

Mt Arthur Coal



Executive Summary

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ES1 BACKGROUND

This document is an Environmental Assessment (EA) for a modification to the Mt Arthur Coal Mine, Open Cut Consolidation Project Approval 09_0062.

The Mt Arthur Coal Mine is owned and operated by Hunter Valley Energy Coal Pty Ltd (HVEC), a wholly-owned subsidiary of BHP Billiton.

This EA has been prepared by HVEC to support a request to modify the Project Approval 09_0062 under section 75W of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979* (EP&A Act). The Mt Arthur Coal Mine Open Cut Modification (the Modification) includes the continuation of open cut mining operations at the Mt Arthur Coal Mine for an additional operational life of four years.

ES2 EXISTING OPERATIONS

The Mt Arthur Coal Mine is located approximately 5 kilometres (km) south-west of Muswellbrook within the Muswellbrook Shire Local Government Area (LGA) in the Upper Hunter Valley of NSW.

The Mt Arthur Coal Mine is a large open cut operation, with a history which dates back to the 1960s. The mine is a substantial economic contributor to the region and state, and will employ 2,600 people at its full production rate.

In 2009, HVEC lodged an application under Part 3A of the EP&A Act to extend open cut operations and consolidate existing approvals for open cut mining operations and surface infrastructure. The application was assessed in the *Mt Arthur Coal Consolidation Project Environmental Assessment* and was approved by the Minister for Planning on 24 September 2010 (Project Approval 09_0062). The project approval permits the extraction of up to 32 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal from the open cut and up to 36 Mtpa from the combined open cut and underground operations.

The currently approved extent of the Mt Arthur Coal open cut is shown on Figure ES-1.

ES3 MODIFICATION OVERVIEW

The Modification includes the following key components:

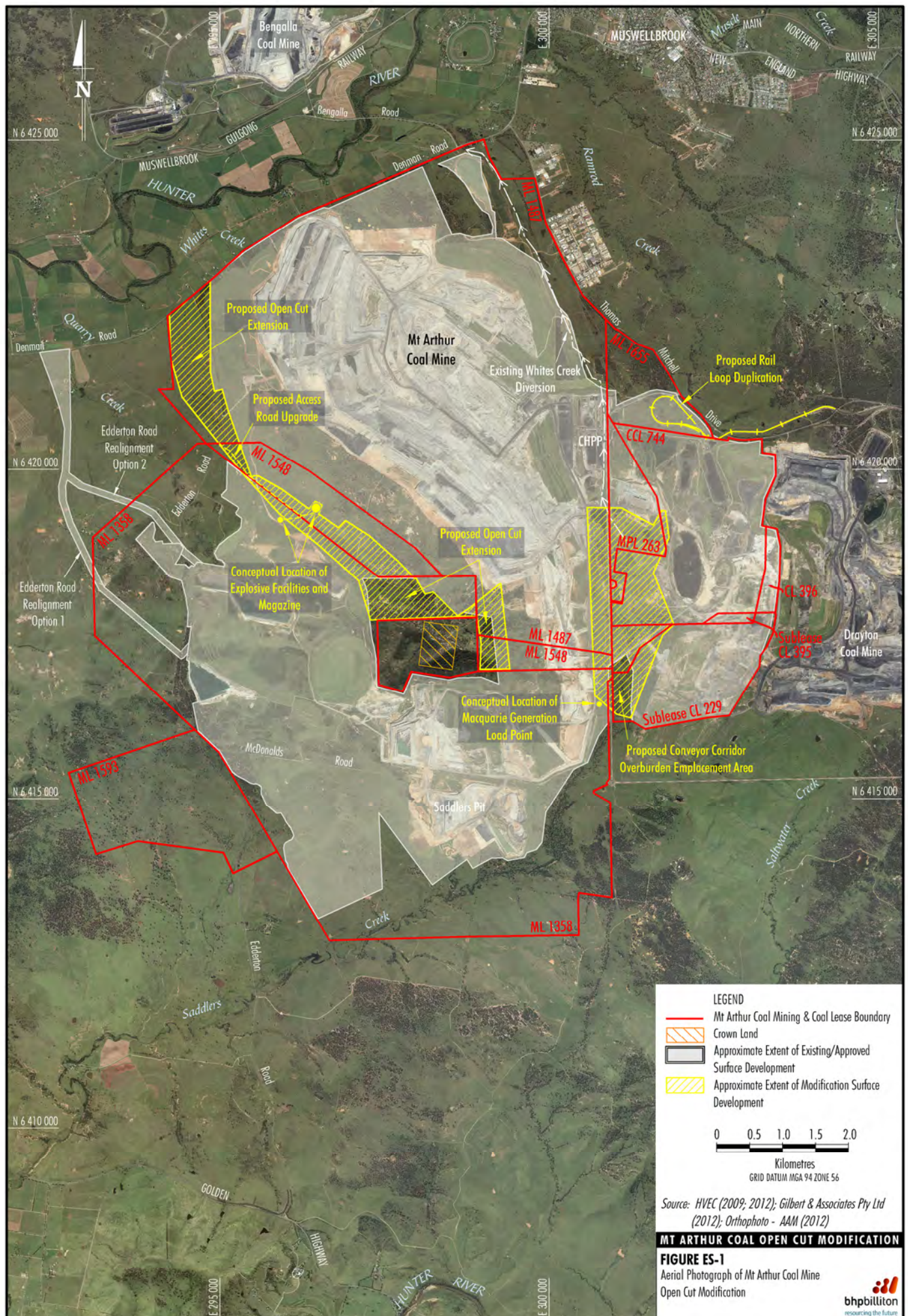
- a four year continuation of the open cut mine life from 2022 to 2026 at the currently approved maximum rate of 32 Mtpa;
- an increase in open cut disturbance areas;
- use of the conveyor corridor for overburden emplacement;
- duplication of the existing rail loop;
- an increase in the maximum number of train movements per day from 24 to 38;
- the relocation of the load point for the overland conveyor which delivers coal to Macquarie Generation's Bayswater Power Station;
- the relocation and upgrade of the explosives storage, magazine and associated facilities; and
- the construction of additional offices, a control room and a small extension to the ROM coal stockpile footprint.

The proposed changes to the existing/approved Mt Arthur Coal Mine are shown on Figure ES-1.

ES4 CONSULTATION

HVEC has consulted extensively with key stakeholders in relation to the Modification, including:

- state government authorities;
- local government authorities;
- federal government authorities;
- infrastructure owners, service providers and other resource companies;
- local community and affected landholders;
- the Hunter Thoroughbred Breeders Association;
- Aboriginal community representatives; and
- Mt Arthur Coal employees and contractors.



ES5 COMMUNITY INITIATIVES AND INVOLVEMENT

HVEC is an active community participant. Current community engagement and consultation initiatives include:

- the Mt Arthur Coal Community Consultative Committee;
- the BHP Billiton website and Mt Arthur Coal Community Response Line;
- the *Community Matters Newsletter*;
- sponsorships and community investment;
- the BHP Billiton Matched Giving Program – which matches donations made by employees to charitable and not-for-profit organisations;
- the Sustainable Communities Project; and
- public reporting.

ES6 ENVIRONMENTAL ASSESSMENT

The EA that accompanies the application under section 75W of the EP&A Act describes and assesses the potential impacts relating to the Modification, and where required, identifies mitigation strategies and management measures to be applied. The primary potential impacts are summarised below.

Agricultural Resources

An Agricultural Impact Statement has been completed for the Modification. The Mt Arthur Coal Mine is subject to the Upper Hunter Strategic Regional Land Use Plan (SRLUP). A review of the regional mapping in the Upper Hunter SRLUP indicates that a small area of land in the north-west of the Modification area may be classed as Biophysical Strategic Agricultural Land (BSAL).

Ground truthing and surveys indicated that approximately 33.1 hectares (ha) of land to be disturbed is of class II land capability and is periodically used to graze cattle. Within this class II land is approximately 2.4 ha of BSAL.

The agricultural economic analysis indicates that the economic benefits of the Modification far outweigh the potential economic costs associated with the reduction in regional agricultural production that would arise due to the restriction of use of grazing agricultural lands due to the Modification and associated biodiversity offsets.

Regional mapping in the Upper Hunter SRLUP indicates that part of the Modification area is within areas identified as Equine Critical Industry Cluster and Viticulture Critical Industry Cluster. However, there are no viticulture or equine enterprises within the Modification area, which is within an existing mining lease.

Groundwater

A comprehensive groundwater assessment, including three-dimensional modelling, has been undertaken for the Modification.

The progression of open cut mining resulting from the Modification would contribute to the development of a localised groundwater sink within the immediate area of mining activities.

An incremental increase in watertable drawdown associated with the Modification is predicted. This increase is located mainly within HVEC-owned land and extends partially into the nearby Hunter River alluvium.

Consistent with the *NSW Aquifer Interference Policy*, HVEC currently holds adequate licences to account for the potential incremental increase in take of water associated with the Modification.

The numerical modelling predicted that three groundwater bores on HVEC-owned land would experience additional drawdown greater than 2 metres (m) as a result of the Modification. No privately-owned bores would be affected by the Modification.

HVEC's existing groundwater commitments would remain for the Modification, as follows:

- Mining (other than that approved in the Mt Arthur North Environmental Impact Statement) would not extend beyond a nominal 150 m buffer zone from the Hunter River alluvials until agreement is reached with the NSW Office of Water regarding the installation of a lower permeability barrier along the point of connections of mining and the alluvium or other appropriate safeguards.
- In the event of interruption to water supply resulting from the Mt Arthur Coal Mine, an alternative water supply would be provided, until such interruption ceases.

Surface Water

A surface water assessment, including a site water and salt balance, was undertaken for the Modification.

The Modification would result in changes to flows in local creeks due to the progression of open cut mining and associated subsequent capture and re-use of runoff from operational catchment areas. The changes in local creeks are generally minor and in some cases result in an increase in reporting catchment areas to off-site watercourses as a result of redesign and/or progressive rehabilitation of overburden emplacements.

The maximum decrease in the Hunter River catchment resulting from the Modification is approximately 0.6 square kilometres. This represents less than a 0.02 percent reduction in the catchment area reporting to the Hunter River at the Mt Arthur Coal Mine and a corresponding reduction of less than 0.02 percent in average flow rates in the Hunter River at the Mt Arthur Coal Mine. This catchment would be progressively reinstated through rehabilitation of mine landforms.

The updated site water balance model found that the majority of the Mt Arthur Coal Mine water demand was able to be sourced from site rainfall runoff, with supply reliability predicted to be greater than 95 percent for all components of the Mt Arthur Coal Mine Open Cut.

Final voids would remain in the Northern Open Cut, McDonalds Pit and Belmont Pit. The Saddlers Pit Void, which would remain as a void under the existing and approved operations, would now be backfilled with overburden as part of the Modification.

Flora and Fauna

The existing Mt Arthur Coal Mine is located in a mining and agricultural landscape. The natural vegetation in and around the Mt Arthur Coal Mine had been predominantly cleared for a variety of agricultural purposes prior to mining.

The Modification would result in the disturbance of approximately 260 ha of land, of which approximately 173 ha is grassland.

The areas to be disturbed include communities listed as Endangered Ecological Communities, some threatened plant species and potential threatened fauna habitat.

In addition, three threatened populations listed as endangered under the NSW *Threatened Species Conservation Act 1995* would be impacted by the Modification. These are: *Acacia pendula* population in the Hunter catchment; *Cymbidium canaliculatum* population in the Hunter Catchment; and *Diuris tricolor* population in the Muswellbrook LGA.

A comprehensive offset strategy is proposed to offset the potential impacts associated with the Modification. This involves augmentation of existing biodiversity offsets in the vicinity of the Mt Arthur Coal Mine, and the proposed conservation of approximately 410 ha of land owned by HVEC located approximately 70 km north of the Mt Arthur Coal Mine (Middle Deep Creek).

Aboriginal Heritage

An Aboriginal Cultural Heritage Assessment was undertaken for the Modification with 41 Aboriginal stakeholders registered an interest in being consulted.

Previous archaeological investigations identified 27 Aboriginal heritage sites within the Modification area and immediate surrounds. These included artefact scatters, a potential archaeological deposit and a grinding groove site.

The field survey undertaken for the Modification identified an additional 28 new sites.

Artefacts within the Modification disturbance areas would be salvaged for safekeeping in accordance with the stakeholder's wishes. An attempt would be made to salvage and relocate a sandstone block, which hosts a grinding groove site, to the Mount Arthur Conservation Area, or other location determined in consultation with the registered Aboriginal stakeholders.

Air Quality

Comprehensive air quality modelling was undertaken for the Modification to allow comparison with the Consolidation Project EA.

The modelling predictions show that annual and maximum 24-hour particulate matter less than 10 micrometres in size (PM₁₀) average concentrations are marginally lower at the majority of the residences compared to the Consolidation Project EA.

In particular, when comparing the modelling predictions of the Modification to the Consolidation Project EA, eight residences are below the 24-hour average PM₁₀ criterion of 50 micrograms per cubic metre (µg/m³). This is in part a result of continued efforts by Mt Arthur Coal Mine to implement controls to reduce dust emissions since 2009.

In summary, no privately owned residences are anticipated to be impacted by dust levels exceeding the annual average PM₁₀ criterion that are not already within HVEC's or other mining companies' zone of acquisition.

The impacts of the Modification were assessed cumulatively with other nearby mines, namely:

- Bengalla Coal Mine;
- Drayton Coal Mine (including the proposed Drayton South Project);
- Mangoola (formerly Anvil Hill) Coal Mine; and
- Mount Pleasant Coal Project.

Three receivers are predicted to cumulatively exceed annual average PM₁₀ criteria. All of these receivers are currently within existing zone of acquisition.

The cumulative 24-hour average PM₁₀ concentrations are heavily influenced by the prevailing wind speed and direction on a given day. HVEC implements a proactive management system incorporating real-time monitoring which allows the implementation of additional dust management controls as dust levels increase.

Noise and Blasting

Detailed noise modelling was undertaken for the Modification. Noise impacts of the Modification were compared to the Consolidation Project EA and Project-specific noise criteria. Changes in noise predicted exceedances relative to the Consolidation Project EA include:

- one new marginal noise management zone exceedance (less than or equal to 5 'A' weighted decibels [dBA] above the criteria);
- two residences in the existing noise management zone are now in the noise affectation zone (greater than 5 dBA above the criteria); and
- one resident currently within the existing noise affectation zone moves into the noise management zone.

HVEC would review the existing Noise Management Plan for the site to incorporate the following additional practical management measures:

- procurement of noise attenuated vehicles for critical haul routes;
- modified alignment of haul routes for day and night scenarios, including placement of overburden in less noise-sensitive locations during the night-time; and
- use of bulldozers on overburden emplacements in less noise-sensitive locations during the night-time.

Similar to the air quality assessment, Modification noise was also assessed cumulatively with other nearby mines.

Cumulative noise impacts resulting from the concurrent operation of the Modification and nearby coal mining developments listed above were assessed against the Industrial Noise Policy amenity criteria.

No exceedance of the recommended acceptable amenity criterion (40 dBA) was predicted during the night-time period.

Rail Noise

The maximum coal production rate, and therefore the average number of rail movements, would remain the same for the Modification. However, due to congestion on the Main Northern Railway and reduced cargo assembly times at the Port of Newcastle, additional short-term train movements are required to reduce delays in ship loading at the Port of Newcastle. An increase in maximum daily train movements from 24 to 38 per day is required for the Modification.

It is predicted that the increase in train movements would result in a negligible (0.4 dBA) increase in noise along the Main Northern Railway.

Economic Impacts

The Modification is expected to make a substantial contribution to the regional economy for the four years associated with the extension of approval to 2026, including:

- \$2,691 million (M) in annual direct and indirect regional output or business turnover;
- \$1,654M in annual direct and indirect regional value added;
- \$326M in annual direct and indirect household income; and
- 2,715 direct and indirect jobs.

Other Considerations

- HVEC would access the relocated explosives facility and magazine from Edderton Road. This would result in a minor change in traffic distribution. Notwithstanding, local roads and intersections would continue to maintain appropriate levels of service, with the implementation of mitigation measures described in the Consolidation Project EA.
- Overburden removed as part of the Modification would exhibit similar geochemical characteristics to existing overburden, and existing management measures would continue to apply.
- The Modification would not change approved employment levels at the Mt Arthur Coal Mine, therefore community infrastructure impacts would be unchanged. Employment would, however, continue for an additional four years.
- The relocated explosives facility and magazine would be constructed to relevant standards and operated in accordance with existing procedures. Consequently, off-site hazard potential would not increase.
- Visual impacts would be largely unchanged due to the Modification.
- Average direct (Scope 1) greenhouse gas emissions are estimated at approximately 2 million tonnes of carbon dioxide-equivalent per annum¹.

¹ HVEC has commenced an investigation programme to enable a better estimation of fugitive emissions at the Mt Arthur Coal Mine.

ES7 REHABILITATION

The Modification would result in a reduction in the number and overall catchment area of the final voids, through the backfilling of the Saddlers Pit Void.

Existing rehabilitation strategies and plans would continue to apply for the Modification.

HVEC's rehabilitation research, design, planning, approval and implementation will be informed by its proposed Future Landscapes Design Project (FLDP).

The key objective of the FLDP is to create a final landform design that addresses stakeholder concerns, is safe and stable, reduces ongoing maintenance, and minimises impact on coal production or operational efficiencies during its development.

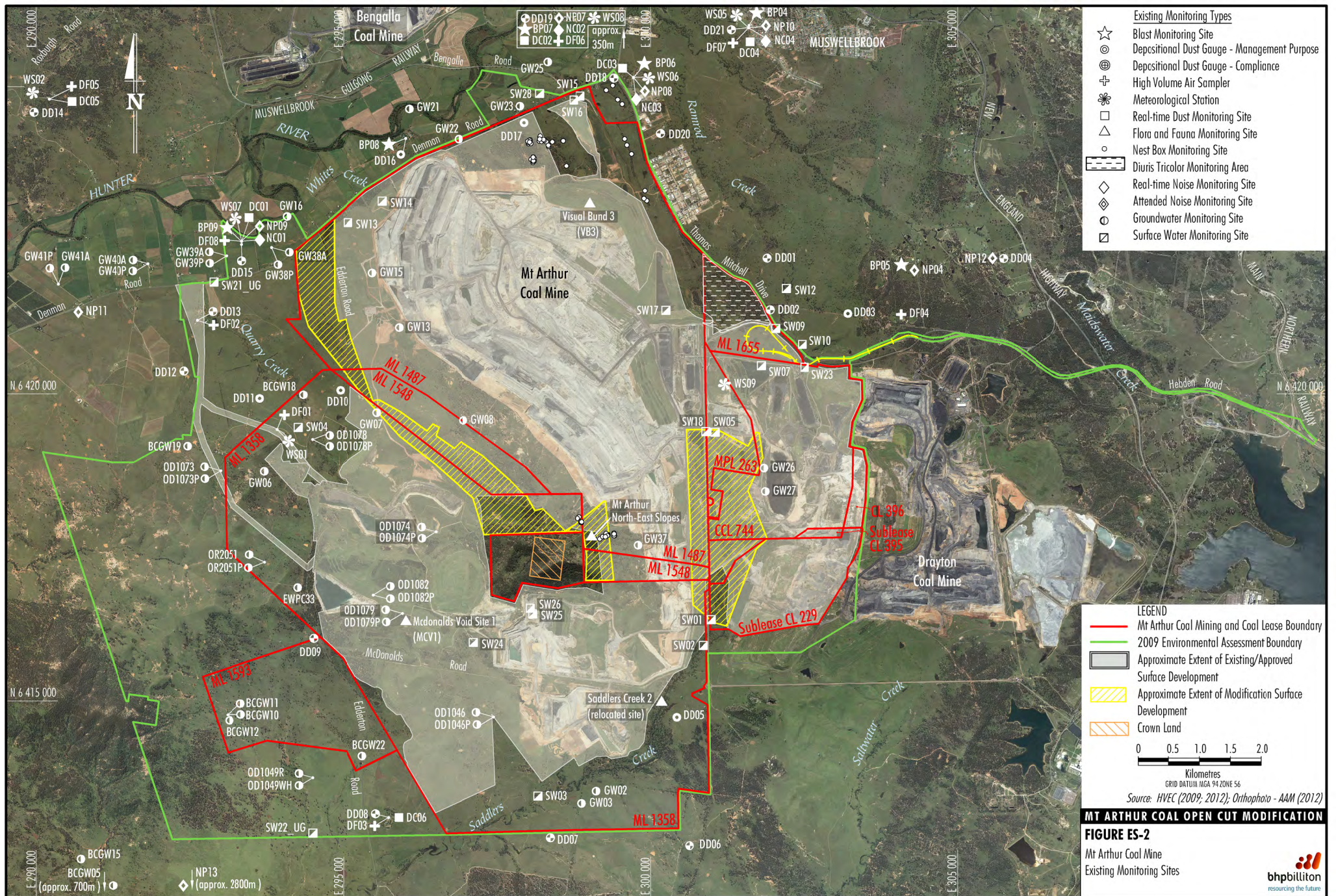
It is anticipated that the design phase of the FLDP would be completed in approximately 18 months. The FLDP is a separate project to the Modification.

ES8 SUMMARY OF ENVIRONMENTAL MANAGEMENT AND MONITORING INITIATIVES

HVEC has a comprehensive Environmental Management System, which includes an extensive suite of management plans. These plans would be reviewed and revised for the Modification, where necessary.

HVEC undertakes a comprehensive environmental monitoring regime at the Mt Arthur Coal Mine (Figure ES-2). Given that environmental impacts related to the Modification are largely similar to those associated with the existing operation, this regime would generally remain for the Modification.

Notwithstanding, the environmental monitoring program is periodically reviewed for effectiveness and relevance, and this review process would continue for the Modification.



ES9 MODIFICATION JUSTIFICATION

The Modification provides for the continuation and extension of open cut coal mining operations at the Mt Arthur Coal Mine for a period of four years.

At full development, the total workforce would be approximately 2,600 full-time equivalent employees. A construction workforce of approximately 240 people would also be required for the Modification.

The Modification would include the implementation of mitigation management measures (including performance monitoring), to minimise potential impacts on the environment and community.

The Modification would involve the production of up to 32 Mtpa of ROM coal with up to 128 million tonnes of additional ROM coal extracted over the life of the Modification. The Modification would produce saleable thermal coal that would be sold domestically or exported for electricity generation.

The Saddlers Pit Void would be backfilled with overburden as part of the Modification.

The Socio-Economic Assessment indicates that the Modification is likely to result in an average annual stimulus of approximately 2,715 direct and indirect jobs in the local region, and some 9,071 direct and indirect jobs in NSW. The Modification would also contribute to regional and State business turnover and household income.

The benefit cost analysis in the Socio-Economic Assessment indicates that a net benefit of \$1,031M would be forgone if the Modification is not implemented.

Coal produced as a result of the Modification would contribute to NSW export income, State royalties and State and Commonwealth tax revenue, as well as to electricity supply and manufacturing in Australia and other countries.