

Mt Arthur Coal

Response to Submissions Proposed Mt Arthur Underground Project Environmental Assessment

May 2008

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Prepared by

Umwelt (Australia) Pty Limited

on behalf of

Mt Arthur Coal

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APPENDICES

- 1 Revised Statement of Commitments**
- 2 Total Predicted Traffic Volumes on the Local Road Network**

1.0 Introduction

This Response to Submissions report has been prepared in accordance with Section 75H(6) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in response to issues raised during the public exhibition period for the Environmental Assessment, Proposed Mt Arthur Underground Project (Umwelt 2008) (the EA).

The report provides a response to submissions made by:

- Muswellbrook Shire Council (MSC);
- Mine Subsidence Board (MSB);
- NSW Heritage Council;
- Department of Environment and Climate Change (DECC);
- Department of Water and Energy (DWE);
- Department of Primary Industries (DPI);
- NSW Roads and Traffic Authority (RTA);
- Rosebrook Pty Limited; and
- Construction Forestry Mining and Energy Union (Mining and Energy Division).

1.1 Report Structure

Section 2.0 of this report addresses comments in submissions made by government agencies whilst **Section 3.0** addresses issues raised by interest groups and community members. In these sections, the issues raised are noted in bold, followed by a response in normal type.

A revised Statement of Commitments for the project, addressing the issues raised in the submissions as discussed in the following sections, is included in **Appendix 1**. The changes made to the Statement of Commitments in response to the submissions received are highlighted in **Appendix 1** as tracked changes.

2.0 Response to Authority Submissions

2.1 Muswellbrook Shire Council

The proposed Mt Arthur Underground Project (Underground Project) was considered by MSC at its meeting on 10 March 2008. The following recommendations were made by the council.

MSC Comment:

Council supports the proposed Mt Arthur Underground Project....subject to the following conditions:

- 1. The establishment of a water extraction point located on the Hunter River and any upgrade to the existing extraction point should be undertaken in consultation with Muswellbrook Shire Council and the Department of Water and Energy. Any overland piping associated with these extraction points are to be buried below the grounds surface.***

Response:

Commitment 6.6.8 of the revised Statement of Commitments contained in **Appendix 1** has been revised to appropriately reflect the above. The revised commitment is included below (additional sections are underlined).

- 6.6.8 The final design of the proposed Hunter River pump station and any upgrade to the existing extraction point will be determined in consultation with the DWE and MSC. Any overland piping associated with these extraction points will be buried unless otherwise discussed with MSC.

MSC Comment:

- 2. Approval must be obtained from the appropriate authority to undertake sewage treatment and reuse of wastewater on the site.***

Response:

Relevant approvals will be sought in accordance with s68 of the *Local Government Act 1993* to carry out any sewerage works, install any waste treatment device or operate any system of sewage management.

MSC Comment:

- 3. That the draft statement of commitments included in the Environmental Assessment prepared by Umwelt Environmental Consultants January 2008 be included as conditions of consent.***

Response:

Mt Arthur Coal has no objection to inclusion of the EA Statement of Commitments (as revised as part of this Response to Submissions report and included in **Appendix 1**) as Project Approval conditions.

MSC Comment:

- 4. In addition to the completion of a management strategy the identified population of the *Acacia pendula* located within the underground project area should be signposted and/or fenced to minimise any possibility for disturbance during works on the surface such as subsidence remediation.**

Response:

Commitment 6.4.2 of the revised Statement of Commitments contained in **Appendix 1** has been revised to appropriately reflect the above. The revised commitment is included below (additional sections are underlined).

- 6.4.2 Mt Arthur Coal will develop a management strategy for the weeping myall (*Acacia pendula*) Endangered Population and EEC located in the Underground Project area (this may be included as part of the above Ecological Management Plan). The plan will consider the need for signposting and/or fencing to provide for protection of this area.

MSC Comment:

- 5. The Traffic Management Plan concerning Edderton Road shall be completed and reviewed every three (3) years in consultation with Muswellbrook Shire Council. This Plan shall include, but is not limited to, the regular maintenance of the area (including drainage works) of Edderton Road which may be impacted by the underground project.**

Response:

Commitment 6.12.1 of the revised Statement of Commitments contained in **Appendix 1** has been revised to appropriately reflect the above. The revised commitment is included below (additional sections are underlined).

- 6.12.1 As described in Commitment 6.3.4, Mt Arthur Coal will, prior to undermining of Edderton Road, prepare a Traffic Management Plan to manage subsidence impacts on Edderton Road in consultation with MSC (including any maintenance requirements related to subsidence), the MSB and DPI, and to the satisfaction of the Director General. This Traffic Management Plan will also include measures for the management of construction access from Edderton Road for minor surface infrastructure (e.g. ventilation facilities) and measures to minimise inconvenience to the public associated with access and use of Edderton Road. The Plan will be reviewed at least once every three years.

MSC Comment:

- 6. No trains associated with the development are to block the level crossing associated on Antiene Railway Station Road.**

Response:

This issue was discussed in the EA including in Section 5.11.4.2 of the main text and in the Traffic and Transport Assessment that formed Appendix 14 of the EA. Mt Arthur Coal is a user of the Antiene Rail Spur and does not have any control over the placement of signals on the rail line. The Antiene Rail Spur is owned by Anglo Coal and signalling arrangements are

controlled by the Australian Rail Track Corporation (ARTC). Therefore, Mt Arthur Coal cannot make the commitment recommended by MSC.

However, as outlined in the EA, Mt Arthur Coal is committed to resolving the current access situation for the residences in the Antiene area east of the New England Highway in partnership with the other relevant stakeholders and has commenced discussions with MSC regarding possible solutions. The relevant stakeholders include Anglo Coal (the owners of the Antiene Rail Spur), MSC (the roads authority for Hebden and Antiene Railway Station Roads), Macquarie Generation (operators of an adjacent rail unloading facility), the ARTC and Mt Arthur Coal as a user of the Antiene spur.

This issue was addressed by Commitment 6.12.2 in the Statement of Commitments in the EA as outlined below.

6.12.2 Mt Arthur Coal will liaise with Anglo Coal, MSC, Macquarie Generation and the ARTC to address legal and appropriate access for properties along Antiene Railway Station Road.

It is considered that this commitment appropriately addresses this issue given that Mt Arthur Coal does not have any control over placement of the rail signals.

MSC Comment:

7. ***External medical services should be obtained by the applicant where possible in particular for the completion of workplace medical assessments to alleviate local medical shortages.***

Response:

Mt Arthur Coal currently utilise a specialist external service provider to complete workplace medical assessments such as pre-employment and other company planned medical checks. This minimises company related demands on local medical services which cater to the public. Mt Arthur Coal intend to continue to utilise specialist external service providers for such workplace medical assessments

MSC Comment:

8. ***Prior to the commencement of construction, the Applicant shall enter into a legally binding agreement with Council for a financial contribution to Council for the purpose of community enhancement to address the social amenity and associated community infrastructure requirements arising from the operation of the development. The financial contribution shall be generally in accordance with the Council's Section 94 Contributions Plan and the associated Community Enhancement Program adopted by Council in June 2006.***

Response:

This recommendation is appropriately addressed by Commitment 6.13.2 of the revised Statement of Commitments contained in **Appendix 1**. The revised commitment is included below (additional sections are underlined).

6.13.2 Mt Arthur Coal will meet its obligations under the EP&A Act in regard to making a development contribution for the enhancement of services and/or facilities in the local community.

2.2 NSW Department of Environment and Climate Change

DECC's submission states that it *'has no objection to the proposal proceeding subject to the recommendations in attachment A'*. Attachment A of DECC's submission contains recommended conditions relating to Aboriginal Cultural Heritage, Threatened Species, Greenhouse Gas Emissions, Water and Administrative Conditions (relating to future Environment Protection Licence conditions should the project be approved). The recommended conditions relating to Aboriginal cultural heritage, threatened species and water are consistent with the draft Statement of Commitments included in the EA. The recommendations related to greenhouse gas emissions and the administrative conditions are largely consistent with the draft Statement of Commitments, except as addressed below.

DECC also noted that *'all cultural heritage values within the site, including those identified by Barbara Foot should be registered on the Aboriginal Heritage Information System and their status confirmed'*. Umwelt, on behalf of Mt Arthur Coal will submit site cards for each of these sites to DECC for entry into the Aboriginal Heritage Information System.

DECC Comment:

GREENHOUSE GAS EMISSIONS

G1 *Prior to the commencement of operations the proponent must undertake a feasibility study to identify and assess potential options for the capture and reuse of drainage gas and Ventilation Air Methane (VAM).*

Response:

Commitment 6.9.3 of the Statement of Commitments contained in **Appendix 1** has been revised to appropriately reflect the above. The revised commitment is included below (additional sections are underlined).

6.9.3 Where gas purity reliably allows, methane emissions from the mine will either be flared or may be beneficially utilised where practical and feasible. Mt Arthur Underground will make application for the appropriate Petroleum tenure so that, subject to that tenure being granted, the opportunity to beneficially reuse methane emissions is available. A documented study that identifies and assesses potential options for the capture and reuse of drainage gas and ventilation air methane will be completed prior to the commencement of longwall mining and a copy provided to the Director-General.

DECC Comment:

L5.1 *Operational noise from the premises must not exceed the sound pressure level (noise) limits presented in the Table below....*

Response:

The recommended noise limits contained in recommended condition L5.1 of Attachment A of DECC's submission are not the Project Specific Noise Levels (PSNLs) calculated for the project in accordance with DECC's NSW Industrial Noise Policy (INP). Instead, the limits

recommended by DECC generally reflect the predicted noise levels for combined Mt Arthur Coal operations (it is noted that in some cases the recommended noise limits are lower than the predictions). The proposed noise limits contained in the draft Statement of Commitments in the EA are based on the PSNLs consistent with the approach outlined in the INP and are therefore considered to be the appropriate noise limits for the project.

The PSNLs calculated for the Underground Project are also consistent with the noise limits for the existing Mt Arthur Coal mining areas. The limits proposed by DECC in recommended condition L5.1, if adopted, would therefore differ from the noise limits that apply to the current operations. The application of different noise limits for the existing operations and the proposed Underground Project would be highly problematic as the proposed Underground Project will be operating simultaneously with the existing open cut operations and will be integrated with these operations, utilising common infrastructure.

It is considered that the appropriate noise limits for the Underground Project are those outlined in Commitments 6.7.1 and 6.7.3 of the EA.

DECC Comment:

M2 Noise monitoring....

Response:

Attachment A of DECC's submission outlines a recommended noise monitoring program in conditions M2.1 to M2.4. This recommended monitoring program discusses initial monitoring three months after commencement of operations and then six monthly monitoring. Commitment 6.7.7 of the EA proposes to maintain the existing noise monitoring network (or as otherwise agreed with DECC), including real-time directional noise monitoring in accordance with the MAN development consent. Targeted rail noise monitoring is also proposed, with noise monitoring findings to be reported annually in the Annual Environmental Management Report (AEMR). It is considered that the existing noise monitoring program is extensive and provides appropriate data for determining compliance with the noise limits.

DECC Comment:

The EA states that discharges from the site, if required will continue to be managed under the Hunter River Salinity Trading Scheme. Sufficient information has not been provided to allow the DECC to determine the likelihood that Mt Arthur Coal will be able to comply with the rules of the scheme under all conditions using existing water management infrastructure.

Response:

As outlined in the Surface Water Assessment included as Appendix 9 of the EA, Mt Arthur Coal currently holds discharge credits under the Hunter River Salinity Trading Scheme (HRSTS) and has appropriate discharge infrastructure.

As also outlined in the Surface Water Assessment, Mt Arthur Coal has extensive water storage capacity available on site in both dams and, as required, open cut mining voids. In total this currently amounts to approximately 7400 ML of storage. Using this storage Mt Arthur Coal stores and uses with preference, minewater generated by the mine. The water balance analysis for the EA did not identify the need for discharges under the HRSTS during average rainfall years when fully utilising this storage. The analysis also identified that the total capacity of on-site storages is the equivalent for the predicted water surpluses for

three 90th percentile wet rainfall years during worst case periods in the latter years of the project. This is based on a conservatively large mine water catchment.

Based on the above analysis, discharges from Mt Arthur Coal under the HRSTS would only be required following prolonged wet periods (i.e. consecutive 90th percentile annual rainfall years). Any such discharges would be undertaken using the existing discharge infrastructure (approved to discharge 450 ML/day) and be in accordance with Mt Arthur Coal's Environment Protection Licence and credits under the HRSTS. Mt Arthur Coal's existing 39 salt credits under the HRSTS, based on historical daily flow and conductivity data at Denman, would allow discharge of up approximately 1300 ML in a 90th percentile rainfall year and would have allowed discharge of up to 2350 ML in the highest rainfall year in the past 13 years. Using the combined minewater storage and discharge capacity, the EA water balance assessment found that Mt Arthur Coal will be able to comply with the rules of the HRSTS using existing water management infrastructure.

2.3 NSW Department of Primary Industries

DPI's submission states that it 'has no objections to the proposal subject to the following provisions'. These provisions are discussed in the following sections.

DPI Comment:

The Department requires that a Mining Lease Application (MLA) be prepared and submitted to DPI.

Response:

Should the project be approved, Mt Arthur Coal will apply to the DPI for a Mining Lease (ML) under the *Mining Act 1992*, as outlined in Section 4.2 of the EA. As indicated in **Section 2.2**, Mt Arthur Underground also anticipates applying for appropriate Petroleum tenure to provide the opportunity for the beneficial use of methane emissions from the mine.

DPI Comment:

....DPI requires:

- ***A commitment to compliance with the Coal Mine Health and Safety Act 2002 and Coal Mines Regulation Act 1982.***
- ***Nomination of a person (or persons) as Operator and Manager as required by the Coal Mine Health and Safety Act 2002 and Coal Mines Regulation Act 1982.***
- ***Details of the procedures the Proponent intends to adopt in addressing any safety issues identified by an Inspector or Mine Safety Officer or an authorised Government Official as specified in the Coal Mine Health and Safety Act 2002.***

Response:

Mt Arthur Coal will continue to meet its obligations under the relevant mining and safety legislation.

DPI Comment:

A Mining Operations Plan (MOP) should be submitted to DPI for acceptance prior to the commencement of any construction.

Integrated rehabilitation and environmental management reporting is to be captured in the Mining, Rehabilitation and Environmental Management Report documents to the satisfaction of DPI.

Response:

A MOP will be prepared and submitted to DPI for approval in accordance with the conditions of the ML which Mt Arthur Coal will seek should the project be approved, as outlined in Section 4.2 of the EA.

Mt Arthur Coal will satisfy the requirements of the DPIs Mining, Rehabilitation and Environmental Management Report (MREP) process, including preparation of an Annual Environmental Management Report for the project as outlined in Commitment 6.14.1.

DPI Comment:

...possibility of community concerns as a result of potentially severe subsidence impacts, particularly due to:

- i. Potential closure of Edderton Road from time to time if this is to be used as part of the subsidence management measures, causing possible inconvenience to the community;***

Response:

The potential subsidence impacts to Edderton Road were discussed in detail in the EA in Section 5.2 and in the Subsidence Assessment that formed Appendix 5. To remediate subsidence impacts, repair work will be undertaken following the progression of each longwall panel beneath the road surface. These works will be completed using standard road maintenance techniques and traffic controls. All works on Edderton Road will be carried out in accordance with a Traffic Management Plan to be prepared in consultation with MSC and will include provision of temporary access whilst road works are being completed. The submission on the EA from MSC, the relevant roads authority for Edderton Road, indicated that MSC supports the preparation of the proposed Traffic Management Plan for Edderton Road and requested that this plan be reviewed every three years. This recommendation has been incorporated in the revised Statement of Commitments in **Appendix 1**. The Traffic Management Plan will include measures to maintain access along Edderton Road and minimise inconvenience to the public associated with the road works.

Commitment 6.12.1 of the revised Statement of Commitments contained in **Appendix 1** has been revised to appropriately reflect the above. The revised commitment is included below (additional sections are underlined).

- 6.12.1 As described in Commitment 6.3.4, Mt Arthur Coal will, prior to undermining of Edderton Road, prepare a Traffic Management Plan to manage subsidence impacts on Edderton Road in consultation with MSC (including any maintenance requirements related to subsidence), the MSB and DPI, and to the satisfaction of the Director General. This Traffic Management Plan will also include measures for the management of construction access from Edderton Road for minor surface infrastructure (e.g. ventilation facilities) and measures to minimise inconvenience to

the public associated with access and use of Edderton Road. The Plan will be reviewed at least once every three years.

DPI Comment:

...possibility of community concerns as a result of potentially severe subsidence impacts, particularly due to:

ii. Potential visual and other impacts to private properties, such as affects to serviceability of farm infrastructure, erosion, changes to drainage etc.

Response:

As discussed in the EA, potential subsidence impacts on the ground surface or surface infrastructure will be remediated or repaired progressively as subsidence occurs. Potential visual impacts associated with subsidence remediation works have been assessed as part of the visual impact assessment detailed in Section 5.9 of the EA. Subsidence remediation work will consist of activities such as deep ripping, regrading and minor earthworks, all of which are consistent with surrounding agricultural land management practices. Therefore the visual impact of subsidence remediation works is considered to be minimal given the surrounding rural environment and temporary nature of the impact. Considering the above, visual impacts associated with subsidence remediation works are unlikely to be significant.

Impacts to private properties from subsidence have been assessed in detail in the Subsidence Assessment prepared for the project. Where potential subsidence impacts have been identified on private property, Mt Arthur Coal has prepared detailed Private Property Plans for each private land holder. These plans clearly identify the potential impacts of mining on the property and provide a comprehensive summary of the management and remediation measures proposed to be implemented. These management and remediation measures reflect the measures outlined in Section 5.2 of the EA and Commitment 6.3.3 of the draft Statement of Commitments. These management and mitigation measures have been designed to minimise the potential impacts of subsidence on private land and infrastructure and Mt Arthur Coal has committed to ongoing consultation with these landholders throughout the life of the project.

Commitment 6.3.2 requires Mt Arthur Coal to prepare updated Private Property Plans as the project progresses to ensure that potentially affected private landholders are kept fully informed of potential impacts and management measures relevant to their properties. This commitment has been made to provide that affected private landholders are fully aware of the interaction of the project with their property, including the proposed management measures to be implemented, and so that they can enter into informed discussions with Mt Arthur Coal regarding appropriate management and mitigation measures.

DPI Comment:

...serious concerns have been raised about the feasibility to manage the subsidence impacts to the transmission towers....the proposed mining could potentially necessitate the realignment of a section of this major infrastructure. Should it not be possible to realign the transmission line, the viability of the relevant part of the proposed longwall layout may be affected.

Response:

Mt Arthur Coal identified the risk associated with subsidence of the 330/500kV transmission line within the project area early in project planning. To address this issue, Mt Arthur Coal commenced early discussions with TransGrid regarding the appropriate management of subsidence impacts on the transmission line. Subsidence and engineering assessments were completed as part of the project planning process. The engineering assessments were undertaken by TransGrid. TransGrid concluded that engineering solutions were expected to be available to manage the predicted subsidence, however, further detailed engineering design was required. During the course of these studies, Mt Arthur Coal undertook detailed consultation with TransGrid, DPI and the Mine Subsidence Board (MSB). A summary of the key findings of these studies was included in the EA.

Since that time, further detailed discussions have occurred between Mt Arthur Coal and TransGrid and detailed engineering studies have been progressed. Based on these studies, the best long-term solution to subsidence management may be the relocation of the transmission line.

In consultation with TransGrid, Mt Arthur Coal has identified several potentially suitable options for revised alignments for the transmission line. Each of the options identified are located within the project area and are within the survey and assessment area covered for the Underground Project, including the survey areas for the ecological, archaeological and heritage assessments. All of the alignments avoid impact on the proposed Saddlers Creek Conservation Area and other key archaeological and ecological features. In addition, the nature of transmission line developments provides significant flexibility for the placement of towers and access tracks to assist in minimising potential environmental impacts. In the light of the above, it is considered that the transmission line could be relocated within the project area without materially altering the environmental outcomes of the overall project as outlined in the EA.

2.4 Mine Subsidence Board

MSB Comment:

The Mine Subsidence Board has no objection to the proposed development.

Response:

No comments or questions were raised which require a response.

2.5 NSW Department of Water and Energy

DWE Comment:

Quantification of the loss of discharge reporting through third order or higher stream systems must occur. This should be undertaken as part of the remediation strategy nominated by the EA statement of commitments, and any contribution to mine site water balance must include estimation of inflows from surface streams and rivers. In addition, any private landholder who experiences loss inflows to farm dams or stock water from streams discharging from the impacted area.

Response:

Commitment 6.6.5 in the EA identifies the development of detailed drainage line monitoring and remediation protocols as part of the Subsidence Management Plan process and in consultation with DWE. This commitment has been revised to appropriately reflect the above comment from DWE (refer to **Appendix 1**). The revised commitment is included below (additional sections are underlined).

6.6.5 Subsidence impacts on drainage lines will be effectively remediated such that there is no significant impact on downstream water users and environmental flows. Drainage line monitoring and remediation protocols will be developed as part of the SMP process (in consultation with DWE) to guide the management of subsidence impacts and drainage line remediation works on surface water systems. The drainage line monitoring and remediation protocols will include:

- detailed monitoring protocols (including monitoring which aims to assess any loss of flow from third order or higher stream systems).

It is also noted that Commitment 6.3.3 in the EA states that Mt Arthur Coal will provide an alternative source of water, as required, in the event of any significant loss of water from a privately owned farm dam.

DWE Comment:

The EA document has provided commitment to revising the water balance for the project through mine life. This must extend throughout the Mt Arthur-Bayswater mine complex...

Response:

This recommendation is addressed by Commitment 6.6.1 of the draft Statement of Commitments in the EA (note that this commitment refers to the whole Mt Arthur Coal water balance, not just to the Underground Project).

DWE Comment:

Mt Arthur Coal must develop a strategy to remediate damage to streams overlying the goaf of the underground mine in conformity to DWE policy (Rivers and Estuaries management Policy) and standard (Australian Stream Rehabilitation Manual 2000).

Response:

A reference to the above guidelines has been included in Commitment 6.6.5 of the revised Statement of Commitments contained in **Appendix 1**. The revised commitment is included below (additional sections are underlined).

6.6.5 Subsidence impacts on drainage lines will be effectively remediated such that there is no significant impact on downstream water users and environmental flows. Drainage line monitoring and remediation protocols will be developed as part of the SMP process, and in consultation with DWE, to guide the management of subsidence impacts and drainage line remediation works on surface water systems. The drainage line monitoring and remediation protocols will include:

-details of the design of drainage line remediation works. Remediation work will be generally consistent with DWEs Rivers and Estuaries Management Policy and the Australian Stream Rehabilitation Manual 2000

DWE Comment:

....DWE requests that stream management plans be submitted for review...

Response:

Commitment 6.6.5 in the draft Statement of Commitments in the EA satisfies this recommendation by committing to the development of detailed drainage line monitoring and remediation protocols as part of the Subsidence Management Plan process in consultation with DWE.

DWE Comment:

The Conservation Area proposed in the EA document includes an area of Saddlers Creek. DWE requires that a specific section of the plan of management address existing degradation of Saddlers Creek, and measures required to rehabilitate the creek, using buffer zone area recommendations from comparable Rivercare plans developed in the Upper Hunter, and recommended indigenous plants for revegetation.

Response:

Commitment 6.4.3 of the revised Statement of Commitments contained in **Appendix 1** appropriately reflects the above.

6.4.3 Mt Arthur Coal will establish and manage the proposed Saddlers Creek conservation area (refer to Figure 5.12) to protect and enhance its ecological values in perpetuity, to the satisfaction of the Director General. The management of the proposed conservation area will address the existing degradation of Saddlers Creek.

2.6 Heritage Council of New South Wales

Heritage Council Comment:

It is noted that no additional historical research was conducted to assist in the identification of heritage items and the Muswellbrook Local and Family History Society was not able to be consulted....The significance of prominent local families...is not examined....The Heritage Office does not support the statement that "subsurface investigation will not answer any research questions regarding the history of the locality not already well documented in the historical record". A greater understanding of the significance of the prominent local families is required to understand the significance of archaeological remains present within the project area.

Response:

Detailed historical research was undertaken for all items discussed in the Historical Heritage Assessment for the Underground Project. This research included:

- a review of parish maps;
- a review of historical aerial photographs from the NSW Department of Lands and United Aerial Photographs;
- searches of online pictorial databases including Picture Australia (an online pictorial collection held by the National Library of Australia) and the NSW State Library's PICMAN database which includes an online database of picture records, manuscript records and oral history.
- a review of the Muswellbrook Shire Council's online local history section of their website and their pictorial database of heritage sites;
- detailed consultation with Ms Lillian Cullen, Muswellbrook Shire Council's Heritage Officer including a face to face meeting and follow up emails and telephone communications;
- a review and summary of detailed land title history of the Edderton and Belmont Conservation Management Plans (CMPs) (Rappoport 2006) and a draft condition and history of the Hospital Building which contained detailed histories of the prominent local families in the area including the Beers, Lucas, McDonald and the Russell families. These documents also included:
 - oral history interviews with members of these families including Mrs Jeanette Beer, Ms Alva Hollins and Ms Liz Parkinson;
 - detailed research and consultation with Ms Margaret Delahunty, Ms Linda McIntosh and Mr Robert Tickle of the Muswellbrook Local and Family History Society for their assistance in researching the histories of the buildings and the families who occupied them;
 - consultation with Muswellbrook Shire Council's Heritage Adviser, Lillian Cullen;
 - family photographs of the buildings and other areas that are within the project area;
 - parish maps;
 - historical plans;
 - floor plans of all buildings; and

- detailed information on land title and land ownership, buildings and other areas that are within the project area.

The assessment also included a review of previous heritage studies, a review of statutory and non statutory heritage registers including consultation (phone and written) with the National Trust and field survey involving a qualified heritage architect and an archaeologist.

The assessment has not duplicated the detailed research carried out in the draft Edderton and Belmont CMPs (Rappoport 2006) and the Hospital Building condition report, as both the Historical Heritage Assessment and the draft CMPs were undertaken for Mt Arthur Coal and all research undertaken was thorough and exhaustive.

The Historical Heritage Assessment involved a review of the historical research carried out for the draft CMPs and relevant information was summarised and presented in the Historical Heritage Assessment where appropriate. A summary of the land transfer information for the project area was presented in Appendix 1 of the Historical Heritage Assessment. A summary of the history of the Beer, Noble and Lucas families and their land ownership and tenure was provided in Table 3.2 of the Historical Heritage Assessment. A detailed history of each of the historical heritage items was provided in the Historical Heritage Assessment in Section 3.1. Figure 3.1 of the Historical Heritage Assessment included a 1921 parish map which showed the ownership of the Saddlers Creek district in the early twentieth century (mapping dated 1920's circa).

Consultation with the Muswellbrook Local and Family History Society (MLFHS) was undertaken as part of the Historical Heritage Assessment and included phone discussions and emails to the MLFHS in January 2007 inviting the MLFHS to be involved in the Historical Heritage Assessment for the Underground Project. No further information was provided by the MLFHS, however, the draft CMPs included detailed consultation and input from the MLFHS and this information was used in the Historical Heritage for the Underground Project.

Given the thorough and exhaustive nature of the historical research that formed the basis of the Historical Heritage Assessment for the Underground Project, it is considered that the significance of prominent local families and historical heritage sites within the project area is well understood. The heritage sites potentially impacted by the project have been assessed as having low to moderate local heritage significance. On this basis, it is considered that further subsurface investigations will not add meaningfully to our understanding of the history of the locality and therefore is not required for this project.

Heritage Council Comment:

Given the inadequacies of the historical heritage component of the EA...the following management strategies are recommended by the Heritage Office for inclusion in the Statement of Commitments:

- ***The Proponent shall prepare a Non-Indigenous Heritage Management Plan as part of the Mt Arthur Coal Annual Environmental Management Report (EMP). The plan shall include details of all procedures to be implemented throughout the duration of the project in relation to Non-Indigenous Heritage items.***
- ***A specialist heritage consultant with appropriate qualifications and experience commensurate with the scope of works shall be engaged to prepare and implement the Non-Indigenous Heritage Management Plan.***
- ***All construction contractors, subcontractors and personnel working in the vicinity of identified Non-Indigenous heritage items are to be inducted by the nominated***

heritage consultant and informed of their obligations and requirements as detailed in the Non-Indigenous Management Plan.

Response:

Mt Arthur Coal has committed to the finalisation of the draft CMPs for the Belmont Homestead complex and Edderton Homestead complex (Commitment 6.5.8) and to the preparation of a management plan to identify appropriate alternative locations and opportunities for adaptive re-use of the Hospital Building (Commitment 6.5.9). The remaining heritage sites within the project area have all been assessed as having low local heritage significance. The required management measures for these sites are detailed in Sections 5.4 and 5.2 of the EA and Commitments 6.5.10 and 6.3.3 of the draft Statement of Commitments.

Given that Mt Arthur Coal are preparing site specific management plans for all sites considered to be of moderate or high local heritage significance, and that management measures have been specified in the EA for the remaining sites of low local heritage significance, it is not considered necessary to prepare a separate Non-Indigenous Heritage Management Plan for these sites.

Mt Arthur Coal inducts all personnel working at the mine, including completion of a detailed environmental induction in accordance with the requirements of Mt Arthur Coal's ISO 14001 accredited environmental management system. This induction addresses relevant heritage aspects.

Heritage Council Comment:

- ***The draft Conservation Management Plans for Belmont Homestead complex and Edderton Homestead complex must be finalised in consultation with the Muswellbrook Local and Family History Society and Muswellbrook Shire Council prior to the commencement of the project. The recommendations of the Conservation Management Plans shall be incorporated into the EMP and implemented prior to the commencement of mining operations.***

Response:

Commitment 6.5.8 in the draft Statement of Commitments in the EA satisfies this recommendation by committing to completion of the draft CMPs in consultation with the Muswellbrook Local and Family History Society and MSC prior to any mining impact on these heritage sites.

Heritage Council Comment:

- ***Photographic and archival recording of all heritage items identified by the 'Historical Heritage Assessment' is to be undertaken by the nominated heritage consultant prior to the commencement of mining operations. Recording is to be completed in accordance with guidelines published by the Heritage Council of NSW. Copies of these photographic recordings shall be made available to the Heritage Office, Department of Planning and to the Muswellbrook Local Studies Library.***

Response:

Commitment 6.5.10 of the revised Statement of Commitments contained in **Appendix 1** has been revised to appropriately reflect the above. The revised commitment is included below (additional sections are underlined).

6.5.10 Mt Arthur Coal will engage a qualified heritage consultant to carry out archival recording of all heritage sites listed in Table 5.5 and located within the subsidence affectation area, to the standards of local heritage significance prior to underground mining impact. Copies of all archival recordings will be provided to the NSW Heritage Office, Department of Planning and the Muswellbrook Library.

Heritage Council Comment:

- ***Heritage items located within the subsidence affectation area shall be inspected by a structural engineer and the nominated heritage consultant on an annual basis to monitor the impact of mining on built elements, ruins and potential archaeological sites. The results of these inspections shall be documented in the relevant Subsidence Management Plan.***

Response:

Subsidence impacts on heritage sites will occur as discrete events on one or more occasions during the life of the project, therefore it is considered appropriate to undertake inspections of these sites prior to and following these events to monitor the impact of mining rather than on an annual basis. Additional inspections of selected heritage items may also be undertaken as required by the CMPs. This inspection regime is consistent with that for all other structures within the subsidence affectation area (refer to Commitment 6.3.3) and will provide for an appropriate assessment of subsidence impacts on heritage sites. The results of these inspections will be reported in the Annual Environmental Management Report.

Commitment 6.5.11 of the revised Statement of Commitments contained in **Appendix 1** has been included to address this recommendation. The proposed commitment is included below.

6.5.11 Heritage sites listed in Table 5.5 of the EA and located within the subsidence affectation area will be inspected by a structural engineer and heritage consultant prior to and after undermining to assess the impact of subsidence. The results of these inspections will be reported in the Annual Environmental Management Report.

Heritage Council Comment:

- ***More detailed historical research and other investigations are to be undertaken for all identified heritage items negatively affected by the proposal. If demolition and/or removal of the heritage item is required the nominated heritage consultant will conduct archival recording and assess the significance of potential relics at the site.***

Response:

As discussed above, the historical research that formed the basis of the Historical Heritage Assessment has been thorough and exhaustive and provides a sufficient foundation for the assessment of significance of heritage sites within the project area. Archival recording of all

sites within the subsidence affectation area will be completed as outlined in Commitment 6.5.10 of the revised Statement of Commitments contained in **Appendix 1**.

Heritage Council Comment:

- ***All affected historical archaeological sites of Local and State significance are to be subject to professional archaeological excavation and/or recording before demolition works commence. A Research Design including an Archaeological Excavation Methodology must be prepared in accordance with Heritage Council guidelines for each site to be excavated. Those documents should be prepared for the approval of the Director-General, Department of Planning.***

Response:

There are no sites of State significance within the project area.

As discussed above, the heritage significance of the sites within the project area is well understood. All sites of high and moderate local significance will have management plans prepared to guide their management. The remaining heritage sites that may be impacted by the project and which may be demolished, were assessed as having low local significance. Given the low local significance rating of these sites, it is considered that subsurface investigations will not add meaningfully to our understanding of the history of the locality and are not required. Archival recording will be undertaken for all of these sites.

Heritage Council Comment:

- ***After archaeological works are undertaken, a copy of the final excavation report(s) shall be prepared and lodged with the Heritage Council of NSW and the Muswellbrook Local Studies Library. The proponent shall also be required to nominate a repository for any relics salvaged from any historical archaeological excavations. The information within the final excavation report shall be required to include the following.....***

Response:

As discussed above, it is considered that subsurface investigation of the sites of low local significance within the project area will not add meaningfully to our understanding of the history of the locality and is therefore not required. Archival recording will be undertaken in accordance with NSW Heritage Office guidelines.

2.7 NSW Roads and Traffic Authority

RTA Comment:

The RTA...considers that the Environmental Assessment is inadequate in addressing traffic and road safety matters. The transport and traffic assessment shall be revised in accordance with the RTA's Guide to Traffic Generating Development to include the following:

- ***Traffic analysis including:***
 - ***Current traffic counts and 10 year traffic growth projections;***
 - ***95th percentile back of queue lengths;***
 - ***Delays and level of service on all legs for the relevant intersections;***
 - ***Use of SIDRA or similar traffic model;***
 - ***Electronic input / output data files for RTA review.***

Response:

The Traffic and Transport Impact Assessment for the project, included as Appendix 14 of the EA, has been undertaken in accordance with the RTA's *Guide to Traffic Generating Development* and the Director-General's requirements for the project.

The specific matters raised by the RTA are addressed as follows:

- current traffic counts for all relevant roads surrounding the project area are included in Section 4.3 of the Traffic and Transport Impact Assessment. These counts were collected for the project between 15 and 22 September 2006. Future traffic growth projections are addressed in Section 5.2.3 of the Traffic and Transport Impact Assessment based on historical traffic data contained in the RTAs Traffic Volume Data for Hunter and Northern Regions 2004 (which was the latest information available when the assessment report was prepared). The future traffic growth predictions used in the assessment also include future traffic volumes associated with currently approved or proposed major projects;
- traffic modelling outputs for all relevant intersections are presented in Section 5 of the Traffic and Transport Impact Assessment in accordance with the RTAs guideline. This includes Level of Service, Degree of Saturation, Average Vehicle Delay in Seconds and Highest Movement Delay in Seconds. The traffic modelling results were provided using INTANAL, identified as an acceptable traffic model under the RTA's *Guide to Traffic Generating Development* and have been presented in a format consistent with these guidelines; and
- all relevant details regarding the inputs and outputs of the traffic modelling undertaken for the project are included in Sections 3 to 5 of the Traffic and Transport Impact Assessment.

The key local intersections related to the project (i.e. the Thomas Mitchell Drive/Denman Road intersection and the Thomas Mitchell Drive/New England Highway intersection) have been upgraded in recent years with funding from the various mining operations within the area including Mt Arthur Coal. The traffic and transport assessment found that the additional traffic associated with the project will not have a significant impact on these intersections and that the existing road network has sufficient capacity to cater for the predicted traffic volumes with no upgrades required.

RTA Comment:

The report makes mention of two other mine developments in the area. However, it does not consider the background growth due to other developments along the network. Nominally this should be 2% per annum.

Response:

Background traffic growth is considered in Section 5.2.3 of the Traffic and Transport Impact Assessment included as Appendix 14 of the EA. Based on the RTA's Traffic Volume Data for Hunter and Northern Regions 2004 (which was the latest information available when the assessment report was prepared), there has been very little traffic growth (0.3% per annum) on the New England Highway at the southern town boundary of Muswellbrook (Station 05.44) between 1998 and 2004. Similarly, traffic growth on Denman Road west of Maitland Street (Station 05.477) between 1992 and 2004 has been an average of 0.6% per annum. This low traffic growth occurred despite mines such as Mt Arthur Coal's MAN mining area being constructed and commissioned during this period. Therefore, it is considered that a growth rate of 2% per annum is not supported by the historical traffic data and should not be included in the assessment. Any significant future increase in traffic volumes on these roads is more likely to be associated with major new development/s, which would be required to assess the cumulative impacts of their own operations on the local road network.

RTA Comment:

The assessment shall include a sketch of the local road network showing total predicted traffic volumes.

Response:

Sketches of the local road network showing total predicted traffic volumes are included as **Appendix 2**.

RTA Comment:

A Road Safety Audit shall be prepared to review the operation of the intersections of the New England Highway/Thomas Mitchell Drive and Denman Road/Thomas Mitchell Drive. The audit should be completed in accordance with the Austroads Guidelines for Road Safety Audits by a recognised road safety auditor. The road safety audit should specifically address right turn movements and night time operation at the two intersections.

Response:

Mt Arthur Coal are required to undertake a night time road safety audit of the intersections in question as a condition of the South Pit Extension Project Approval dated 9 January 2008. The South Pit Extension Project Approval requires this audit to be undertaken in a manner that considers the existing operations and the proposed Underground Project. This road safety audit will address the above comment by the RTA.

3.0 Response to Community Submissions

Two community responses were received in relation to the proposed Mt Arthur Underground Project. These include one response from a solicitor acting on behalf of a land holder within the project application area, Rosebrook Pty Limited, and one from an interest group, the Construction Forestry Mining and Energy Union (Mining and Energy Division) Northern District Branch.

A response to the comments raised in these submissions is provided in the following sections.

3.1 Rosebrook Pty Limited

Rosebrook Comment:

....whilst underground mining is carried out beneath the company's land a strip of land will be fenced and indeed quarantined from the remainder of the property....Such an intrusion would of course present a major dislocation to the proper and normal workings of the land which is used for agricultural purposes...

Response:

As discussed in the EA and Private Property Plans prepared for the Rosebrook property, it may be necessary to temporarily fence off some privately owned land above active longwall panels while subsidence is occurring to ensure the safety of people and livestock on the surface. This fencing may be maintained until subsidence remediation has been completed. Subsidence remediation will be completed progressively as subsidence occurs, therefore minimising the duration of required fencing.

Mt Arthur Coal acknowledge that temporarily restricting access to privately owned land through fencing will temporarily affect the proper and normal working of the land for agricultural purposes, and as such, Mt Arthur Coal has held discussions with Rosebrook Pty Limited regarding appropriate compensation and management measures to minimise these impacts.

Rosebrook Comment:

Rosebrook Pty Limited has grave concerns as to the impact mining would have on underground water supplies which are vital for the normal use of the lands.

Response:

As discussed in the EA and in Private Property Plans prepared for the Rosebrook property, the project is predicted to result in groundwater depressurisation beneath portions of the Rosebrook property. However, there are no registered groundwater bores located on the Rosebrook property within the predicted region of depressurisation. Therefore, no impact on groundwater bores on the Rosebrook property is anticipated, nor is impact on Rosebrook's ability to continue to use the land, and in particular the underground water supply, in the same manner as before the operation of the project.

In accordance with Commitment 6.3.2, the Private Property Plan prepared for the Rosebrook property will continue to be revised as more detailed mine planning, monitoring and

modelling results become available. This plan will clearly outline impacts of mining on the property and the management and remediation measures to be implemented.

Rosebrook Comment:

....underground mining will cause subsidence. That will present a danger in any movement on the surface including that of both livestock and humans.

Response:

As discussed in the EA and Private Property Plans prepared for the Rosebrook property, Mt Arthur Coal propose to temporarily fence off some privately owned land above active longwall panels while subsidence is occurring to ensure the safety of people and livestock on the surface. Exclusion is considered the most appropriate way of ensuring the safety of people and livestock from subsidence impacts such as cracking of the ground surface, until these subsidence impacts are required.

Mt Arthur Coal will provide more detailed information to Rosebrook Pty Limited regarding the timing and extent of potential subsidence impacts via revisions to the Rosebrook Private Property Plan as more detailed mine planning progresses (Commitment 6.3.2).

As noted above, appropriate management and compensation measures have been discussed with Rosebrook Pty Limited to address this issue and these discussions will be ongoing as the project progresses.

Rosebrook Comment:

....subsidence must adversely impact on any surface water storages.

Response:

As discussed in the EA and in Private Property Plans prepared for the Rosebrook property, subsidence is predicted to impact five farm dams on the Rosebrook property, four of which may experience some cracking, minor leakage and/or changes in spillway location. No dam failure or significant loss of water is predicted to occur from any of the dams on the Rosebrook property.

Commitment 6.3.3 in the EA draft Statement of Commitments requires Mt Arthur Coal to monitor and remediate any subsidence related impacts on farm dams on the Rosebrook property to ensure they remain in a safe and serviceable condition. If a significant loss of water occurs from a farm dam on the Rosebrook property as a result of the project, Commitment 6.3.3 requires Mt Arthur Coal to provide an alternate water source until the dam is repaired.

In accordance with Commitment 6.3.2, the Rosebrook Private Property Plan will continue to be revised as more detailed mine planning, monitoring and modelling results become available. This plan will clearly outline impacts of mining on the property and the management and remediation measures to be implemented.

Rosebrook Comment:

....appropriate compensation should be provided for those who may well be disadvantaged....I request consideration be given that if approval issues for the proposed development that should only be on the basis that if called upon by Rosebrook Pty Limited the developer would be obliged to purchase its lands.

Response:

The EA, revised Statement of Commitments and Private Property Plan prepared for the Rosebrook property outline a comprehensive range of management measures to address potential impacts from the project on the Rosebrook property. Mt Arthur Coal has also held discussions with Rosebrook Pty Limited regarding managing the impacts of the project and appropriate compensation for these impacts.

Given that the existing land use consists of low intensity grazing, only small portions of the total property will be affected at any one time, any impacts will be managed and remediated, and that no residences or significant infrastructure will be affected, the project is not considered to impede the viability of the continued use of the property. Therefore, the inclusion of an acquisition clause relating to this property in any future project approval is not considered necessary or appropriate. Nevertheless, Mt Arthur Coal is committed to ongoing discussions with Rosebrook regarding appropriate compensation for the minor landuse impacts predicted,

3.2 Construction Forestry Mining and Energy Union (Mining and Energy Division)

No specific comments or questions were raised which require a response.

APPENDIX 1

Revised Statement of Commitments

Statement of Commitments

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The DGRs for the Underground Project require that the EA includes a Statement of Commitments which details the measures proposed by Mt Arthur Coal for environmental mitigation, management and monitoring of the proposed Underground Project.

If approval is granted under Part 3A of the EP&A Act for the proposed Underground Project, Mt Arthur Coal will commit to the following controls.

6.1 Compliance with the EA

- 6.1.1 To carry out the development for the Underground Project generally in accordance with the Project Application and this EA report.

6.2 Life of Operation, Production, Concept Mine Plan and Rail Haulage

Project Life

- 6.2.1 The project approval life will be 21 years from the commencement of longwall mining. Closure and rehabilitation activities may continue beyond this 21 year period and will be undertaken in accordance with an approved Mining Operations Plan.

Production Limits

- 6.2.2 The Underground Project will produce approximately 8 Mtpa ROM coal. This will be in addition to the approved annual coal production from the combined Mt Arthur Coal open cut mine complex.

Hours of Operation

- 6.2.3 Mining and associated activities for the Underground Project may be undertaken 24 hours a day, seven days a week.

Refinement of Mine Plan

- 6.2.4 Any material changes to the concept mine plan outlined in this EA report will be detailed and assessed as part of SMPs and MOPs prepared by Mt Arthur Coal.
- 6.2.5 The locations of minor surface infrastructure required to implement the project will be detailed and assessed as part of MOPs prepared by Mt Arthur Coal.

Rail Haulage

- 6.2.6 The peak number of train movements from Mt Arthur Coal will be limited to a maximum of 24 movements per day, except in the event that Drayton Mine does not utilise all of its approved train movements, whereby Mt Arthur Coal may take up the spare capacity.
- 6.2.7 Coal transported along the Bayswater Rail Loop from Mt Arthur Coal will be limited to 19 Mtpa.

- 6.2.8 No product coal will be transported from site by road transport except in an emergency situation and as approved by the Director General.
- 6.2.9 Annual average and maximum daily train movements and tonnages will be reported annually in the Annual Environmental Management Report (refer to commitment 6.14.1).

6.3 Subsidence

- 6.3.1 Mt Arthur Coal will manage the impacts of mining subsidence as required by the conditions of the ML and other DPI conditions.
- 6.3.2 Where a potential subsidence impact is identified on private property, Mt Arthur Coal will prepare an updated PPP for each of the potentially affected private landholders. These plans will clearly outline impacts of mining on the property and the management and remediation measures to be implemented.
- 6.3.3 Subsidence management measures to be implemented as part of the project will include:
- visual monitoring of the land surface and drainage lines within the subsidence affectation area pre and post subsidence to identify remediation requirements, if any;
 - detailed subsidence monitoring in accordance with Department of Primary Industry requirements, and utilise this data to regularly update the subsidence predictions for the site;
 - remediation and rehabilitation of subsidence impacts will be carried out, where required, as soon as practicable following subsidence using methods specified in SMPs;
 - building structures located within the subsidence affectation area will be inspected by a structural engineer prior to and after undermining and appropriate management measures implemented;
 - informing all relevant service providers of the potential impacts of mining subsidence on services;
 - farm dams within the subsidence affectation area will be monitored during and following undermining to ensure they remain in a safe and serviceable condition. Remediation works will be undertaken as required;
 - in the event of any significant loss of water from a privately owned farm dam, Mt Arthur Coal will provide an alternate source of water, as required, until the dam is repaired; and
 - all privately owned bores within the subsidence affectation area will be monitored during and following undermining. If the capacity of any utilised private bore is reduced to unacceptable level as a result of subsidence, Mt Arthur Coal will provide an alternative supply of water until such time as the MSB re-establishes or replaces the bore.

6.3.4 Mt Arthur Coal will, prior to undermining of Edderton Road, prepare and implement a Traffic Management Plan to manage subsidence impacts on Edderton Road in consultation with MSC and DPI and to the satisfaction of the Director General.

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6.4 Ecology

6.4.1 Mt Arthur Coal will, within six months of the commencement of operations submit to the Director General for approval, a revised Mt Arthur Coal complex Ecological Management Plan which integrates management of ecological issues associated with the Underground Project with the remainder of Mt Arthur Coal operations. This will include:

- measures to minimise the impact of subsidence remediation works on ecological values such as use small earthmoving machinery to carry out subsidence remediation works within woodland/forest areas and use of hand remediation methods for any works within the vicinity of the known weeping myall (*Acacia pendula*) Endangered Population and EEC;
- measures to assist regeneration of vegetation communities affected by subsidence remediation where satisfactory natural regeneration does not occur;
- a due diligence process for the location of minor surface infrastructure to be implemented when they cannot be located wholly within previously cleared areas;
- use of existing clearing procedures;
- continued implementation of existing measures for the replacement of arboreal habitat, should the removal of any hollow bearing trees be required; and
- expansion of the existing Mt Arthur Coal ecological monitoring program to include monitoring of vegetation condition within subsidence affected areas, rehabilitation works, the weeping myall (*Acacia pendula*) stand and monitoring of fauna in the Underground Project area.

6.4.2 Mt Arthur Coal will develop a management strategy for the weeping myall (*Acacia pendula*) Endangered Population and EEC located in the Underground Project area (this may be included as part of the above Ecological Management Plan). The plan will consider the need for signposting and/or fencing to provide for protection of this area.

6.4.3 Mt Arthur Coal will establish and manage the proposed Saddlers Creek conservation area (refer to **Figure 5.12**) to protect and enhance its ecological values in perpetuity, to the satisfaction of the Director General. The management of the proposed conservation area will address the existing degradation of Saddlers Creek.

6.5 Heritage

Aboriginal Heritage

6.5.1 Prior to any impact on Aboriginal sites, Mt Arthur Coal will submit to the Director General of the DoP, an Aboriginal Cultural Heritage Management Plan (ACHMP), to be developed for the project in consultation with DECC and Aboriginal stakeholder groups. The ACHMP will:

- facilitate ongoing management of Aboriginal sites;
- outline the timing and methodology for the salvage of sites;
- detail the management strategy for the Saddlers Creek conservation area; and
- include the establishment of a Management Committee to review and advise in relation to ongoing management of sites within the project area.

6.5.2 Aboriginal site loci within the subsidence remediation impact zone (shown on **Figure 5.11** or as refined in the SMP process) will be salvaged by surface collection on a per longwall panel basis prior to the commencement of mining in each longwall panel. Salvage works will be undertaken in accordance with the methods outlined in **Appendix 7** of the EA.

6.5.3 Targeted sub-surface investigation will be carried out within areas of Quarry Creek (QC01), Saddlers Creek tributary (SC09) and Western Creek (WC04) in areas within the subsidence remediation impact zone (shown on **Figure 5.11** or as refined in the SMP process) and for Saddlers Creek (SC01) within the proposed conveyor corridor (refer to **Figure 5.11**). The sub-surface investigations will be undertaken in accordance with the methods outlined in **Appendix 7** of the EA.

6.5.4 Aboriginal sites (or part thereof) located outside the subsidence remediation impact zone (shown on **Figure 5.11** or as refined in the SMP process) and not required to be impacted for establishment of mining, will be conserved *in situ* and managed under the ACHMP for the duration of the project.

6.5.5 A report containing the findings of the salvage program and subsequent artefact analysis will be completed for the series of longwall panels in each target coal seam. The report will be prepared within two years of the completion of salvage works and two copies provided to DECC. Copies will be made available to Aboriginal community groups that participated in the consultation program for the project.

6.5.6 Mt Arthur Coal commit to the following Aboriginal cultural heritage offsets:

- to set aside the proposed Saddlers Creek conservation area to be conserved in perpetuity for its Aboriginal cultural heritage values (refer to **Figure 5.12**). The proposed conservation area will be managed under an ACHMP prepared in consultation with DECC and the registered Aboriginal stakeholder groups;
- to fund and construct a Keeping Place within the Proposed Saddlers Creek conservation area, during the period of this project. The Keeping Place will store artefacts salvaged as part of the project and will be staffed an average of 50 days per year by appropriately trained Aboriginal community representatives, or as otherwise agreed with Mt Arthur Coal;
- to fund the training of five representatives from the registered Aboriginal stakeholder groups to undertake 'Collections Training' at the Australian Museum (or similar training) for staffing of the proposed Keeping Place, during the period of this project;
- to establish within or near to the existing fenced section of Quarry Creek west of Edderton Road, a facility suitable for use by the Aboriginal community when using the area for teaching purposes until such time as the area is impacted by subsidence;

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- to offer training for one member of each of the registered Aboriginal stakeholder groups for the project in relation to site recording and artefact recording and basic analysis; and
- to establish a Management Committee including at least five representatives of the Aboriginal stakeholder groups to guide the ongoing management of sites within the project area for the duration of this project.

6.5.7 If any human skeletal material is uncovered during ground disturbing works, all works will cease and the NSW Police Department, DECC and Aboriginal stakeholder groups will be notified. These stakeholder groups will then be consulted in relation to the development of appropriate mitigation measures.

Historic Heritage

6.5.8 The draft Conservation Management Plans for Belmont Homestead complex and Edderton Homestead complex will be finalised prior to any underground mining impact in consultation with the Muswellbrook Local and Family History Society and MSC.

6.5.9 The Hospital Building will be relocated prior to impact from approved open cut mining activities following preparation of a management plan to identify an appropriate alternative location and opportunities for adaptive re-use, if available. The management plan will guide the ongoing management of the structure and include full archival recording undertaken to the standard of local heritage significance.

6.5.10 Mt Arthur Coal will engage a qualified heritage consultant to carry out archival recording of all heritage sites listed in Table 5.5 and located within the subsidence affectation area, to the standards of local heritage significance prior to underground mining impact. Copies of all archival recordings will be provided to the NSW Heritage Office, Department of Planning and the Muswellbrook Library.

6.5.11 Heritage sites listed in Table 5.5 of the EA and located within the subsidence affectation area will be inspected by a structural engineer and heritage consultant prior to and after undermining to assess the impact of subsidence. The results of these inspections will be reported in the Annual Environmental Management Report.

6.6 Water Resources

Surface Water

6.6.1 Mt Arthur Coal will review and extend its current water balance and related water management system for the complex to seek to minimise external clean water demand. The water balance and performance of the related management system with respect to external clean water demand will be subject to an annual review and the key outcomes will be reported in the Annual Environmental Management Report.

6.6.2 The overland conveyor crossing of Saddlers Creek will have a catch tray system (or similar) on the underside of the conveyor where it passes over the creek to minimise the potential for coal spillage entering the creek.

6.6.3 Drainage from pit-top facilities and high traffic hardstand areas, including workshops, will be appropriately managed to contain and treat run-off prior to re-use on-site within the mine water management system.

6.6.4 Erosion and sediment control measures will be designed and implemented for construction of surface infrastructure to a standard consistent with Managing Urban Stormwater: Soils and Construction (NSW Landcom 2004) (the Blue Book) and Guidelines for Establishing Drainage Lines on Rehabilitated Minesites (Draft) (DLWC, 1999).

6.6.5 Subsidence impacts on drainage lines will be effectively remediated such that there is no significant impact on downstream water users and environmental flows. Drainage line monitoring and remediation protocols will be developed as part of the SMP process, and in consultation with DWE, to guide the management of subsidence impacts and drainage line remediation works on surface water systems. The drainage line monitoring and remediation protocols will include:

- detailed monitoring protocols (including monitoring which aims to assess any loss of flow from third order or higher stream systems);
- a program to complete drainage remediation works in a timely manner post subsidence to limit the potential for surface water capture;
- details of the design of drainage line remediation works. Remediation work will be generally consistent with DWEs Rivers and Estuaries Management Policy and the Australian Stream Rehabilitation Manual 2000;
- assessment of the viability and benefits of applying proactive measures such as the installation of liners or geo-fabrics in drainage lines prior to subsidence; and
- following the completion of any required reshaping works, remediated drainage lines will be revegetated and the riparian zone fenced to protect the drainage line and enhance ecological function.

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6.6.6 The existing surface water monitoring program will be continued as part of the Underground Project, or as otherwise agreed by the Director General in consultation with the DWE.

6.6.7 Surface water monitoring results will be reported annually in the Annual Environmental Management Report.

6.6.8 The final design of the proposed Hunter River pump station and any upgrade to the existing extraction point will be determined in consultation with the DWE and MSC. Any overland piping associated with these extraction points will be buried unless otherwise discussed with MSC.

Groundwater

- 6.6.9 A groundwater monitoring program will be implemented for the project as outlined in **Appendix 10**, or as otherwise agreed by the Director General in consultation with the DWE.
- 6.6.10 The results of groundwater monitoring and a comparison of measured and predicted impacts will be reported annually in the Annual Environmental Management Report (refer to commitment 6.14.1).
- 6.6.11 Impacts on privately owned bores will be assessed by monitoring and in the event that any utilised privately owned bore is significantly affected, an alternative water supply will be provided by Mt Arthur Coal until such time as the bore is re-established or replaced.

Monitoring Review

- 6.6.12 Additional groundwater monitoring locations will be established to monitor the impacts of the Underground Project on groundwater aquifers as outlined in **Appendix 10**, or as otherwise agreed by the Director General in consultation with the DWE.
- 6.6.13 An annual analysis of surface and groundwater monitoring data will be undertaken and will include:
- identification of any changes or long term trends in surface water quality. Should any adverse trends be identified, an investigation will be implemented to determine if the trend is a result of the Underground Project operations and if so, will identify management strategies to be implemented to address the identified issues; and
 - a comparison to modelled groundwater impact predictions.

The monitoring results and analysis findings will be reported in the Annual Environmental Management Report.

6.7 Noise

- 6.7.1 Unless otherwise agreed with the landowner, Mt Arthur Coal will manage operations associated with the Underground Project (the project alone), including noise from underground operations, coal processing and rail loadout, such that the noise emissions from the project comply with the noise criteria included in **Table 6.1** at privately owned land. All reasonable and feasible noise management measures will be implemented as part of the project with the aim of meeting the intrusive noise criteria.

Table 6.1 - Project Specific Noise Levels and Assumed Acquisition Criteria

Location	Project Specific Noise Levels (Day/Evening/Night ¹) $L_{Aeq,15min}$	Assumed Acquisition Criteria (Day/Evening/Night ¹) $L_{Aeq,15min}$
Antiene Estate ²	37 / 40 / 38 dBA	greater than 42 / 45 / 43 dBA
East Antiene	41 / 40 / 39 dBA	greater than 46 / 45 / 44 dBA
Skellatar Stock Route ² Thomas Mitchell Drive ² Denman Road ²	39 / 38 / 37 dBA	greater than 44 / 43 / 42 dBA
Racecourse Road ²	37 / 36 / 35 dBA	greater than 42 / 43 / 40 dBA
Denman Road West ² Roxburgh Vineyard ² Roxburgh Road ²	37 / 36 / 35 dBA	greater than 42 / 41 / 40 dBA
South Muswellbrook ² (incl. the South Muswellbrook Development Area)	35 / 35 / 35 dBA	greater than 40 / 40 / 40 dBA

Notes: 1) Day period is 7.00 am – 6.00 pm; Evening is 6.00 pm – 10.00 pm; Night is 10.00 pm – 7.00 am.

2) Locations as identified in Schedule B of the MAN development consent

- a. $L_{Aeq,15min}$ is the value of $L_{Aeq,15min}$ which shall not be exceeded for more than 10 per cent of the monitoring periods detailed in the noise monitoring program for continuous noise monitoring (refer Condition 6.4.3(a)(i)) or for independent noise investigations (refer Condition 6.4.3(a)(v)), as representative of any season (i.e. December to February, March to May, June to August, or September to November) and would include the locality specific range of weather conditions occurring at the time of monitoring.
- b. All measured or predicted noise levels to be rounded to the nearest decibel.

6.7.2 Underground Project operations will be managed with the aim of achieving the predicted noise levels in **Section 5.6** of the EA report.

6.7.3 Unless otherwise agreed with the owner, Mt Arthur Coal will manage its total operations such that the total noise impacts of the combined Underground Project, South Pit Extension project and MAN mining operations, including noise from coal processing and rail loadout, to comply with the assumed noise acquisition criteria for the Underground Project detailed in **Table 6.2** (note: these criteria are consistent with the noise acquisition criteria in the MAN development consent).

Table 6.2 - Assumed Noise Acquisition Criteria

Location	Intrusive Noise Acquisition Criteria (Day/Evening/Night ¹) L_{Aeq,15min}	Cumulative Amenity Acquisition Criteria (Day/Evening/Night ¹) L_{Aeq,period}
Antiene Estate ²	greater than 42 / 45 / 43 dBA	greater than 53 / 48 / 43 dBA
East Antiene	greater than 46 / 45 / 44 dBA	greater than 53 / 48 / 43 dBA
Skellatar Stock Route ² Thomas Mitchell Drive ² Denman Road ²	greater than 44 / 43 / 42 dBA	greater than 58 / 48 / 43 dBA
Racecourse Road ²	greater than 42 / 43 / 40 dBA	greater than 53 / 48 / 43 dBA
Denman Road West ² Roxburgh Vineyard ² Roxburgh Road ²	greater than 42 / 41 / 40 dBA	greater than 53 / 48 / 43 dBA
South Muswellbrook ² (incl. the South Muswellbrook Development Area)	greater than 40 / 40 / 40 dBA	greater than 53 / 48 / 43 dBA

Notes: 1) Day period is 7.00 am – 6.00 pm; Evening is 6.00 pm – 10.00 pm; Night is 10.00 pm – 7.00 am.

2) Locations as identified in Schedule B of the MAN development consent

- a. **L_{Aeq,15min}** is the value of **L_{Aeq,15min}** which shall not be exceeded for more than 10 per cent of the monitoring periods detailed in the noise monitoring program for continuous noise monitoring (refer Condition 6.4.3(a)(i)) or for independent noise investigations (refer Condition 6.4.3(a)(v)), as representative of any season (i.e. December to February, March to May, June to August, or September to November) and would include the locality specific range of weather conditions occurring at the time of monitoring.
- b. **L_{Aeq,period}** is the long-term **L_{Aeq}** noise level over the relevant day, evening or night period, as detailed in the noise monitoring program for continuous noise monitoring (refer Condition 6.4.3(a)(i)) or for independent noise investigations (refer Condition 6.4.3(a)(v)). These periods would be representative of any season (i.e. December to February, March to May, June to August, or September to November) and would include the locality specific range of weather conditions occurring at the time of monitoring.
- c. All measured or predicted noise levels to be rounded to the nearest decibel.

6.7.4 Mt Arthur Coal will manage train movement noise impacts from Mt Arthur Coal trains travelling on the Bayswater Rail Loop and Antiene Rail Spur to meet the assumed noise acquisition criteria (refer to **Table 6.2**) at all private residences (except East Antiene Location A1, refer to **Section 5.6**) when Mt Arthur Coal trains are travelling on the Bayswater Rail Loop and Antiene Rail Spur. Details of the measures implemented to manage train noise will be discussed in the AEMR.

6.7.5 Mt Arthur Coal will implement reasonable and feasible noise mitigation strategies in an effort to minimise noise impacts at sensitive receivers.

6.7.6 Mt Arthur Coal will review and revise their existing noise management plan in relation to noise management associated with Underground Project operations.

6.7.7 Mt Arthur Coal will maintain the existing noise monitoring network (or as otherwise agreed with DECC), including real-time directional noise monitoring in accordance with the MAN development consent. In order to assess the compliance of rail passby noise with the criteria in **Table 6.2**, Mt Arthur Coal will undertake annual noise monitoring in east Antiene for a period of three years. Monitoring will be

undertaken during winter night time periods and will monitor a minimum of 10 train movements. The monitoring program will be reviewed at the end of the three year period. Noise monitoring findings relating to the Underground Project will be reported annually in the Annual Environmental Management Report (refer to commitment 6.14.1).

6.8 Air Quality

- 6.8.1 Mt Arthur Coal will manage operations associated with the Underground Project such that, unless a specific agreement is reached with the landholder in regard to air quality impacts, the air quality criteria outlined in **Tables 6.3, 6.4 and 6.5** will be met at any privately owned residence (or, in relation to privately owned vacant land, will not impact on more than 25 per cent of that land).

Table 6.3 - Long Term Dust Concentration Criteria

Pollutant	Averaging Period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m ³
Particulate matter <10 µm (PM ₁₀)	Annual	30 µg/m ³

Note: Should monitoring identify that the above limits are not met an investigation will be undertaken to identify if Mt Arthur Coal is a major contributor to dust levels at this location with further action subject to the findings from this investigation and as agreed with DoP.

Table 6.4 - Short Term Dust Concentration Criteria

Pollutant	Averaging Period	Criterion	Percentile ^a	Basis
Particulate matter < 10 µm (PM ₁₀)	24 hour	150 µg/m ³	99 ^b	Total ^c
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³	98.6	Increment ^d

- a Based on the number of block 24 hour averages in an annual period.
 b Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by DoP in consultation with DECC.
 c Background PM₁₀ concentrations due to all other sources plus the incremental increase in PM₁₀ concentrations due to the Underground Project alone.
 d Incremental increase in PM₁₀ concentrations due to the Underground Project alone.

Table 6.5 - Dust Deposition Criteria

Pollutant	Averaging Period	Maximum Increase in Deposited Dust Level	Maximum Total Deposited Dust Level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

- 6.8.2 Mt Arthur Coal will revise their existing operational dust management plan in relation to dust management associated with Underground Project operations.
- 6.8.3 Mt Arthur Coal will maintain their existing dust monitoring network (or as otherwise agreed with DECC), that includes high volume air samplers measuring PM₁₀ on a six day cycle, real-time samplers measuring PM₁₀ and dust deposition gauges. Dust

monitoring findings relating to the Underground Project will be reported annually in the Annual Environmental Management Report (refer to commitment 6.14.1).

6.9 Greenhouse Gas Emissions

- 6.9.1 Mt Arthur Coal will develop and maintain an internal energy management plan with monitoring and reporting elements and specific targets and a greenhouse gas management plan for the Underground Project, in accordance with BHP Billiton requirements.
- 6.9.2 Mt Arthur Coal will investigate opportunities for reduction of greenhouse gas emissions from the project. This will include ongoing review of emissions monitoring and management technology.
- 6.9.3 Where gas purity reliably allows, methane emissions from the mine will either be flared or may be beneficially utilised where practical and feasible. Mt Arthur Underground will make application for the appropriate Petroleum tenure so that, subject to that tenure being granted, the opportunity to beneficially reuse methane emissions is available. A documented study that identifies and assesses potential options for the capture and reuse of drainage gas and ventilation air methane will be completed prior to the commencement of longwall mining and a copy provided to the Director-General.

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6.10 Visual

- 6.10.1 Mt Arthur Coal will implement the following visual controls to screen or filter views of project infrastructure from residential and public road locations (refer to **Figure 5.25**):
- construction of a 10 metre high bund around the northern and western edge of the Glen Munro pit-top facilities with tree plantings on the bund wall;
 - tree planting around the northern edge of Belmont pit to filter views of the edge of the open cut mining area;
 - tree planting on a rise to the south-west of the North Saddlers ROM facility to filter distant views of the ROM facility from the south-west;
 - all lighting to be located and directed so as to not directly impact on residential or road locations. Lighting will be designed to minimise excessive night glow in a manner consistent with AS 4282 Control of the Obtrusive Effects of Outdoor Lighting; and
 - all buildings potentially visible to the public to be coloured in suitable natural tones.

6.11 Decommissioning and Rehabilitation

- 6.11.1 A decommissioning plan will be prepared for each mining stage as part of the MOP process and submitted to the DPI for approval approximately five years prior to the commencement of decommissioning works (Note: this excludes progressive closure of underground mining facilities such as shafts which will be closed as part of

ongoing mining activities will be outlined in the relevant MOP and undertaken in accordance with the requirements of the DPI).

- 6.11.2 Tailings emplacement strategies implemented during the life of the project will be implemented in consultation with, and following approval from, the DPI.
- 6.11.3 Mt Arthur Coal will prepare final void management plans for West Belmont Pit and Saddlers Pit at least five years prior to their planned closure. The plans will be incorporated into the Mining Operations Plan submitted to the DPI as part of the closure process.
- 6.11.4 The existing rehabilitation and habitat management strategy for the Mt Arthur Coal complex will be revised to include:
- an approximately 295 hectare conservation area along Saddlers Creek (proposed to conserve archaeological and ecological values) (refer to **Figure 5.35**); and
 - approximately 150 hectares of land to the west of Edderton Road owned by Mt Arthur Coal that is within the Department of Primary Industry's mapped regional habitat linkage (Synoptic Landscape Plan, NSW DMR, 1999) which will be managed to enhance its ecological corridor values (refer to **Figure 5.35**).
- 6.11.5 The complex wide rehabilitation and habitat management strategy will be regularly reviewed and revised as part of the ongoing rehabilitation planning process at Mt Arthur Coal, with details of the implementation of the strategy included in the operations various MOPs submitted to the DPI for approval. Progress in implementing the strategy will be reported annually in the Annual Environmental Management Report.

6.12 Traffic and Transport

- 6.12.1 As described in commitment 6.3.4, Mt Arthur Coal will, prior to undermining of Edderton Road, prepare a Traffic Management Plan to manage subsidence impacts on Edderton Road in consultation with MSC (including any maintenance requirements related to subsidence), the MSB and DPI, and to the satisfaction of the Director General. This Traffic Management Plan will also include measures for the management of construction access from Edderton Road for minor surface infrastructure (e.g. ventilation facilities) and measures to minimise inconvenience to the public associated with access and use of Edderton Road. The Plan will be reviewed at least once every three years.
- 6.12.2 Mt Arthur Coal will liaise with Anglo Coal, MSC, Macquarie Generation and the ARTC to address legal and appropriate access for properties along Antiene Railway Station Road.

6.13 Community

- 6.13.1 Mt Arthur Coal will work with the MSC and DoP to create an appropriate Community Consultative Committee for the Underground Project. Mt Arthur Coal will provide the Community Consultative Committee with regular information regarding the environmental management performance of the Underground Project and any relevant matters regarding community relations.

- 6.13.2 Mt Arthur Coal will meet its obligations under the EP&A Act in regard to making a development contribution for the enhancement of services and/or facilities in the local community.

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6.14 Environmental Management, Monitoring, Auditing and Reporting

Annual Environmental Management Report

- 6.14.1 Mt Arthur Coal will prepare an Annual Environmental Management Report for the Underground Project. This Annual Environmental Management Report may be integrated into a whole-of-site Mt Arthur Coal Annual Environmental Management Report.

Waste Management

- 6.14.2 No waste will be disposed of on site except for inert wastes permissible under the EPL obtained for the Underground Project with all other waste disposed of at appropriately licensed waste management facilities located offsite.

Update of Environmental Management Plans

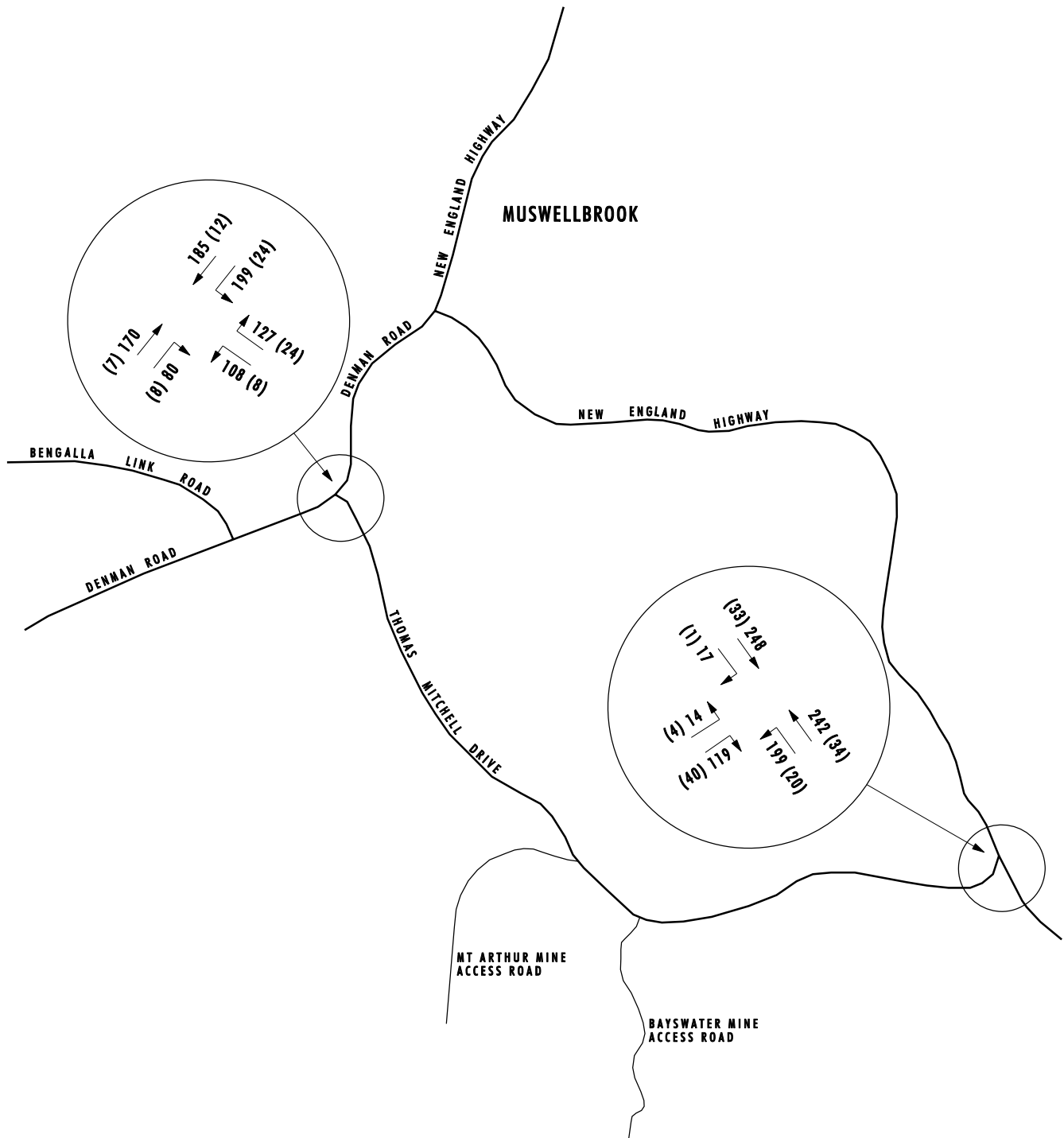
- 6.14.3 Within 12 months of commencing underground longwall mining operations, Mt Arthur Coal will incorporate relevant aspects of the environmental management of the Underground Project and rail facility in the Mt Arthur Coal complex environmental management plans. This work will be undertaken in consultation with the relevant Government authorities, as agreed with the Director-General.

Independent Environmental Audit

- 6.14.4 Three years after commencement of Underground Project mining operations, and every three years thereafter, Mt Arthur Coal will commission and pay the full cost of an Independent Environmental Audit of the project in consultation with the Director-General of DoP. A copy of the audit report will be provided to the Director-General of DoP and DPI, DECC, MSC, DWE and members of the Community Consultative Committee for the Underground Project. This audit may be combined with other independent environmental audits required by Mt Arthur Coal's development consents/Project Approvals as agreed by the Director-General of DoP.

APPENDIX 2

Total Predicted Traffic Volumes on the Local Road Network

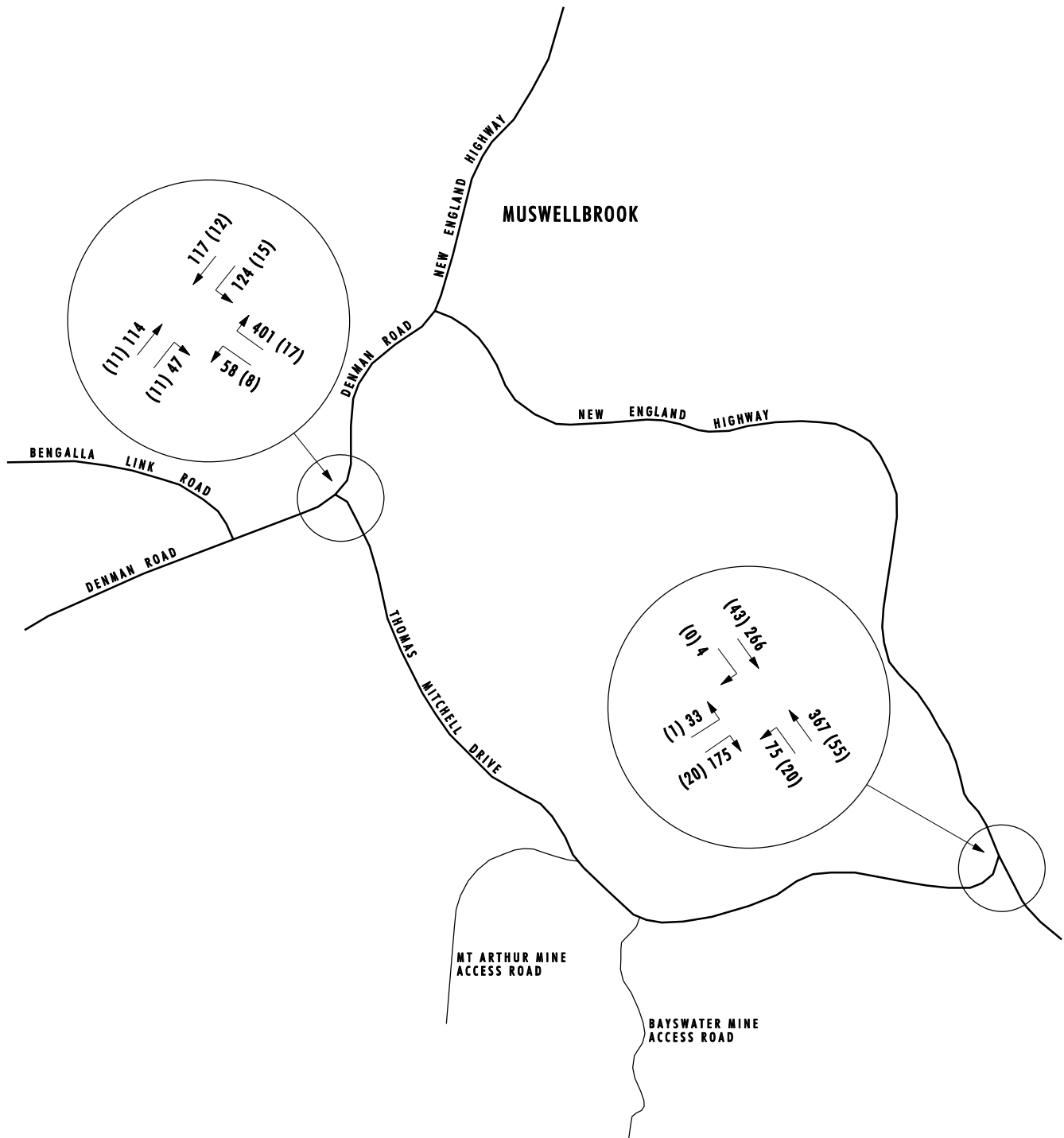


Legend

266 - Total Vehicles
(43) - Heavy Vehicles

FIGURE 1

Total Predicted Traffic Volume (Including Mt Arthur Underground Project) - 7.15am - 8.15am

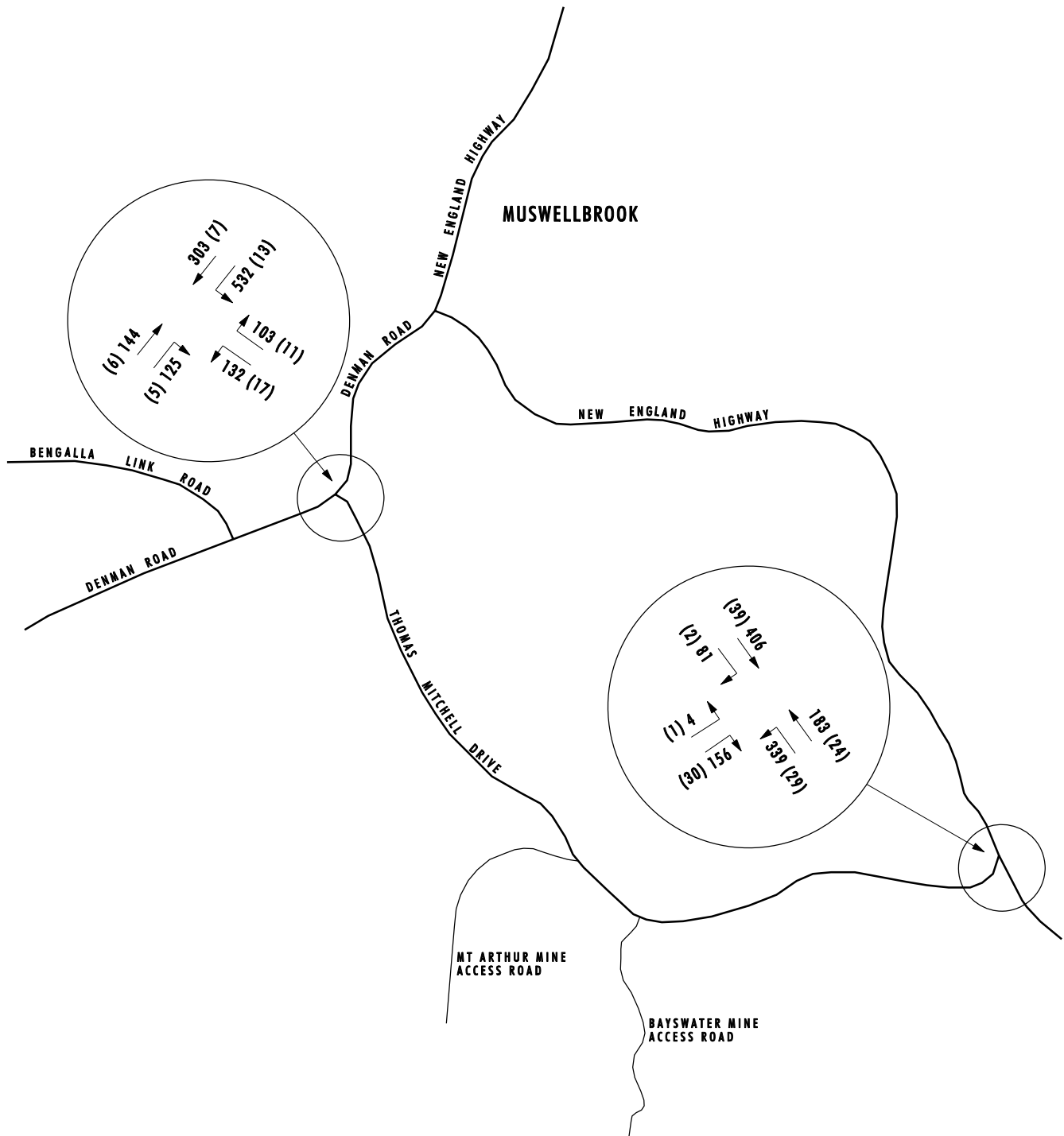


Legend

266 - Total Vehicles
(43) - Heavy Vehicles

FIGURE 2

Total Predicted Traffic Volume (Including Mt Arthur Underground Project) - 3.15pm - 4.15pm

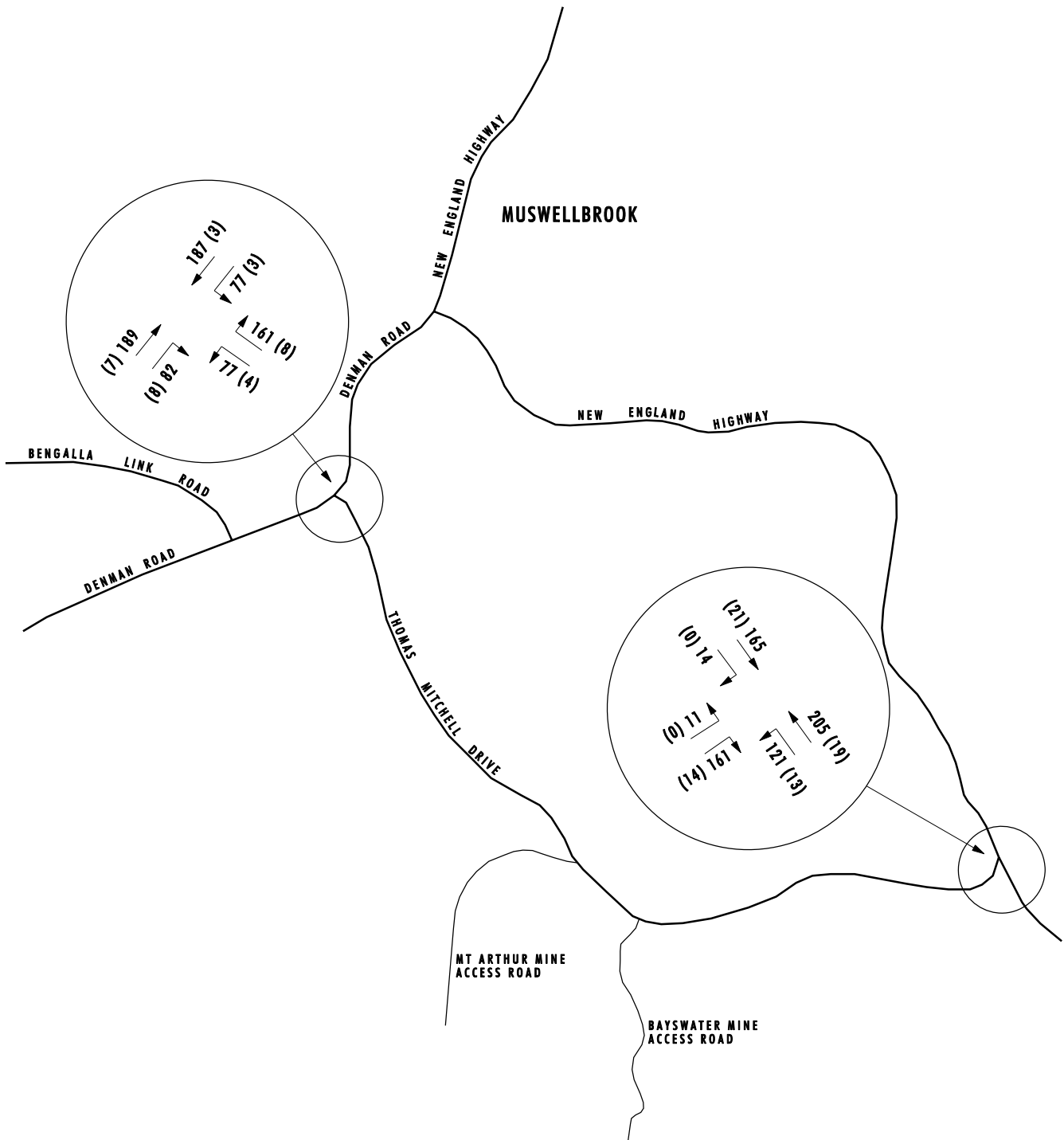


Legend

266 - Total Vehicles
(43) - Heavy Vehicles

FIGURE 3

Total Predicted Traffic Volume (Assuming Mt Arthur Underground Project Shift Time Overlap with Mt Pleasant and Anvil Hill Mines) - 6am - 7am



Legend

266 - Total Vehicles
(43) - Heavy Vehicles

FIGURE 4

Total Predicted Traffic Volume (Assuming Mt Arthur Underground Project Shift Time Overlap with Mt Pleasant and Anvil Hill Mines) - 6pm - 7pm

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