Mt Arthur Coal

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Section 3 – Description of the Proposed Modification

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3 DESCRIPTION OF THE PROPOSED MODIFICATION

As described in Section 1, the Modification would facilitate the continuation of open cut operations at the Mt Arthur Coal Mine for a further four years. The subsections below describe the Modification in further detail.

3.1 OPEN CUT MINING OPERATIONS

3.1.1 Geology

The proposed open cut extension is shown on Figure 3-1.

The Wittingham coal measures would continue to be mined in the Modification open cut extension area. Seams which subcrop within the extension area are the Bowfield and Arrowfield Seams towards the northern extent of the extension area and the Woodlands Hill and Glen Munro seams towards the southern extent.

The open cut extension area is situated on the western limb of the north-northwest oriented Muswellbrook Anticline, with coal seams generally dipping to the west-southwest toward the Calool Syncline – Denman Anticline systems.

3.1.2 Mining Method and Schedule

Conventional truck and shovel open cut mining would continue to be used at the Mt Arthur Coal Mine for a further four years until 2026. This would involve the extraction of approximately 128 Mt of ROM coal. Open cut mining operations would continue to be undertaken at the currently approved rate of up to 32 Mtpa. A provisional production schedule for the modified Mt Arthur Coal Mine is provided in Table 3-1.

Table 3-1
Indicative Coal Processing and Coal Production Schedule

Component	Year		
	2016	2022	2026
ROM Coal (Mtpa)	32.0	32.0	32.0
CHPP Rejects* (Mtpa)	3.6	3.6	3.6
Product Coal for Rail (Mtpa)	27	27	27
Product Coal (including unwashed, as required) to Macquarie Generation's Bayswater Power Station or Bypass Coal (Mtpa)	1.4	1.4**	1.4**

Source: BHP Billiton (pers. comm., 2012).

* Rejects comprise approximately 63% coarse rejects, with the remainder fine rejects (Appendix C).

** Subject to future contract negotiations with Macquarie Generation.

Although this Modification is principally to facilitate an additional four years of mining, some changes to the overall approved mine schedule are proposed as described below.

An indication of the existing/approved mobile fleet list is provided in Table 2-1. The mine planning that was undertaken for the Consolidation Project EA contained assumptions on truck productivity that has been superseded. New data from the mining operation at the Mt Arthur Coal Mine shows that a more conservative set of truck productivity assumptions should be used. This has resulted in an increase in the indicative fleet list relative to the Consolidation Project EA. The indicative fleet list for the Modification is provided in Table 3-2.

Table 3-2
Modification Indicative Mt Arthur Open Cut Mine Mobile Fleet

Equipment	Number of Items		
	2016	2022	2026
Electric Face Shovels	3	3	5
Excavators	19	19	20
Trucks	152	155	189
Graders	13	13	15
Bulldozers	28	29	30
Rubber Tyre Bulldozers	5	5	7
Watercarts	13	13	16
Drills	7	8	9

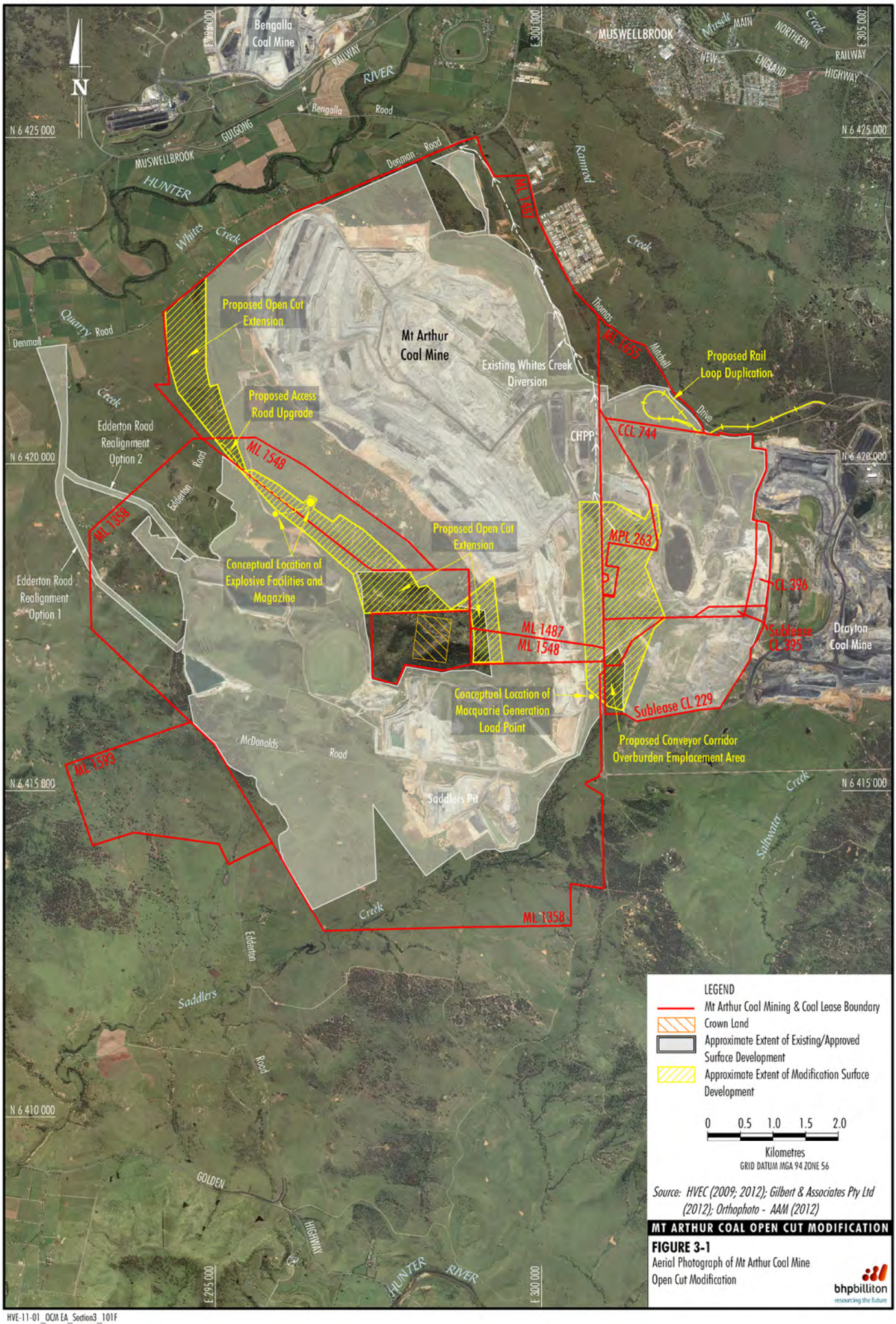
Source: BHP Billiton (pers. comm., 2012).

3.1.3 Overburden Management

Approximately 512 million bank cubic metres of additional overburden would be excavated as a result of the Modification. The majority of this overburden would be used to in-fill the Northern Open Cut, with some overburden to be placed within the conveyor corridor, as described below.

The existing overland conveyor to the Bayswater Powerstation is contained within a 'corridor' surrounded by mine landforms and infrastructure. As part of the Modification, the conveyor loadpoint would be relocated, making this corridor available for the placement of overburden (Figure 3-1).

This overburden emplacement area would be constructed to approximately 360 m AHD (the same height as the approved average height of the Northern Open Cut overburden emplacement) between the Northern Open Cut and the tailings storage areas in the Drayton sub-lease.



MT ARTHUR COAL OPEN CUT MODIFICATION

FIGURE 3-1

Aerial Photograph of Mt Arthur Coal Mine Open Cut Modification

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3.2 INFRASTRUCTURE UPGRADES AND MODIFICATIONS

In addition to the abovementioned changes to the open cut and overburden management, some changes to existing infrastructure are also proposed as part of the Modification. These changes are shown on Figures 3-2 and 3-3; and a provisional schedule showing the timing of these changes is shown on Figure 3-4.

3.2.1 Mt Arthur Rail Loop Duplication – High Capacity Option

HVEC proposes a high capacity optional duplication of the existing rail loop (Figure 3-2) as part of the Modification, with the need for the duplication determined by ship loading requirements at the Port of Newcastle, and constraints on the Main Northern Railway.

If constructed, the rail loop duplication would consist of approximately 5 km of new track, immediately adjacent to the existing rail loop. In addition, the high capacity option would result in the second train loading facility, (approved under the Mt Arthur Consolidation Project) being constructed in a different location to that described in the Consolidation Project EA.

3.2.2 Relocation of Load Point for Existing Overland Conveyor to Bayswater Power Station

In order to facilitate the continuation of supply of coal to Macquarie Generation's Bayswater Power Station, HVEC would construct a new load point for the overland conveyor to the south (Figure 3-1). The need for this infrastructure would be determined through consultation with Macquarie Generation and in consideration of other relevant contractual and coal market considerations.

ROM coal would be delivered to the new load point via trucks using existing internal site haul roads.

3.2.3 Relocation of Explosives Magazines and Facilities

The existing explosives magazine and facilities would require relocation as part of the Modification (Figure 3-1). Explosives that would be required would include initiating products and detonators, Ammonium Nitrate Fuel Oil (ANFO) and emulsion explosives.

ANFO would continue to be the main explosive used at the Mt Arthur Coal Mine.

The explosives magazine would be constructed in accordance with relevant Australian Standards (AS), including AS 2187.1:1998 *Explosives - Storage, Transport and Use*. Section 4.15 provides a preliminary assessment of potential off-site hazards associated with the proposed relocation of explosives magazines and facilities.

The explosives magazine and facilities would store the following products:

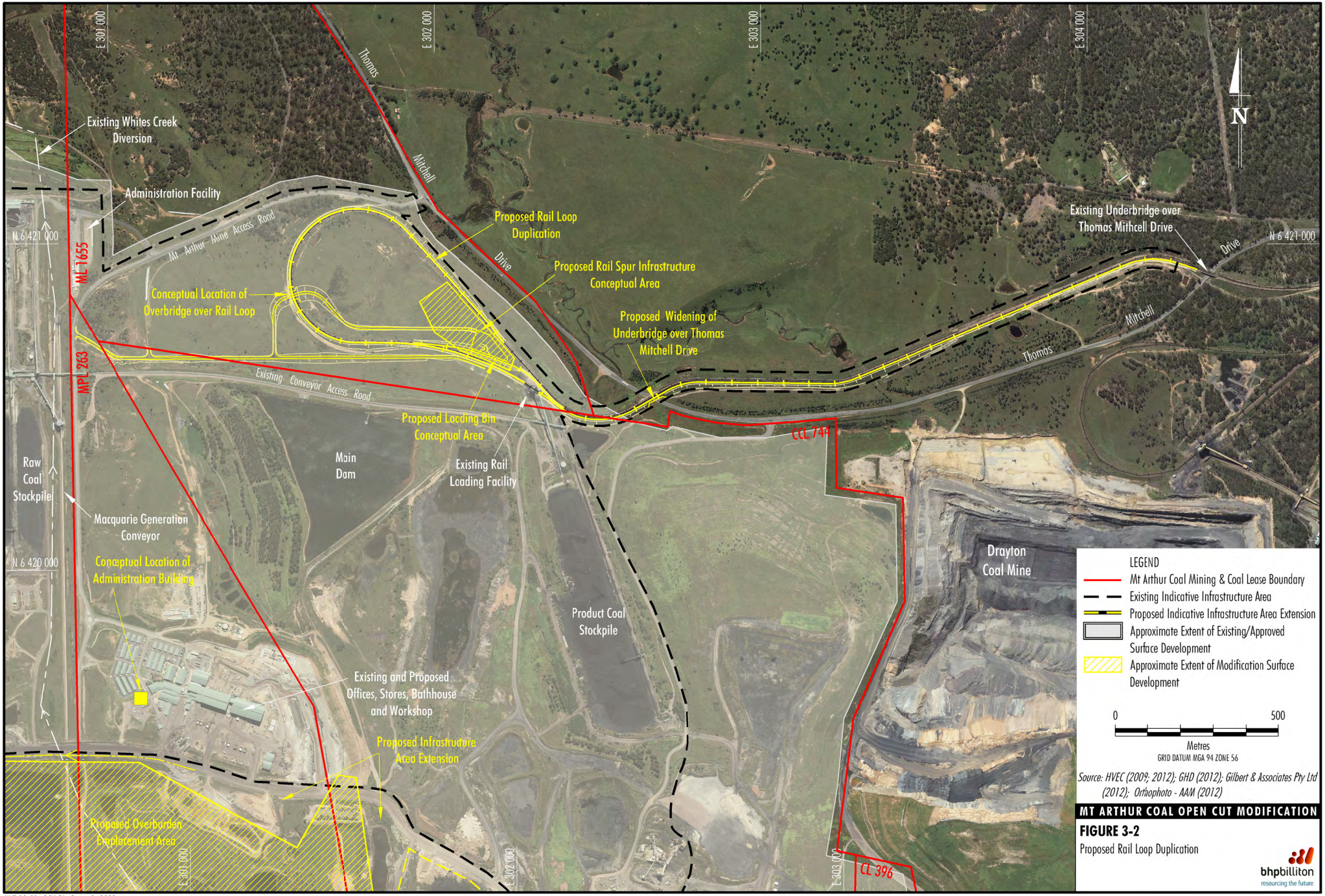
- 1,500 tonnes (t) of prill (ammonium nitrate);
- 1,100 t of emulsion; and
- 90,000 litres of diesel.

As part of this relocation, access to the relocated explosives magazine and facilities would be provided from Edderton Road via an existing access track which allows access to the summit of Mount Arthur for emergency services and legitimate users (in accordance with Condition 47[e], Schedule 3 of PA 09_0062). The portion of this track between Edderton Road and the new explosives magazine and facilities would be upgraded as part of the Modification (Figure 3-1). This access would provide for the approximately 60 employees that work at the explosives facility and approximately 5,000 heavy vehicle deliveries per annum would access the explosives magazine.

As described in Section 2.6, HVEC currently has approval for the realignment of Edderton Road via PA 09_0062. This realignment is scheduled to occur in approximately 2019. A new access to the explosives magazine and facilities would be constructed within existing/approved or Modification disturbance areas as part of the Modification once this realignment is established.

3.2.4 CHPP Control Room and Office Facilities

Additional office facilities and a control room would be constructed adjacent to the CHPP as part of the Modification (Figure 3-3). Construction of this infrastructure would be undertaken as part of the CHPP upgrades approved as part of the Consolidation Project.



Source: HVEC (2009; 2012); GHD (2012); Gilbert & Associates Pty Ltd (2012); Orthophoto - AAM (2012)

MT ARTHUR COAL OPEN CUT MODIFICATION

FIGURE 3-2

Proposed Rail Loop Duplication

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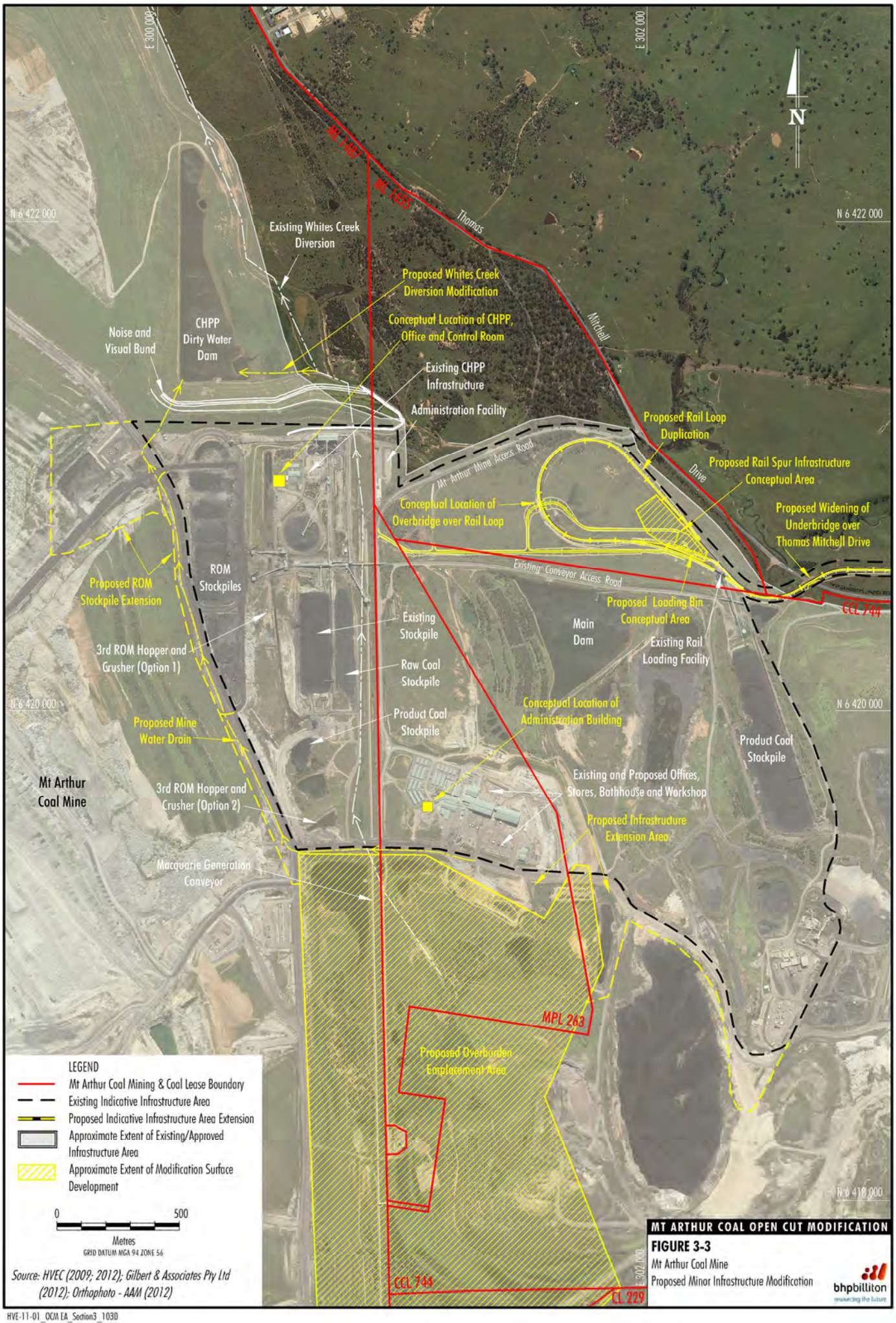
E 300 000
E 302 000
N 6 422 000
N 6 420 000
N 6 418 000
N
ML 1427
ML 1655
Thomas
Mitchell
Drive
Existing Whites Creek Diversion
Proposed Whites Creek Diversion Modification
Conceptual Location of CHPP, Office and Control Room
Noise and Visual Bund
CHPP Dirty Water Dam
Existing CHPP Infrastructure
Administration Facility
Proposed Rail Loop Duplication
Mt Arthur Mine Access Road
Proposed Rail Spur Infrastructure Conceptual Area
Conceptual Location of Overbridge over Rail Loop
Proposed Widening of Underbridge over Thomas Mitchell Drive
Existing Conveyor Access Road
CCL 744
Proposed ROM Stockpile Extension
ROM Stockpiles
Proposed Loading Bin Conceptual Area
Existing Stockpile
Main Dam
Existing Rail Loading Facility
3rd ROM Hopper and Crusher (Option 1)
Raw Coal Stockpile
Product Coal Stockpile
Conceptual Location of Administration Building
Proposed Mine Water Drain
Product Coal Stockpile
Mt Arthur Coal Mine
3rd ROM Hopper and Crusher (Option 2)
Existing and Proposed Offices, Stores, Bathhouse and Workshop
Proposed Infrastructure Extension Area
Macquarie Generation Conveyor
MPL 263
Proposed Overburden Emplacement Area
CCL 744
CL 229
LEGEND
Mt Arthur Coal Mining & Coal Lease Boundary
Existing Indicative Infrastructure Area
Proposed Indicative Infrastructure Area Extension
Approximate Extent of Existing/Approved Infrastructure Area
Approximate Extent of Modification Surface Development
0
500
Metres
GRID DATUM MGA 94 ZONE 56
Source: HVEC (2009; 2012); Gilbert & Associates Pty Ltd (2012); Orthophoto - AAM (2012)
MT ARTHUR COAL OPEN CUT MODIFICATION
FIGURE 3-3
Mt Arthur Coal Mine
Proposed Minor Infrastructure Modification
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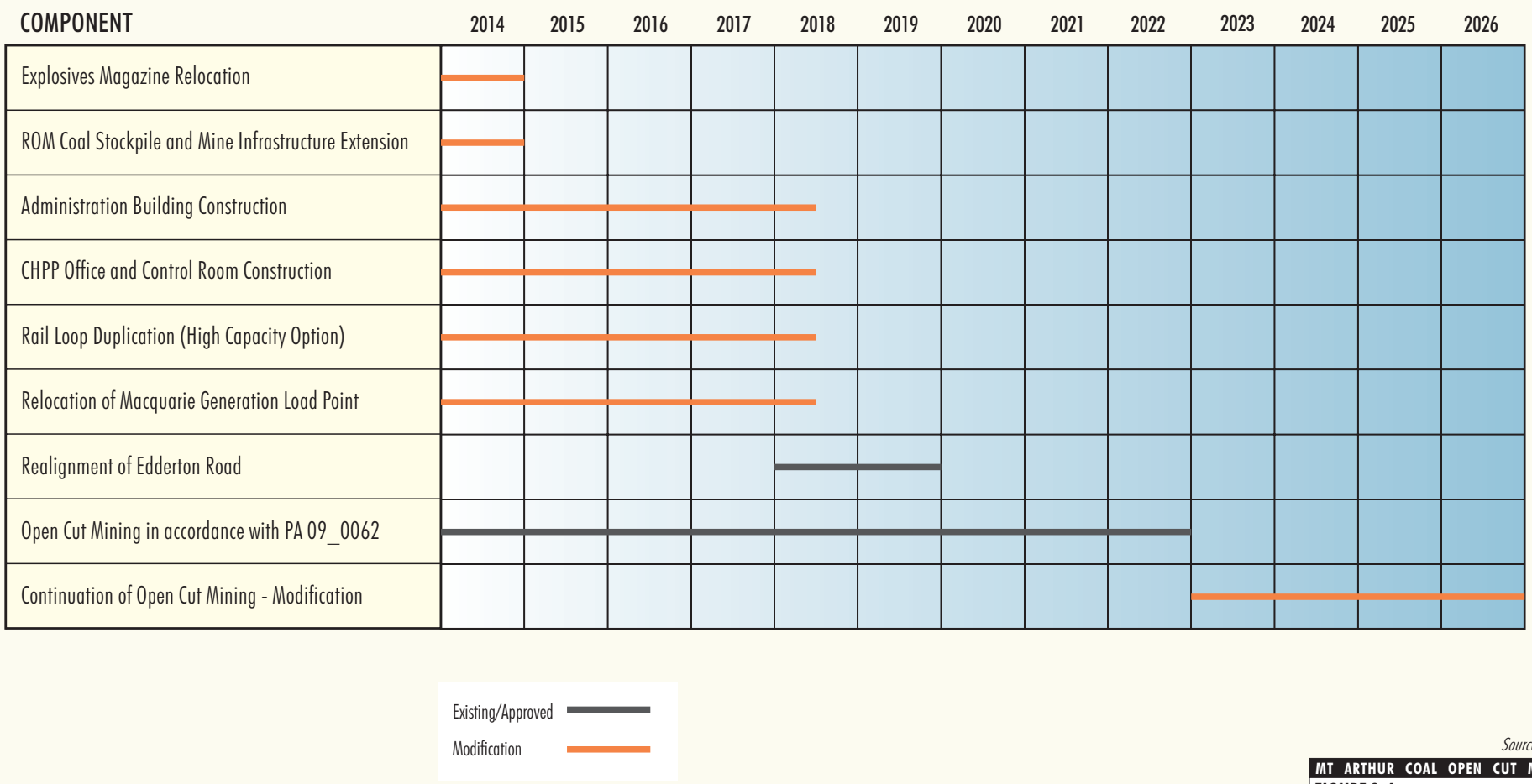
MT ARTHUR OPEN CUT MODIFICATION
PROVISIONAL DEVELOPMENT SCHEDULE



Source: HVEC (2012)

MT ARTHUR COAL OPEN CUT MODIFICATION

FIGURE 3-4

Provisional Modification Development Schedule

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3.2.5 Mine Infrastructure Area Stockpile Expansion

The existing/approved mine infrastructure area would be extended to the west as part of the Modification within existing disturbance areas (Figure 3-3).

3.2.6 Administration Building

An additional administration building would be required for the Modification. This building would be constructed adjacent to the main administration building (Figure 3-3).

3.3 WATER SUPPLY AND WATER MANAGEMENT

The existing surface water runoff controls aimed at preventing up-catchment runoff water from entering open cut mining operational areas would mostly be retained and where necessary upgraded for the Modification.

Some additional up-catchment runoff water control structures would be constructed for the Modification to manage surface water reporting to/from the additional disturbance areas.

3.3.1 Whites Creek Diversion

As described in Section 2.4, the upper catchment of Whites Creek is currently diverted around the mine infrastructure area and overburden emplacement via an open channel diversion and short pipeline. As part of this Modification, it is proposed that the upper portion of this diversion be removed and this portion of the catchment would instead drain to the site water management system. This would be achieved by draining the upper catchment of Whites Creek into the CHPP Dirty Water Dam (Figure 3-3).

The lower portion of the Whites Creek Diversion would remain intact. Following completion of mining, Whites Creek would be re-established to drain off-site in accordance with existing conceptual rehabilitation principles.

3.4 CHPP REJECTS MANAGEMENT

Consistent with existing operations, all coarse rejects produced by the CHPP would continue to be co-disposed within the overburden emplacement areas or utilised in the construction of tailings dams, stockpiles or other infrastructure.

Tailings associated with the Modification would be accommodated within the existing/approved extension of the tailings emplacement area (up to 280 m AHD) (Australian Tailings Consultants, 2011). As a result, no changes to the tailings emplacement are proposed for the Modification.

3.5 PRODUCT COAL RAIL MOVEMENTS

The Modification would not change annual ROM or product coal production rates. Therefore, the average rail movements would be similarly unchanged. 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. As part of the Modification, maximum rail movements would increase from 24 movements per day to 38 movements per day.

3.6 REHABILITATION

The rehabilitation concepts described for the existing Mt Arthur Coal Mine (Section 2.9) would remain for the Modification with the exception that the Saddlers Pit void would be backfilled as part of the final landform profiling for the Modification. This is discussed further in Section 5.

3.7 WORKFORCE

The Modification would facilitate the continuity of employment for the existing and approved workforce consisting of approximately 2,600 employees (i.e. no additional employment would be required).

Approximately 60 employees associated with the explosives facility and magazine would access the site via the new site entrance off Edderton Road, once this access is constructed and commissioned. These employees would be part of the overall approved site employment total of 2,600.