of waste emplacement at the DCM, and to improve the geotechnical stability of the open pit low walls.

Without the Modification, waste emplacement at the DCM would be constrained and a portion of the coal reserves approved to be extracted from the Weismantel and Clareval open pits until 2019 would be foregone, resulting in a truncation of the mine life.

As such, the Modification would enable the continuation of the direct and indirect socio-economic benefits associated with the operation of the DCM via the continuation of employment, expenditure in the local and state economies and payment of royalties and taxes.

## ES4 CONSULTATION

Consultation has been conducted with key state government agencies, local councils and the local community (including Aboriginal stakeholders) for the Modification.

Consultation will continue during the assessment phase of the Modification.

## ES5 ENVIRONMENTAL ASSESSMENT

The environmental studies completed for the Modification indicate that with minor amendments, existing monitoring, mitigation and management measures could continue to be implemented to minimise the potential impacts of the DCM on existing environmental values and the nearest privately-owned properties.

A summary of key outcomes of the environmental assessment for the Modification are provided in Table ES-1.

### ES5.1 NOISE

A Noise and Blasting Assessment was prepared by SLR Consulting.

The DEP noise model was updated to account for the proposed changes to the DCM mine layout (e.g. increased waste rock emplacement height).

There is a reduction in the currently approved noise levels predicted for the Modification, as mobile plant are now operating approximately 60 metres deeper in the Clareval open pit in comparison to the DEP noise modelling scenario.

Within the current Project Approval there are four residences in the Noise Affectation Zone (i.e. greater than 5 A-weighted decibels [dBA] above the project specific noise limit [PSNL] of 35 dBA). This reduces to zero privately-owned residences[1] for the Modification.

Within the current Project Approval there are twelve residences in the Noise Management Zone (i.e. 1 to 5 dBA above the PSNL). This reduces to five privately-owned residences[1] for the Modification.

DCPL would continue to implement the noise management measures and monitoring program detailed in the Noise Management Plan, including real-time noise monitoring and management.

### ES5.2 AIR QUALITY

An Air Quality Impact Assessment was prepared by Pacific Environment Limited.

There is a reduction in annual dust emissions predicted for the Modification.

No exceedances of air quality criteria were predicted at any privately-owned receiver due to project-only emissions.

Existing mitigation, management and monitoring measures described in the Air Quality and Greenhouse Gas Management Plan and Pollution Reduction Programs would continue for the Modification, including real-time air quality monitoring and management.

[1] Privately-owned residences not subject to an existing compensation agreement with DCPL.

**Table ES-1**
**Summary of Key Outcomes of the Modification Environmental Assessment**

| Environmental Aspect | Approved DCM | The Modification |
|---|---|---|
| Noise | • Four residences in the Noise Affectation Zone.<br>• 12 residences in the Noise Management Zone.<br>• Real-time noise monitoring and management. | • Predicted reduction in currently approved noise levels.<br>• No residences[1] predicted to be in the Noise Affectation Zone.<br>• Five residences[1] predicted to be within the Noise Management Zone.<br>• No change to the real-time noise management. |
| Air Quality | • No predicted exeedances of air quality criteria due to project-only emissions at privately-owned residences. | • Reduction in dust emissions predicted.<br>• No change. |
| | • Real-time dust management and monitoring. | • No change. |
| Groundwater | • Negligible effect on the alluvials of the Mammy Johnsons River, or on baseflow to/from the Mammy Johnsons River. | • No change. |
| | • Negligible predicted drawdown in water levels at privately-owned bores and groundwater dependent ecosystems. | • No change. |
| | • Performance and investigation indicators and contingency plan. | • No change. |
| Surface Water | • Water management system, including the diversion of up-catchment runoff, and the control of runoff from disturbed, rehabilitated and infrastructure areas. | • No change. |
| | • No predicted overflow from the mine water dam, open pits or final voids. | • No change. |
| | • Negligible effect on the Mammy Johnsons River. | • No change. |
| Biodiversity | • Surface development extent as shown on Figure ES-2.<br>• Biodiversity offset strategy to compensate potential biodiversity impacts. | • Minor increase in surface development extent of approximately 2.5 ha, comprising approximately 1.8 ha of derived grassland and 0.7 ha of open forest.<br>• No threatened/endangered ecological communities in the Modification disturbance area.<br>• Avoidance of open forest clearance where reasonable and feasible.<br>• Expansion of existing biodiversity offset area for residual potential impacts. |
| | • Protocols and procedures to manage potential impacts flora and fauna. | • No change. |
| Aboriginal Heritage | • Aboriginal Cultural Heritage Assessment, including consultation with stakeholders and extensive surveys of ML 1646 and ML 1427. | • No known Aboriginal heritage sites within the Modification disturbance areas.<br>• Consultation with stakeholders during preparation of the Modification Aboriginal Cultural Heritage Assessment. |
| | • Aboriginal heritage management in accordance with the Heritage Management Plan. | • No change. |
| Visual Impacts | • "Very low" to "low" potential visual impacts with the implementation of mitigation measures (e.g. progressive rehabilitation and The Bucketts Way Visual Screen). | • No change to "very low" to "low" level of visual impact at sensitive receivers.<br>• No change to existing and ongoing mitigation measures. |

Note 1: Privately-owned residences not subject to an existing compensation agreement with DCPL.

### ES5.3 GROUNDWATER

A Groundwater Assessment was prepared by HydroSimulations.

The DEP groundwater model was updated to account for the proposed increase in the depth of the Clareval open pit and for the revised mining sequence.

Consistent with the predictions for the DEP and observed groundwater monitoring data, the following is predicted:

- negligible impact to the alluvium in which the Mammy Johnsons River sits, or to river leakage/baseflow contributions;
- negligible impacts to other groundwater users; and
- negligible impacts to groundwater dependent ecosystems.

Groundwater inflow to the open pits is predicted to remain within DCPL's existing licensed allocation, and as such, no additional licences would be required.

Existing groundwater monitoring and management measures described in the Groundwater Management Plan would continue for the Modification, including the performance measures and indicators (trigger levels) for investigating any potentially adverse groundwater impacts to the Mammy Johnsons River or privately-owned bores and associated contingency measures.

### ES5.4 SURFACE WATER

The DEP site water balance model was updated by Gilbert & Associates to account for the proposed changes to the mine layout (e.g. increased height of waste rock emplacement and increased depth of the Clareval open pit) and revised mining sequence.

Consistent with the predictions for the DEP, the following is predicted:

- the water management system could continue to operate such that there would be no overflow from the mine water dam or open pits to downstream watercourses;
- negligible impacts to flows in the Mammy Johnsons River;
- no change to potential water quality impacts;
- no overflow from the final voids to downstream watercourses; and
- water in the final voids would not overflow or post-mining.

### ES5.5 BIODIVERSITY

A Flora Assessment was prepared by FloraSearch, and a Fauna Assessment was prepared by Australian Museum Consulting.

***Surveys***

Extensive flora and fauna surveys have been conducted for the DCM and surrounds, including within the additional 2.5 ha Modification disturbance area. Additional flora and surveys were conducted by FloraSearch and Australian Museum Consulting, respectively, in April and May 2014.

The Modification disturbance area and immediate surrounds contains:

- approximately 1.8 ha of derived grassland and 0.7 ha of open forest;
- no threatened/endangered ecological communities;
- no threatened flora species;
- no critical habitat; and
- records of six threatened fauna species, all of which have been previously recorded in the ML 1646 or ML 1427 or are known to have widespread distribution in the area.

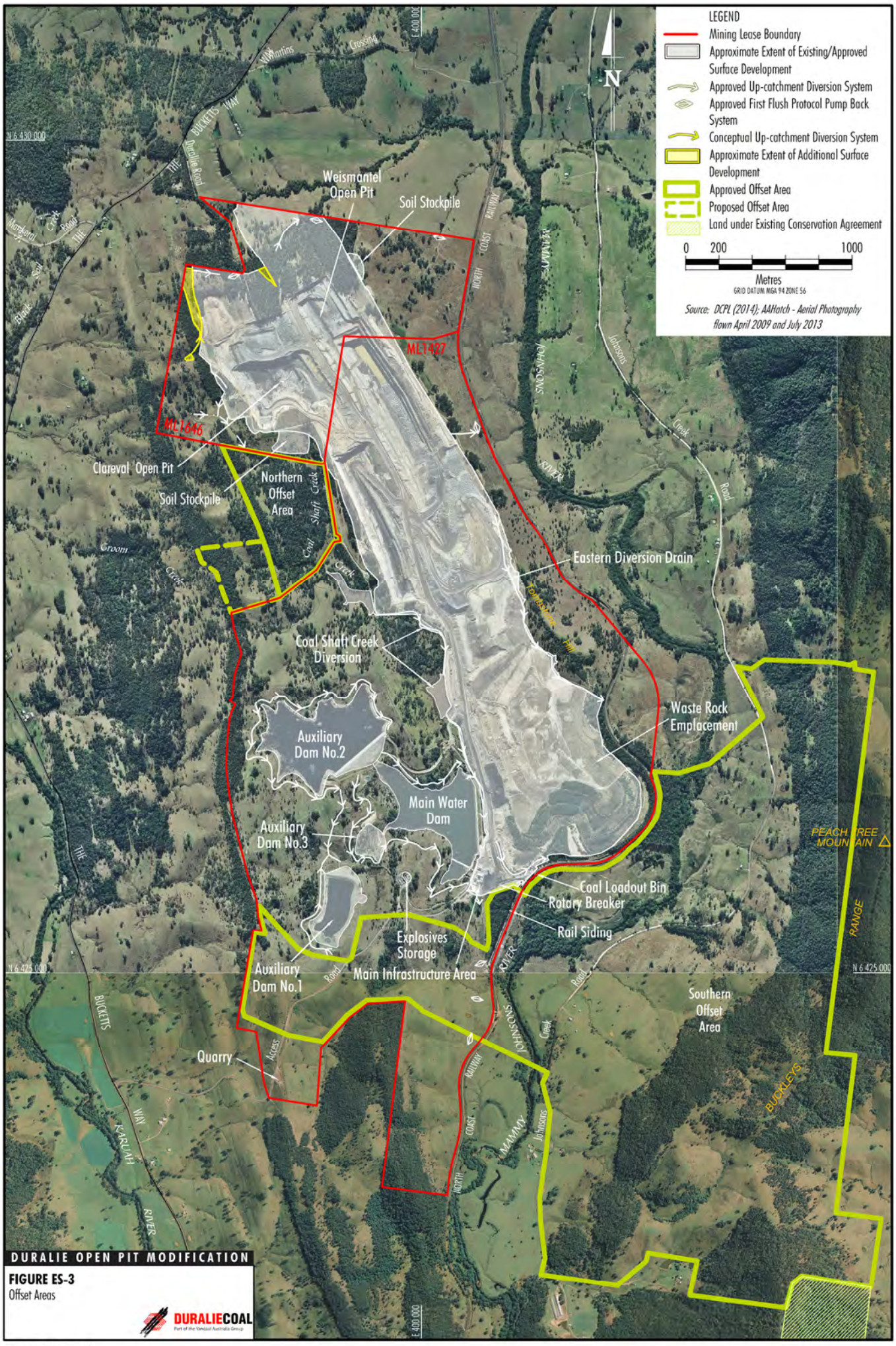
***Mitigation Measures, Biodiversity Offset and Management***

The additional 2.5 ha of surface disturbance is required to improve geotechnical stability of the open pits. Therefore, additional disturbance associated with the changes to the open pit limits cannot be avoided without potentially impacting the long-term stability of the open pit low walls.

The relocation of existing water diversion infrastructure adjacent to the Clareval open pit (i.e. to account for the proposed change to the open pit limit) has been designed to occur within derived grassland and to avoid additional disturbance of native vegetation wherever possible.

To address potential residual impacts, DCPL proposes to extend the existing biodiversity offset area (of approximately 680 ha) to include an additional 12.5 ha of land (owned by DCPL) (Figure ES-3).

Established vegetation clearance protocols would continue for the Modification to manage potential impacts to flora and fauna.




**DURALIE OPEN PIT MODIFICATION**

**FIGURE ES-3**
Offset Areas

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### ES5.6 ABORIGINAL HERITAGE

An Aboriginal Cultural Heritage Assessment was undertaken for the DEP following comprehensive surveys across ML 1646, ML 1427 and surrounds.

As such, the survey conducted for the DEP included the Modification disturbance areas (Figure ES-2), which are located within ML 1646.

There are no known Aboriginal heritage sites located within the Modification disturbance areas.

The consultation process undertaken for the Modification builds on the consultation undertaken for the DEP. A Draft Aboriginal Cultural Heritage Assessment for the Modification was provided to registered stakeholders plus other interested groups.

Aboriginal heritage sites would continue to be managed in accordance with the DCM Heritage Management Plan.

### ES5.7 VISUAL CHARACTER

Views of the existing DCM from public and private viewpoints are largely screened by topography and vegetation, and by DCPL ownership of the majority of land surrounding the DCM.

Privately-owned residences identified for the DEP as having the greatest potential of visual impacts for the DEP are now either owned by DCPL, or DCPL has a private compensation agreement with the landholder.

Views of the DCM are available from some sections of public roads (e.g. The Bucketts Way and Johnsons Creek Road) to the north and east of the DCM. To minimise potential views, DCPL has constructed a visual screen adjacent the section of The Bucketts Way identified in the DEP to have the greatest potential for unmitigated views of the approved DCM.

A revised visual assessment has been conducted to account for the proposed changes to the mine layout (e.g. increased waste rock elevation height).

Consistent with the outcomes of the DEP, the potential visual impact of the modified DCM landforms was considered to be “very low” to “low” at relevant sensitive receivers with the implementation of mitigation measures.

### ES5.8 OTHER ENVIRONMENTAL ASPECTS

With regard to other environment aspects:

- It is predicted blasting could continue in accordance with existing Project Approval blast limits for ground vibration and overpressure.
- No increase in annual greenhouse gas emissions is expected.
- No impacts to aquatic ecology are expected, as no overflow of water from the main water dam or open pits is predicted, and as there would be no change to the irrigation first flush protocol.
- The Modification would not change the existing annual traffic movements to/from the DCM, and therefore, no additional impacts to the surrounding road network are expected.
- No registered non-Aboriginal heritage items would be impacted.
- The Modification would not change potential impact mechanisms to the public or to public property, to the extent that previously identified hazard or risk levels for the DCM would increase.

## ES6 REHABILITATION

The rehabilitation and final land use strategy for the DCM incorporating the Modification is consistent with the approved strategy with respect to progressive rehabilitation and final land use concepts.