

Environmental Assessment Statement

Submission of Environmental Assessment (EA)

Under Section 75H of the *Environmental Planning and Assessment Act 1979*

EA Prepared by

Name James Bailey

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Address Hansen Bailey
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In Respect Of Maules Creek Coal Project

Proponent Name

Aston Coal 2 Pty Limited

Proponent Address

Level 10, 10 Eagle Street
BRISBANE QLD 4000

Land to be Developed

See **Appendix A** of this EA.

Proposed Development

Development and operation of the Maules Creek Coal Project and associated activities as outlined in **Section 3** of this EA.

Environmental Assessment

An EA for the Project is attached.

Certification

I certify that I have prepared the contents of the EA and to the best of my knowledge:

- It is in accordance with Sections 75E and 75F of the *Environmental Planning and Assessment Act 1979*;
- It contains all available information that is relevant to the EA of the activity to which the statement relates; and
- The information contained in the statement is neither false nor misleading.

Signature

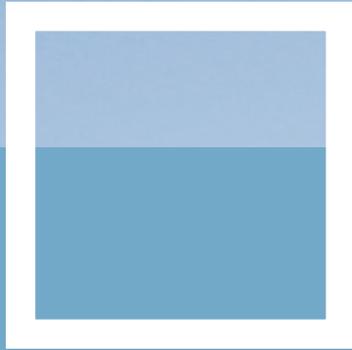


Name

James Bailey
Director

Date

July 2011



Executive Summary

Executive Summary

BACKGROUND

Aston Coal 2 Pty Limited, a wholly owned subsidiary of Aston Resources Limited (an independent Brisbane-based coal company listed on the Australian Stock Exchange), is the owner of the Maules Creek Coal Project located in the Gunnedah Coal Basin. The Maules Creek Coal Project is located approximately 18 km north-east of Boggabri within the Narrabri Local Government Area and is considered to be one of the few remaining Tier 1 metallurgical and thermal coal assets in NSW.

Development Consent (DA 85/1819) was granted by the NSW Minister for Local Government and Minister for Planning on 12 June 1990 for the development of the (then) approved Maules Creek Coal Project. DA 85/1819 remains valid and is supported by the Maules Creek Coal Project Environmental Impact Statement. DA 85/1819 was physically commenced in 1995 with the construction of the Development Dam; however, no open cut mining has been undertaken at the site. Mining authorities were granted in the 1970's and since this time, extensive exploration activities have been undertaken to define the local geology and develop a viable mine plan. Aston Coal 2 Pty Limited acquired the Maules Creek Coal Project in February 2010 and immediately commenced investigations into its further development.

Aston Coal 2 Pty Limited now seeks a contemporary Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979* to facilitate the development of a 21 year open cut coal mining operation and associated surface infrastructure generally within its current mining authorities, extracting coal at up to 13 Million tonnes per annum (the Project). This Environmental Assessment has been prepared in accordance with the Director-General's Environmental Assessment Requirements and supports an Application to the Minister for Planning for Project Approval as sought.

EXISTING ENVIRONMENT

Natural Environment

The Project is situated within the Gunnedah Coal Basin which extends from the Liverpool Ranges to the south (where it meets the Hunter Coalfields) to the township of Moree at its most northern boundary.

The Project Boundary is located on the northern slopes of the Willow Tree Range which forms a broad south-west facing basin largely within an elevated area containing the Leard State Forest. To the north, there are a series of hills and ridges that separate the catchments of Back Creek and Maules Creek. Other surrounding areas generally consist of a series of ridges and narrow gullies, with some more undulating slopes to the north.

Land Use

The Project Boundary is situated on land largely occupied by the Leard State Forest (which has historically been predominantly utilised for forestry, recreation and more recently mining related activities) and within the existing mining authorities held for the Maules Creek Coal Project and Boggabri Coal Mine. The Tarrawonga Mine operates immediately south of Boggabri Coal Mine. Various coal mining exploration leases occur to the east and further south.

Coal mining has occurred within the Gunnedah Coal Basin for more than 100 years. In recent years, coal mining within the region has increased with several new mining development projects commencing operations or undertaking exploration activities.

Parallel to this, the forestry industry (which has been historically active within the region) has substantially declined as large tracts of previously forested land have been afforded environmental and heritage protection under the *Brigalow and Nandewar Community Conservation Act 2005*.

The majority of the land within the Project Boundary has previously been logged and is affected by disturbances commonly associated with forestry operations. The land within the Project Boundary continues to be zoned for mining and forestry purposes.

The broader region is comprised of alluvial plains associated with the Namoi River which are typically utilised for intensive agricultural practices such as cropping, with the more elevated areas set aside for cattle and sheep production. The region also supports forestry and an array of other minor industries consistent with the rural community setting.



There are several State Forests in proximity to the Project Boundary, including the 1,200 hectare Leard State Conservation Area located immediately to the west. The foothills of the 36,820 hectare Mt Kaputar National Park lie approximately 20 km to the north of the Project Boundary.

The rural township of Boggabri is located approximately 20 km to the south-west; and the small, rural village of Maules Creek occurs approximately 5 km north of the Project Boundary. Maules Creek provides facilities for local farming families including a Public School, community hall and churches.

Land Ownership

The land within and surrounding the Project Boundary is largely covered by four key land ownership categories: private freehold land, Aston Coal 2 Pty Limited owned land, land owned by other mining companies and land held by Forests NSW. There are two private freehold properties (owners with whom Aston Coal 2 Pty Limited has purchase agreements) partially located in the northern part of the Project Boundary.

There are other private freehold landowners that occupy land immediately to the north and north-east of the Project Boundary. There are also some small areas of private freehold land along sections of the proposed rail spur which will not be disturbed as part of the Project.

The majority of the Project infrastructure will be located on land owned by Aston Coal 2 Pty Limited, Boggabri Coal or the Crown.

Climate

Regional climatic conditions of the Gunnedah Coal Basin consist primarily of seasonal variations of hot, wet summer months giving way to mild dry winters resulting in an overall warm temperate climate.

Temperature records indicate that January achieves the hottest temperatures with a maximum mean average of 34.0°C. The coolest month is July with a minimum mean of 3.0°C. Humidity levels exhibit seasonal variability throughout the year. The average annual rainfall is 618.5 mm falling over an average of 72 days per year. Late spring and early summer are generally drier than the rest of the year.

Evaporation is greater than annual precipitation with mean monthly pan evaporation rates varying seasonally from 242 mm during December to 57 mm during June.

The prevailing wind directions are from the south-east and west north-west and, to a lesser extent, the west and south south-east. Almost no winds originate from the north to north north-west.

Coal Resource

Coal resources associated with the Project Boundary occur within the early Permian age Maules Creek Formation of the Maules Creek Sub-basin. The Maules Creek Formation contains 15 named coal seam groups with the coal measures generally dipping towards the south-east at 1-7 degrees.

Exploration drilling, feasibility studies and geological modelling of the Maules Creek mining authorities indicate that a marketable reserve of 321 Million tonnes exists, with the mining authorities containing the fourth largest metallurgical coal deposit and the seventh largest coal deposit in Australia.

The predicted stripping ratio for coal accessible by open cut mining methods averages 6.4:1 over the 21 year mine life.

Approved Maules Creek Coal Project

The currently approved Maules Creek Coal Project generally provides approval for the development and operation of an open cut coal mine within the Leard State Forest, producing up to 9 Million tonnes of product coal per year to the Braymont Seam. DA 85/1819 also enables the extraction of coal via underground methods to the Lower Northam coal seam, along with various mining related infrastructure (including rail loop, coal handling plant and buildings).

Various licences and leases are held for the Maules Creek Coal Project including mining tenements and relevant water licences. An environmental monitoring system has also been established.

THE PROJECT

Since Aston Coal 2 Pty Limited purchased the assets of the Maules Creek Coal Project, extensive planning, assessment and previous operational experience has enabled the Project Team to develop a thorough understanding of the engineering, environmental and social constraints of the Project.

Options for the extraction of this internationally sought after coal resource (including underground extraction) were assessed in consideration of the principles of Ecologically Sustainable Development and the Objects of the *Environmental Planning and Assessment Act 1979*. The selected Project mine plan was then developed with reference to all of the constraints identified.

The Project is comprised of (at least) the following:

- Utilising a standard mining equipment fleet for truck and shovel / excavator mining operations to extract the coal resource at a rate of up to 13 Million tonnes per annum within a 21 Year Mining Limit down to the Templemore Seam;



- Processing up to 13 Million tonnes per annum run of mine coal through the coal handling and preparation plant and / or bypass coal directly to market;
- Transportation of product coal by rail via the Werris Creek to Mungindi Railway Line to the Port of Newcastle for export;
- Development and utilisation of infrastructure, including:
 - Coal handling and preparation plant and associated facilities;
 - Train loading facility;
 - A rail spur and loop connecting to the Werris Creek to Mungindi Railway Line involving common infrastructure with other miners;
 - Upgrade of local road access;
 - Communications, water management and power reticulation;
 - Explosives storage facilities; and
 - Administrative offices and support facilities.
- All mining and maintenance activities undertaken up to 24 hours per day, seven days per week; and
- A workforce of up to 470 permanent employees.

The Project will also require the development of temporary site access via Leard Forest Road and a permanent entry from Therribri Road.

ENVIRONMENTAL MANAGEMENT SYSTEM

Aston Coal 2 Pty Limited is committed to the Project's construction and operation activities being undertaken in an environmentally responsible manner, ensuring regulatory compliance and that expectations of the local, State and Federal government agencies and the immediate local community are met.

A comprehensive Environmental Management System will be developed for implementation throughout the life of the Project. The Environmental Management System will comprise a number of Environmental Management Plans, an Environmental Monitoring Program, associated operating procedures and standards and requirements to report on the Project's performance against agreed performance targets.

REGULATORY FRAMEWORK

Environmental Planning and Assessment Act 1979

In accordance with Section 75D of the *Environmental Planning and Assessment Act 1979*, the (then) Minister for Planning declared the Project one to which Part 3A applies, as it adheres to *State Environmental Planning Policy (Major Development) 2005* Section 6(2) as development "for the purpose of mining that is coal mining".

A Project Application was accepted by the Director-General of the (then) Department of Planning on 16 August 2010 and was subsequently allocated Project Application number 10_0138.

The Director-General notified Aston Coal 2 Pty Limited of the Environmental Assessment Requirements for the Project under Section 75F of the *Environmental Planning and Assessment Act 1979* on 6 December 2010.

Under *State Environmental Planning Policy (Mining Petroleum Production and Extractive Industries) 2007*, mining is permissible with development consent on land where development for the purposes of agriculture may be carried out. Accordingly, development for the purposes of coal mining is permissible on the subject land with Project Approval.

A Voluntary Planning Agreement is being established under Section 93F of the *Environmental Planning and Assessment Act 1979* between Aston Coal 2 Pty Limited and the Narrabri Shire Council and Gunnedah Shire Council to facilitate the provision of additional services for the forecast increase in demand on existing services due to the Project.

This Environmental Assessment considers the objectives of the *Narrabri Local Environmental Plan 1992*, should the Minister for Planning and Infrastructure exercise his discretion to consider its provisions.

Other Relevant NSW Legislation

The Project will seek as required, approvals under NSW legislation not exempted by Section 75U or granted consistent with Section 75V of the *Environmental Planning and Assessment Act 1979*.

Relevant Commonwealth Legislation

A Referral under the *Environment Protection and Biodiversity Conservation Act 1999* was lodged with the Minister for Sustainability, Environment, Water, Population and Communities as a proposal under Section 68 of the *Environment Protection and Biodiversity Conservation Act 1999*.



The Minister determined the Project a 'Controlled Action' on 9 August 2010, as it is likely to have a significant impact on listed Critically Endangered Ecological Communities under Section 18 including: White Box, Yellow Box, Blakely's Red Gum Grassy Woodland and Derived Native Grassland. The Project was also considered to be likely to have a significant impact on native vegetation which provides potential habitat for listed Threatened species (Regent Honeyeater and the Swift Parrot) under Section 20. The Minister will review this Environmental Assessment and confirm whether an 'Approval Decision' can be made under Section 133 with or without conditions.

STAKEHOLDER ENGAGEMENT

Stakeholder engagement included consultation with local, State and Federal government, industry regulators, near neighbours, the local Aboriginal community and the wider local community. The engagement process aimed to identify stakeholders' issues regarding the Project and ensuring that these issues were appropriately assessed and responded to either directly, or within this Environmental Assessment.

Throughout the planning phase and the preparation of this Environmental Assessment, 10 near neighbours located in close proximity to the Project Boundary accepted a personal briefing on the Project. Engagement with Aston's near neighbours also involved the distribution of two Project Newsletters in July 2010 and September 2010 to provide information on Aston Coal 2 Pty Limited, the Project and the approvals process.

A community open day was held at Aston's Boggabri Office on 9 December 2010. This community open day aimed to provide information on the Project and to gain feedback from the local community in relation to the Project. Around 60 stakeholders from the local community, councillors, political leaders and regulators attended the open day to learn more about the Project.

A number of briefings and presentations were provided to regulators throughout the preparation of this Environmental Assessment, including a Planning Focus Meeting that was held at the Boggabri RSL Memorial Club on 21 July 2010.

Consultation with the Aboriginal community was conducted in accordance with the 'Aboriginal cultural heritage consultation requirements for proponents 2010' and the superseded 'Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation' and 'Interim Community Consultation Requirements for Proponents'.

All concerns that were raised as a result of the engagement process with near neighbours, Aboriginal stakeholders, the wider community and regulators have been noted in this Environmental Assessment.

IMPACTS, MANAGEMENT AND MITIGATION

A risk assessment was undertaken to identify potential environmental and social issues associated with the Project. The purpose of the risk assessment process was to prioritise and focus the required environmental assessments for the Project in consideration of the Director-General's Environmental Assessment Requirements and the findings from stakeholder engagement.

Key findings from the environmental assessments are discussed below.

Air Quality

The independent air quality consultant PAEHolmes completed an air quality impact assessment for the Project.

To assess the effect that dust emissions will have on existing air quality, the dispersion model predictions from the indicative worst case modelled years (Year 5, Year 10, Year 15 and Year 21) have been compared with relevant air quality criteria.

The results from the dispersion modelling indicate that the Project considered alone, and with other sources, is predicted to contribute to some exceedances of air quality criteria at a number of private receivers or over more than 25% of contiguous vacant land in single ownership. There are no private receivers predicted to experience air quality levels that exceed the relevant assessment criterion for annual average total suspended particulates or annual depositional dust for the Project alone or on a cumulative basis. Two receivers are predicted to experience annual average PM₁₀ levels and 24 hour PM₁₀ levels greater than the relevant criterion. Aston Coal 2 Pty Limited has reached an agreement with these landholders to purchase these two properties.

Air quality management and minimisation practices will be implemented to ensure that the Project does not exceed the relevant criteria at all other privately owned receivers (other than those described above).

Aston Coal 2 Pty Limited will develop an Air Quality Management Plan for the construction and operation of the Project. This Air Quality Management Plan will incorporate real time predictive dust impact analysis and practical leading practice dust minimisation management measures.



These practices will include (but not be limited to): using wind activated automated water sprays on coal stockpiles and motion automated water spray transfer points, employing either water or a dust suppressant product on all active coal and overburden haul roads, minimising disturbance areas and revegetating disturbed areas as soon as practical.

Aston Coal 2 Pty Limited will develop a leading practice air quality monitoring network surrounding the site in consultation with neighbouring mining companies and representatives of the closest sensitive receivers. This shall include a real time meteorological monitoring station with predictive software capabilities and a network of real time air quality monitors. This will assist these mines in proactively managing their operations on a mutual basis and reducing adverse impacts to neighbouring sensitive receivers.

Greenhouse Gas

PAEHolmes completed a greenhouse gas assessment for the Project.

The main sources of greenhouse gas emissions from the Project have been identified as resulting from electricity consumption, fugitive emissions of carbon dioxide and methane, diesel usage, explosives usage, and the transport and end use of the product coal.

Scope 1, scope 2 and scope 3 emissions were considered in the assessment of carbon dioxide, methane, nitrous oxide and relevant synthetic gases.

When comparing greenhouse gas emissions from the Project including the mining, transporting the coal to the Port of Newcastle and end usage of the coal (30,028,092 tonnes of carbon dioxide equivalent per annum) with the estimated current global emissions (3,000 Giga tonnes of carbon dioxide equivalent per annum), it has been calculated that the average annual emissions of the Project are estimated to be approximately 0.001% of the current global carbon dioxide emissions.

In this context, it can be seen that the emissions estimated to result from the Project will not individually have any significant impact on global warming.

Aston Coal 2 Pty Limited will implement all feasible and reasonable measures onsite to minimise the greenhouse gas emissions of the Project and ensure it is energy efficient. It will also contribute to research into low emission coal technologies, improved energy use and efficiency and ensure that preventative maintenance is undertaken on plant equipment.

Aston Coal 2 Pty Limited will report against greenhouse and energy targets within its Annual Review.

Acoustics

An acoustics assessment was undertaken by Bridges Acoustics for the Project which considered operational, construction, road and rail, sleep disturbance and low frequency noise.

Predicted noise levels for the Project were modelled at sensitive receivers for indicative worst case mine plans for Year 1, Year 5, Year 10, Year 15 and Year 21. Assessments were undertaken for both prevailing and neutral weather conditions. Additional model scenarios were undertaken to determine construction and sleep disturbance noise levels from the Project to ensure these issues were comprehensively assessed against relevant criteria.

Background noise monitoring was completed for the Project and determined that a background level of 30 dBA was applicable during all time periods for all private receivers. An intrusive criterion for all receivers during all time periods of 35 dBA (LAeq 15 min) was therefore utilised in the assessment.

Predicted noise levels for both construction and operational activities include all feasible and reasonable noise management and mitigation measures. An analysis was undertaken to investigate various noise management measures to be applied to the Project, which showed that those measures proposed in this Environmental Assessment are feasible and reasonable.

Some receivers and / or properties are predicted to receive significant noise levels of 40 dBA or above as a result of the Project. Further receivers are predicted to receive moderate noise levels of 38 to 40 dBA, whilst other receivers are expected to receive mild noise impacts of between 35 to 38 dBA from the Project.

Two receivers owned by two landholders (who do not have a right to acquisition upon written request from a neighbouring coal mining operation) have been predicted to receive significant noise impacts from the Project under a worst-case modelling scenario. Aston Coal 2 Pty Limited has reached a purchase agreement with both of these receivers.

Three receivers (108, 120 and 259) are predicted to experience moderate noise impacts as a result of the Project. Two of these (120 and 259) are owned by landholders who own receivers who are predicted to experience significant noise levels. Four receivers (77, 82, 134 and 236) are predicted to experience minor noise impacts from the Project. Aston Coal 2 Pty Limited is committed to meeting the intrusive criteria at receivers 77 and 82 during the life of the Project. The landowner of receiver 134 holds land that is predicted to receive significant noise impacts over 25% of the property as a result of the Project and as such Aston Coal 2 Pty Limited has reached a purchase agreement for this property. Aston Coal 2 Pty Limited has also reached a purchase agreement with receiver 236.



Seven contiguous properties under individual ownership are anticipated to receive significant noise impacts from the Project under a worst case modelling scenario over more than 25% of the property area. One of these properties (254-255) has previously been predicted to be affected by the neighbouring Boggabri Coal Mine. Aston Coal 2 Pty Limited has reached a purchase agreement with one other landholder (132-140) and is in ongoing discussions with the remaining landholders in relation to reaching appropriate agreements.

All other private receivers are predicted to experience noise levels less than the intrusive criterion. All receivers where cumulative operational, construction, sleep disturbance, road or rail traffic noise levels are predicted to exceed relevant criteria are also predicted to receive significant operational noise impacts.

As part of its Environmental Management System, Aston Coal 2 Pty Limited will develop a Noise Management Plan for the construction and operation of the Project incorporating practical noise minimisation including (but not limited to): fitting mobile equipment with leading practice exhaust silencers and warning devices to reduce noise emissions, operational controls of mobile fleet during noise enhancing conditions, design controls to infrastructure and bussing the majority of employees to site.

Aston Coal 2 Pty Limited will develop a leading practice noise monitoring network surrounding the site (in consultation with neighbouring mining companies) which is representative of the closest sensitive receivers. This shall include a real time meteorological monitoring station with predictive software capabilities and a network of real time noise monitoring units. This will assist these mines in proactively managing their operations on a mutual basis and reducing adverse impacts to neighbouring sensitive receivers.

Blasting

A blasting impact assessment for the Project was completed by Bridges Acoustics.

The Project is likely to require an average of up to four blast events per week during daylight hours to prepare overburden for removal and for coal recovery.

The assessment determined that the closest private receivers to blast locations have also been predicted to be impacted by significant noise levels from the Project. Therefore other receivers will be more than 5,600 m from the proposed blasting activities and therefore impacts will be well below the relevant blasting vibration or overpressure criteria.

The Warriadool Hut is located the closest to any potential blast site at approximately 2,500 m to the north of the 21 Year Mining Limit. The blast predictions calculated for the assessment are within applicable residential vibration and overpressure criteria and it is highly unlikely the Warriadool Hut will be affected by blasting.

Aston Coal 2 Pty Limited will develop an Environmental Monitoring Program including a blast monitoring system (in consultation with Boggabri Coal Mine and Tarrawonga Mine) which is representative of the closest sensitive receivers to ensure compliance with the relevant blast criteria and will coordinate blasting schedules with adjacent mining operations to avoid simultaneous impacts on sensitive receivers.

Visual and Lighting

Integral Landscape Architecture and Visual Planning completed a visual and lighting assessment of the potential impacts of the Project. This assessment was undertaken to identify the character of the surrounding visual landscape and provide management and mitigation measures for visual impacts associated with the Project.

A primary viewing catchment was determined where views to the Project had a potential to occur, within which views from the eastern, western and northern sectors were considered.

No viewing locations were assessed in the Southern View Sector as it is screened by the Willow Tree Ranges and the neighbouring Boggabri Coal Mine and Tarrawonga Mine.

At each of the representative viewing locations, photographs of views towards the Project Boundary were taken to illustrate the existing environment and to develop projected photomontages during Year 1, Year 5, Year 10 and Year 21 as representative phases of the Project mine life.

The visual impact of the Project was determined by a combined consideration of both visual effect and visual sensitivity. Lighting impacts were evaluated qualitatively and considered both direct lighting effects and indirect lighting effects of the Project at night.

The Eastern View Sector contains a number of rural receivers, local roads, the southern part of the Mt Kaputar Range and the Nandewar Ranges. The visual impacts for most viewing locations from this sector will be low following rehabilitation of the eastern face of the Northern Overburden Emplacement Area.

There remains a potential for a high impact to be experienced from approximately five receivers that may be within 7.5 km from the Project that have views to the Northern Overburden Emplacement Area in a pre-rehabilitated condition.



However, once rehabilitation of the Northern Overburden Emplacement Area occurs, visual impacts will be reduced to moderate to low.

Receivers along Dripping Rock Road and Mallee Lane are unsighted by topographic elements. As such there will be a low visual impact on these receivers.

The Northern Sector is dominated by rural lands. It includes parts of the cropping lands, slopes and foothills, rocky hills, and the surrounding ranges. The sector includes numerous rural receivers, some local roads as well as the village of Maules Creek. Mt Kaputar National Park, Rusden and Deriah State Forests also occur within the Northern Sector.

Higher impacts could occur for receivers that are closer to the Project Boundary, especially for those houses on Ellerslie and Trantham Roads.

Any high to moderate impact, however, will only occur in the first five years of the mine life as the constant maturing of tree cover on the outer slopes of the Northern Overburden Emplacement Area will reduce effects and impact levels to low and insignificant.

While the Doug Sky Lookout in Mt Kaputar National Park may be a sensitive location, it is located over 30 km away and would have a low visual effect and resulting low visual impact level.

The Western Sector is dominated by rural lands that include significant cropping land areas along the Namoi River. This sector contains the highest density of rural receivers which reflects the intensive agriculture associated with the cropping lands adjacent to the Namoi River, as well as the village of Baan Baa, the Kamilaroi Highway and local rural roads. Views are screened by the topographic features of the Leard State Conservation Area. Only the elevated terrain of the rocky hills, in the vicinity of the Kamilaroi Highway, obtains views in this sector.

A high visual impact will occur at approximately 14 receivers within 7.5 km of the Project Boundary until rehabilitation occurs. Many of these receivers will likely have garden landscapes and or adjoining red gum woodlands that will screen or filter views. These receivers are located on Trantham, Ellerslie, Therribri and Harparary Roads.

Receivers outside the 7.5 km distance will correspondingly generate lower visual impacts, however the actual impact experienced by various receivers will vary and be totally dependent on foreground or middle ground vegetation. Due to the low visual effect and low sensitivity, visual effects will also be low from the Kamilaroi Highway in this sector.

The main light effects will be from intermittent lights associated with truck movements from the construction of the Northern Overburden Emplacement Area. These elevated locations will negate the screening effect of surrounding vegetation and topography and create direct light effects. However the distances to sensitive receivers will mitigate these effects.

While the effects of diffuse lighting are considered to be low, the contrast of the lighting from the Project against the existing night sky will be noticeable. This will create a halo of light above the mine components that are the sources of the light.

Although evident, it is not considered that it will create a significant visual impact due to a combination of large viewing distances, orientation of receivers and the screening effects of topography and vegetation.

Onsite treatments will be implemented to mitigate visual impacts of the Project including (but not limited to) progressive rehabilitation as soon as practical and natural tones for buildings and cladding.

Onsite treatments to mitigate lighting impacts of the Project will include (but not be limited to): use of low brightness lights, consideration of fixed and mobile night lighting locations and orientation; and where possible the conduct of night operations behind appropriate barriers to reduce offsite impacts.

Offsite treatments at existing private receivers are not likely to be required however, should a landholder within 7.5 km of the active mining area consider they are experiencing high visual impacts; an assessment will be made at the individual residence and feasible and reasonable mitigation measures employed in consultation with the landholder and Department of Planning and Infrastructure.

Ecology

Cumberland Ecology Pty Ltd has undertaken an Ecological Impact Assessment for the Project which investigates the impacts of the Project on current biodiversity values, including Threatened species, populations and protected ecological communities, as well as addressing impacts on Matters of National Environmental Significance as listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

Extensive ecological studies were undertaken in the vicinity of the Project from the 1970's to early 2000's which formed part of the comprehensive literature review for the assessment.

In order to verify and update the results of the earlier surveys, Cumberland Ecology undertook various additional surveys between 2008 and 2010 to form a complete baseline ecological study in accordance with the Threatened Biodiversity Survey and Assessment Guidelines for Development and Activities.



Floristic sampling was designed to meet the Department of Sustainability, Environment, Water, Population and Communities' guidelines for the identification of Box Gum Woodlands and Derived Grasslands which is listed as a critically endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*. Weeping Myall Woodland, Swift Parrot and Regent Honeyeater were also the particular focus of investigation.

The Project Boundary supports vegetation containing a high diversity of native species, with several hundred flora species being recorded within the Leard State Forest and the surrounding landscape.

No Threatened flora species were identified within the Project Boundary during the survey periods for this ecological assessment. However, a suite of Threatened plant species are known to occur in the locality surrounding the Project Boundary.

A total of 22 mammal species were identified within or in the vicinity of the Project Boundary, which included 11 terrestrial species, two arboreal species and nine bat species. Eighty one grid sites were assessed across the Project Boundary for koala. No signs of koala activity were found in any of the grid sites.

A total of 132 bird species were identified within the Project Boundary and immediate surrounds. Several listed Threatened birds were either recorded in the locality or are considered to have potential habitat within the Project Boundary.

A total of eight frog species were detected in the Project Boundary, although none are listed as Threatened. A total of 25 reptile species were recorded in the Project Boundary, including snakes, geckos and skinks. No Threatened reptile species were recorded during the survey period.

No groundwater dependant ecosystems have been identified to occur within the Project Boundary. A desktop analysis has been undertaken to confirm whether the Project is likely to have an adverse impact upon stygofauna in the surrounding alluvial aquifers. As the Project is not likely to significantly impact upon the groundwater levels in the surrounding aquifers, it is not likely to significantly affect stygofauna.

The areas to be impacted over the life of the Project consist of approximately 1,665 hectares of forest and woodland and a further 513 hectares of native grassland and crop land. The Project proposes the removal of significant areas of Box Gum Woodland and Derived Grassland amounting to approximately 458 hectares and 86 hectares respectively. The Project mine plan has been designed to avoid the disturbance of over 100 hectares of critically endangered ecological community.

In anticipation of such impacts, Aston Coal 2 Pty Limited has proposed an offset package (Biodiversity Offset Strategy) that will result in significant net benefits to flora and fauna within the locality and region in the medium to long term, including Box Gum Woodland and extensive habitat for Threatened species that are known to occur in the locality. Management measures proposed for the Project have followed the Draft Guidelines for Threatened Species Assessment with the aim to avoid, mitigate or compensate via offsets all identified impacts.

A Biodiversity Management Plan will be prepared for the Project for the approval of the Department of Planning and Infrastructure which shall include (at least): a Land Disturbance Protocol which will minimise impacts to critically endangered ecological communities where practical, delineate clearing, specify seed collection and the translocation of habitat features and describe regeneration trials. Progressive rehabilitation and the implementation of the Biodiversity Offset Strategy, a flora and fauna monitoring program, the development of linkages between remnant vegetation and the support of research into the reestablishment of critically endangered ecological communities will also assist in ensuring that biodiversity in the region is maintained.

Biodiversity Offset Strategy

The Leard State Forest, in which the Project is proposed, was recognised for its forestry and mining characteristics and was zoned under the *Brigalow and Nandewar Community Conservation Act 2005* for these purposes.

Notwithstanding the zoning considerations under the Agreement, the Biodiversity Offset Strategy has been developed to generally comply with the biodiversity offsetting principles developed by both the State and Commonwealth Governments.

The Biodiversity Offset Strategy that has been formulated for the Project requires the acquisition of a large area of private land holdings that contain substantial amounts of remnant vegetation and includes:

- **Northern Offsets:** 6,353 hectares over two properties to the north of the Project Boundary that are acquired, or in the process of being acquired for use as compensatory habitat. The "Mt Lindesay" and "Wirradale" properties are extensively vegetated, linking to each other and to adjacent conservation lands, including the Mt Kaputar National Park;
- **Western Offsets:** properties in the vicinity of the Leard State Conservation Area and the Namoi River riparian corridor on the western margins of the Project Boundary that have and/or will be acquired for conservation and farming purposes;



- **Eastern Offsets:** properties on the eastern and north-eastern side of the Project Boundary that have and/or will be acquired for conservation and farming purposes; and
- **Shared Property:** property in shared ownership with Boggabri Coal Mine to the south-west of the Project Boundary and will be incorporated into the Biodiversity Offset Strategy for the Project.

The results from numerous site inspections and preliminary vegetation mapping indicate that these offset properties contain suitable vegetation and habitat to address the ecological impacts of the Project. The offset properties were chosen for inclusion in the Biodiversity Offset Strategy with due consideration for their strategic placement outside existing mining/exploration tenements and prime agricultural land, as well as their proximity to existing and future conservation lands and natural corridors. Comprehensive surveys will be completed for these offset properties in the near future and this detailed information will be used to guide appropriate land management and restoration activities for conservation.

The native vegetation within the offset properties provides forest, woodland and grassland habitat for many of the threatened and migratory fauna that are predicted to be impacted by the Project.

The habitat areas of the Eastern and Western Offset Areas are within proximity, or connected to the habitat in the Leard State Conservation Area and the Leard State Forest. These properties would presumably provide habitat for the fauna assemblages present in the Leard State Forest and Leard State Conservation Area. Within the Northern Offsets, there are extensive areas of well connected forest and woodland that provide excellent habitat for a wide variety of species, potentially including species that are not found in Leard State Forest, such as the Spotted Tailed Quoll which is listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Biodiversity Offset Strategy areas will build onto the link between the Namoi River and the Leard State Conservation Area, as well as building onto the corridor from the remaining section of Leard State Forest to the Nandewar Ranges.

The properties along the western side of the Project Boundary will form links between rehabilitated lands that will be formed within the Project Boundary with Leard State Conservation Area and with the River Red Gum corridors that currently exist along the Namoi River.

The Northern Offsets Area will comprise 6,353 hectares which is broken down into approximately 2,200 hectares of Box Gum Woodland and approximately 1,900 hectares of Derived Native Grassland, with a further 130 hectares of Low Diversity Derived Native Grassland to be regenerated to comply with the critically endangered ecological community.

The Western Offsets will include up to 600 hectares of forest and woodland which will be strategically selected in order to maximise the vegetated links between the Namoi River and the Leard State Conservation Area.

The Eastern Offsets will include up to 400 hectares of native vegetation on certain properties to the north-east of the Project Boundary that are predicted to be impacted by the Project, building on the areas of land previously proposed to be put aside for conservation by Boggabri Coal.

Properties within the Eastern and Western Offset areas will be strategically selected, only including vegetated areas that are on the foothills, not on prime, agricultural land. This will ensure that agricultural farmland is not locked up in the Biodiversity Offset Strategy.

The Biodiversity Offset Strategy for the Project is dynamic and aims to maintain and then improve the biodiversity values of the landscape in the medium to long term. This will be achieved through the restoration and conservation of land with the potential to regenerate and build onto areas of existing native vegetation and provide additional habitat for Threatened species. A Biodiversity Offset Management Plan will be developed for the Project to guide the restoration and the overall management of land for biodiversity offsets. The Plan will prescribe the management of existing vegetation within the Project Boundary, revegetation of cleared or degraded areas, fire management, weed and feral animal control and management of the habitats of Threatened species of flora and fauna.

Further to the above the Project Boundary will be progressively rehabilitated over the life of the Project and will form part of the Biodiversity Offset Strategy. A key objective of rehabilitation will be to establish native forests and woodland with a focus on the Threatened Box Gum Woodland community and other habitat structures characteristic of the pre mining landscape.

Aboriginal Heritage

AECOM Australia Pty Limited prepared an Aboriginal Archaeology and Cultural Heritage Impact Assessment for the Project which aimed to assess the nature of the archaeological landscape of the Project Boundary and the potential impacts that the Project may have on Aboriginal cultural heritage values.

A targeted survey strategy was adopted for the Project over 18 days, involving AECOM archaeologists and 15 members of the Aboriginal community. The survey divided the Project Boundary into its constituent landform types to ensure that all landforms within the survey areas were sampled.

A proportional field emphasis on those areas considered to have higher archaeological potential (i.e. creek / river flats) was adopted.



A total of 78 Aboriginal sites were found to occur within the Project Boundary, with a further 19 sites occurring outside the Project Boundary on Aston Coal 2 Pty Limited owned land. The majority of Aboriginal sites located during the survey were stone artefact sites, with 47 artefact scatters and a further 25 isolated artefacts also identified. In addition to these, 21 scarred trees were identified within the Project Boundary with the majority identified adjacent to the Namoi River within the vicinity of the proposed pipeline corridor.

Three grinding groove sites were also identified, including one fixed groove in sandstone bedrock and two portable grinding stones. All grinding groove sites were identified within the steep sided gully landform in the vicinity of the proposed Rail Spur.

The remaining site type is a previously recorded rock shelter located outside of the Project Boundary and will not be impacted by the Project.

In total, 21 sites with high archaeological significance were identified during the field survey within the Project Boundary. The most expansive site was that of Leard SF ASI, an artefact scatter of approximately 320 artefacts located near a well known soak (Lawler's Waterhole) within the Leard State Forest. Sites listed as highly significant include Leard SF ASI, grinding grooves and scarred trees.

Aboriginal sites predicted to be disturbed as part of the Project of high scientific significance will be salvaged with excavation while sites of moderate to low significance will be collected. Various sites not impacted by the Project will be delineated in the field and protected.

An Aboriginal Archaeology and Cultural Heritage Management Plan will be developed in consultation with Aboriginal stakeholders and the Department of Environment, Climate Change and Water.

The Management Plan and will include: protection of sites prior to salvage and impact, fencing sites not to be impacted, detailed salvage methodologies, identification of protocols for the monitoring of earth works and identification of the storage location and procedure for the care and control of salvaged artefacts.

Aston Coal 2 Pty Limited will also fund and construct a Keeping Place during the period of the Project in consultation with other mines in and adjacent to the Leard State Forest, the Aboriginal community and the Office of Environment and Heritage. Aston Coal 2 Pty Limited will also offer training packages to members of the Red Chief Local Aboriginal Lands Council in relation to site recording and artefact recording and will also support the opportunity for a representative of the Aboriginal community to be a member of the Maules Creek Community Consultative Committee.

Non Indigenous Heritage

A Non Indigenous Heritage assessment was undertaken by Archaeology Australia for the Project. The Non Indigenous Heritage assessment did not identify any items of significance within the Project Boundary.

A total of five sites were identified in proximity to the Project Boundary, three of which were determined to be of local significance associated with the Velyama Homestead site (including the homestead, shearing shed and burial ground). Warriahdool Hut was identified to be of local significance. The Therribri Homestead Site was also determined to be of local significance.

Aston Coal 2 Pty Limited will develop a Non Indigenous Heritage Management procedure for properties on Aston Coal 2 Pty Limited owned land. Aston Coal 2 Pty Limited will also compile an Oral History Report for any landowners who are to be acquired by the Project should they wish to contribute to such a report.

Surface Water

A surface water impact assessment has been undertaken for the Project by WRM Water & Environment which incorporated a review of the existing catchments, the layout of the proposed water management system, consideration of the proposed infrastructure and an overall water balance for the various years of the Project.

Back Creek which adjoins the northern side of the Project Boundary has a catchment area of approximately 44 km² to the upstream and 63 km² to the downstream or western end of the Project Boundary. The land surrounding Back Creek has been fully or partially cleared for agricultural purposes. Back Creek is an ephemeral creek and flows only for short periods after intensive rainfall. The main areas of disturbance resulting from the Project include the Northern Overburden Emplacement Area and open cut pit which are drained by numerous small ephemeral tributaries of Back Creek which flow northwards from the Willow Tree Range through the Leard State Forest.

The maximum catchment area draining to the mine water management system is approximately 1,590 hectares in Year 5, which represents approximately 25% of the catchment area of Back Creek to the downstream boundary of the Project Boundary. This area to be captured also represents approximately 2.1% of the total Maules Creek catchment. By Year 10, the catchment from the Northern Overburden Emplacement Area will be allowed to be released back into the Back Creek catchment after treatment in sediment dams.



The potential for impacts upon flooding has been investigated for Back Creek and the Namoi River (where the proposed pump station, Rail Spur and Mine Access Road are to be constructed on the floodplain) to confirm any possible impacts upon the flooding regime of these two waterways. The Rational Method was used to estimate 100 year Average Recurrence Interval design flood discharges in Back Creek.

The Project is not predicted to have any adverse impact on flood levels or flood behaviour along Back Creek for events up to the 100 year Average Recurrence Interval event.

A 21 year water balance (including long term final void water balance) analysis was undertaken which aimed to assess the performance of the site water management system under a range of climatic conditions using GoldSim software.

The annual volumes of makeup water required from the Namoi River pipeline varies. In very wet years, it may be possible to obtain all water requirements for the mining operations from local runoff and groundwater inflows being the priority water supplies for the water management system. However, during average years it is predicted that annual makeup volumes of up to 1,800 megalitres will be required from the Namoi River to ensure a reliable source of water to the coal handling and preparation plant. The maximum simulated water requirement from the Namoi River for any year was 2,730 megalitres which is less than Aston Coal 2 Pty Limited's existing high security water allocation.

Storage behaviours in the Mine Water Dams were investigated for various climatic sequences over the Project life. The median over the 89 scenarios modelled indicated that stored volumes within the Mine Water Dams are likely to be less than 200 megalitres.

During wet periods, the storage capacities of the mine water dams are likely to be exceeded for around 7% of the mine life. Resulting from this, up to 600 megalitres of water may need to be stored within the Open Cut Pit for more than 5% of the mine life, should very wet climatic conditions be experienced. During average climatic conditions, less than 200 megalitres of water is likely to be stored within the Open Cut Pit for 95% of the time. The model results indicate that should mining cease at Year 21, the final void water level will rise quickly to a depth of about 160 m Australian Height Datum.

The final steady state water level of about 220 m Australian Height Datum will not be reached until 300 to 400 years following the cessation of mining operations. The steady state water level is more than 100 m below the overflow level of about 340 m Australian Height Datum and as such, water will not spill from the Final Void.

The results of the salt balance indicate that the salinity and total dissolved solids in the final void will gradually increase over time. The rising salinity level in the final void will have no adverse impact on surface water because the long term water level is more than 100 m below the overflow level. Further the groundwater qualities will not be affected as the Final Void will remain as a groundwater sink.

Aston Coal 2 Pty Limited will develop a Water Management Plan to the approval of the Department of Planning and Infrastructure for the construction and operation of the Project which shall include details of the mine site water management system, a sediment and erosion control plan, and a surface water monitoring program (for onsite storages and Back Creek).

The Project will include a leading practice real time water management system that will aim to reuse contaminated mine water supplies onsite as a priority to meet dust suppression and coal handling and preparation and plant demands and therefore minimise the need for use of fresh water from the Namoi River.

Groundwater

A groundwater impact assessment was undertaken for the Project by Australasian Groundwater and Environmental Consultants Pty Ltd which aimed to assess the impact of the Project on the groundwater regime and water users and to quantify predicted inflows into the mining area throughout the life of the Project and following cessation of mining.

The regional groundwater system within the vicinity of the Project Boundary consists broadly of three aquifer systems:

- Namoi Valley alluvial aquifer system associated with the Namoi River floodplain and its tributaries;
- A thin veneer of weathered bedrock (regolith) near the ground surface; and
- Permian bedrock aquifers, in particular the coal seams of the Permian Maules Creek Formation.

Data necessary for the assessment of the groundwater regime was largely taken from historical groundwater reports, databases of groundwater monitoring information and some further field observations undertaken to support this information.

A numerical model was developed using the three dimensional groundwater flow model to simulate the impact of the Project (and other activities) on the groundwater regime over time.

The modelling used conservative parameters and values and is considered to represent the worst case scenario for potential groundwater impacts resulting from the Project and other activities.



Seepage of groundwater from the intersected aquifers during mining will reduce groundwater pressures in the coal seams and overburden / interburden aquifers around the open cut mining void.

The depressurised zone is predicted to extend between 5 km and 7 km from the 21 Year Mining Limit. The zone of influence largely remains within the Permian outcrop zone, but does extend slightly into the alluvial aquifer, in the south-west, where a thin zone of alluvium is present in a small valley extending into the outcropping hill.

A total of 27 registered bores fall within the zone of influence as defined by the 1 metre drawdown contour at the end of mining. A total of 13 of these were identified within the outcrop of the Maules Creek Formation and 14 within the outcrop zone of the Boggabri Volcanics. The majority are owned by mining operations. None are registered for irrigation. Up to eight may remain in private ownership and be relied upon for stock watering and domestic purposes.

The modelling indicates that the Project will not result in significant drawdown of groundwater levels in the Maules Creek alluvial aquifer and for this reason the groundwater dependent vegetation identified along the creek alignment will not be impacted by the Project.

The predicted inflow of groundwater over the 21 year life of the mine varies from a minimum of 0.18 megalitres per day in Year 5 to up to a maximum of 2.91 megalitres per day in Year 15 and reduces back to 0.65 megalitres per day in Year 21.

The overall decline in flows to the alluvial aquifer, when the Project is operating in conjunction with the Boggabri Coal Mine and the Tarrawonga Mine is approximately 1.5 megalitres per day.

The modelling indicates that the interception of flow to the alluvial aquifer due to the Project alone reaches almost 0.35 megalitres per day at the end of mining. The cumulative predicted decline in inflow to the alluvial aquifer attributable to the Project over the 21 year mine life is about 1,060 megalitres or 50 megalitres per year.

The predicted impact on the recharge to the alluvial aquifer is very low, at less than 1% of both the rainfall recharge simulated by the steady state model, and the recharge to Zone 4, Zone 5 and Zone 11 as stated in the Upper and Lower Namoi Groundwater Source Water Sharing Plan at 43,900 megalitres per year.

At the end of the 21 year mine life, in the unlikely event that mining was not to continue further to the north, groundwater levels in the area will slowly recover. Here, the void will gradually fill to form a lake from rainfall and groundwater inflows until it reaches a stable water level.

As the groundwater gradient between the open void and the coal seam aquifers reduces, the rate of inflow would decrease until a 'quasi' equilibrium is reached. As the lake surface is exposed, recovery is likely to be impeded by the effects of evaporation and would be expected to reach equilibrium conditions at a lower than pre mining potentiometric surface elevations.

This will result in the groundwater levels reaching equilibrium conditions of approximately Reduced Level 225 m after about 1,000 years of pit lake recovery, indicating the final void lake will remain a sink to local groundwater flow.

Aston Coal 2 Pty Limited will develop and implement a Water Management Plan which will include a groundwater monitoring program including the installation of additional bores and piezometers surrounding mining operations. In the unlikely event that it is demonstrated that water levels in existing landholder bores decline as a consequence of the Project, the supply will reasonably be substituted by Aston Coal 2 Pty Limited.

The Groundwater Impact Assessment was Peer Reviewed by Heritage Computing in accordance with the *Murray-Darling Basin Commission's Australian Flow Modelling Guideline* (MDBC, 2001). The Peer Review concluded that the groundwater model had been developed competently and suitably addresses the cumulative impacts, provides conservative estimates for dewatering rates and appropriately assesses the potential groundwater impacts on a regional basis.

The review supported the conclusion that there will be no significant impacts external to the mined area and to the base flows of neighbouring creek systems.

Geochemical

RGS Environmental Pty Ltd conducted a geochemical impact assessment for the Project which involved a characterisation and assessment of overburden and potential coal reject materials associated with the mining of the coal seams to be open cut mined.

A review of available geochemical and geological data associated with the Project assisted in testing of 138 overburden and coal reject samples during 2010 in accordance with relevant technical guidelines.

Overburden materials at the Project are likely to have negligible (< 0.1%) total sulphur content and are therefore classified as Non Acid Forming barren.

Overburden also appears to have excess acid buffering capacity typical of a moderate Acid Neutralising Capacity value. Most overburden materials were predicted to generate slightly alkaline and relatively low salinity runoff and seepage following surface exposure.



Overburden materials have been predicted to be non sodic (and as such non dispersive) and may be suitable for revegetation and rehabilitation activities (in final surfaces or as a growth medium).

Most potential coal reject materials are likely to have negligible total sulphur content (< 0.1%) and are therefore classified as Non Acid Forming. These materials have a high factor of safety with respect to potential acid generation.

A small proportion of the potential coal reject materials located near the Braymont, Flixton, Herndale and Onavale seams (roof and some floor samples) have a relatively high total sulphur content and negligible buffering capacity and are classified as Potentially Acid Forming - High Capacity. Most Non Acid Forming potential coal reject materials will generate slightly alkaline and relatively low salinity runoff and seepage following surface exposure. However it is recognised that Potentially Acid Forming coal reject materials may generate acidic and more saline runoff and seepage if exposed to oxidising conditions.

The ongoing management of overburden will include pre stripping topsoil from areas to be mined for use in final rehabilitation activities and placement of overburden within the Overburden Emplacement Areas in a manner that limits the risk of surface erosion. Field trials to identify the most appropriate topsoil and overburden materials for the revegetation and rehabilitation of final landforms will also be undertaken.

The ongoing management of coal rejects materials will include disposal of Potential and Non Acid Forming coal reject materials in the open pit and / or co-disposal with overburden and burial to a depth of at least 5 m in the Overburden Emplacement Areas. Runoff or seepage from Overburden Emplacement Areas will be monitored on a regular basis.

Waste

Aston Coal 2 Pty Limited will develop an effective recycling program whereby wastes are separated into designated recyclable waste bins and transported to an appropriate recycling centre. Regular inspections, classification of wastes, monitoring and tracking, and regular waste management handling training will be undertaken.

Aston Coal 2 Pty Limited will develop an Environmental Procedure to ensure that the minimisation, storage, transport, disposal, tracking and reporting of all waste and hazardous materials generated onsite is conducted in accordance with all relevant legislative requirements.

Traffic and Transport

A Traffic and Transport Impact Assessment was undertaken for the Project by Hyder Consulting Pty Limited.

The main access to the Project Boundary will be via the Manilla Road, Therribri Road and the proposed 15 km Mine Access Road. Prior to the construction of the Mine Access Road, a preliminary access route will be required to be utilised via the Manilla Road, Leard Forest Road and existing access tracks within the Leard State Forest including the East Link Road and / or the Northern Loop Road.

Aston Coal 2 Pty Limited proposes to transport around 90% of its employees in both the construction and operational phases of the Project using a shuttle bus system to and from the township of Boggabri.

The nominated heavy vehicle route to and from the Project Boundary is proposed to be via Blue Vale Road-Braymont Road-Barbers Lagoon Road and Manilla Road and prior to the Mine Access Road being constructed will be via the Leard Forest Road and the East Link Road or Northern Boundary Road. Once the Mine Access Road has been constructed, heavy vehicles will continue along Manilla Road onto Therribri Road and up the Mine Access Road to the Project Boundary.

Product coal will be transported entirely via rail and as a result there will be no traffic generated on public roads by coal transportation. The proposed rail spur will connect to the Werris Creek to Mungindi Railway Line, which travels to the south-east and connects with the Main Northern Railway Line at Werris Creek where it continues to the Port of Newcastle.

Four key intersections were assessed for performance using SIDRA 4.0 and include: Manilla Road / Barbers Lagoon Road, Manilla Road / Therribri Road, Therribri Road / Mine Access Road and Kamilaroi Highway / Manilla Road for existing, maximum construction and maximum operational scenarios. Performance indicators assessed included level of service, degree of saturation, average intersection delay and maximum queue length.

It was estimated that the Project together with the Boggabri Coal Mine will result in 24 train movements per day, equating to approximately one train every two hours for each direction. The potential impacts on the Werris Creek to Mungindi Railway Line and in particular, potential impacts on road traffic at the level crossings situated at Boggabri, Gunnedah and Curlewis, were assessed. The potential queue spillback effect was also considered at several railway level crossings at Breeza, Curlewis, Boggabri and Gunnedah. It was concluded that there will be a short stacking queue risk at some railway level crossings.



The road intersection analysis showed there are currently low traffic demands at all intersections as all turning movements were modelled to have good level of service ratings at less than 14 second delays and negligible queuing lengths. The assessment of peak construction impacts on these intersections also indicates an acceptable delay. The peak operational period will have similar intersection performance to the existing base scenario.

A Road Safety Audit of the primary access routes for the Project was undertaken. The majority of the identified road safety deficiencies in the existing road network were found to be caused by existing traffic and were not expected to deteriorate further as a result of the Project.

The proposed rail spur will require a bridge to pass above the Kamilaroi Highway for which Aston Coal 2 Pty Limited will enter into a relevant Agreement with the Roads and Traffic Authority. Detailed designs of the bridge will be required for the review and approval by the Roads and Traffic Authority. Aston Coal 2 Pty Limited will upgrade a 3 km section of Therribri Road from Manilla Road to the Mine Access Road, during which time measures will be adopted to manage the traffic related impacts around the road works.

A total of 19 cumulative trains per day per direction were assessed at the Curlewis railway level crossing as an indicative worst case impact as it has the interaction with the most traffic. A sensitivity analysis confirmed that there is spare capacity in the rail network with respect to maintaining reasonable operation of the railway level crossings. A similar first principle capacity assessment was carried out for the other railway level crossings. Although queue dissipation is not likely to be a problem, the queue spillback potential could lead to short stacking risk due to proximate intersections.

Aston Coal 2 Pty Limited will prepare a Traffic and Transport Management Plan to manage possible impacts resulting from construction and operation including relevant management and mitigation measures.

Aston Coal 2 Pty Limited has nominated specific light and heavy vehicle access routes, with other roads to be prohibited from access by employees and contractors and appropriate signage to be erected. Sections of each of Harparary Road, Leard Forest Road and Therribri Road and all of Browns Land will be restricted from mine traffic access (unless travelling to a specific destination along that road). Consultation with relevant councils will also occur.

The rail transport assessment has concluded that it is unlikely there will be any significant impacts on the railway level crossings located at Boggabri, Gunnedah or Curlewis.

The Project will encourage management strategies to ensure the rail network can continue to handle the additional train movements by collaborating with surrounding mines and the Australian Rail Track Corporation Limited.

Soils and Land Capability

GSS Environmental completed a soil and land capability assessment for the Project. Soil mapping and profiling, field assessment and laboratory testing was undertaken via 21 soil test pits.

Nine soil types were identified within the Project Boundary from Shallow Gravelly Brown Sandy Loam (42% of Project Boundary) to Brown Clays and Red Brown Earths (4% of Project Boundary). Seven are suitable as topdressing materials with available areas proposed to be disturbed within the Project Boundary equal to 2.85 Million cubic metres.

Selective stripping practices are proposed to ensure the higher quality soils are not mixed with the lower quality soils.

The land capability classification within the Project Boundary ranges from Class III to Class VII with Class VII being the dominant class in the existing environment.

All areas which are not proposed to be disturbed by mining will remain the same land capability as the pre mining class and includes all Class II and Class III land which is not proposed to be disturbed by mining activities.

Class VII land will continue to dominate the site after cessation of mining. The flatter slopes should result in rehabilitation to Class V land. Overall the percentage area of each class of agricultural suitability will remain relatively similar to that of the existing environment.

No Class 2 land is proposed to be disturbed by the Project and following cessation of mining and completion of all rehabilitation works all disturbed areas will be returned to a combination of Class 3, 4 and 5 land.

Strategies will be implemented during operations and mine rehabilitation to achieve the desired post mining land capability and agricultural suitability outcome for incorporation in a Soil and Land Capability Procedure. This Procedure shall include requirements for: stripping to indicated levels, stockpiling limited to 3 m high and processes to limit compaction, maintaining an inventory of topsoil, thorough seedbed preparation to ensure optimum establishment and growth of vegetation, managing runoff and installing engineered waterways and control dams.



Rehabilitation and Final Landform

Aston Coal 2 Pty Limited has developed detailed mine plans to obtain the maximum area of rehabilitation available throughout the life of the Project. Reafforestation will be undertaken consistent with the surrounding landscape aiming to re-link remnant native vegetation communities with re-established habitat areas.

The rehabilitation strategy for the Project will focus on biodiversity and the establishment of habitat for the Threatened species known to occur in the area.

Rehabilitation processes will be undertaken generally in accordance with the Strategic Framework for Mine Closure and the 'Mine Rehabilitation' and 'Mine Closure and Completion' Handbooks.

Preliminary rehabilitation criteria have also been developed for the Project.

A Land Clearance Protocol will be implemented prior to the clearing of any native vegetation. Revegetation works will generally be carried out when conditions are optimal. Revegetation works will involve direct native seeding and / or supplementary tube stock planting.

Aston Coal 2 Pty Limited will maximise opportunities for a post mining landscape that is generally consistent with pre mining land use biodiversity. Rehabilitation will be designed to achieve a standard whereby rehabilitation lands can be classified as offset land. All mine areas will be rehabilitated except for the final void which will be shaped appropriately.

A conceptual final landform assuming mining will not continue beyond the 21 year approval period, along with a cumulative landform in consideration of adjacent mining operations has been developed.

In the unlikely event that mining does not continue beyond the 21 Year Mining Limit, the final landform will be left largely free draining and designed to integrate with the surrounding catchments by channelling water towards the drainage lines of both Back Creek and the final void. The final landform will contain gentle slopes to allow drainage to preferential paths on the slopes. The final land use of this area will comprise a mixture of the native vegetation communities including, grassy woodland (70%), shrubby woodland / open forest (25%) and riparian forest (5%) for conservation purposes.

Overburden Emplacement Areas will be progressively rehabilitated over the life of the mine as soon as practical in accordance with the relevant rehabilitation completion criteria. A Rehabilitation Management Plan will be developed to accommodate the objectives of the rehabilitation management strategy and findings from this Environmental Assessment.

A Mine Closure Plan will be prepared within five years of closure and shall reflect contemporary expectations including changes to the mine plan, regulatory requirements, new technologies and stakeholder expectations.

Bushfire

The area surrounding the Project Boundary and the Leard State Forest is predominantly agricultural land, dominated by grazing and cropping activities which present a much lower bushfire hazard. The Leard State Conservation Area lies to the west of the Project Boundary consisting of dense forest vegetation and consequently is a higher bushfire hazard.

Due to the relatively low rainfall and dry nature of the landscape combined with the build up of high fuel loads (leaf drop and tinder) over time, a significant risk of bushfire presents itself to the Project. Onsite bushfires and potential bushfire hazards will be managed in accordance with the *Rural Fires Act 1999*.

A Bushfire Management Plan will be developed to monitor and maintain areas and equipment where bushfire hazards are present to prevent and minimise the potential outbreak of bushfire, control any outbreak of fire, and minimise the risk of bushfires spreading from the Project to adjacent private properties.

Hazard Analysis

A relevant hazard assessment was undertaken for the Project. In order to determine if the Project is Potentially Hazardous under *State Environmental Planning Policy 33 Guidelines*, activities associated with the Project were assessed for potential fire, explosion and toxicity hazard.

Potential hazards included diesel fuel, explosives storage and other hazardous materials. A review of the relevant components of the Project has confirmed is not considered to be potentially hazardous or offensive.

A more detailed hazardous analysis is not required. Aston Coal 2 Pty Limited will develop a Hazard Management Plan which shall include the management of all explosives and diesel and to support an application for a Notification from WorkCover under the *Occupational Health and Safety Regulation 2001*.



Economics

An Economic Impact Assessment was undertaken by Gillespie Economics which aimed to determine both the economic efficiency and the economic impacts of the Project.

A benefit cost analysis has confirmed that when production costs (acquisition costs for affected land, opportunity cost of land, operating costs, decommissioning costs, etc) and production benefits (revenues from production, residual values of land, etc) are considered, the Project will have net production benefits of \$8.7 Billion.

This net production benefit is distributed amongst a range of stakeholders including the local community, Aston Coal 2 Pty Limited and its shareholders and government.

Based on this outcome the Project is considered desirable and justified from an economic efficiency perspective.

A supplementary assessment was also undertaken to compare the simple economic principles between mining and agricultural industries on a State and regional level. This report confirmed that there is a compelling socio-economic argument that the required land and water resources should be allocated to the Project.

Recent trends have shown that the agriculture industry is greatly improving productivity with mechanisation and consolidation of farming lands. This has resulted in a reduced economic stimulus in regional areas as the demand for economic inputs such as labour decline and expenditure leaves the region to more specialised service providers for new technically advanced machinery.

The conversion of land to be used by higher value production activities such as mining offers the greatest potential for regional growth. This is because it helps to stimulate the economy with regional spending for production related costs and with wages for labour which generally enter the regional economy.

A case study was undertaken specific to the Project based on the Gunnedah and Narrabri Statistical Local Areas. Statistics show that there has been a declining trend in population within the Gunnedah and Narrabri Statistical Local Areas over the last decade, which is expected to be the result of changes in farming practices. Currently, extractive industries are conducted on less than 1% of the land area within the Gunnedah and Narrabri Statistical Local Areas, while agriculture accommodates around 68% of the land area.

The output value of existing coal production within the Gunnedah and Narrabri Statistical Local Areas is greater than all agricultural production within the region. The annual output value of the Project is over four times the annual output value of all agricultural production within this region.

Importantly, the land classification within the Project Boundary ranges from Class III to Class VII, with Class VII being the dominant class. The proposed mining area is distant from the prime agricultural lands located along the Namoi River alluvial plains which are more than 4 km away.

Direct and indirect employment provided by the Project will be more than 27 times that provided by continued agricultural use of the land and water resources.

The net production benefits (\$8.7 Billion) of the Project are more than 345 times those benefits from the continued agricultural production and associated use of the required water for the Project within the region.

Social

Hansen Bailey completed a social impact assessment for the Project which developed a social profile for the Narrabri and Gunnedah Local Government Areas and aimed to identify any future social impacts which may result from the Project (including the cumulative impacts from existing and potential future projects).

The Narrabri Local Government Area had a 2008 population of 13,507 persons. The main township is Narrabri which has 45.2% of the population.

The next largest settlements are Boggabri and Wee Waa which have 6.9% and 12.8% respectively. The Narrabri Local Government Area is characterised by a declining population, reduced growth in the number of private dwellings, an ageing population, a larger Indigenous population, changing employment industry with reduced employment in the agricultural and forestry industries and a relatively high unemployment rate.

The area has a declining labour force and a median individual, family and household income level lower than average NSW levels. The Gunnedah Local Government Area had a 2008 population of 11,985 persons with 75% residing in either Gunnedah or the largest outlying village of Curlewis.

The area is characterised by a declining population, ageing population, decreasing number of occupied private dwellings, stable labour force size, relatively high unemployment rate, stable employment characteristics with the agricultural industry continuing to be the largest employment sector, Indigenous population made up of a large proportion of youth with a relatively high unemployment rate, and median income levels substantially lower than average NSW income levels.



Anecdotal reports and information provided by Narrabri Shire Council and Gunnedah Shire Council suggest, however, that economic conditions in both Local Government Areas are improving, which is evidenced by the increasing rental prices and tightening job and housing markets.

The local housing market (both purchase and rental) appears to be tight, there is however considered to be adequate land available for development. A comparison of median household income and median housing loans indicates that housing in the local area is more affordable when compared to other areas such as the Hunter Statistical Division. A number of short term accommodation options are available including hotels, motels, caravan parks and a proposed workers accommodation village.

The local area is serviced by local hospitals in the townships of Narrabri, Gunnedah, Boggabri and Wee Waa which together have 126 beds. Additional health care is provided throughout the townships including aged care facilities, a community health centre, Home and Community Care and general practitioners.

Primary, secondary and tertiary education facilities are available in the local area. Narrabri has three primary schools and one high school, Gunnedah has four primary schools and two high schools, Boggabri has two primary schools, and Maules Creek Village has a one teacher primary school.

The Project is located between the townships of Gunnedah and Narrabri and hence is able to attract employees from either location.

There will be a large number of job availabilities in a short space of time which the local community may have difficulty absorbing.

Two scenarios have been assessed for the Project. These scenarios have been selected as they represent two 'extremes' of the potential spectrum of social impacts that may result from the Project. Both assume that 20% of the workforce is sourced locally and 80% is non-local. The key differentiating factor is that Scenario 2 will result in no direct permanent population increase, where Scenario 1 will result in the non-local employees relocating to the local area hence contributing to a larger population.

Under Scenario 1, the Project may result in a permanent population increase of approximately 932 persons across the local area. This permanent population increase will generate demand for approximately 373 dwellings across the local area. In addition, there is potential for population increase as a result of indirect employment opportunities generated by the Project and the required associated workforces.

When compared to the available dwellings in both the rental and purchase markets, there does not appear to be adequate existing housing to accommodate the predicted increase in demand. There is however, sufficient land available for residential subdivision and therefore construction of new dwellings.

Under Scenario 2, the anticipated temporary population increase to the local area associated with the operational phase of the Project will be 373 people. This population increase is not considered to be permanent and it is anticipated that the workers will be accommodated by the proposed worker's accommodation village located at Boggabri.

The local area has a relatively small pool of skilled labour. There is potential for the Project to place some strain on the skilled labour force in the region. During the initial stages of the Project, this will necessitate a significant number of non local hires to fill skilled labour positions. During the longer term, the Project will assist in increasing the skilled labour force within the region.

The local area is currently serviced by a range of facilities and services. There is available capacity in local infrastructure, services and facilities to accommodate the population increases associated with the Project.

Education and health services may have the capacity to expand to meet the demand generated by the additional population under Scenario 1, although it should be noted that education and health services were identified by the community as being areas of need.

As the non-local workforce is anticipated to utilise the worker's accommodation village, it is highly unlikely that additional pressures would be placed on childcare and education facilities under Scenario 2. The additional population will however, increase demand for a range of health services including general practitioner and hospitals. Additionally, Under Scenario 2, there would be a significant increase in demand for flights in to and out of the Narrabri airport.

There are a number of existing and proposed mining developments at various stages of development in the local area. As a result of this, there is potential for cumulative social impacts. The associated permanent population increase is likely to lead to some additional pressures on the housing and accommodation markets.

Due to the location of potential future projects such as Watermark and Caroon, greater impact on the Gunnedah housing market and services and facilities is likely. The expanding industry also provides the opportunity for training of local individuals in mining operations and construction work, however there is potential for this to compete with other skilled industries.

Aston Coal 2 Pty Limited will employ the following management strategies to mitigate impacts from the Project on the community:

- Continue to consult and work with The MAC, Narrabri Shire Council and the community where necessary to facilitate the approval of The MAC Group workers' accommodation village to be located at Boggabri;
- Assist The MAC to implement strategies to integrate the facilities and residents into the local Boggabri community including:
 - No tolerance for anti-social behaviour employee policies (including an accommodation village Code of Conduct);
 - No sale of alcoholic beverages at the workers' accommodation village;
 - Developing facilities which the town of Boggabri currently does not have (e.g. function room / training facility and gym);
 - Avoiding development of facilities which the town of Boggabri already has (e.g. lap pool, medical facilities, bar and tennis courts); and
 - Making available site facilities (e.g. the restaurant, gym and function room / training facility) to the public.
- Implement an Employee Incentive Scheme which will include policies on items such as encouraging progressive re-location to the local area by provision of financial assistance with emphasis on construction of new dwellings;
- Contribute a total of \$1,500,000 to Narrabri Airport, paid evenly over three years (as part of the Narrabri Shire Council Voluntary Planning Agreement), for the expansion of services and routes, including renovation of terminal and upgrade of air strip infrastructure;
- Implement local labour force recruitment strategies with focus on non-skilled positions to facilitate improving the local labour force skill;
- Implement state wide labour force recruitment strategies with focus on skilled positions as needed to facilitate improving the local labour force skill;
- Utilise local suppliers where possible to support growth of other local industries;
- Focus relocation and development strategies for all non-local hires to the Narrabri Local Government Area to mitigate against cumulative impacts on housing in the Gunnedah Local Government Area;
- Adopt within its recruitment policies:
 - A local hire strategy for operators, ancillary staff and trade apprentices in the short to medium term, although it is noted that the commencement of other major mining projects in the region may influence this strategy;
 - As part of the local hire strategy, efforts will be made in the recruitment and training of women and local Aboriginal people;
 - Continuation of Aston Coal 2 Pty Limited's Scholarship and Apprenticeship Program. This will include the expansion of a local traineeship and apprenticeship program, including at least four onsite apprenticeships per year in the first 10 years of operation (of which at least one will be for Indigenous applicants).
- Provide an annual scholarship for a locally based student to study a child care related course as well as sponsoring a traineeship program for child care workers;
- Continue to liaise with Narrabri Shire Council and Ochre Health (health providers in Boggabri) relating to contributions towards additional health resources and medical facilities;
- Commitment to a financial contribution of up to \$20,000 per year to encourage retainment of medical staff in Boggabri;
- Provide investment of approximately \$100,000 per year into capital equipment for services such as the bushfire brigade, ambulance, Westpac Helicopter and other valued community services;
- Ensure timely provision of information to facility and service providers regarding potential incoming population associated with the Project;
- Encourage relevant members of the workforce's children to attend Fairfax Public School at Maules Creek and continue to consult and provide assistance to the school as appropriate; and
- Monitor housing affordability and availability in the local area and report in the regulatory required Annual Review.

Additionally, Aston Coal 2 Pty Limited has consulted extensively with Narrabri Shire Council and Gunnedah Shire Council and is working towards forming a voluntary planning agreement under Section 93F of the *Environmental Planning and Assessment Act 1979* to provide in kind and monetary contributions to ensure the potential social effects of the Project are mitigated.



STATEMENT OF COMMITMENTS

In addition to conditions of Project Approval, Aston Coal 2 Pty Limited has identified and commits to the operational controls summarised in the Statement of Commitments in this Environmental Assessment for all activities associated with the Project.

The aim of this Statement of Commitments is to ensure that any potential environmental impacts resulting from the Project as identified in this Environmental Assessment are minimised and managed by implementing relevant environmental management, mitigation and monitoring strategies.

PROJECT JUSTIFICATION

The Project will provide Aston Coal 2 Pty Limited with a contemporary Project Approval that will enable maximum coal recovery in the most efficient manner utilising current leading practice operational and environmental standards.

It will provide Aston Coal 2 Pty Limited with the flexibility required to ensure that mining is undertaken efficiently whilst also implementing a range of management and mitigation measures to ensure that environmental impacts on sensitive receivers and the environment are minimised.

The Project will provide material economic benefits from the recovery of a valuable coal resource that has been for some time identified as a resource which could be recovered in the interests of the local and regional communities, as well as the State of NSW and Australia.

Society is greatly reliant on coal to meet basic energy needs and steel production. With the continuing increase in population and a number of countries that currently do not benefit from electricity, it is expected that the demand for thermal coal for energy production will continue to rise. In the same context, demand for coking coal for steel production is also likely to continue to grow with world population growth and the development of third world countries.

The Project will contribute to the supply of significant quantities of high quality metallurgical coal and will also provide valuable thermal coal for energy production to meet increasing international demand.

The Project has a large delineated Joint Ore Resource Committee coal resource of 610 Million tonnes, capable of supporting a large open cut coal mining operation for more than 30 years.

The proposed mining area exists within the elevated areas of the Leard State Forest and some elevated Class IV and V agricultural lands, being distant from the prime agricultural lands located along the Namoi River alluvial plains which are more than 4 km away.

The Project Boundary falls entirely on land that is classified under the *Narrabri Local Environment Plan 1992* as zone I(a) which permits mining with development consent.

The area within the Leard State Forest has also long been identified as containing a valuable coal resource and as such was recognised by being included in Zone 4 under the *Brigalow and Nandewar Community Conservation Area Act 2005* so as to facilitate the purposes of forestry, recreation and mineral extraction. This long term strategic planning initiative further acknowledges the suitability of the site for mining purposes on a local, regional and State level.

The Project includes the flexibility for the shared construction of a rail spur down to the Werris Creek to Mungindi Railway Line with neighbouring Boggabri Coal Mine. The opportunity to share the development of significant infrastructure reaffirms the suitability of the site for the Project as proposed.

The Project will result in a substantive, in perpetuity, offset for the ecological impacts that will result from it ensuring an improved ecological outcome for the region over the long term due to the availability of proximate appropriate offset areas.

When the production costs (acquisition costs for affected land, opportunity cost of land, operating costs, decommissioning costs, etc) and production benefits (revenues from production, residual values of land, etc) are considered, the Project will provide net production benefits to society of approximately \$8.7 Billion. Royalty payments to the NSW government over the first 21 years of production are expected to total \$2.8 Billion.

Based on this outcome, the Project is considered desirable and justified from an economic efficiency perspective. The Project will deliver significant socio-economic benefits to the Narrabri and Gunnedah Regions and the State of NSW through the generation of employment, export revenue, taxes and royalties.

In summary, the Project will result in the following economic benefits to the State economy:

- \$2.8 Billion in annual direct and indirect output or business turnover;
- \$1.6 Billion in annual direct and indirect value added;
- \$303 Billion in annual household income; and
- 4,029 direct and indirect jobs.



Executive Summary

In summary, the Project will result in the following economic stimulus to the Narrabri economy:

- \$1.9 Billion in annual direct and indirect output or business turnover;
- \$1.0 Billion in annual direct and indirect value added;
- \$54 Million in annual household income; and
- 753 direct and indirect jobs.

These economic benefits to the State of NSW and the Narrabri and Gunnedah Regions will be foregone if the Project does not proceed.

The Project will deliver substantive socio-economic benefits to the Narrabri Local Government Area, but in doing so will create a need for supporting infrastructure and services, traditionally within the province of Narrabri Shire Council. To this end, Aston Coal 2 Pty Limited is in the advanced stages of discussions with Narrabri Shire Council with the view of entering into a Voluntary Planning Agreement.

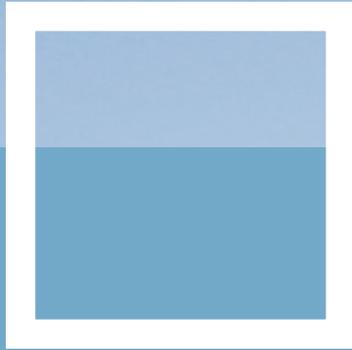
The application of a stringent, contemporary environmental assessment has not identified any significant adverse economic, social or environmental impacts associated with the Project.

Aston Coal 2 Pty Limited will also implement representative real time air and noise environmental monitoring networks to ensure that environmental impacts are being assessed and operations are proactively managed in order to meet the relevant criteria.

The Project has specifically been designed to minimise the adverse economic, social and environmental impacts, and establish considerable Biodiversity Offsets aimed to maintain and ultimately improve the biodiversity values within the region in the medium to long term.

Due to the substantive positive economic and social impacts and the nature of the environmental impacts resulting from the Project (in consideration of the mitigation and management measures proposed), it can be concluded that the Project is well justified on socio-economic and environmental grounds.

This Environmental Assessment has demonstrated that the socio-economic benefits of the Project are likely to far outweigh its residual costs and will facilitate the proper management and development of the State's resources, with the added benefit of improving biodiversity values in region in the medium to long term.

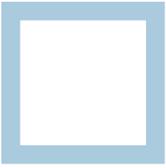


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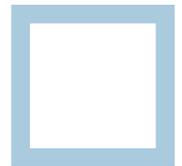


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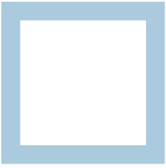
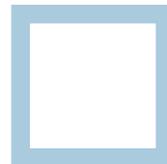
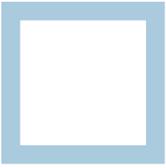


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Appendices

VOLUME 1

- Appendix A Schedule of Land to which this EA Applies
- Appendix B Mine Plan Justification
- Appendix C Regulatory Correspondence
- Appendix D Stakeholder Engagement
- Appendix E Revised Environmental Risk Assessment

VOLUME 2

- Appendix F Air Quality Impact Assessment
- Appendix G Acoustics Impact Assessment
- Appendix H Visual and Lighting Impact Assessment

VOLUME 3

- Appendix I Ecological Impact Assessment

VOLUME 4

- Appendix J Aboriginal Cultural Heritage Impact Assessment
- Appendix K Non Indigenous Heritage Impact Assessment
- Appendix L Surface Water Impact Assessment
- Appendix M Groundwater Impact Assessment

VOLUME 5

- Appendix N Geochemical Impact Assessment
- Appendix O Traffic and Transport Impact Assessment
- Appendix P Soil and Land Capability Impact Assessment
- Appendix Q Economic Impact Assessment
- Appendix R Social Impact Assessment

SECTION

1

Background



Background

1.1 INTRODUCTION

Aston Coal 2 Pty Limited (Aston), a wholly owned subsidiary of Aston Resources Limited (Aston Resources), is the owner of the Maules Creek Coal Project located in the Gunnedah Coal Basin. The Maules Creek Coal Project is considered to be one of a few remaining “Tier 1” metallurgical coal assets in NSW. The majority of the production will be semi soft coking and PCI coal with a minority of thermal coal. It is located approximately 18 km to the north-east of Boggabri in the north-west region of NSW within the Narrabri Local Government Area (LGA) (see **Figure 1**).

Development Consent (DA 85/1819) was granted by the NSW Minister for Local Government and Minister for Planning (now NSW Minister for Planning) on 12 June 1990 for a mining operation at Maules Creek. DA 85/1819 remains valid and is supported by the *Maules Creek Coal Project Environmental Impact Statement* (Maules Creek EIS) (KCC 1989). DA 85/1819 was physically commenced in 1995 with the construction of the Development Dam; however no open cut mining has been undertaken at the site.

Mining authorities were granted in the 1970’s and since this time, extensive exploration activities have been undertaken to define the local geology and develop a viable mine plan. Aston finalised the acquisition of the Maules Creek Coal Project from Coal and Allied Industries Limited (CNA) in February 2010 and commenced investigations into its further development.



Aston now seeks a contemporary Project Approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to facilitate the development of a 21 year open cut coal mining operation and associated surface infrastructure generally within its current mining authorities at up to 13 Million tonnes per annum (Mtpa) Run of Mine (ROM) coal (the Project).

1.2 PROPONENT

The proponent is Aston (which holds the mining authorities for the Maules Creek Coal Project) for which the contact details are:

Aston Coal 2 Pty Limited

121 Merton Street
BOGGABRI NSW 2382
Phone: 02 6749 7800

Aston’s registered office contact details are:

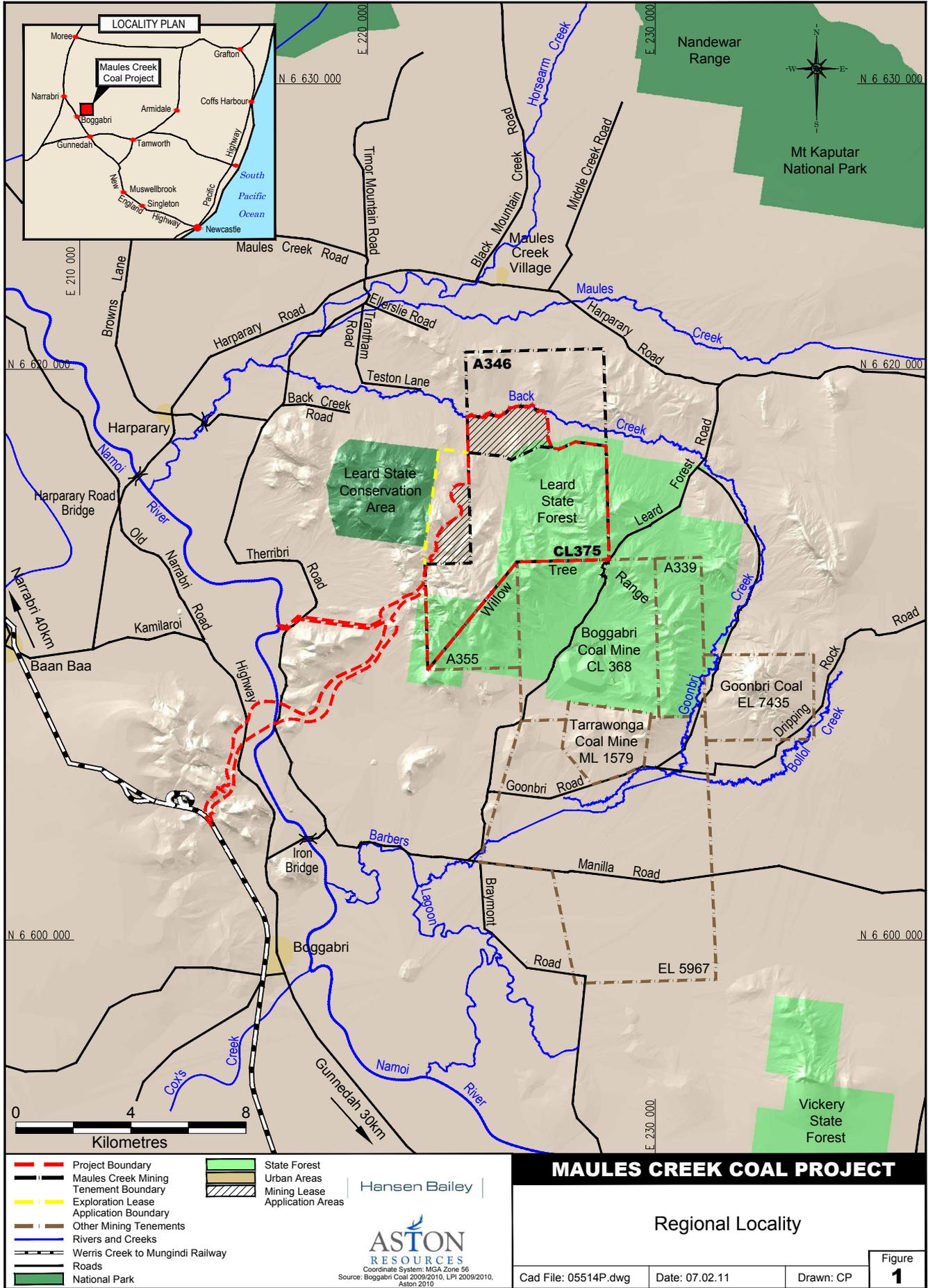
Aston Coal 2 Pty Limited

Level 10, AMP Place
10 Eagle Street
BRISBANE QLD 4000
Phone: 07 3235 6600

1.3 DOCUMENT PURPOSE

A Major Project Application and supporting Preliminary Environmental Assessment (PEA) were submitted to the Department of Planning and Infrastructure (DP&I) in August 2010 under Section 75E of Part 3A of the EP&A Act. The Director-General’s Environmental Assessment Requirements (EARs) were issued by DP&I on 6 December 2010.

This Environmental Assessment (EA) has been prepared by Hansen Bailey Environmental Consultants (Hansen Bailey) on behalf of Aston to support an application for Project Approval under Section 75E of the EP&A Act. The Project Application Boundary (Project Boundary) to which this EA applies is illustrated on **Figure 1** and generally occurs within Coal Lease (CL) 375 and Authorisation (A) 346. The schedule of lands to which this EA applies is provided in **Appendix A**.



This EA includes consideration of issues raised during the extensive stakeholder consultation program undertaken. It fulfils the requirements of the EARs by assessing the social, economic and environmental impacts of the Project to enable the Minister for Planning and Infrastructure to determine the Project Approval as sought.

Stakeholder issues and a checklist of each EAR and where it is incorporated into this EA is presented in **Section 5**.

1.4 DOCUMENT STRUCTURE

This EA consists of five volumes. This volume (Volume 1) encompasses the main report and presents a description of the Project, a summary of the associated environmental, social and economic impacts and proposed management and mitigation measures as follows:

- **Section 2** provides information relating to the existing environmental setting and the Maules Creek Coal Project as currently approved;
- **Section 3** provides a detailed description of the Project;
- **Section 4** describes the regulatory framework relevant to the Project;
- **Section 5** details stakeholder engagement undertaken for the Project and discusses issues raised. Specifically, this section lists the Director-General's EARs and identifies where these matters are addressed in this EA;
- **Section 6** outlines the risk assessment process adopted to rank all identified environmental and social issues as extreme, high, moderate or low to assist in directing the EA focus;
- **Section 7** assesses the predicted environmental and social impacts and outlines the management and mitigation measures proposed for the Project (including proposed Offset Strategies);

- **Section 8** presents Aston's Statement of Commitments for the Project;
- **Section 9** provides a detailed justification for the Project;
- **Section 10** lists abbreviations used throughout this EA;
- **Section 11** provides a list of all materials referenced in this EA; and
- **Section 12** lists the EA study team.

Volume 1 also contains regulatory documents and correspondence, stakeholder engagement materials and the risk assessment conducted for the Project.

Volumes 2 to 5 present the remaining technical assessments that support this EA.

SECTION
2



Existing Environment



Existing Environment

This section provides a discussion on the natural features, land use, land ownership and the existing climate within and surrounding the Project Boundary. The geology of the area is also discussed as relevant to the Project, along with a summary of the Maules Creek Coal Project as currently approved.

2.1 TOPOGRAPHY AND CATCHMENTS

The Project is situated within the Gunnedah Coal Basin which covers more than 15,000 km² in the north-western region of NSW. The Gunnedah Coal Basin extends from the Liverpool Ranges to the south (where it meets the Hunter Coalfields) to the township of Moree at its northern boundary.

The Project Boundary is located on the northern slopes of the Willow Tree Range (430 m Australian Height Datum (AHD)) which forms a broad south-west facing basin largely within an elevated area containing the Leard State Forest.

The central to southern portion of the Project Boundary generally consists of a series of ridges and narrow gullies above 350 m AHD with some slopes being up to 30%. The northern portion of the Project Boundary is generally more undulating with slopes ranging between 0 to 15%. To the north of the Project Boundary there are a series of hills and ridges that separate the catchments of Back Creek and Maules Creek.

Back Creek is a small ephemeral creek, which incises the footslopes to the north of the Project Boundary, which generally flows in an east to west direction through A 346 towards its junction with Maules Creek, which flows into the Namoi River. There are also a series of smaller unnamed intermittently flowing tributaries off Back Creek that drain a majority of the Project Boundary.

2.2 LAND USE

The Project Boundary is situated on land largely occupied by the Leard State Forest (which has historically been predominantly utilised for forestry, recreation and more recently mining related activities) and within the existing mining authorities held for the Maules Creek Coal Project and the Boggabri Coal Mine.



The bulk of the land within the Project Boundary has previously been affected by disturbances commonly associated with forestry operations. These disturbances include vegetation clearing, weed invasion, altered natural drainage and edge effects.

The broader region is comprised of alluvial plains associated with the Namoi River which are typically utilised for intensive agricultural practices such as cropping, with the more elevated areas set aside for cattle and sheep production. The region also supports forestry and an array of other minor industries consistent with the rural community setting.

Coal mining has occurred within the Gunnedah Coal Basin for more than 100 years. In recent years, coal mining within the region has progressed with several new mining development projects commencing operations or undertaking exploration activities. In parallel to this, the forestry industry (which has been historically active within the region) has substantially declined as large tracts of previously forested land have been afforded environmental and heritage protection under the *Brigalow and Nandewar Community Conservation Act 2005* (BNC Act).

Each of the key land uses is discussed further below as relevant to the Project.

2.2.1 Agriculture

Agricultural land use proximate to the Project Boundary is primarily based on cattle and sheep grazing and dry land cropping activities.

Historically, the regional climate also allowed summer and winter crops to be cultivated in the lower lying areas of the Namoi River alluvial floodplain (see **Figure 1**).

The construction of Keepit Dam completed in 1960, and then Split Rock Dam in 1987 ensured a reliable water supply is available along the Namoi River during periods of prolonged dry weather. This supported the emergence of intensive cropping enterprises throughout the region.

Today, the broader alluvial floodplain supports both dry land and irrigated cropping, along with pasture establishment enterprises with water either drawn from the Namoi River or underlying alluvial groundwater aquifers. The lighter soils on the surrounding slopes and foothills adjacent to the Namoi River alluvial floodplain are used primarily for livestock grazing including sheep and cattle.

2.2.2 Forestry

The majority of the Project Boundary is dominated by remnant vegetation communities of the Leard State Forest with high natural species diversity and relatively few exotic species. However, these vegetation communities have often been structurally simplified, reflecting a history of disturbances consistent with commercial timber harvesting and regular thinning.

In 2005, following intensive study and extensive consultation by the NSW government, the Leard State Forest was designated as Zone 4 under the BNC Act which secured its use from a macro planning perspective as for the purposes of forestry, recreation and mineral extraction rather than for the purpose of ecological or Aboriginal archaeological conservation and protection.

2.2.3 Coal Mining

Coal mining is a common land use in the vicinity of the Project Boundary with the southern side of Aston's CL 375 adjoining the northern boundary of Boggabri Coal Pty Limited's (Boggabri Coal) CL 368 (see **Figure 1**).

Boggabri Coal Mine is an existing mining operation owned and operated by Boggabri Coal with a planning approval to extract coal down to the Merriown seam at a maximum production rate of 5 Mtpa product coal until 14 November 2011.

Boggabri Coal transports its product coal via an approved private haul route down to a loadout facility located on the Werris Creek to Mungindi Railway Line to the south-west of the Maules Creek Project Boundary, where it is loaded onto trains for export via the Port of Newcastle. Boggabri Coal has approval for the construction of a private rail spur from its operations to the Werris Creek to Mungindi Railway Line, however this has not yet been constructed.

Boggabri Coal has recently submitted a new Project Approval application and the supporting Boggabri Coal Mine Continuation of Mining Project Environmental Assessment (Boggabri EA) (Hansen Bailey 2010) to DP&I seeking approval for the continuation of mining for a further 21 years. This application seeks approval for continuation of the previously approved operations with coal production rates up to 7 Mtpa product coal, the option of utilising a dragline and the construction of a Coal Handling and Preparation Plant (CHPP), rail loop and spur and other various mine infrastructure.

The approved Tarrawonga Mine, located immediately to the south of the Boggabri Coal Mine is managed by Whitehaven Coal Mining Limited (Whitehaven) on behalf of Tarrawonga Coal Pty Ltd (Tarrawonga Coal), being a joint venture between Whitehaven (70%) and Boggabri Coal (30%).

The Tarrawonga Mine commenced coal production within ML 1579 during 2006, with coal hauled to Whitehaven's coal processing facilities near Gunnedah for selective washing prior to loading onto trains for transport to Newcastle for export. Mining is conducted by truck and excavator methods producing up to 1.5 Mtpa product coal.

Whitehaven submitted a modification application to DP&I in early 2010 seeking approval for the extraction of additional coal reserves within the existing ML 1579, with no planned increase in annual coal production or mine life. This modification was granted on 15 October 2010.

Goonbri Coal Company Pty Limited currently holds Exploration Lease (EL) 7435 (Goonbri EL) located approximately 6 km south-east of the Project Boundary.

Tarrawonga Coal also holds EL 5967 to the south of its existing operations. No information was available on the plans to develop these areas as at the time of writing this EA.

There are a number of other coal mining operations within the Gunnedah Coal Basin that are distant from the Project Boundary.

2.2.4 Recreation

Amongst the large areas of agricultural land associated with the Namoi River alluvial floodplain, there are a number of National Parks, State Forests and Conservation Areas that exist and provide areas for public use for recreation. The Project Boundary is located largely within the Leard State Forest which covers an area of approximately 8,134 ha, of which the majority is dominated by native vegetation with woodlands containing Ironbark, White Box, Blakely's Red Gum and White Cyprus Pine trees.

The Leard State Forest was declared a conservation hunting area by the NSW Game Council in 2004, which allows licensed recreational hunters to assist with the control of introduced feral animal species.

There are several other State Forests within the regional setting of the Project Boundary, some of which are shown on **Figure 1**. Jacks Creek and Bibblewindi State Forests lie approximately 35 km to the west of the Project Boundary, while the Vickery and Kelvin State Forests are situated approximately 20 km and 25 km to the south-east respectively.

The Leard State Conservation Area is located immediately to the west of the Project Boundary and covers an area of approximately 1,200 ha. The foothills of Mt Kaputar National Park lie approximately 20 km to the north of the Project Boundary. Mt Kaputar National Park covers an area of approximately 36,820 ha (DECCW 2009).

2.2.5 Rural and Residential Areas

The rural township of Boggabri is located approximately 20 km south-west of the Project Boundary. Boggabri is located on the Kamilaroi Highway between the larger rural towns of Narrabri approximately 57 km to the north-west, and Gunnedah located 40 km to the south-east.

The small rural village of Maules Creek is approximately 5 km north of the Project Boundary (see **Figure 1**). Maules Creek consists of a typical small rural community, providing facilities for local farming families including a Public School, community hall and churches.

Other small rural villages including Harparary and Baan Baa are located approximately 12 km north-west and 15 km west of the Project Boundary, respectively.

2.2.6 Local Industry

The regional economy is primarily influenced by the agriculture and coal mining industries which are supported by an array of light industries. These industries generate wealth and have provided the opportunity for a number of secondary and tertiary industries to establish in the region (Gillespie Economics, 2011).

The region holds many annual events through the year, including the internationally renowned Ag-Quip Field Days, which is Australia's largest agricultural industry field event.

The Narrabri LGA is characterised by a changing employment industry with a reduction in employment in the agricultural and forestry industries, significant reduction in the manufacturing and wholesale industries and a corresponding significant increase in employment in the mining industry, with minor increases in employment in education, health care and administrative industries.

2.3 LAND OWNERSHIP

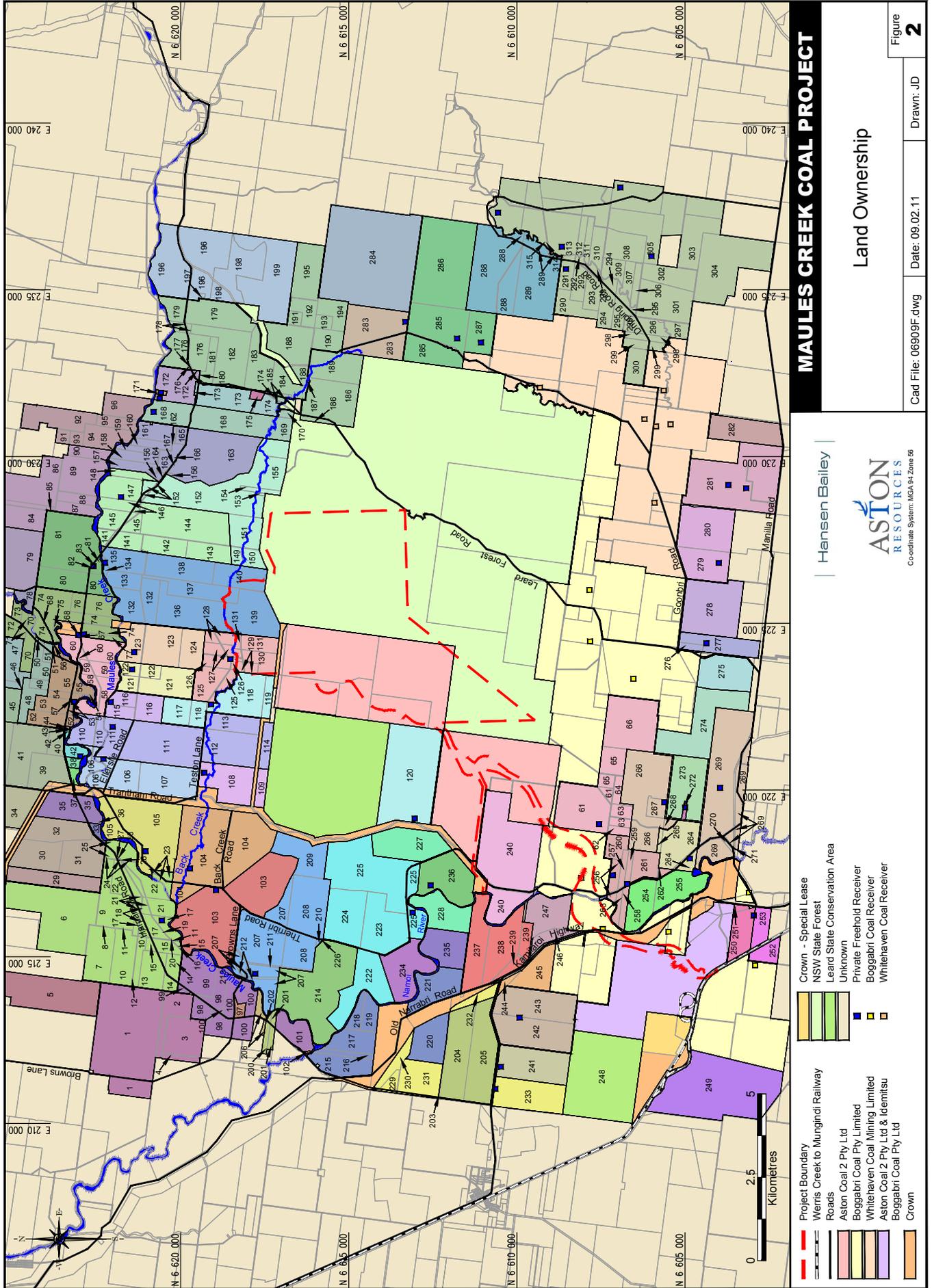
The land ownership within and surrounding the Project Boundary is listed in **Table 1**, showing each individual block of land with a unique identifying number. **Table 1** also indicates whether a receiver (private residence) was identified on the land.

Figure 2 illustrates the land ownership within and surrounding the Project Boundary and should be read in conjunction with **Table 1**. Landholders that own several contiguous parcels of land are illustrated with a single colour on **Figure 2**.

The land within and surrounding the Project Boundary is largely covered by four key land ownership categories, including: private freehold land, Aston owned land, land owned by other mining companies and land held by Forests NSW. There are two private freehold landholders located within the northern part of the Project Boundary. Aston has agreements in place with these landholders for the purchase of each property. There are some other private freehold landowners that occupy land immediately to the north and north-east of the Project Boundary.

The majority of the Project infrastructure will be located on land owned by either Aston, Boggabri Coal or the Crown. The southern portion of the Project Boundary, in the vicinity of the Werris Creek to Mungindi Railway line is jointly owned as tenants in common under a perpetual lease between Aston and Boggabri Coal. Boggabri Coal and Whitehaven own other land to the south-east of the Project Boundary.

The Project Boundary partly overlies the corners of some private freehold land along sections of the proposed rail spur. Aston does not intend to disturb this land as a result of the Project.



MAULES CREEK COAL PROJECT

Land Ownership

Cad File: 06909F.dwg Date: 09.02.11 Drawn: JD

Figure **2**

Hansen Bailey

ASTON
RESOURCES

Coordinate System: MGA 94 Zone 56

Table 1 Non Mine Owned Land Ownership

ID	NAME	RECEIVER	ID	NAME	RECEIVER	ID	NAME	RECEIVER
1	Glenelg Cotton Pty Ltd		43	The Presbyterian Church (NSW) Property Trust		83	Roman Catholic Church for the Diocese of Armidale	
2	Glenelg Cotton Pty Ltd		44	DA & KL Foran		84	AB & RJ Laird	
3	Glenelg Cotton Pty Ltd		45	AR & SA Kirkby		85	AB & RJ Laird	
4	Glenelg Cotton Pty Ltd		46	CK Wallace		86	AB & RJ Laird	
5	IB Norrie		47	CK Wallace		87	AB & RJ Laird	
6	IB Norrie		48	DS Graham & AA Taylor		88	AB & RJ Laird	
7	IB Norrie		49	DS Graham & AA Taylor		89	AB & RJ Laird	
8	IB Norrie		50	DS Graham & AA Taylor		90	AB & RJ Laird	
9	IB Norrie		51	DS Graham & AA Taylor		91	MW Busby	
10	IB Norrie		52	LD Holmes		92	MW Busby	
11	IB Norrie		53	LD Holmes	◆	93	MW Busby	
12	IB Norrie		54	LD Holmes		94	MW Busby	
13	IB Norrie		55	LD Holmes		95	MW Busby	
14	IB Norrie		56	LD Holmes		96	MW Busby	
15	IB Norrie		57	Telstra Corporation Ltd		97	RH & CE Stubbs	
16	IB Norrie		58	KR Druce		98	FE & RM Chisholm	
17	IB Norrie	◆	59	KR Druce		99	FE & RM Chisholm	
18	IB Norrie		60	KR Druce		100	FE & RM Chisholm	
19	IB Norrie		61	KR Druce**	◆	101	FE & RM Chisholm	
20	IB Norrie		62	KR Druce**		102	FE & RM Chisholm	
21	IB Norrie		63	KR Druce**		103	GL & LE & AG Hamblin	◆
22	IB Norrie		64	KR Druce**		104	LA & SL Leitch	◆
23	IB Norrie		65	KR Druce**		105	DM & MSR Williams	◆
24	IB Norrie		66	KR Druce**		106	PC Leitch	◆
25	IB Norrie		67	Minister for Education		107	PC Leitch	
26	IB Norrie		68	Minister for Education	◆	108	JM Morris	◆
27	IB Norrie		69	C & AV Bradshaw		109	JM Morris	
28	IB Norrie		70	S & J Bradshaw		110	PF Murphy	
29	KJ Hobden		71	S & J Bradshaw		111	PF Murphy	◆
30	KKL Kenniff		72	S & J Bradshaw		112	PF Murphy	
31	KKL Kenniff		73	S & J Bradshaw		113	PF Murphy	
32	KKL Kenniff		74	S & J Bradshaw		114	PF Murphy	
33	RA & AM Edwards		75	S & J Bradshaw		115	PR Hobden	
34	Jonel Holdings Pty Ltd		76	S & J Bradshaw		116	PR Hobden	◆
35	RR & RJ Clissold		77	S & J Bradshaw	◆	117	MJ & ML Nott ^	
36	RR & RJ Clissold		78	RJ & TL Laird		118	MJ & ML Nott ^	◆
37	RL & AJ Skillicorn		79	Progress Programming Solutions Pty Ltd		119	MJ & ML Nott ^	
38	R Frank		80	EA & RE Genders		120	MJ & ML Nott ^	◆
39	RN & JM Ison		81	EA & RE Genders		121	L & SN Compton	
40	RN & JM Ison		82	Roman Catholic Church for the Diocese of Armidale	◆	122	L & SN Compton	◆
41	RN & JM Ison					123	JR Holmes	◆
42	DR & JJ Whan	◆						

ID	NAME	RECEIVER	ID	NAME	RECEIVER	ID	NAME	RECEIVER
124	JR Holmes		167	Morse Investments Pty Ltd		210	Hamblin Pastoral Co Pty Ltd	
125	DJC Watson ^		168	PD & LA Finlay	◆	211	Hamblin Pastoral Co Pty Ltd	
126	DJC Watson ^	◆	169	PD & LA Finlay		212	Hamblin Pastoral Co Pty Ltd	
127	DJC Watson ^		170	PD & LA Finlay		213	Hamblin Pastoral Co Pty Ltd	
128	DJC Watson ^		171	KD Woods	◆	214	Oakcolt Pty Ltd	
129	DJC Watson ^		172	PD Finlay	◆	215	RA Maunder	
130	DJC Watson ^		173	LA & KA & PD Finlay		216	RA Maunder	
131	DJC Watson ^		174	LA & KA & PD Finlay		217	RA Maunder	
132	VA & MA Younger ^		175	Narrabri Shire Council		218	RA Maunder	
133	VA & MA Younger ^		176	MJ Brennan		219	RA Maunder	
134	VA & MA Younger ^	◆	177	MJ Brennan		220	RA Maunder	
135	VA & MA Younger ^		178	MJ Brennan		221	RA Maunder	
136	VA & MA Younger ^		179	MJ Brennan		222	Riverway Boggabri Pty Ltd	
137	VA & MA Younger ^		180	MJ Brennan		223	Riverway Boggabri Pty Ltd	
138	VA & MA Younger ^		181	MJ Brennan		224	Riverway Boggabri Pty Ltd	
139	VA & MA Younger ^		182	MJ Brennan		225	Riverway Boggabri Pty Ltd	◆
140	VA & MA Younger ^		183	MJ Brennan		226	EL Maunder	
141	CM Morse		184	MJ Brennan		227	Bresrow Pty Ltd	
142	CM Morse		185	MJ Brennan		228	Bresrow Pty Ltd	
143	CM Morse		186	MJ Brennan		229	FJ Maunder	
144	CM Morse		187	MJ Brennan		230	FJ Maunder	
145	CM Morse		188	MJ Brennan		231	FJ Maunder	
146	CM Morse		189	MJ Brennan		232	FJ Maunder	
147	CM Morse	◆	190	MJ Brennan		233	FJ Maunder	◆
148	CM Morse		191	MJ Brennan		234	BG & KM Bomford	
149	CM & RRF Morse		192	MJ Brennan		235	DB Hudson	
150	CM & RRF Morse		193	MJ Brennan		236	JA Bastardo ^	◆
151	CM & RRF Morse		194	MJ Brennan		237	PJ Watson & G Parkin	
152	CM & RRF Morse		195	MJ Brennan		238	PJ Watson & G Parkin	
153	CM & RRF Morse		196	JD Duncan		239	PJ Watson & G Parkin	
154	CM & RRF Morse		197	JD Duncan		240	MF & TT & SL Hart & PF Rice	
155	CM & RRF Morse		198	JD Duncan		241	RB & ML Kerr	◆
156	Morse Investments Pty Ltd		199	JD Duncan		242	Glek Pty Limited	◆
157	Morse Investments Pty Ltd		200	SM Eather		243	Glek Pty Limited	
158	Morse Investments Pty Ltd		201	SM Eather		244	PJ Watson	
159	Morse Investments Pty Ltd	◆	202	SM Eather		245	PJ Watson	
160	Morse Investments Pty Ltd		203	SM Eather		246	LE Christine-Rockliff**	
161	Morse Investments Pty Ltd		204	SM Eather		247	LE Christine-Rockliff**	
162	Morse Investments Pty Ltd		205	SM Eather		248	LJ & KJ Shields	
163	Morse Investments Pty Ltd		206	NE Grinter		249	RE & MJ Stoltenberg	
164	Morse Investments Pty Ltd		207	Hamblin Pastoral Co Pty Ltd	◆	250	DW & AM Keys	◆
165	Morse Investments Pty Ltd		208	Hamblin Pastoral Co Pty Ltd		251	DW & AM Keys	
166	Morse Investments Pty Ltd		209	Hamblin Pastoral Co Pty Ltd		252	RA & CM Collyer	

ID	NAME	RECEIVER	ID	NAME	RECEIVER	ID	NAME	RECEIVER
253	RA & CM Collyer		274	LE James & KE Woodward		295	JE & RJ Picton	
254	GP & LF & WP Clarke		275	KR & KA Pryor		296	JE & RJ Picton	
255	GP & LF & WP Clarke		276	HM Lockwood**		297	JE & RJ Picton	
256	RW & A Grover	◆	277	HM Lockwood**	◆	298	JE & RJ Picton	
257	RW & A Grover		278	RR & PL Crosby**		299	JE & RJ Picton	
258	RW & A Grover		279	RP & RD McGregor*	◆	300	JE & RJ Picton	
259	RW & A Grover	◆	280	RP & RD McGregor*		301	JE & RJ Picton	
260	RW & A Grover		281	DJ Wellwood**	◆◆	302	JE & RJ Picton	
261	RW & A Grover		282	P & AC Laird		303	JE & RJ Picton	
262	RW & A Grover		283	Bank of NSW	◆	304	JE & RJ Picton	
263	RW & A Grover		284	NF Smith		305	JE & RJ Picton	◆
264	RJ & EJ Browning	◆	285	VP & SM McAuliffe	◆	306	JE & RJ Picton	
265	RJ & EJ Browning		286	VP & SM McAuliffe		307	JE & RJ Picton	
266	RJ Heiler		287	VP & SM McAuliffe	◆	308	JE & RJ Picton	
267	RJ Heiler	◆	288	PM & MI Mainey		309	JE & RJ Picton	
268	RJ Heiler		289	PM & MI Mainey		310	JE & RJ Picton	
269	RJ Heiler	◆	290	JE & RJ Picton		311	JE & RJ Picton	
270	RJ Heiler		291	JE & RJ Picton	◆	312	JE & RJ Picton	
271	RJ Heiler		292	JE & RJ Picton		313	JE & RJ Picton	◆
272	DV Gillham	◆	293	JE & RJ Picton		314	JE & RJ Picton	
273	DV & RJ Gillham		294	JE & RJ Picton		315	JE & RJ Picton	

NB: A diamond denotes a receiver on the property.

^ Aston has purchased or reached an agreement for the purchase of this property.

* Entitled to acquisition upon request in Tarrawonga Mine EA (Resource Strategies 2010).

** Entitled to acquisition upon request in Boggabri Coal Mine EA (Hansen Bailey 2010).

2.4 CLIMATE

Regional climatic conditions of the Gunnedah Coal Basin consist primarily of seasonal variations of hot, wet summer months giving way to mild dry winters resulting in an overall warm temperate climate. While there are intermittent periods of rainfall, the Gunnedah Coal Basin is characterised by extensive periods of low precipitation resulting in droughts that increase in severity and intensity towards the west.

The warm, dry summer conditions are caused by high pressure systems over the northern parts of Australia. Intermittent periods of high intensity rainfall and thunderstorms in summer are caused by synoptic low pressure systems, inland tropical cyclones and localised convection storms as a result of the mountain ranges such as the Nandewar Range. The cool dry conditions experienced from mid autumn to late spring are as a result of high pressure systems that alternate with cold fronts.

A range of meteorological monitoring stations in the immediate vicinity of the Project were reviewed whilst preparing this EA. Data sets from three Bureau of Meteorology (BoM) meteorological monitoring stations at the Gunnedah Pool, Gunnedah Resource Centre (RC) and Boggabri Kanownda were also utilised. The Boggabri Coal Mine Meteorological Dataset (Boggabri MD) which used a combination of the Boggabri Automated Weather Station (Boggabri AWS) and the Tarrawonga Mine Meteorological Station (Tarrawonga MS) was also reviewed in order to obtain a complete data series (Boggabri 2010).

Data was also sourced from the Maules Creek Automatic Weather Station (AWS) installed on the western edge of the Project Boundary in accordance with the Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DECC 2007a).

PAEHolmes generated the Maules Creek Meteorological Dataset (Maules Creek MD) using a diagnostic meteorological modelling system known as California Meteorological (CALMET). Observed hourly data from the Maules Creek AWS, Boggabri Coal Mine AWS, Tarrawonga MS, and the BoM site located at Narrabri Airport AWS were used as input for CALMET.

A description of the locations and recording periods of each meteorological data set utilised within this EA is provided in **Table 2**. **Table 3** provides a summary of climatic conditions in the vicinity of the Project Boundary, with key parameters discussed further below.

2.4.1 Temperature and Humidity

Temperature records from the Gunnedah Pool BoM station indicate that January reaches the hottest temperatures with a maximum mean average of 34.0°C. July records the coolest month with maximum and minimum monthly mean temperatures of 16.9°C of 3.0°C respectively.

Humidity levels exhibit seasonal variability throughout the year. Mean morning (9:00 am) humidity levels range from 58% - 79% and mean afternoon (3:00 pm) humidity levels range from 40% - 55%. Late spring and early summer are generally drier than the rest of the year.

2.4.2 Rainfall

The Gunnedah Coal Basin experiences a summer dominant rainfall which reduces significantly throughout winter. The BoM site located at the Gunnedah Pool indicates that maximum rainfall occurs during January with a mean monthly rainfall of 71.3 mm and mean minimum rainfall occurring during April of 37.7 mm with an extended dry period until October.

The long term annual mean rainfall recorded at the Gunnedah Pool BoM station is 618.5 mm falling over an average of 72 days.

Trends established in the long term data from the Gunnedah Pool BoM site are generally consistent when compared to the Boggabri MD.

2.4.3 Evaporation

Data from the BoM Gunnedah RC station was used to assess representative evaporative trends typical of the Gunnedah Coal Basin. Summer months experienced higher daily evaporation in direct correlation with increased temperature and presence of afternoon winds typical of the region.

Evaporation is greater than annual precipitation with mean monthly pan evaporation rates varying seasonally from 242 mm during December to 57 mm during June, with a monthly mean evaporation of 147.3 mm.

2.4.4 Wind Speed and Direction

Data from the Maules Creek AWS shows prevailing wind directions are from the south-east and west north-west and, to a lesser extent, the west and south south-east. Almost no winds originate from the north to north north-west. This is consistent with the CALMET generated windroses shown in **Figure 3**, which illustrate on an annual basis that the prevailing wind directions are from the south-east and south south-east, with a less dominant west north-west component.

2.5 GEOLOGY

2.5.1 Exploration

Extensive exploration and mapping has been undertaken in the vicinity of Aston's mining authorities since 1948. Objectives of the various exploration drilling activities have been designed to assess the quality, quantity and overall extent of the coal reserves. The historical drilling program at the Maules Creek Coal Project prior to the transfer of the existing mining authorities to Aston can be categorised into the following stages:

- NSW Geological Survey Department conducted surface geological mapping (1948 to 1950) within Exploration Permit No. 4;
- NSW Geological Survey Department conducted initial drilling of seven boreholes located within A 354 and A 346 (1974 to 1975);
- Kembla Coke and Coal Pty Limited exploration drilling program, consisting of 316 boreholes totalling approximately 60,422 m (1980 to 1988); and
- Novacoal Australia Pty Limited exploration drilling to improve the geological knowledge within CL 375 (1996).

In order to further define the in situ resource and to gain contemporary coal quality and processing data for the 15 open cut mineable coal seams present within CL 375, Aston has undertaken further drilling since May 2010.

As part of this exploratory drilling program (approved by Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) (formerly Industry and Investment NSW (I&I NSW)) and described in the Mining Operation Plan (Exploration Activities) 1 April 2010 to 1 April 2012 (Hansen Bailey 2010)), Aston has completed seven large diameter (200/100 mm) bore cores, 66 open holes and 22 HQ slim core holes totalling approximately 14,205 m of borehole drilling. This drilling program also assisted with the collection of the relevant samples for this EA and the installation of some groundwater monitoring bores within the Project Boundary for ongoing monitoring.

Table 2 Meteorological Stations

NAME	LOCATION	PARAMETERS REPORTED	PERIOD OF RECORD
Gunnedah Pool	Approximately 45 km to the south-east of the Project	Mean Daily Temperature Mean Monthly Rainfall Mean Monthly Rain days Mean Monthly Relative Humidity	1876 to current
Gunnedah RC	50 km to the south of the Project Boundary	Evaporation	1948 to current
Boggabri (Kanownda)	7 km north-east of the Project Boundary	Mean monthly Rainfall	1899 to Current
Boggabri MD (Boggabri AWS and Tarrawonga MS)	Boggabri AWS: Located in the Boggabri Infrastructure area to the south of the Project Tarrawonga MS: On the Tarrawonga Mine Site to the south of the Project	Mean Daily Temperature Mean Monthly Rainfall Mean Monthly Rain days Mean Monthly Relative Humidity	Boggabri AWS: September 2008 to August 2009 Tarrawonga MS: September 2009 to December 2009 excluding the month of October 2009
Maules Creek MD (Maules Creek AWS, Boggabri AWS, Tarrawonga MS, Narrabri Airport AWS)	Maules Creek AWS: western edge of the Project boundary. Boggabri AWS: Located in the Boggabri Infrastructure area to the south of the Project. Tarrawonga MS: On the Tarrawonga Mine Site to the south of the Project.	Winds Temperature inversions Relative Humidity Wind speed wind direction Vertical temperature gradient	Maules AWS: May 2010 to current Boggabri AWS: September 2008 to August 2009 Tarrawonga MS: September 2009 to December 2009 excluding the month of October 2009 Narrabri Airport AWS: July 2001

Table 3 Meteorological Data Summary

MONTH	MEAN DAILY TEMPERATURE (°C)						MEAN RAINFALL (mm)			MEAN RAIN DAYS		MEAN HUMIDITY (%)		MEAN EVAPORATION (mm) GUNNEDAH RC
	GUNNEDAH POOL		BOGGABRI DM		MAULES CREEK MD		GUNNEDAH POOL	BOGGABRI MD	BOGGABRI KANOWNDA	GUNNEDAH POOL	BOGGABRI MD	GUNNEDAH POOL		
	MIN	MAX	MIN	MAX	MIN	MAX						9:00 AM	3:00 PM	
Jan	18.3	34.0	19.6	34.5	10.9	36.9	71.3	56.0	76.4	6.5	6.0	61	43	239
Feb	18.1	32.9	18.8	32.9	15.9	33.9	66.5	100.1	60.6	6.1	8.7	65	45	190
Mar	15.8	30.7	15.1	31.1	13.9	31.9	48.1	19.1	45.5	4.7	2.3	65	44	186
Apr	11.4	26.4	12.3	25.5	6.9	27.9	37.7	13.0	34.9	4.3	2.5	67	46	129
May	7.1	21.3	3.0	22.0	2.9	25.9	42.4	50.0	37.8	5.1	3.0	73	51	84
Jun	4.3	17.6	6.5	17.9	-2.1	19.9	43.9	57.2	41.1	6.3	6.5	79	55	57
Jul	3.0	16.9	3.9	16.9	-2.1	21.0	42.7	36.1	40.3	6.3	4.0	77	53	59
Aug	4.2	18.9	5.4	22.6	-3.1	31.9	41.3	38.7	34.7	6.2	3.3	71	48	84
Sep	7.0	22.8	8.6	22.4	0.9	30.9	39.9	37.1	36.6	5.8	2.7	65	44	117
Oct	10.7	26.7	12.3	27.4	4.9	32.9	55.4	27.6	51.2	6.9	4.0	61	43	164
Nov	14.1	30.3	16.2	26.7	14.9	39.9	60.9	78.3	58.0	6.8	8.0	59	40	201
Dec	16.8	33.0	17.8	30.0	11.9	39.9	68.6	80.7	62.2	7.0	8.3	58	40	242
Mean	10.9	26.0	12.4	26.2	6.3	31.0	51.6	49.5	48.0	6.0	4.9	67.0	46.0	147

Annual and seasonal windroses for CALMET (Maules Creek AWS) 2010



Hansen Bailey |
ASTON
 RESOURCES
Source: PAE Holmes (2011)

MAULES CREEK COAL PROJECT

Maules Creek AWS Windroses

Cad File: 07086B.dwg

Date: 19.01.11

Drawn: CP

Figure
3

2.5.2 Stratigraphy

Coal resources associated with the Project Boundary occur within the early Permian age Maules Creek Formation of the Maules Creek Sub-basin. The basement of the Maules Creek Sub-basin is formed by the Boggabri Volcanics. The rhyolitic volcanics are overlain by the Leard Formation, a thin unit comprised of black claystone and rare, thin coal seams. The Maules Creek Formation is up to 800 m thick within Aston's mining authorities and sits conformably on the Leard Formation (Sides 2009).

Within CL 375, the Maules Creek Formation contains 15 named coal seam groups, which exhibit splitting towards the north-east. This seam splitting has resulted in the recognition of up to 39 individual seam plies resulting in complex geological modelling. The identified coal measures generally dip towards the south-east with a flattening of dip occurring in the far south-eastern corner of CL 375 (Sides 2009).

Dips range from 1 to 7 degrees but are within the range of comfortable open cut mining operations. Dip direction is generally consistent across the deposit.

Coal will be extracted from all 15 defined seams, via open cut methods down to the Templemore seam. An indicative stratigraphic column for the Project showing the target coal seams is presented in **Figure 4**. All seam groups situated stratigraphically below the Braymont Seam lap onto the basement volcanics. The depth of weathering across the modelled area varies from 6 m to 113 m with the average depth of around 25 m.



Overburden and interburden materials consist predominantly of sandy conglomerate with minor amounts of interbedded sandstone, siltstone and mudstone.

2.5.3 Reserves and Resource Utilisation

Exploration drilling, feasibility studies and geological modelling of the Maules Creek mining authorities indicate that an estimated 642 Mt of inventory coal is available. Of this, there is a Joint Ore Reserves Committee (JORC) coal resource of 610 Mt consisting of a JORC coal reserve of 356 Mt. On a marketable reserves basis, at 321 Mt, the mining authorities contain the fourth largest metallurgical coal deposit and the seventh largest coal deposit in Australia (Aston Resources 2010).

The Project proposes to extract approximately 240 Mt of ROM coal at rates of up to 13 Mtpa ROM coal via open cut mining methods over a period of 21 years.

The Project is located within the Gunnedah Coal Basin and is considered to be one of the few remaining Tier 1 undeveloped metallurgical coal assets in NSW. The resource is anticipated to have a saleable mine yield of approximately 89% throughout the life of the Project with an approximate ash content of 7.6% for semi soft coking coal and 9% for thermal coal.

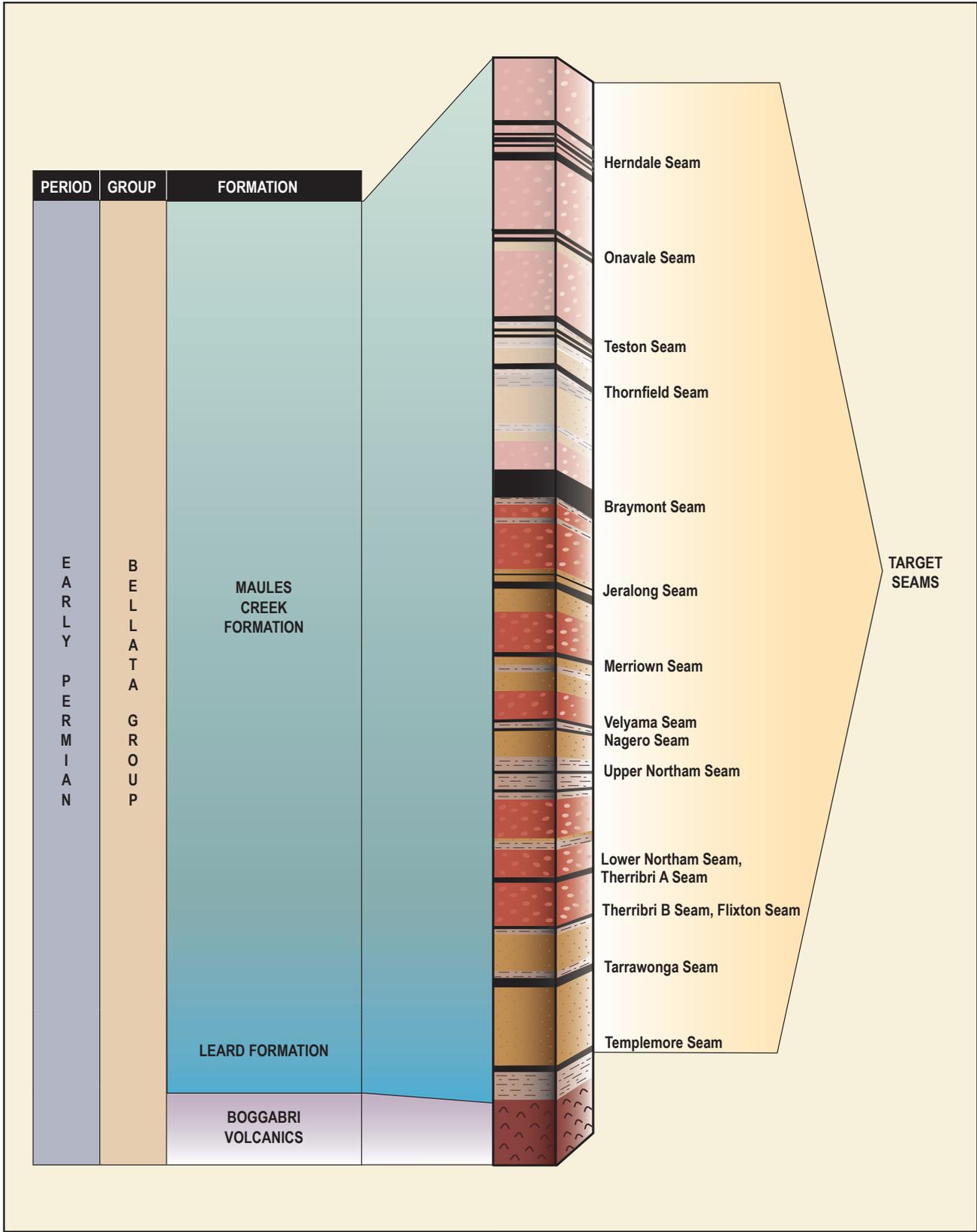
The predicted stripping ratio for coal accessible by open cut mining methods averages approximately 6.4 bank cubic metres (bcm) of overburden for every one tonne (t) of ROM coal resources (i.e. 6.4:1), based on the 21 Year Mine Plan. ROM coal production for the Project is anticipated to consist of 57% metallurgical coal and 43% thermal coal.

2.6 APPROVED MAULES CREEK PROJECT

2.6.1 Mining Authorities

Exploration Permit No. 4 was originally held in the vicinity of the Project Boundary by Pacific Coal Pty Limited, a subsidiary of CRA Limited (CRA). When CRA acquired the Maules Creek mining authorities, a comprehensive program of exploration drilling and feasibility assessments was undertaken to define the coal resource and develop an open cut mine plan.

On 4 June 1991, CL 375 was granted to Namoi Valley Coal Pty Limited (NVCPL) for a period of 21 years until 4 June 2012. CL 375 was granted to enable the development of an open cut mine in the southern portion with entitlements from surface to unlimited depth and an underground operation to the north which covered from 20 m below the surface to unlimited depth.



 Coal	 Sandstone	Hansen Bailey
 Shale	 Volcanics	
 Conglomerate		 Sources: Maules Creek Project EIS 1989 Aston Resources 2010
 Siltstone		

MAULES CREEK COAL PROJECT

Indicative Stratigraphic Column

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Figure **4**

A 354 which covered the southern area was cancelled. During this time, A 346 was also modified by NVCPL to retain surface rights over the northern portion of CL 375 that was approved for underground mining development. NVCPL became a wholly owned subsidiary of CNA in 1991.

Aston completed the acquisition of the Maules Creek Coal Project and associated mining authorities in February 2010.

2.6.2 DA 85/1819 and Maules Creek EIS

The Maules Creek EIS supports DA 85/1819 which was granted on 12 June 1990 for the approved Maules Creek Coal Project and provides for:

- The development of a coal mine within the Leard State Forest utilising open cut mining and underground mining methods at an average production rate of 9 Mtpa product coal during the operation of both the open cut and underground operations;
- The extraction of coal down to the Braymont coal seam via open cut mining methods and the extraction of coal commencing in the Braymont coal seam down to the Lower Northam coal seam via underground mining methods;

- Construction of mining infrastructure, including a rail loop and associated rail spur, CHPP, mine administration and bathhouse facilities, workshop, pipeline, communications, powerlines and water reticulation; and
- Employment of up to 683 employees during peak production periods.

DA 85/1819 was physically commenced in 1995 with the construction of the Development Dam as shown on **Figure 5**. No open cut mining has been commenced at the site to date. DA 85/1819 has no sunset clause and remains as a valid planning approval.

Figure 5 illustrates the approximate layout of the approved Maules Creek Coal Project.

2.6.3 Existing Licences, Leases and Approvals

Table 4 provides a summary and outlines the status of existing licences, leases and mining approvals that are held by Aston.

2.6.4 Environmental Monitoring

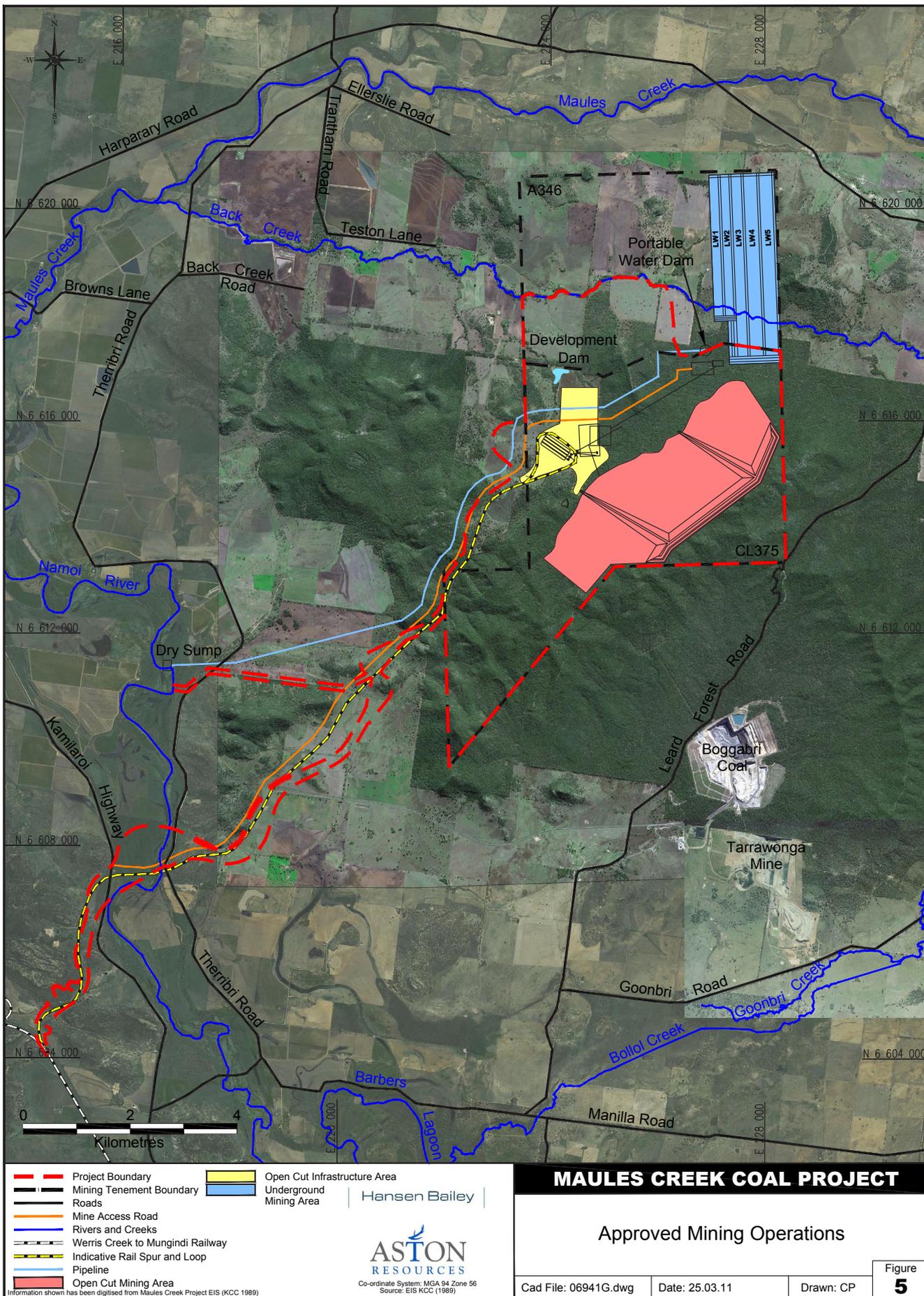
An extensive environmental monitoring program is in place for the Maules Creek Coal Project. **Figure 6** shows the historical and existing monitoring locations for surface, groundwater, noise and air quality. Each is discussed as relevant in **Section 7**.

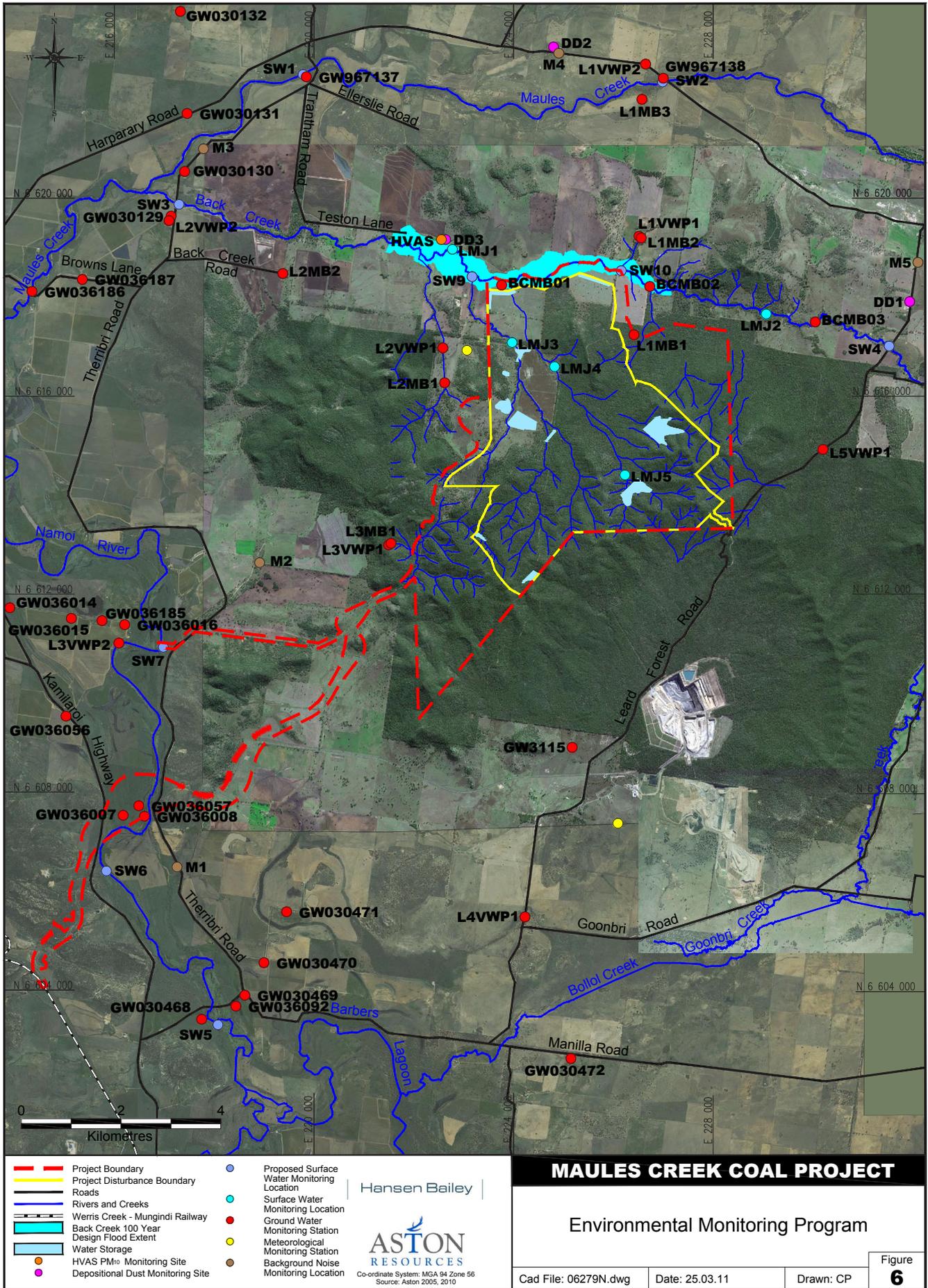
Table 4 Existing Approvals and Licences

APPROVAL	REFERENCE	DETAIL	VALIDITY DATES
Coal Lease	CL 375	Covers an area of approximately 4,200 ha The southern part of the tenement covers rights to mine from the surface to unlimited depth (~2,500 ha) The northern part of the tenement covers rights to mine from 20 m depths to unlimited depth (~1,700 ha)	4 June 1991 to 4 June 2012*
Authorisation	A 346	Covers the rights of the northern part of CL 375 from the surface to 20 m depth (~1,700 ha)	Expires 27 February 2011*
Development Consent	DA 85/1819	Pursuant to the Maules Creek EIS for the construction and operation of a surface and underground coal mine, associated transport and coal preparation and loading facilities and rail spur	Granted 19 June 1990 This approval has no sunset clause
Environment Protection Licence (EPL)	5112	Discharge of waters from the Development Dam	Surrendered by CNA in 2003
Surface Water Licence	90SL051655	30 ML water licence for irrigation use	Surrendered by Aston in November 2010 replaced by 90SL101060
Surface Water Licence	90SL101060	Water supply for mining and irrigation one Overshot dam and a 150 mm Centrifugal Pump	1 November 2010 to 1 November 2015
Water Access Licence (WAL)	WAL 13050	3000 units (equivalent to 3,000 mega litres (ML)) of water entitlements for site supply	Transferred to Aston 11 May 2010

APPROVAL	REFERENCE	DETAIL	VALIDITY DATES
Water Supply Works Approval	90WA801901 DWE Ref no: 90AL801900	Allows construction of a 610 mm Axial Flow Pump located on the Namoi River	July 1 2004 to June 30 2017
Forests NSW Occupation Agreement	N/A	Agreement applies to that part of Leard State Forest No. 420 that occurs within CL 375	Granted 31 March 2010 to 2011 *
Mining Operations Plan (MOP)	N/A	MOP for Exploration Activities	Granted 1 April 2010 to 1 April 2012
Bore Licence	90WA809078	Bore constructed in the Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gins Leap) Groundwater Source	Commencement 1 November 2006
Bore Licence	90WA809079	Bore constructed in the Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gins Leap) Groundwater Source	Commencement 1 November 2006
Bore Licence	90WA809300	Bore constructed in the Upper Namoi Zone 5 Namoi Valley (Gins Leap to Narrabri) Groundwater Source	Commencement 1 November 2006
Bore Licence	90WA809127	Bore constructed in the Upper Namoi Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gins Leap) Groundwater Source	Commencement 1 November 2006
Bore Water Licence	90BL121059	6 ML bore licence held for MAC 018 LD Drill hole	Surrendered replaced by 90B255704
Bore Water Licence	90BL255704	6 ML bore licence For industrial and mining purposes	Granted 7 June 2010 to 6 June 2015
Bore Water Licence	90BL001144	Bore will be used for stock and domestic services	Granted 28 February 1939 for perpetuity
Bore Licence	90BL255779	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255780	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255781	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255782	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255783	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255784	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255785	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255786	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255787	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255788	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255789	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL255790	For the purpose of a Monitoring Bore	Granted 25 August 2010 for perpetuity
Bore Licence	90BL024837	Bore will be used for stock services	Unknown
Water Access Licence	WAL12811	135 Units with works approval 90CA807230 Upper Namoi Zone 5 Namoi Valley (Gins Leap to Narrabri) Groundwater Source	Transferred to Aston 16 November 2010 Tenure continuing

* Renewal pending.





SECTION
3



The Project



The Project

This section provides a detailed description of the Project including the conceptual 21 year mine plan, equipment and employment requirements, infrastructure, management of waste and an indicative construction schedule. It also includes a discussion on the need for the Project and a justification of the proposed mine plan and required infrastructure.

3.1 INTRODUCTION

Aston is seeking a contemporary Project Approval under Part 3A of the EP&A Act to facilitate the development and operation of an open cut coal mine for a period of 21 years within the Project Boundary as shown on **Figure 7** on the land listed in **Appendix A**.

The indicative layout of the Project is provided in **Figure 7** and **Figure 8** and is generally comprised of the following:

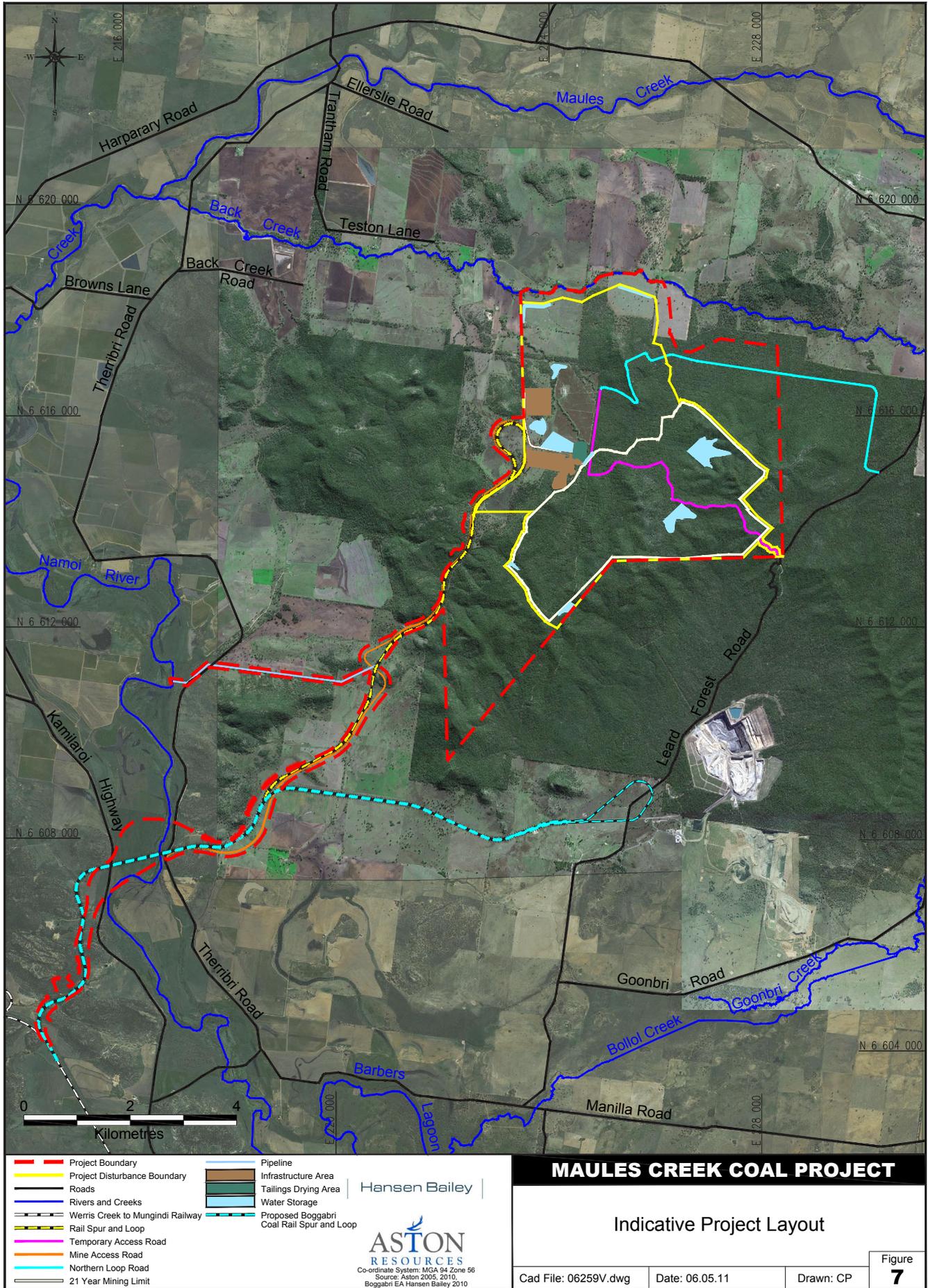
- Utilising a standard mining equipment fleet for truck and shovel / excavator mining operations for a period of up to 21 years to extract the coal reserve within the 21 Year Mining Limit down to the Templemore Seam;

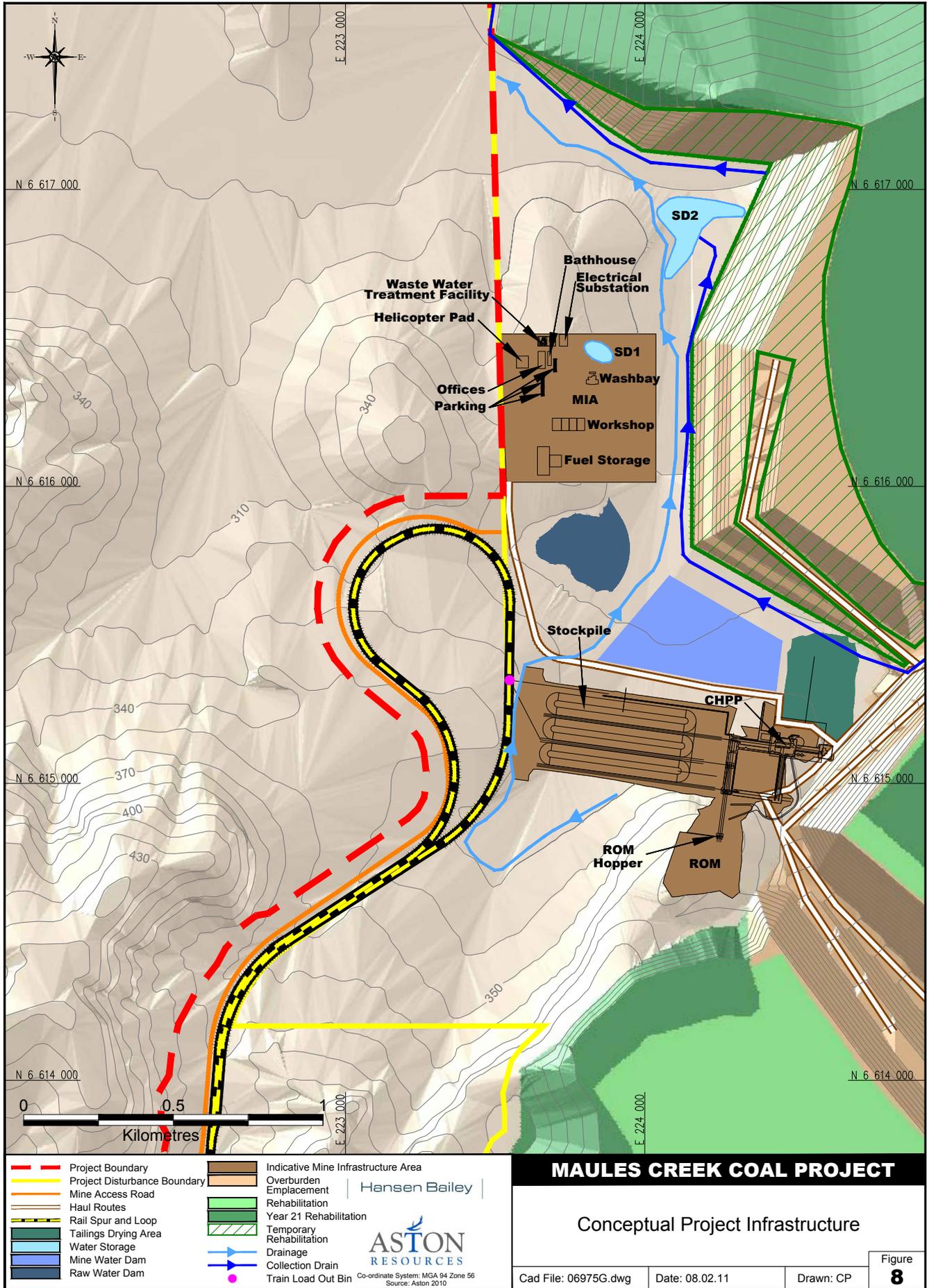


- Processing up to 13 Mtpa ROM coal through the CHPP and / or bypass coal directly to the export market;
- Transportation of product coal by rail via the Werris Creek to Mungindi Railway Line and the Main Northern Railway Line to the Port of Newcastle for export;
- Development and utilisation of various site infrastructure and associated facilities, including:
 - CHPP and associated facilities;
 - Train loading facility;
 - A rail spur and loop connecting to the Werris Creek to Mungindi Railway Line;
 - Upgrade of local road access;
 - Communications and power reticulation;
 - Explosives storage facilities;
 - Water management structures and systems; and
 - Administrative offices and support facilities.
- A workforce of up to 470 permanent employees at peak production; and
- Up to 340 employees during the construction period.

The Project will also require the development of temporary site access via Leard Forest Road and a permanent entry (Mine Access Road) from Therribri Road.

The Project will generally be undertaken within the Project Disturbance Boundary as illustrated in **Figure 7**. Some of the infrastructure such as the rail loop and spur, Mine Access Road, power and communications infrastructure and the water pipeline will be located outside the Project Disturbance Boundary. Minor additional disturbance associated with ancillary works including fencing, firebreaks, water diversion structures, minor contour banks, tracks along pipelines, explosives storage facilities, power supply for excavator, powerlines, sediment and erosion control structures, will also be required.





3.2 CONCEPTUAL MINE PLANS

3.2.1 Mine Layout

The Project seeks to recover approximately 240 Mt of ROM coal within the 21 Year Mining Limit to produce around 220 Mt of product coal (see **Figure 7**). The Project will extract the open cut coal reserve from the Maules Creek Formation, which entails approximately 15 coal seams down to the Templemore Seam. Up to 1,450 Million bank cubic meters (Mbcm) of overburden material will be moved and an approximately 20 Mt of coal reject will be produced during processing of ROM coal over the 21 year approval period.

Figure 9 to **Figure 13** illustrate the conceptual mine plan layouts for Years 1, 5, 10, 15 and 21 respectively. The staged mine plans provided are indicative only and have been included for modelling purposes and may vary due to the ultimate production levels achieved in the period in question. These stages of the mine plan have been selected for modelling as they represent a combination of mining at the extremities of the Project mine life and the greatest intensities of mining.

Mining operations are proposed to commence in the central west of the Project Disturbance Boundary (see **Figure 7**), progressing to the south-west along the limit of oxidation of the coal reserve, before turning toward the south-east in around Year 5 (**Figure 9** and **Figure 10**). The mining activities, whilst progressing towards the eastern part of the Project Disturbance Boundary also advance to the north out to Year 21 (**Figure 13**).

The southern boundary of CL 375 is a common boundary with the neighbouring Boggabri Coal Mine's mining authority. A coal resource is known to occur in the vicinity of this boundary (barrier coal) and is not currently proposed to be extracted as part of the Project.

As a result of the staging of the mine plans for the Project and the Boggabri Coal Mine, it is unlikely that the two operations will exist in this area concurrently. As such, the barrier coal may be extracted by either party, subject to a commercial agreement and to the approval of the relevant regulator. The possible future extraction of this barrier coal will also enable a consistent landform to be developed across the two operations.

Aston will implement all reasonable endeavours to reach the relevant barrier pillar agreement with Boggabri Coal by the end of Year 5 of operations, when both operations will be substantially advanced and be better placed to determine a suitable solution for the extraction of the barrier coal.

It is likely that due to the staging of the two mine plans, it would be more practical and efficient for Boggabri Coal's operations to extract these resources, subject to the relevant approvals being granted for these operations.

During the early years of operation, the Northern Overburden Emplacement Area (OEA) is proposed to be developed in the northern part of the Project Disturbance Boundary. The footprint of the Northern OEA has been specifically designed to minimise disturbance of sensitive ecological communities, whilst providing the capacity required for the mining operations. The Northern OEA will store overburden material from the initial years of mining operations to facilitate the boxcut being constructed down to the lowest coal seam in the sequence, maximising coal recovery.

The Northern OEA is anticipated to be fully developed up to Reduced Level (RL) 430 m by the end of Year 10 (**Figure 11**). Rehabilitation activities of the Northern OEA will be undertaken progressively ensuring this area is largely rehabilitated by around Year 15 (**Figure 12**). The western and southern faces of the Northern OEA are not proposed to be shaped for final rehabilitation until mining activities cease.

Temporary rehabilitation activities will be undertaken on these faces to provide the relevant cover to these slopes to minimise wind blown dust and to reduce visual effects to receivers to the north-west. Final rehabilitation of the Northern OEA faces would cover the required mine water infrastructure areas and internal haulage roads that are expected to be required beyond the 21 Year mining period. There are considerable known open cut mineable coal resources beyond the 21 Year Mining Limit and depending upon market factors and resource confirmation, Aston may seek further relevant approvals for the extraction of these.

A conceptual final landform design has been developed in the event that an approval for the continuation of mining beyond the 21 Year Mining Limit is not sought or granted.

This has been prepared to confirm that should mining operations not continue beyond the 21 Year Mining Limit, then the orderly closure of the Project could be achieved.

The conceptual final landform for the Project has been developed in consideration of neighbouring approved and proposed mining operations as far as practical.

A discussion on the conceptual post mining land use and management of the final landform is provided in **Section 7.16**. This design is based on the unlikely assumption that the mine prematurely closes in Year 21 rather than continuing to the north under subsequent planning approvals. The conceptual final landform design indicates the presence of a lower lying area in the eastern extent of the mine plan. The OEAs have been shaped down towards the base of this void area as practical and will ultimately exhibit a lake surface. This final landform scenario will minimise the surface catchment as far as practical, utilising diversion drains and contour banks to divert surface water runoff away from the lower lying void area.

Further refinement to the conceptual final landform may occur during the preparation of the Mining Operations Plan for the Project. This will allow the landform to be blended with neighbouring mining projects as the operations progress. Should further approvals for the continuation of mining be granted, the landform conceptually illustrated within this EA would not be required.

3.2.2 Mining Schedule and Methods

An indicative ROM coal production schedule for the conceptual staged years is provided in **Table 5**. Due to the relatively shallow nature of the coal reserves, the Project will commence production at approximately 4 Mtpa ROM coal from Year 1.

The Project will utilise a contemporary shovel and excavator operation supported by a fleet of trucks. Typical of standard shovel and excavator mining methods, topsoil is initially stripped from the mining area and either utilised on available rehabilitation areas and / or stockpiled for later use.

Overburden is then blasted prior to being removed by loader and / or excavator and trucks before proceeding with coal extraction. The fleet then progresses through the sequence to uncover each coal seam to be extracted within the mining sequence.

Various minor infrastructure supporting day to day activities will be constructed within the Project Disturbance Boundary as required. This is likely to include: topsoil stockpiles, erosion and sediment control structures, power supply sub-lines and substations, water reticulation systems, in-pit fuelling areas, truck parking area, crib facilities, access tracks and storage areas.

3.2.3 Blasting

The hard rock overburden materials in the mining sequence typically require some blasting to achieve suitable fracturing and fragmentation to enable efficient removal of these materials. Recent exploration drilling has confirmed that the burden materials within the 21 Year Mining Limit generally consist of interbedded pebble conglomerate, sandstone and siltstone.

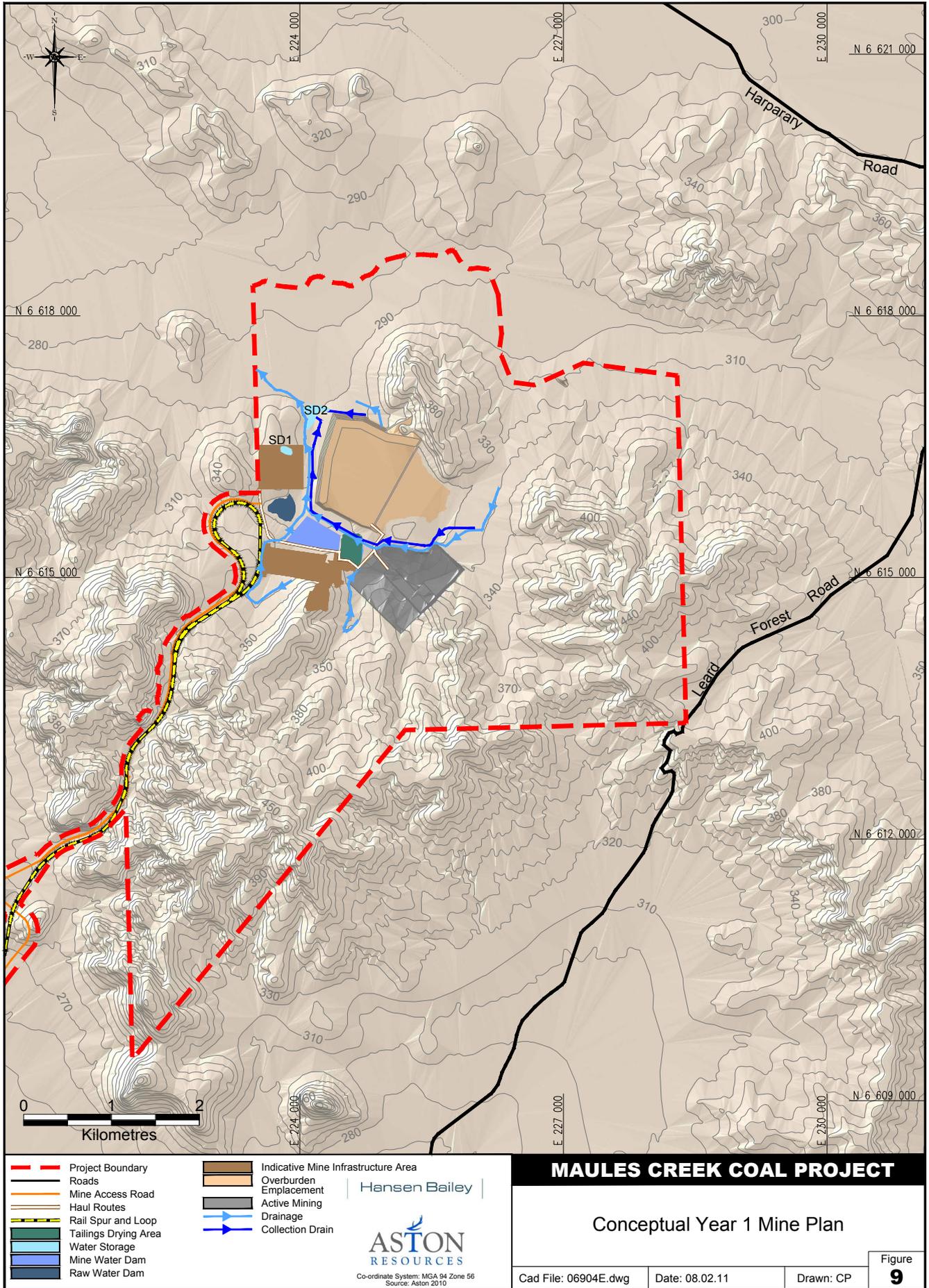
A review of the material to be mined has confirmed that the desired powder factor for blasting is likely to be in the range of 0.5 kg to 0.7 kg of explosive per bcm of material. The ultimate powder factor utilised for operations will be refined throughout the mine life to maximise efficiency.

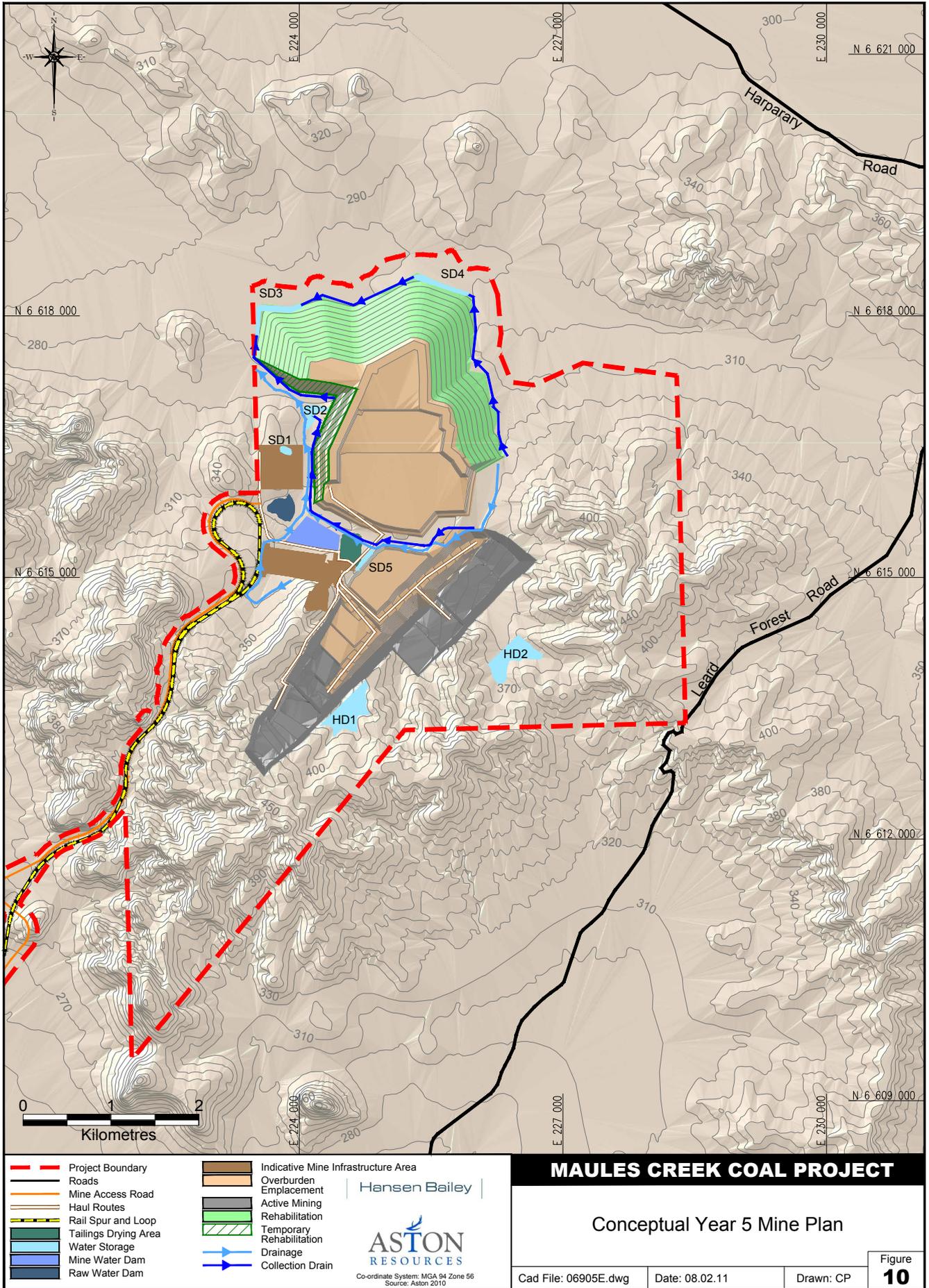
Mine planning has predicted approximately 200 blast events per year, or up to an average of four blast events per week will be required once mining rates reach steady state. Blasting would only be undertaken during the hours 9:00 am to 5:00 pm Monday to Saturday, excluding Sundays and public holidays unless prior approval from Office of Environment and Heritage (OEH) is given. The Project will require the storage of explosives and other related materials. These storage facilities will be designed and sited within the Project Disturbance Boundary in accordance with the relevant Standards and Guidelines (AS2187.2-2006 – Explosives – Storage, Transport and Use. Part 2: Use of Explosives).

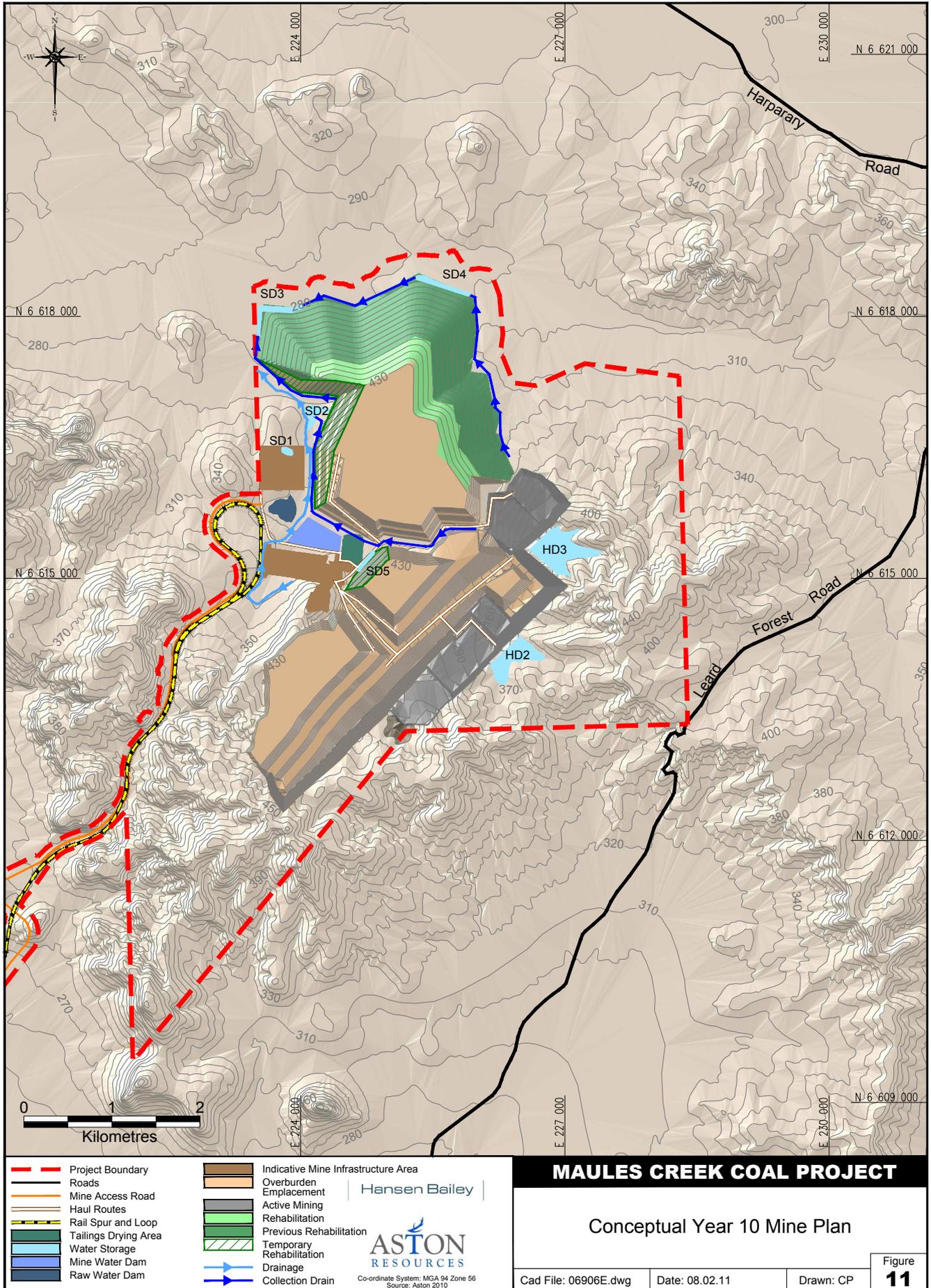
Table 5 Indicative Production Schedule

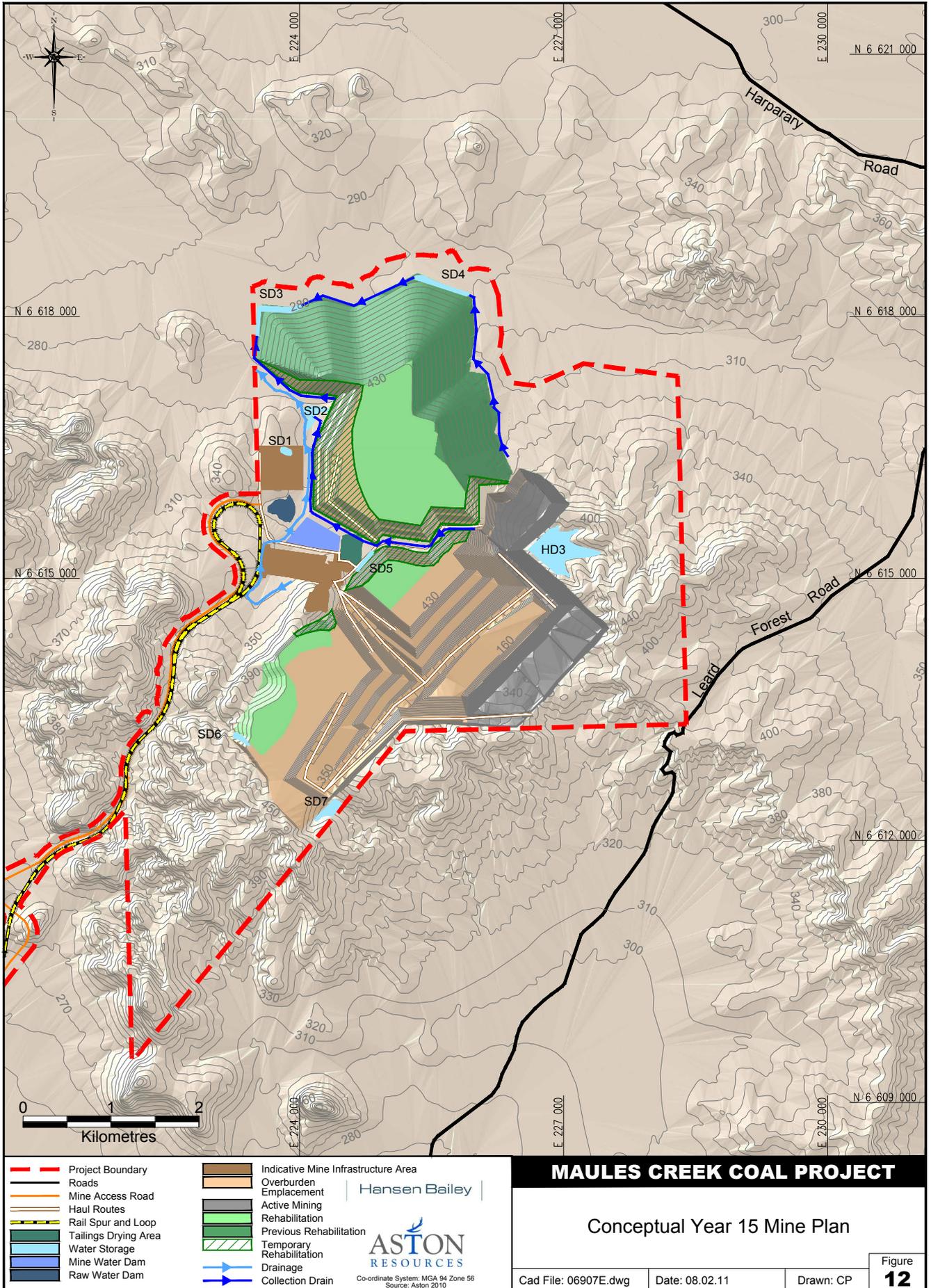
PROJECT YEAR	OVERBURDEN REMOVED (Mbcm*)	ROM COAL RECOVERED (Mtpa)	PRODUCT COAL (Mtpa)	COARSE REJECT AND TAILINGS (Mtpa)
Year 1	22.5	3.8	3.6	0.2
Year 5	74.3	12.4	11.8	0.6
Year 10	74.3	12.7	12.1	0.6
Year 15	74.4	11.2	10.6	0.6
Year 21	85.5	13.0	12.4	0.6

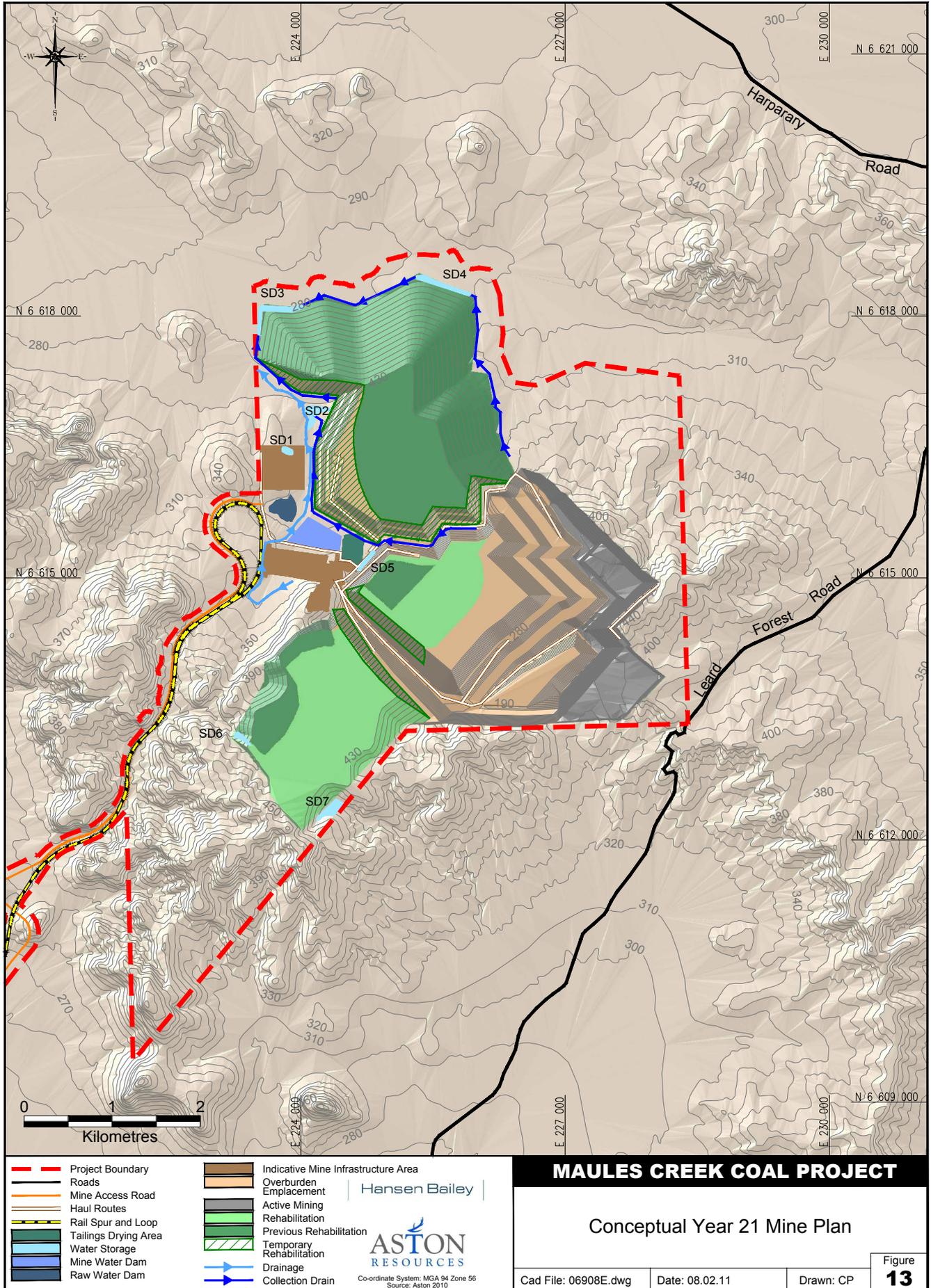
* Million bank cubic metres.











3.2.4 Indicative Equipment Fleet

Table 6 lists the indicative equipment fleet utilised for modelling purposes for Year 1, 5, 10, 15 and 21 of the Project. Actual equipment utilised for the Project may vary, however operations will be undertaken to ensure that noise levels meet the noise predictions within this EA. Further to these items of plant, there will be other ancillary equipment required for the Project including (but not limited to) lighting plants, generators, water pumps, light vehicles, self banded fuel tanks / facilities, service trucks, mobile cranes, elevated platforms and fuel and oil trucks.

3.3 COAL HANDLING AND PREPARATION FACILITIES

The Project involves the construction and operation of a CHPP and associated facilities to enable the handling and processing of up to 13 Mtpa ROM coal during the 21 year mine life. The facility will enable ROM coal to be simultaneously directed to the processing plant and the product coal stockpile should the quality of the ROM coal be lower than the shipping specification. The indicative layout of the CHPP and other associated facilities is illustrated on **Figure 8**. The orientation of the CHPP and other associated facilities within the Project Disturbance Boundary may vary depending on detailed engineering design. Relevant components of the CHPP are described further below.

3.3.1 ROM Coal Handling

ROM coal will be unloaded from rear dump trucks into two 500 t ROM coal hoppers where it will be fed at a controlled rate into a primary sizing station that will reduce the size of the ROM coal to 300 mm.

The coal will then be fed through to the secondary sizing station for top size reduction down to 120 mm. Coal will then be fed onto a vibrating screen with 50 mm grid screen decks prior to entering the tertiary sizing stations which will ensure coal to less than 50 mm prior to dispatch into the 500 t CHPP surge bin or directly onto the product stockpile bypass conveyor for delivery to a product stockpile. ROM coal may also be stockpiled on a 200,000 t ROM coal pad and fed into the ROM coal hoppers by front end loader(s) as required.

3.3.2 Coal Handling and Preparation Plant

ROM coal will be fed into the CHPP from the surge bin via a vibrating feeder which will be designed to nominally deliver up to 1,600 t per hour of ROM coal. The CHPP will utilise a typical Dense Medium Cyclone (DMC) / Reflux Classifier process to remove a proportion of the rock impurities from the coal to ensure that product specifications are maintained. This process is further described below.

Table 6 Indicative Mobile Equipment List

EQUIPMENT	YEAR 1	YEAR 5	YEAR 10	YEAR 15	YEAR 21
1,000 t Excavator	0	3	3	3	3
600 t Excavator	2	2	2	2	3
350 t Excavator	1	1	1	1	1
250 t Excavator	1	1	1	1	1
330 t haul truck	0	17	17	19	20
230 t haul truck	8	8	8	9	15
185 t coal truck	4	6	8	8	9
Rubber Tyred Bulldozer	1	1	1	1	1
Bulldozer	3	8	8	8	8
Front End Loaders	3	3	3	3	3
Grader	2	4	4	4	4
Water cart	2	3	3	3	3
Drill Rig	1	4	4	3	4

ROM coal will be fed into the desliming screen feed box where it will be mixed with water and discharged onto the desliming screen which will contain 1.4 mm screen decks. Coal between 2 mm and 50 mm will be directed into the coarse coal cleaning circuit, whilst coal smaller than 2 mm will continue to the fines coal circuit.

Coarse coal will be mixed with magnetite slurry and pumped into the DMC circuit. Cleaned coal will discharge from the cyclone onto a vibrating drain and rinse screen where the adhering magnetite medium will be rinsed from the coal and returned to the DMC circuit. Rinsed clean coal will then be diverted into a centrifuge to remove the majority of the surface moisture prior to being conveyed to the product coal stockpiles.

Finer coal (-2.0+0.0 mm) will be pumped into the bank of desliming cyclones. High ash discharges from the vortex finders of the desliming cyclones will then be directed into a conventional thickener where and with the aid of flocculant, it will be thickened for discharge into the tailings drying cells.

Once this material has reached the desired moisture content, the material will be removed by excavator into trucks for delivery to the active OEA.

Deslimed fine coal will be diverted from the desliming cyclone spigots onto a sieve bend that removes any remaining slimes prior to this fine coal discharging into a sump where it will be mixed with water and pumped to a bank of reflux classifiers. Clean coal will then discharge to a fine coal centrifuge to remove surface moisture before being conveyed to the product coal stockpiles.

3.3.3 Product Coal Handling

Product coal (bypass and processed coal) will be placed on two parallel linear product coal stockpiles which will be designed to receive up to approximately 300,000 t of product coal onto each.

The product coal handling layout also incorporates an emergency product stockpile of up to 150,000 t. Loaders will be utilised up to Year 3 until the single bucket wheel coal reclaimer is commissioned.

Product coal will be transported around the CHPP complex and placed on the stockpile area utilising a network of conveyors, transfer stations and stackers. Product coal will be reclaimed at rates up to 5,000 t per hour utilising a single slewing bucket wheel reclaimer and transported via a network of conveyors to a Train Loading Facility.

The Train Loading Facility will be designed to hold up to 1,500 t of product coal and facilitate the loading of trains at a rate of up to 5,500 t per hour.

3.3.4 Tailings and Rejects Management

The CHPP will generate coarse rock and fine tailings rejects representing the waste products of the coal preparation process.

Coarse rejects will be directed to a 600 t rejects bin via a conveyor system from the CHPP. This material will then be loaded onto haul trucks for co-disposal within the active OEA.

Fines tailings material will be pumped via pipeline to appropriately engineered Tailings Drying Areas, located to the north of the CHPP building. The Tailings Drying Areas will be constructed with an impervious base to avoid seepage. Water will be decanted from the Tailings Drying Areas for reuse in the mine water management system.

The tailings, depending upon the quality, will be allowed to evaporate and either recovered for reprocessing or hauled for co-disposal within the Northern OEA or in later years in pit. The use of this contemporary technology will facilitate an increase in resource recovery along with reduced water demands and waste production.

3.4 RAIL SPUR AND LOOP

The transport of all product coal will be by rail to the Port of Newcastle for sale to the export market. The construction of a rail loop and spur will be required to provide access to the Werris Creek to Mungindi Railway Rail Line. A Train Loading Facility will be constructed on the rail spur to facilitate the loading of product coal on to the trains.

A refuelling facility will be placed on land within the Project Disturbance Boundary adjacent to the rail loop and spur.

Figure 7 illustrates the rail loop and spur alignments for the Project. The Project rail spur connects to the proposed Boggabri Coal rail spur to utilise common rail infrastructure with neighbouring mining operations as requested by DP&I. This preferred rail spur alignment entails the construction of the rail spur travelling towards the south and meeting with the Boggabri Coal rail spur as proposed in the Boggabri EA. Aston is in discussions with Boggabri Coal in relation to entering a joint venture agreement to manage the construction and operation of the common rail spur alignment.

The impacts associated with the construction of the common section of the rail spur have previously been considered within the Boggabri EA. As such, these impacts have not been discussed in detail within this EA. The potential cumulative noise and air quality impacts from the transport of the Project's coal on the common section of rail spur have been considered in this EA.

Consistent with that described within the Boggabri EA, the common section of rail spur will continue across the Namoi River and its floodplain with the rail structures designed to remain above the 1 in 100 year flood level. The common rail spur would also intersect some public roads, including the Therribri Road and the Kamilaroi Highway at which grade separation structures would be required. The design and construction of these grade separation crossings will be undertaken in close consultation with other potential rail users, the Narrabri Shire Council (NSC), Australian Rail Track Corporation (ARTC) and Roads and Traffic Authority (RTA).

The rail spur will be designed and constructed in order to meet ARTC track design standards. The rail spur design will enable a turnout to exit and enter the Werris Creek to Mungindi Railway Line at speeds of up to 80 km/hour.

The Boggabri Coal rail spur partly extends beyond the Maules Creek Project Boundary which was defined prior to the requirement to utilise the rail spur alignment. As mentioned above, the environmental impacts of this section of rail spur have previously been assessed within the Boggabri EA and as such would be addressed in accordance with the management and mitigation measures described in that document.

The Project Boundary vicinity of the southern portion of the rail spur partly overlies some non mine owned land. It is Aston's intention that this non mine owned land will not be disturbed as a result of the Project.

Whilst train movements will vary depending on factors such as production, sales and availability in the transport chains, the Project is expected to require up to 10 train movements per day to transport the product coal from the site.

3.5 MINE ACCESS ROAD

The Mine Infrastructure Area (MIA) is approximately 15 km from Therribri Road. The Project Boundary is currently accessed via the Kamilaroi Highway, Old Manilla Road, Leard Forest Road and two gravel State Forest roads (the Temporary Access Road and Northern Loop Road), which intersect the Leard Forest Road near the south-eastern corner of CL 375 (see **Figure 7**).

This current access to the Project Boundary via the Temporary Access Road and the Northern Loop Road will be utilised for the initial year of the Project to enable access and transport of equipment and materials to the site whilst the Mine Access Road is under construction. The Mine Access Road will be constructed prior to the closure of the Leard Forest Road as recently proposed by Boggabri Coal (Hansen Bailey 2010).

The Mine Access Road is proposed to continue from Therribri Road towards the north-east to the MIA, generally following the alignment of the rail spur. The Mine Access Road will be approximately 15 km in length and will cross the rail spur in an area where the topography is most suitable.

The Mine Access Road will also intersect the existing Boggabri Coal haul road, where a level crossing will be required. The Mine Access Road will be designed in accordance with the Road Design Guide (RTA 1999) with a bitumen seal cover suitable for withstanding vehicles that will be required during the development and operation of the Project.

Aston also proposes that 3 km of the Therribri Road from Manilla Road to the proposed Mine Access Road be upgraded and bitumen sealed in consultation with NSC.

3.6 POWER AND COMMUNICATION

The power requirement for the Project is estimated to be approximately 12 megawatts per year. Appropriately designed high voltage powerlines and an associated substation will be constructed from the existing TransGrid infrastructure which is located adjacent to the Kamilaroi Highway. The powerlines to be constructed for the Project will commence from the Kamilaroi Highway and continue within the Project Boundary in the vicinity of the Mine Access Road and rail spur. TransGrid is currently carrying out the detailed design for these powerlines and the associated substation for which they will seek the relevant planning approval for its construction and operation.

Communications lines required for the day to day operations will be fed from the existing infrastructure which is located along Therribri Road. These communications lines will be located within the corridor required for the Mine Access Road and rail spur.

Onsite communications towers and an Optical Fibre network connection to enable communications throughout the 21 years of mining operations will also be required and will be located within the Project Boundary.

3.7 MINE INFRASTRUCTURE AREA

The Project will require the construction of various items of surface infrastructure to assist the mining operations. These items will generally be contained within the MIA which is to be located within the western extremity of the Project Disturbance Boundary. The indicative layout of the MIA, conceptual water management structures and other associated facilities is illustrated on **Figure 8**.

The orientation of individual components of the MIA, location and sizing of water management structures and other associated facilities within the Project Disturbance Boundary will be confirmed during detailed engineering design.

The MIA is anticipated to contain (at least) the following items:

- Administration, office, and bathhouse buildings;
- Heavy and Light Vehicle Parking;
- Waste Water Treatment Plant;
- Electrical Substation;
- Helicopter Pad;
- Heavy and Light Vehicle Workshops, including hot work and hardstand areas;
- Tyre Change Bay and Storage Areas;
- Stores Building and Laydown areas;
- Vehicle Wash down Facilities;
- Bulk Oil and Fuel Storage Tanks and Refuelling Facilities; and
- Associated Water Management Infrastructure.

Each of these is described below.

3.7.1 Administration and Bathhouse

Administration offices and bathhouse buildings will be constructed to cater for approximately 470 employees required for the Project. These buildings will be designed and constructed in accordance with the relevant building codes and NSC requirements.

Potable water for these facilities will be supplied from a Water Treatment Plant, which will treat raw water from the Namoi River to a suitable quality. The buildings will be connected to the Wastewater Treatment Plant to be constructed in the northern extent of the MIA. Potable water may also be delivered to site as required. Structures within the MIA will be designed and constructed to meet the requirements of the Building Code of Australia.

3.7.2 Parking Facilities

Whilst employees will largely be transported to the site from Boggabri via bus throughout the life of the Project, there will be a need for some light vehicle parking areas. The Project includes the construction of bitumen sealed car parking facilities to cater for approximately 40 visitor parks with a further 30 car parks for mining vehicles and office employees.

The hardstand area in the vicinity of the heavy vehicle workshop also accommodates a heavy vehicle park up area for certain equipment whilst it is not being utilised for operations.

3.7.3 Waste Water Treatment Facility

Waste water produced in the MIA will be collected, treated and irrigated via an appropriately licensed Waste Water Treatment facility. The treated effluent will be utilised on rehabilitation / garden areas following the receipt of the relevant approval or removed from the site for the appropriate disposal by a licensed waste contractor.

3.7.4 Electrical Distribution Yard

An electrical distribution yard will be located in the MIA and will be fed by the High Voltage powerlines to be constructed for the Project. The distribution yard will distribute 22 kV to various points throughout the site. The yard will be fenced for safety and security purposes.

3.7.5 Helicopter Pad

A bitumen sealed helipad will be constructed to allow for both emergency and transport purposes. The helicopter pad will be located in the MIA.

3.7.6 Workshops

A heavy vehicle workshop will be constructed to accommodate maintenance activities required on mobile equipment throughout the life of the Project.

The heavy vehicle workshop will be a steel frame Colorbond cladded building, containing three concrete floor bays.

The light vehicle workshop will be a Colorbond building constructed adjacent to the light vehicle visitors parking area.

Level hardstand areas will also be constructed in the vicinity of the workshops to provide heavy vehicles with sufficient turning room to manoeuvre into and around the workshop and for laydown and storage areas.

3.7.7 Vehicle Wash Facilities

The vehicle wash facilities will be located within the central part of the MIA. These facilities will be designed and constructed to have separate heavy and light vehicle wash areas. Runoff water from the vehicle wash facilities will be diverted through a sediment trap to capture sediment prior to being fed into an oil / water separation unit for treatment before release for reuse within the mine water management system.

3.7.8 Bulk Oil and Fuel Storage Facilities

A fuel storage facility will be constructed to store and dispense diesel, oils and lubricants that are required for day to day operations. The fuel storage facility will be constructed with bunding in accordance with the relevant Australian Standards, including but not limited to Australian Standard No. 1940, The Storage and Handling of Flammable and Combustible Liquids.

Diesel storage will be designed and constructed to cater for the storage of approximately 2 Million litres. The tanks and the facility will be designed and constructed to the required standards. Diesel fuel will be delivered on a daily basis with up to three B-Double (50,000 litre) tankers per day. Access for the delivery of fuels, oils and lubricants is provided via the road that is proposed on the western side of the MIA.

Oils and lubricants will be stored in a separate section of the Fuel Farm in above ground tanks and smaller drums. Fuel and lubricant facilities will also be utilised at the CHPP, for input refuelling and at the rail loop facility. These will be used to fuel certain mobile and rail equipment.

3.7.9 Water Management

The MIA will be designed to ensure that all surface water runoff is diverted to water management infrastructure for treatment and ultimate reuse within the site Water Management System. Water runoff from the hardstand areas will be diverted to a sediment dam located within the north-eastern corner of the MIA.

Water management structure sizing and locations will be confirmed during detailed engineering design and will be located within the Project Disturbance Boundary.

Water from the workshop areas will be diverted to the oil / water separation unit to be treated prior to being reused within the site water management system.

3.8 WATER MANAGEMENT SYSTEM

The Project will require an ongoing and reliable water source to enable the processing of ROM coal and also for dust suppression. **Figure 9** to **Figure 13** illustrate an indicative water management system for the Project as mining activities progress, opening and creating new catchments.

A number of water management structures will be required to manage the water that will need to be held and controlled onsite.

The existing Development Dam is proposed to be utilised as a sediment structure to capture water runoff from the Northern OEA. Some additional work may be required on this dam to increase its capacity and ensure it meets the requirements of Managing Urban Stormwater Guidelines (Landcom Guideline) (Landcom 2004) at varying stages of the Northern OEAs development.

Drains and sedimentation ponds will also be required along the eastern and northern faces of the Northern OEA to control water runoff from these areas. There will be a number of other sedimentation structures required throughout the life of the Project which will be located within the Project Disturbance Boundary and designed to capture and divert runoff from rehabilitation areas in accordance with the Landcom Guideline.

Water recovered from mining operations will be pumped to mine water storages and be used within the mine water management system. During abnormally wet periods where excess pit water exists onsite, the pit will be used to store this water which will be later reused in the mine water management system.

Where additional water is required in the mine water management system, the Project proposes to utilise its current works approval and high security water allocation for up to 3,000 units from the Namoi River. This water allocation is proposed to be utilised during both the construction and operation of the Project. An electric pump station and associated water pipeline (see **Figure 7**) will be constructed to enable the transfer of water from the Namoi River, which will supplement water supplies required for the CHPP. A gravel access track and powerlines will also be constructed to enable the ongoing operation and maintenance of this pump station.

3.9 HOURS OF OPERATION AND EMPLOYMENT

A total workforce of up to 470 permanent employees will be required for the Project at peak production. Construction activities to be undertaken during the early years of the development are unlikely to exceed 340 employees.

All coal mining operations and associated activities relating to the Project will be undertaken up to 24 hours per day, seven days a week.

Construction activities as described in **Section 3.10** will be undertaken up to 24 hours per day, seven days a week, but generally during daytime hours to avoid adverse impacts to neighbours.

3.10 CONSTRUCTION SCHEDULE

The construction of the Project is proposed to be undertaken as expeditiously as possible. Construction will commence following the establishment of construction offices and facilities within the Project Boundary. The indicative construction schedule for the Project is shown in **Table 7**.

3.11 ENVIRONMENTAL MANAGEMENT SYSTEM

Aston is committed to the Project's construction and operation activities being undertaken in an environmentally responsible manner, ensuring regulatory compliance and that expectations of the local and state government agencies and the immediate local community are met.

To assist Aston in achieving this, a comprehensive Environmental Management System (EMS) will be developed for implementation throughout the life of the Project. The EMS will comprise a number of Environmental Management Plans, an Environmental Monitoring Program (EMP), associated operating procedures and standards, and requirements to report on the Project's performance. The Environmental Management Plans, EMP and the management and mitigation measures to be included are discussed further in **Section 7**.

3.12 PROJECT NEED

3.12.1 World Demand for Energy

Current predictions are that the world's demand for energy will increase by an average 1.4% per year between 2007 and 2035 (i.e. 40%), driven by increased industrialisation of the advanced economies and the rapidly increasing economic development and living standards in the third world (IEO 2010).

This is occurring across the world and particularly in Africa, the Middle East, South America and, more relevantly to Australia, in Asia and most particularly China and India as well as the traditional Australian coal buyers, Japan, Korea and Taiwan.

3.12.2 Demand for Coal

Coal provides the largest source of energy generation in the world, with 43% of the world's energy generation being from coal (Geoscience Australia 2010). Despite concerns about greenhouse gas emissions, coal is predicted to continue to be the principle source of energy for electricity generation to meet the increasing world demand for energy into the foreseeable future (IEO 2010). Coal is also an essential reductant used in the metallurgical industries and is vital for about 70% of the world's steel production (ACA 2008).

The world's coal consumption is predicted to increase by 56% from 2007 to 2035 and world energy consumption and steel production utilising coal will grow from 27% in 2007 to 28% in 2035 (IEO 2010).

Alternate sources of energy are not financially viable or sufficiently certain to be relied upon for base load electricity and the somewhat uncertain position of the world, leaves fossil fuels, including coal, as the predominant source of reliable energy.

3.12.3 Australia's Coal Resources

In 2009, Australia's economically recoverable black coal resources were reported at approximately 44 Billion tonnes which is around 7% of the world's resources, ranking fifth behind the United States of America (31%), Russia (22%), China (14%) and India (8%) (ACA 2008). This resource constitutes a materially greater proportion of coal per capita of population than the other jurisdictions, making coal the most important natural and economic asset for Australia.

Australia is the world's largest national exporter of coal, exporting approximately 261 Mt in 2008/2009 which accounts to 28% of the world's total coal exports (ACA 2008). This was a material increase over previous years and is expected to continue to rise considerably in years to come.

The increased worldwide demand for energy indicates that there will be a continuing need and strong demand for coal from Australia. Australia and NSW, is a long term supplier of coal to Asia with partnering arrangements between the Australian operators and investors and the Asian coal buyers.

Strong demand for NSW and Australian coal has existed for some years and has increased materially with the emergence of China and India, two of the most rapidly developing countries in the world, into the Australian coal market. Coal developments contribute to the development of regional centres, road, and rail and port facilities. Coal mining provides a material contribution to the Australian and NSW economies through employment tax and other revenues.

The Project, in which the major Japanese Corporation Itochu is a joint venturer, will be an important economic contributor to the Narrabri LGA through employment, rates and taxes and community enhancement payments.

3.12.4 Coal and the Economy

Coal is one of Australia's main export industries with black coal exports in 2008/2009 generating were around \$55 Billion. Coal remains Australia's largest commodity export, representing around 23% of Australia's total exports of goods and services (ACA 2008).

Coal mining will contribute to wealth and prosperity to the community in the immediate locality of the Project (via jobs, economic benefits and other direct benefits to the local community) and more widely to the State of NSW. These benefits in relation to the Project are discussed in detail in Section 7.19.

The NSW mining sector generated approximately \$14 Billion to the Australian economy in the 2007/2008 financial year. Approximately 135 Mt of saleable coal, valued at around \$10.3 Billion was generated by the NSW coal mining industry in the same period. This equates to approximately 74% of the total value of the NSW mining sector for that year (DPI 2009).

Approximately 40% of Australia's coal exports were via the Port of Newcastle, exporting approximately 89 Mt during the 2007/2008 financial year, with current upgrades for this infrastructure occurring to facilitate additional export capacities for the future. Around 16,000 people were employed within the NSW coal mining industry during 2007/2008; with the industry also providing for a number of other indirect jobs for mine and non mine related services (DPI 2009).

Table 7 Indicative Construction Schedule

ACTION	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
Establishment	█	█										
Water Pump Station and Pipeline		█	█	█								
Therribri Road		█	█	█								
Rail		█	█	█	█							
- Earthworks				█	█	█	█					
- Drains					█	█	█	█				
- Structures			█	█	█	█	█	█	█	█	█	█
- Track								█	█	█	█	█
Road									█	█	█	█
Water Management												
- Dams					█	█	█	█	█	█		
- Drains								█		█		
Power Supply	█	█	█	█	█	█	█	█	█	█	█	█
MIA												
- Earthworks		█	█	█	█							
- Concrete						█	█					
- Buildings							█	█	█	█	█	
CHPP												
- Earthworks	█	█	█									
- Construction	█	█	█	█	█	█	█	█	█	█	█	█
ROM Pad and Hopper												
- Earthworks			█	█								

3.12.5 Economic Value of the Project

The Project will enable the development of a globally significant deposit of high quality, valuable metallurgical coal. Semi soft coking and high volatile PCI coals are typically used as either a reductant in the manufacture of iron and steel or as injected carbon in the iron making process. Australian coking coals are generally exported to steel producing customers in Asia, particularly Japan, Korea and China. The Project will produce high quality semi soft coking and high volatile PCI coal that will be low in deleterious impurities such as sulphur and phosphorous. There is a scarcity of high quality metallurgical coal and international demand is expected to remain robust over the short to medium term.

In addition, the Project will produce a high energy, low ash thermal coal that is in high demand in Asian countries such as Japan and Korea. With an energy content of 7,150 kcal/kg, Maules Creek thermal coal has an energy content significantly above the average for Australian coal production and can be used to blend with lower quality and lower energy coals to provide an optimum energy source.

Open cut mining in the location of the Project has previously been recognised by the NSW State Government. The Project represents a logical progression of the existing mining activities in and adjacent to the Leard State Forest which will maximise the viable recovery of the known coal resource in this area. Development Consent DA 85/1819 for the Project was granted on 12 June 1990 and a mining lease CL 375 was granted to NVCPL on 4 June 1991 for a period of 21 years.

That approved mining did not proceed, as a result of a depressed coal market in the early 1990s and industrial action at the Vickery Mine at that time. As such, the approved Maules Creek Coal Project was not developed with the then owner focussing its efforts on its operations and projects in the Hunter Valley NSW. International coal markets have improved significantly since then and, in particular, coking coal prices have reached all time high levels over the last five years and remain elevated.

A key strength of the rejuvenated Project now proposed to be developed is the relatively low strip ratio of ROM coal of approximately 6.4:1 and a comparatively high mine yield of 89%, both critical factors that will assist the operation to remain cost competitive over the life of the mine.

The Project is approximately 16 km from existing rail infrastructure, the Werris Creek to Mungindi Railway Line, which services the existing local mines owned by Boggabri Coal and Whitehaven for the transport of coal to the Newcastle coal terminals. The existing rail network has a current capacity of approximately 12 Mtpa of coal in conjunction with grain and passenger trains, with commitments from ARTC (the rail provider) to increase this capacity to 16 Mtpa in the short term.

Beyond this, there is a strategy in place to increase capacity further to ultimately 25 Mtpa by as early as 2013. The development of the Project will encourage further investments into the rail network and deliver enhancements to the State's utility services.

Further to the above, the Project is demonstrated by the substantial net economic benefit of \$8.6 Billion which will provide a significant stimulus to the local community, Narrabri Shire, along with the State and Federal Government. Royalty payments to the NSW government over the first 21 years of production are expected to total \$2.8 Billion. The Project will also be a significant regional employer and is expected to employ a total workforce of up to 470 full time employees for the operation, with 340 full time equivalent contractors required during its construction phase.

3.12.6 Planning Need for the Project

The existence and value of the significance of the Maules Creek coal resource was identified by the NSW Government in 2005 when following intensive study and extensive consultation, the Leard State Forest was designated as Zone 4 under the BNC Act. This secured its use from a macro planning perspective as for the purposes of forestry, recreation and mineral extraction, rather than setting it aside for the purpose of ecological or Aboriginal archaeological conservation purposes and protection.

The importance of future coal mining and the Project to the Narrabri Shire are recognised in the draft Narrabri Shire Growth Management Strategy (GMS), and considerations provided for in the revised Local Environmental Plan (LEP). The GMS has recognised opportunities associated with the emerging mining industry and has recommended that provisions within the LEP encourage the development of coal projects within the Narrabri LGA. As such, the revised LEP provides for the rezoning of lands to 2 (a), 2 (b) and 2 (c) surrounding the township of Boggabri for additional housing developments to support the accommodation needs anticipated from future mining developments.

3.12.7 Conclusion

This EA, having demonstrated that the Project can be conducted in accordance with the Objects of the EP&A Act and its approval being justified as concluded in **Section 9**, the Project is needed for the following reasons:

- To enable Australia to continue to meet the international demand for coal, for at least the next 21 years, during which time there will continue to be an increasing world demand for coal for at least the generation of electricity and production of steel;
- To ensure that Australia is able to continue to be a consistent and reliable supplier of coal to its existing and expanding markets; and

- To assist in sustaining the Australian economy and maintaining the economic stability and way of life of NSW and the Narrabri region.

3.13 PROJECT ALTERNATIVES

Since Aston purchased the assets of the Maules Creek Coal Project in February 2010, extensive planning, assessment and operational experience has enabled the Project team to develop a thorough understanding of the likely engineering, environmental and social constraints within the region. Prior to the commencement of the detailed planning for the Project mine plan, other options for the extraction of this internationally sought after coal resource were assessed in consideration of the principles of Ecologically Sustainable Development (ESD) and the Objects of the EP&A Act. The preferred Project mine plan was then developed with reference to all of the constraints identified.

Appendix B provides a summary of the extensive work that was undertaken in order to devise the preferred mine plan, including a description of the various mine planning constraints that have been encountered.

The following sections discuss the mining options that were considered and the reasons for the adoption of the Project as proposed.

3.13.1 Option 1 – Approved Maules Creek Coal Project

Development Consent DA 85/1819 was granted for the Maules Creek Coal Project in 1990 for the construction and operation of open cut and underground coal mines to extract the coal resource in a layout presented within **Figure 5**. This development consent was physically commenced in 1995 with the construction of a Development Dam located on the northern area of the open cut area within CL 375. Whilst this development consent remains valid, no coal mining has occurred onsite to date.

The originally approved Maules Creek Coal Project proposed open cut mining down to the Braymont seam (five seams) utilising dragline and truck and shovel operations, with underground mining extracting coal from only the Braymont and Lower Northam coal seams within the northern section of CL 375. This option:

- Sterilises significant quantities of high quality, valuable coal resources within CL 375. The coal seams underlying Braymont coal seam that would be sterilised provide the highest quality metallurgical coal resource within the sequence;

- Allows the mine to be developed without utilising current leading environmental and social standards;
- With the proposed infrastructure, would not provide the operation with the flexibility that would be required into the future;
- Utilises obsolete mining methods, equipment and technologies which would be likely to create additional environmental impacts than more contemporary mining methods, equipment and technology; and
- Entails a footprint of the mining operations to be much greater than the Project, within the 21 year period, utilising both the open cut and associated overburden emplacement and the underground mining operations.

Utilising this option would sterilise the 10 seams that exist below the Braymont coal seam, with the quality of the coal to be extracted improving with depth. This option would sacrifice approximately 50% of the revenue that would otherwise be generated by the Project. Considering the principles of Intergenerational Equity and Improved Valuation, this option would not enable the maximum and efficient extraction of coal from this area, sterilising significant quantities of coal that could otherwise have been extracted with contemporary technologies.

3.13.2 Option 2 – Underground Mining Resource

Aston commissioned an underground mining analysis to determine the viability of underground coal mining of the target open cut coal seams within the southern part of CL 375 in an attempt to reduce the surface disturbance and resulting impacts on identified Critically Endangered Ecological Community (CEEC) (see **Appendix B**).

The analysis concluded that only two of the coal seams, the Braymont (thickest seam in the sequence) and the Merriown coal seams, are viable for underground mining due to seam thickness, inadequacy of depth of cover, safety issues, slopes of coal and quality limitations.

Table 8 provides a comparison of the resource utilisation by open cut and underground coal mining methods. Resource recovery by underground mining would be around 8% whereas by using open cut mining methods, the recovery would be in the order of 90%.

Recovery of the Maules Creek coal seam sequence by underground mining methods would not only be uneconomical, with a mineable resource of only 28 Mt, but would also sterilise the remaining approximately 318 Mt of this high quality, valuable non renewable coal resource which is suitable for mining by open cut methods.

The access to each of these coal seams would require the construction of a box cut, or a drift. This exercise would be costly and would render this option uneconomical.

Mining the coal resources by underground mining methods would obviously not meet the principles of Intergenerational Equity as significant quantities of non renewable coal resources would be sterilised for future generations, without the benefits of extracting the coal reserves by open cut mining methods.

Further, the potential environmental impacts as a result of the construction of the box cut and the infrastructure that would be required would not be outweighed by the sale of the low quantities of coal production.

Underground mining has been rejected on the basis of the unacceptable percentage recovery of the in situ resource and the potential sterilisation of the resource not able to be recovered by this mining method.

3.13.3 Option 3 – Do Nothing Approach

The do nothing and leave approach would result in the Maules Creek coal resource to remain within the ground and would fail to respond to the need for the Project as described in **Section 3.12**. This failure to respond to the Project need would be in the context that the Project as proposed is capable of being conducted in accordance with the Objects of the EP&A Act and is also well justified in socio-economic, environmental and planning terms, as is discussed in **Section 9**.

Not proceeding with the Project would result in the expiration of CL 375 in 2012, which would then be relinquished to the NSW Government. This would ultimately result in the loss of employment opportunities, socio-economic benefits, and revenue streams to the local, NSW State and Federal Governments.

In addition, this area has previously been designated as an area for coal mining by the State government with the issuance of the existing mining lease and development consent and was not mined at this time due to poor market conditions. Conservation values of the region have previously been set aside within National Parks and conservation areas under agreement between a number of State government agencies, with remaining publically owned land (including the Leard State Forest) being set aside for other purposes such as forestry and mining activities.

Importantly, global coal markets have recovered strongly and there is now a scarcity of high quality metallurgical coal and these market conditions are expected to continue in the short to medium term. The Project is a globally significant deposit of high quality, valuable metallurgical coal and will be an important source of ensuring global markets remain in balance.

Failure to recover the coal resource when it can be recovered in accordance with applicable environmental planning objectives and social and environmental requirements would be contrary to the planning objectives for the region and the State of NSW. This approach was rejected on the basis that current market conditions and the significance of this internationally sought after coal resource is viable for development.

Table 8 Comparison of Open Cut and Underground Resource Utilisations within 30 Year Pit Shell

COAL OPTION	QUANTITY (Mt)	% OF IN SITU COAL
In Situ Coal		
Braymont Seams	102	
Merriown Seams	38	
Other	206	
Total In Situ	346	
Open Cut Mineable Coal		
ROM Coal	313	90.5%
Underground Mineable Coal		
Braymont Sections	28	8.1%

3.13.4 Option 4 – The Project Mine Plan

The Project mine plan as presented and assessed within this EA (see **Figure 9**, **Figure 10**, **Figure 11**, **Figure 12** and **Figure 13**) has been developed through a series of mine planning scenarios. The primary objective of these studies was to develop a mine plan that minimises potential environmental and social impacts whilst maximising resource recovery, operational efficiency and compliance with the Objects of the EP&A Act and the relevant environmental planning instruments.

In developing the Project, aspects of it were critically assessed and tested to determine if alternative ways of conducting the Project enhanced the objective of maximum resource recovery with minimal environmental effects.

Mine Planning

Following the consideration of the earlier discussed alternatives, it was recognised that the most appropriate process for this was to seek a contemporary Planning Approval for the development and operation of an open cut coal mine for a period of 21 years that aimed at maximising coal recovery within the existing mining authorities.

As described further in **Appendix B**, detailed mine planning for the Project has involved the development of numerous mine planning scenarios addressing the following:

- Maximise coal recovery within the existing mining authorities, making use of the higher quality coal seams below the Braymont coal seam;
- Optimal mine plan footprint and sequencing based on the structure of the coal resource;
- Consideration of the extraction of approximately 900,000 t of ROM coal outside of and to the south-west of the existing CL 375;
- Coal recovery depths, including investigations in relation to limiting mining to varying coal mining horizons, sterilising lower coal seams in the sequence;
- Production rates for which the coal resource would be extracted, including a review of previously approved production levels and applying contemporary equipment technologies and innovations;
- Mine layout investigations, including variations to the height, footprint (including CEEC and landownership), and justifying the requirement of the Northern OEA;
- Modifying slope of high walls, low walls and OEAs for safety and the minimisation of disturbance required at any one time;

- Review of equipment list required, including consideration of fewer but larger pieces of equipment compared to smaller pieces of equipment;
- Consideration of two alternative stand alone rail spur alignments and a shared alignment with the neighbouring Boggabri Coal Mine;
- Consideration of the construction of CHPP facilities with linear coal stockpiles with reclamation system or a central coal stockpile utilising dozers to push the coal towards an underground conveyor system; and
- Minimisation of coal sterilisation through OEA design optimisation.

The scheduling as proposed in the Project mine plan was determined to be the most practical and efficient as it follows the weathering zone of the coal seams where it exists close to the surface (and exhibits lower overburden to ROM coal stripping ratios), before continuing down dip to the south-eastern part of CL 375. The Project proposes the extraction of the 900,000 t of coal to the south-west of the current CL 375 and will require a new mining lease for this additional area in this regard.

If not mined as part of this Project, this coal will effectively be sterilised from mining.

The environmental impact assessments undertaken within this EA have confirmed that the proposed production rates, and the mining of the entire coal sequence can be undertaken in the absence of any unacceptable environmental impacts that cannot be mitigated or offset. The Project mine plan layout was adjusted to minimise adverse impacts upon sensitive ecological features and to minimise the disturbance footprint at any one time to reduce environmental impacts.

Northern OEA

Numerous mine planning scenarios were investigated, initially to confirm the requirement of the Northern OEA and then to optimise its ultimate size and location (see **Appendix B**). The following constraints were considered in determining the extent of the Northern OEA:

- Minimise the amount of CEEC to be disturbed;
- Minimise property acquisitions and disturbance of those properties;
- Minimise the volumes of material to be emplaced within the Northern OEA by enabling the emplacement of overburden in pit as soon as possible whilst facilitating the maximised extraction of coal;
- Restricting the overall height of the Northern OEA to be within 50 m of the nominal surrounding terrain;

- Utilise the existing water management structures;
- Final slopes of the OEAs generally designed to 10 degrees. The only exception being the western and southern faces of the Northern OEA which will remain at 37 degrees until mining operations cease, whereby final rehabilitation activities will shape these slopes down to 10 degrees;
- Utilise the MIA in the location proposed throughout the life of the Project;
- Avoid disturbance to prime agricultural land;
- Located so as to minimise the sterilisation of lower strip ratio coal;
- Footprint to provide adequate standoff from Back Creek to enable appropriate water management structures to be incorporated; and
- Provision of sufficient room to enable the safe and efficient operation of the mining equipment fleet.

The Northern OEA will be developed during the initial years of mining, where a boxcut is constructed to extract coal down to the Templemore coal seam. Whilst this initial coal extraction exhibits the lowest coal stripping ratio for the Project, approximately 410 Million bank cubic metres (Mbcm) of overburden will need to be emplaced outside of the mining area within the first nine years of mining to retain sufficient area for coal recovery to the base of the coal sequence. The mining area will be utilised for the emplacement of overburden material as soon as practically possible following the extraction of the coal resource.

Other Mine Plan Changes

Since the presentation of the preferred mine plan within the PEA submitted in August 2010, the Project mine plan has been adjusted to address environmental, social and economic issues raised during the stakeholder consultation and assessment process. The Project mine plan and the assumptions used for modelling have been adjusted, including:

- The establishment of bunds along the northern edge of the Northern OEA to enable equipment to be working immediately behind it during adverse weather conditions in order to reduce any adverse acoustics impacts;
- The indicative final landform mine plan, illustrated should planning approval not be sought beyond 21 years, has been amended to create a more undulating and free draining landform and the development of crests to minimise visual effects. The indicative final landform mine plan has also been developed in consideration of the progression of neighbouring mining operations as far as practical;
- Temporary rehabilitation of the exposed spoil that will not be rehabilitated for extended periods of time;
- Implementation of leading practice exhaust silencers to all haul trucks and water carts; and
- Implementation of leading practice air quality management and mitigation measures, such as the application of water, a dust suppressant or a suitable product to minimise adverse air quality impacts.

The Project proposes a rail spur to the Werris Creek to Mungindi Railway Line, for which ongoing discussions are occurring for the common section of rail spur proposed by Boggabri Coal (Hansen Bailey 2010).

3.13.5 Conclusion

The Project mine plan (Option 4) has evolved as the optimal and acceptable Project mine plan. Investigation has confirmed that the mining of the coal resource can only feasibly occur by the use of open cut mining methods as presented within this EA. The planning phase explored all avenues for sharing infrastructure with adjacent mining operations, resulting in the shared rail spur with the Boggabri Coal Mine.

Project Approval is now being sought to provide Aston with the ability to maximise the recovery of the Maules Creek coal resources whilst at the same time minimising the Project's environmental footprint and impact on the areas' ecological attributes.

The original development consent facilitated the open cut extraction of only the initial five coal seams which, whilst being limited by the mining practises of the day, did not maximise the resource recovery. This is estimated to result in the loss of 50% of the revenue that will be generated by the Project from the recovery of the entire coal sequence.

With the introduction of a more productive mobile mining fleet and the development of an optimum mine plan, the Project is proposing to extract all 15 open cut mineable coal seams in the mining sequence. This, in turn, has enabled the upgrading of the coal resource that is available for recovery and in turn will greatly increase the net benefits from it.

SECTION
4



Regulatory Framework

Regulatory Framework

This section sets out the environmental regulatory legislative framework applicable to the Project and considers both NSW and Commonwealth legislation. The Project may also require approvals under additional State and Commonwealth Acts. These are discussed in detail below as relevant to the Project.

A flowchart showing the Planning Approvals and consultation process relevant to the Project is shown in **Figure 14**.

4.1 BACKGROUND

The Maules Creek Coal Project was originally granted development consent DA 85/1819 under the EP&A Act on 12 June 1990 by the (then) Minister for Planning. **Figure 5** illustrates the approximate layout of the approved Maules Creek Coal Project consistent with the Maules Creek EIS (KCC 1999).

DA 85/1819 was physically commenced in 1995, however no mining has occurred at the site to date. DA 85/1819 has no sunset clause and remains as a valid planning approval. Licences and leases held by Aston are summarised in **Section 2.6**.

4.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

4.2.1 Approval Authority

Section 75D of the EP&A Act provides that a person is not to carry out development that is a project to which this Part applies unless the Minister has approved of the carrying out of the project under Part 3A.



Under *State Environmental Planning Policy (Major Development) 2005* (SEPP Major Development), development “for the purpose of mining that is coal mining” is declared to be a project to which Part 3A of the EP&A Act applies except if the carrying out of that development has been authorised by a consent that is in force under Part 4 of the Act before development of that kind is declared under subclause (1) (see Clause 6(2) of SEPP Major Development).

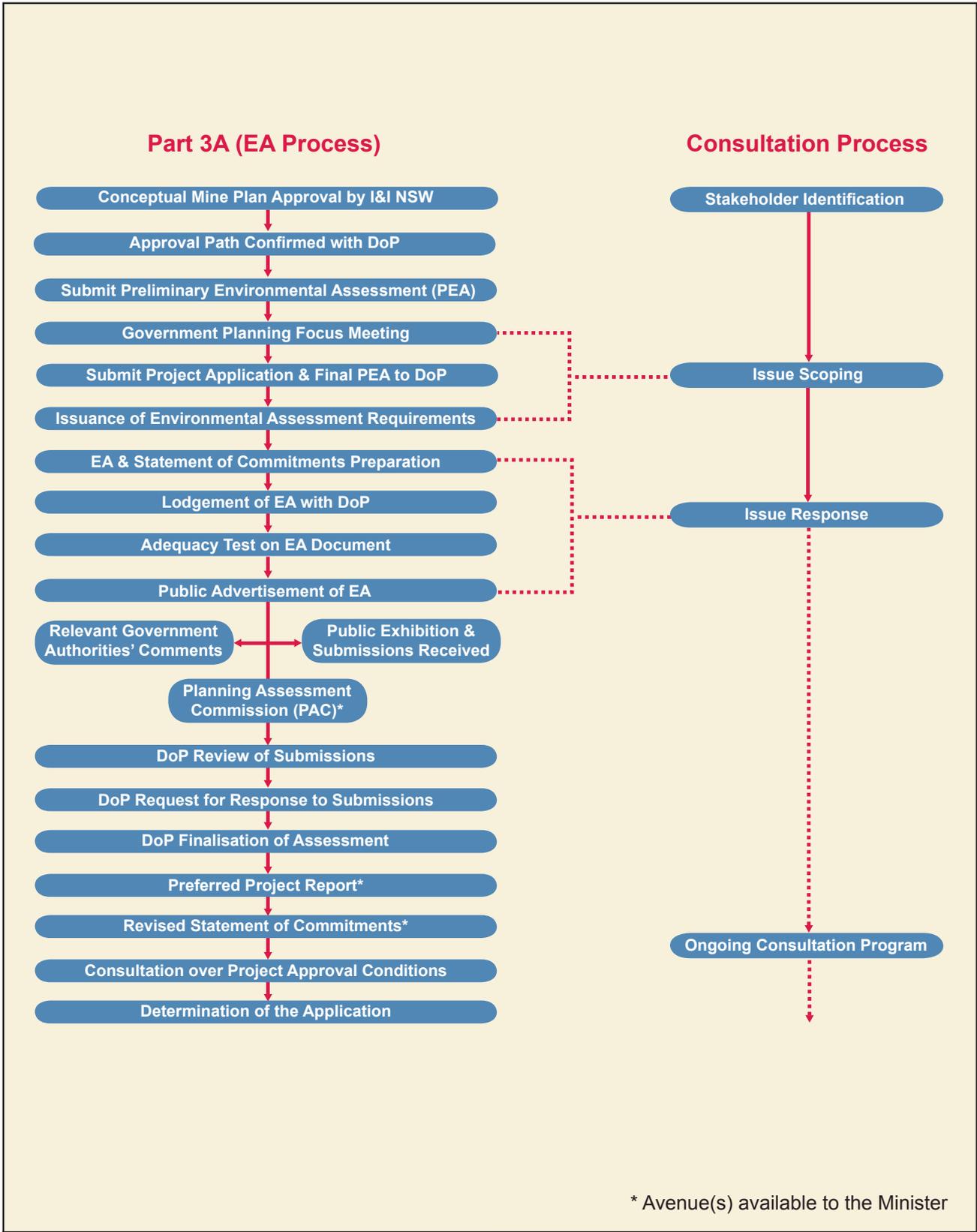
A Project Application for the Project to the Minister for Planning was lodged with (and accepted by) the Director-General of DP&I by Aston on 16 August 2010 and was allocated Project Application number 10_0138.

The Project Application describes that Aston is seeking a new contemporary Project Approval and as such the Project does not intend to utilise DA 85/1819 and is one to which the provisions of Part 3A apply.

The development described in this Application is different to DA 85/1819 and so, despite Clause 6(2) of SEPP Major Development, the development, the subject of this Application is a Project to which the provisions of Part 3A apply because of SEPP Major Development.

When the Environmental Planning and Assessment Amendment (Part 3A Repeal) Bill 2011 (Part 3A Repeal Bill) is commenced, Part 3A of the EP&A Act will be repealed. The Project will be a “transitional Part 3A project” under the new regime as it is a project for which environmental assessment requirements were notified before the repeal of Part 3A (see **Section 4.2.3**).

As a transitional Part 3A project, the Project will be regulated by the provisions of the Schedule 6A to be incorporated into the EP&A Act (this is the relevant effect of the Part 3A Repeal Bill). Under Schedule 6A, the provisions of Part 3A of the EP&A Act will continue to apply to transitional Part 3A projects, irrespective of its repeal (subject to any amendments made from time to time under later legislation or regulations). Similarly, all SEPPs, declarations, orders and determinations relevant to the Project will continue to apply after the repeal of Part 3A. The regulations relevant to Part 3A of the EP&A Act, being Part 1A of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) will also continue to apply to the Project.



Hansen Bailey



MAULES CREEK COAL PROJECT

Planning Approvals and Consultation

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Figure
14

4.2.2 Permissibility

The land on which the Project is proposed is zoned General Rural 1(a) under the *Narrabri Local Environmental Plan 1992* (Narrabri LEP).

Under that zoning, “agriculture” is permitted without development consent and mining is permitted with development consent. Further discussion on the Narrabri LEP is provided in **Section 4.3.7**.

Under *State Environmental Planning Policy (Mining Petroleum Production and Extractive Industries) 2007* (SEPP Mining), mining is permissible with development consent (Project Approval in this case) on land where development for the purposes of agriculture may be carried out, or on land that it is the subject of a mining authority immediately before the commencement of Clause 7 of SEPP Mining.

Accordingly, development for the purposes of coal mining is permissible on the subject land with Project Approval under Part 3A of the EP&A Act.

4.2.3 Environmental Assessment and Environmental Assessment Requirements

The Director-General notified Aston of the EARs for the Project under Section 75F of the EP&A Act via letter dated 6 December 2010. This EA has been prepared to address and fulfil the requirements of these EARs (see **Section 5.2.2**).

4.2.4 Director-General's Assessment Report

Section 75I of the EP&A Act requires that the Director-General of DP&I provides a report on the Project to ‘the Minister for the purposes of the Minister’s consideration of the application for approval to carry out the project’. Section 75I requires that the Director-General's report contain the following:

- (a) a copy of the proponent’s environmental assessment and any preferred project report, and
- (b) any advice provided by public authorities on the project, and
- (c) a copy of any report of the Planning Assessment Commission in respect of the project, and
- (d) a copy of or reference to the provisions of any State Environmental Planning Policy that substantially govern the carrying out of the project, and

- (e) except in the case of a critical infrastructure project - a copy of or reference to the provisions of any environmental planning instrument that would (but for this Part) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project under this Division, and
- (f) any environmental assessment undertaken by the Director-General or other matter the Director-General considers appropriate, and
- (g) a statement relating to compliance with the environmental assessment requirements under this Division with respect to the project.”

Section 75J(2) of the EP&A Act requires that the Minister take into consideration the Director-General's Assessment report in deciding whether or not to approve the carrying out of a project.

4.2.5 Development Contributions

Under Section 75R(4), Divisions 6 and 6A of Part 4 of the EP&A Act apply to Part 3A projects. The Minister has the power under Section 94 of the EP&A Act to impose a condition on any Planning Approval requiring a payment to a local council. The amount is identified as the cost to the local council of providing additional services for the increased demand on existing services due to the Project.

Section 93F of the EP&A Act enables a Planning Agreement (usually referred to as a Voluntary Planning Agreement (VPA)) to be established.

A VPA proposed by Aston would, as is enabled by the EP&A Act, replace any imposition of a requirement for infrastructure contributions pursuant to Section 94 of the EP&A Act. Section 93I of the EP&A Act provides that:

“a consent authority can require a planning agreement to be entered into as a condition of a development consent, but only if it requires a planning agreement that is in the terms of an offer made by the developer in connection with:

- (a) the development application, or
- (b) a change to an environmental planning instrument sought by the developer for the purposes of making the development application,

or that is in the terms of a commitment made by the proponent in a statement of commitments made under Part 3A.”

Aston, NSC and Gunnedah Shire Council (GSC) are continuing discussions into entering a VPA for the payment of contributions in connection with the Project, which is further described in the social impact assessment in **Section 7.19** and Statement of Commitments in **Section 8**. The negotiated VPA is intended to make provision for all contributions by Aston for the Project under Division 6 of the EP&A Act.

4.3 ENVIRONMENTAL PLANNING INSTRUMENTS

In addition to SEPP (Mining), other environmental planning instruments require consideration by the Minister for Planning and Infrastructure but for Section 75R of the EP&A Act. Section 75J EP&A Act has the effect of removing the obligation for the Minister to consider any other environmental planning instrument (except SEPPs which “...expressly provide that they apply to and in respect of the particular project”) (Section 75R (2) (b)) but allows him to do so if he so elects. In this context, the following instruments apply to the consideration of the Project Application.

4.3.1 SEPP (Major Developments) 2005

SEPP Major Developments identifies development to which the assessment and approval process under Part 3A of the EP&A Act applies and establishes the Minister for Planning and Infrastructure as the consent authority for development classified as a “major project”. Coal mining is classified as a project to which Part 3A of the EP&A Act applies by SEPP Major Developments.

4.3.2 SEPP (Infrastructure) 2007

SEPP (Infrastructure) 2007 aims to provide a consistent planning regime for infrastructure and the provision of services across NSW, along with providing consultation with relevant public authorities during the assessment process.

The provision of public infrastructure for the Project may be required to comply with the following planning regimes designated within the SEPP (Infrastructure) 2007, including: electricity transmission or distribution, networks, emergency services facilities and bush fire hazard reduction, railway infrastructure facilities, development in railway corridors, road infrastructure facilities, development in or adjacent to road corridors and road reservations, traffic generating development, sewerage systems, soil conservation works and stormwater management systems. This Policy applies to the State of NSW. Certain items of infrastructure associated with the Project may be subject to SEPP (Infrastructure) 2007.

4.3.3 SEPP (Mining, Petroleum Production and Extractive Industries) 2007

The aims of SEPP (Mining) (see Clause 2) include to provide for the proper management and development of mineral, petroleum and extractive material resources for the social and economic welfare of the State and to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources and to establish appropriate planning controls to encourage Ecologically Sustainable Development (ESD) and establishes relevant matters for consideration by a consent authority.

The considerations set out by Clauses 12 to 17 of SEPP Mining (which set out matters for consideration in development applications) are examined and reported upon throughout this EA. In particular, Clause 12 of SEPP Mining provides:

“Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

- (a) *consider:*
 - (i) *the existing uses and approved uses of land in the vicinity of the development, and*
 - (ii) *whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and*
 - (iii) *any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and*
- (b) *evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and*
- (c) *evaluate any measures proposed by the Proponent to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).”*

This EA undertakes the assessments required by Clause 12 of SEPP Mining.

4.3.4 SEPP 33 – Hazardous and Offensive Development

SEPP 33 – Hazardous and Offensive Development (SEPP 33) requires the consent authority to consider the merits of proposed activities, including the location of the development and the way in which it is to be carried out.

A review of the relevant components of this Project in **Section 7.18** has confirmed that the Project is not considered to be Potentially Hazardous or Offensive. As such, a detailed preliminary hazardous analysis is not required.

Further, as SEPP 33 applies only to proposals that are potentially hazardous or offensive and the proposed development does not constitute a potentially hazardous or offensive industry under Clause 3, SEPP 33 does not apply to this Project.

4.3.5 SEPP 44 – Koala Habitat Protection

SEPP 44 – Koala Habitat Protection (SEPP 44) encourages the conservation and management of koala habitats, to ensure permanent free living koala populations will be maintained over their present range. The SEPP requires the consent authority to consider whether land the subject of a development application is “potential koala habitat” or “core koala habitat”.

The Ecological Impact Assessment carried out for the Project included the consideration of Koala habitat and identified a very low density population of Koalas within and surrounding the Project Boundary. Management and mitigation measures to be implemented to avoid impacts to Koalas are discussed further in **Section 7.6**.

4.3.6 SEPP 55 – Remediation of Land

SEPP 55 – Remediation of Land (SEPP 55) was enacted to provide a state wide approach to the remediation of contaminated land for the purpose of minimising the risk of harm to the health of humans and the environment.

Potentially contaminated sites within the Project Boundary include sheep dips, workshops / machinery sheds used for fuel, chemical and fertiliser storage and landfills.

No contaminated lands have been identified within the Project Disturbance Boundary that will be disturbed for mining or mining related purposes.

4.3.7 Narrabri Local Environment Plan 1992

The Project Boundary is located within the Narrabri Shire LGA, in which the principle environmental planning instrument is the Narrabri LEP.

As identified in **Section 4.2.2**, all components of the Project (the entire Project Boundary) fall within the 1(a) – General Rural Zone of the Narrabri LEP.

Agriculture is permissible on land which is within this zone without development consent and therefore under SEPP (Mining), open cut coal mining and facilities for the transportation and processing of minerals extracted from that land or adjoining land is permissible with development consent under the Narrabri LEP.

The objectives of Zone 1(a) are the proper management and utilisation of resources by:

“(a) protecting, enhancing and conserving:

- (i) agricultural land in a manner which sustains its efficient and effective agricultural production potential,
 - (ii) soil stability by controlling and locating development in accordance with soil capability,
 - (iii) forests of existing and potential commercial value for timber production,
 - (iv) valuable deposits of minerals, coal, petroleum and extractive materials by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits,
 - (v) trees and other vegetation in environmentally sensitive areas where the conservation of the vegetation is significant to scenic amenity or natural wildlife habitat or is likely to control land degradation,
 - (vi) water resources for use in the public interest,
 - (vii) areas of significance for nature conservation, including areas with rare plants, wetlands and significant habitats, and
 - (viii) places and buildings of archaeological or heritage significance, including the protection of Aboriginal relics and places,
- (b) preventing the unjustified development of agricultural land for purposes other than agriculture,
- (c) preventing residential development of prime crop and pasture land, except where it is ancillary to agriculture or another use permissible in the zone,
- (d) facilitating farm adjustments,
- (e) ensuring that any allotment created for an intensive agricultural pursuit is potentially capable of sustaining a range of such purposes or other agricultural purposes,

- (f) *minimising the cost to the community of:*
 - (i) *fragmented and isolated development of rural land, and*
 - (ii) *providing, extending and maintaining public amenities and services."*

This EA considers the above objectives and demonstrates how the Project achieves these, which will be relevant in the event that the Minister exercises his discretion to take into account the provisions of the Narrabri LEP.

4.4 APPROVALS EXEMPTED WITH PROJECT APPROVAL

Pursuant to Section 75U of the EP&A Act, there are a number of authorisations that will not be required for the Project, should Project Approval be granted by the Minister for Planning and Infrastructure under Part 3A of the EP&A Act.

The granting of Project Approval under Part 3A of the EP&A Act makes the Project an "approved project".

4.4.1 National Parks and Wildlife Act 1974

Under the *National Parks and Wildlife Act 1974* (NP&W Act), it is an offence to harm or desecrate an Aboriginal place or object without a permit under Section 90 or Section 87 of the NP&W Act.

By virtue of Section 75U of the EP&A Act, a Section 90 or Section 87 permit is not required for a destruction or desecration arising from a project if a Project Approval is held under Part 3A of the EP&A Act.

4.4.2 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) makes provision for control over the manner in which items of European heritage significance (relics) are managed and prevents their uncontrolled destruction or change without an excavation permit under Section 139.

By virtue of Section 75U of the EP&A Act, an excavation permit under Section 139 of the Heritage Act is not required if a Project Approval is held under Part 3A of the EP&A Act.

4.4.3 Native Vegetation Act 2003

Under the *Native Vegetation Act 2003* (NV Act) it is an offence to clear native vegetation without development consent to do so (subject to certain exceptions).

By virtue of Section 75U of the EP&A Act the development consent under Section 12 of the NV Act is not required and the NV Act does not operate to prohibit the clearing if a Project Approval is issued under Part 3A of the EP&A Act.

4.4.4 Rural Fires Act 1997

The *Rural Fires Act 1997* (Rural Fires Act) provides the statutory framework to prevent, mitigate and suppress bush fires in rural districts, and to coordinate bush fire fighting and prevention.

By virtue of Section 75U of the EP&A Act, a bush fire safety authority under Section 100B of the Rural Fires Act is not required for the Project should a Project Approval be granted under Part 3A of the EP&A Act.

4.4.5 Water Management Act 2000

The *Water Management Act 2000* (WM Act) commenced in December 2000, with the key objective of progressively replacing the planning and management framework for each water source that has previously been set out in the *Water Act 1912* (Water Act).

The WM Act currently applies to the State of NSW. Parts 2 and 3 of Chapter 3 of the WM Act apply to those parts of NSW which are the subject of a proclamation. In general terms, those parts of NSW which are the subject of a proclamation are within water sources to which Water Sharing Plans (WSP) have been applied. Further, by proclamation the NSW Governor, pursuant to Section 88A of the WM Act made on 16 January 2008, Part 3 of Chapter 3 of the WM Act was engaged for all controlled activity approvals as from 4 February 2008. The Project will involve works which are a "controlled activity" and will therefore require an approval under Section 91 of the WM Act. The area of mining is wholly outside of any water management area for the purposes of a WSP.

The Project proposes to utilise water under Water Access Licence (WAL) 13050 which is currently held by Aston and authorises the extraction of up to 3,000 units of water from the Upper and Lower Namoi Regulated River Water Source and groundwater WAL 12811. Other activities associated with the Project may also require the extraction of water from a water source that is administered under any of the above WSPs. A water use approval for the use of water from a water source is required under Section 89 of the WM Act.

Associated with the WAL from the Namoi River water source, Aston holds a Works Approval (90WA801901) for the construction of a 610 mm axial flow pump on the Namoi River for the supply of water.

Further, the Project will involve works such as rail spur construction across Namoi River, the construction of a Mine Access Road and other items to be constructed for the Project that fall within a WSP which generally require a controlled activity approval under Section 91 of the WM Act.

By virtue of Section 75U of the EP&A Act, approvals under Section 89, 90 and 91 of the WM Act are not required for the Project should a Project Approval be granted under Part 3A of the EP&A Act.

Water Access Licences

Division 1A of Part 2 of Chapter 3 of the WM Act provides that it is an offence to take water from a water source without obtaining a water access licence, complying with the conditions of that licence and having sufficient water allocation in the water account which attaches to that licence.

Section 60I of the WM Act confirms that a person who takes water in the course of carrying out a mining activity “takes” water for the purposes of Division 1 of Part 2 of Chapter 3 of the WM Act. Accordingly, a WAL will be required for the Project to authorise the taking of any water taken from any water source to which the WM Act applies.

As the Project is predicted to extract water from the neighbouring water sources, a WAL for the extraction from each of these water sources will be sought from the Minister administering the WM Act. It may be necessary to seek to purchase from the market sufficient share component relevant to that extraction to attach to that WAL.

NSW Murray Darling Basin Porous Rock Groundwater Sources Draft Water Sharing Plan

The NSW Murray Darling Basin Porous Rock Groundwater Sources Draft Water Sharing Plan (Draft Porous Rock WSP) was placed on exhibition by the NSW Office of Water (NOW) throughout December 2010 and January 2011. Submissions made in respect of the Draft Porous Rock WSP are now being considered by NOW.

The Draft Porous Rock WSP applies to “groundwater sources ... within the following water management areas ... Namoi Water Management Area – Gunnedah Oxley Basin MDB Groundwater Source ... [including] ... all water contained within porous rocks below the surface of the ground shown on the Registered Map.” (See clause 4 of the Draft Porous Rock WSP).

These groundwater sources do not include water contained in any fractured rock below the ground or any alluvial aquifer overlying the porous rocks.

If the Draft Porous Rock WSP commences in the form it was exhibited and if the WM Act is commenced for Part 2 of Chapter 3 (by proclamation) in respect of the water sources covered by the Draft Porous Rock WSP then it will be relevant to the Project in the following ways:

- A WAL for the pit will be required to authorise the taking of water from the “porous rocks” (in addition to other WALs required for the Project); and
- The grant of the WAL and the management of allocation and share component which attach to it will be bound by the rules established in the Draft Porous Rock WSP.

The Report Card for the Gunnedah-Oxley Basin MDB Groundwater Source published by NOW:

- Sets the long term average annual extraction limit for that water source at a suggested 392,531 ML/year;
- Indicates that there is 15,922 ML/year groundwater volume entitlements already issued with respect to the water source; and
- Leaving 370,831 ML/year of “unassigned water”, “which may be made available for future extraction”.

It is believed that there should be adequate unassigned water available to enable the Minister administering the WM Act to issue a WAL for the groundwater source regulated by the Porous Rock WSP to facilitate the Project. That issue will be the subject of a separate application to the Minister administering the WM Act.

Water Management System / Sediment Dams

Clause 18(1)(i) of the Water Management (General) Regulation 2004 (WM Regulation) provides that there is no requirement for a WAL when taking water by means of an “excluded work”.

Excluded works are described in Schedule 1 of the WM Regulation and include:

“Dams solely for the capture, containment and recirculation of drainage and / or effluent, consistent with best management practice for required by a public authority to prevent the contamination of a water source, provided such dams are located on a minor stream referred to in section 53(3)(b) of the Act”.

The requirements for water supply works approvals and water use approvals (sections 90 and 89 of the WM Act) are similarly exempt by virtue of clauses 39 and 38 of the WM Regulation and are also subject to section 75U of the EP&A Act.

These provisions apply to all of the dams and water management structures which receive water from disturbed areas (and upstream catchment dams for diversion) within the active mining and mine related areas.

Despite this, the Project will result in a reduction in the catchment area of Maules Creek and its associated water sources (See **Section 7.10.3**). This loss of catchment as a result of the Project will need to be accounted as part of an appropriate water licence.

Prescribed Dams

The proposal to construct the dams will be referred to the Dams Safety Committee as part of the Part 3A process. It is possible that one or more of the dams within the Project may become prescribed dams and therefore subject to the *Dams Safety Act 1978 NSW* and the oversight of the Dams Safety Committee constituted under that Act.

4.5 APPROVALS TO BE GRANTED WITH PROJECT APPROVAL

Pursuant to Section 75V of the EP&A Act, there are a number of authorisations that must be issued “*substantially consistent with*” the Part 3A Project Approval if such an approval is required for the conduct of an approved project.

Aston will seek these approvals if the Project Approval is granted. These authorisations are described further below.

4.5.1 Mining Act 1992

In order to carry out mining activities associated with the Project, Aston will require various mining leases to be granted by the Minister for Resources and Energy. Sections 5 and 6 of the *Mining Act 1992* (Mining Act) provides that a person must not conduct mining or certain stipulated mining purposes without an appropriate mining authorisation.

There are three areas in which mining leases are required for the Project:

- Aston currently holds CL 375 under Section 73 of the Mining Act, which covers a large proportion of the Project Boundary and 21 Year Mining Limit;
- An area to the north of the surface portion of CL 375 where the Project will also require a surface mining lease over part of A 346 (an exploration licence held by Aston) for the development of the Northern OEA. Aston applied for a mining lease over a portion of A 346 on the 25 May 2011; and

- A small area to the west of CL 375 which is required for the extraction of approximately 900,000 t of ROM coal that would otherwise be sterilised by the Project. Aston applied for Ministers Consent to apply for an Exploration Licence on 30 September 2010.

Section 75V of the EP&A Act provides that if a Project Approval is issued for the Project, then an application for a mining lease cannot be refused if it is necessary for the carrying out an approved project and must be granted substantially consistent with the approval.

Section 51(3) of the Mining Act provides that an application that relates to land in a mineral allocation area may not be made in relation to an allocated mineral except by the holder of an exploration licence or assessment lease over that land in respect of that mineral, or with the Minister’s consent.

Area number 2 above is subject to A 346 held by Aston and therefore Aston has made Mining Lease Application number 404.

In relation to area number 3, Aston formally sought the Minister of Resources and Energy’s consent to apply for an Exploration Licence over a 535 ha area to the west of CL 375 in correspondence dated 30 September 2010. If the Minister’s consent is granted, then Aston will proceed to make an application for the exploration licence followed by the necessary mining lease application to facilitate mining activities within this area.

The mining leases for the Project will impose the requirement for a Mining Operations Plan (MOP) (or equivalent) to be prepared to the satisfaction and approval of the Director-General of DTIRIS.

4.5.2 Protection of the Environment Operations Act 1997

The Project is deemed to be a scheduled activity under Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act). Accordingly, under Chapter 3 of the POEO Act, an Environmental Protection Licence (EPL) is required for the Project.

An application for an EPL will be made by Aston to the Environment Protection Authority (the appropriate regulatory authority by virtue of section 6 of the POEO Act) (now OEH) should the Project Approval be granted.

Section 75V of the EP&A Act requires that such an application cannot be refused if it is necessary for carrying out an approved project and is to be granted substantially consistent with the approval.

4.5.3 Roads Act 1993

The Project proposes the closure of some sections of unformed “paper” roads which will be affected by open cut mining. Interactions (upgrades and intersections) with various NSC and State roads will also be required.

Consent under Section 138 of the *Roads Act 1993* (Roads Act) from the appropriate roads authority (NSC and / or RTA) will be required for any work in or over the surface of any road which has not been closed. Section 75V of the EP&A Act requires that such an application cannot be refused if it is necessary for carrying out of an approved project and is to be granted substantially consistent with the approval.

4.6 OTHER RELEVANT NSW LEGISLATION

In addition to a Project Approval under Part 3A of the EP&A Act and approvals required consistent with Section 75V of the EP&A Act, the Project will also require authorisations under other NSW legislation. These are discussed below.

Aston will seek these relevant approvals from the appropriate authorities should Project Approval be granted.

4.6.1 Water Act 1912

Part 5 of the Water Act requires that prior to the construction of a bore, a licence must be held. Aston holds bore licence 90BL255704 for the construction and use of a bore within the Leard State Forest, with an allocation of up to 6 ML from the Permian hardrock aquifers. Aston also holds a number of other Part 5 Water Act licences (see **Table 4**) for the numerous groundwater monitoring bores held within the hardrock aquifer.

Section 129A of the Water Act provides that Part 5 of the Water Act does not apply to “any part of the state to which Part 3 of Chapter 3 of the Water Management Act 2000 applies in relation to water supply work approvals”. At the date of this EA, areas of the Project (including areas of the pit) are outside of parts of the State to which Part 3 of Chapter 3 of the WM Act applies and therefore Part 5 of the Water Act will apply to the Project.

The Project would require licences for the extraction of water from this water source under Part 5 of the Water Act.

An embargo under Section 113A of the Water Act was ordered by the Water Administration Ministerial Corporation (by its delegate – the Deputy Director-General of the NSW Department of (then) Water and Energy) in December 2008 (the Embargo). The Embargo remains current and is applicable to the area of the Project due to its interaction with the Permian hardrock aquifer. There are some exemptions under the Embargo that may apply to the Project. These are currently being discussed with the NOW to ensure that the Project can be licensed appropriately.

The requirement for a licence under Part 5 of the Water Act may not exist if the Draft Porous Rock WSP is commenced and the consequent appropriate proclamations made to commence Part 3 of Chapter 3 of the WM Act in relation to water supply work approvals.

4.6.2 Crown Lands Act 1989

The approval of the Department of Lands (DoL) will be required under the *Crown Lands Act 1989* (Crown Lands Act) for any works within Crown road reserves or on Crown land for the Project.

Should Project Approval be granted, further approval from the DoL will be sought for the construction of the rail spur and any other mining related activities required to be carried out on Crown lands.

4.6.3 Coal Mine Health and Safety Act 2002

The primary objective of the *Coal Mine Health and Safety Act 2002* (CMH&S Act) is to assist in securing the objects of the *Occupational Health and Safety Act 2000* in relation to coal operations and to put in place special provisions necessary for the control of particular risks arising from the mining of coal.

Should Project Approval be granted for the Project, Aston will seek the approval of the Minister for Resources and Energy under the provisions of Section 100 of the CMH&S Act for the establishment of emplacement areas and the co-disposal of rejects and tailings.

4.6.4 Forestry Act 1916

The *Forestry Act 1916* (Forestry Act) provides the statutory framework for the dedication, reservation, control and use of State forests, timber reserves, and Crown lands for forestry and other purposes. The Forestry Act is governed by the Forestry Commission of NSW, trading as Forests NSW, a division of DTIRIS.

Part 4 of the Forestry Act applies to issuance of Permits and Forest Leases that are required for any person wishing to occupy and utilise the land for certain activities. Aston has a current Occupation Permit in place with Forests NSW for land use for activities associated with exploration activities.

Should a Project Approval be granted for the Project, Aston will continue to consult with Forests NSW in relation to the areas of the Leard State Forest within the Project Boundary where mining is proposed, to enter into an appropriate agreement for the use of this land for mining purposes.

4.6.5 Brigalow and Nandewar Community Conservation Area Act 2005

The *Brigalow and Nandewar Community Conservation Area Agreement* (BNC Agreement) was made pursuant to the BNC Act. The BNC Act provided for assessment processes and studies and stakeholder consultation within the area known as the *Brigalow and Nandewar Community Conservation Area* (BNC Conservation Area) which extends from Dubbo to the south up to the State border, to the north-east of Moree.

The objects of the Act are as follows:

- “(a) to reserve forested land in the Brigalow and Nandewar area to create a Community Conservation Area that provides for permanent conservation of land, protection of areas of natural and cultural heritage significance to Aboriginal people and sustainable forestry, mining and other appropriate uses, and
- (b) to give local communities a strong involvement in the management of that land.”

Extensive studies were completed as part of the BNC Agreement which involved sampling of over 5,000 vegetation plots; systematic surveys of landscapes; classification of vegetation communities throughout the relevant area; analysis of distributions of, and abundance and quality of flora and fauna.

Consultation was undertaken with many stakeholders and the following regional planning measures were implemented in the area to which the BNC Act applies:

- “1. 350,000 hectares of native vegetation were set aside for conservation purposes within the Community Conservation Area; and
- 2. Other lands within the Community Conservation Area were set aside or (“zoned”) for development including for mining.”

The conservation lands were variously dedicated as National Parks, Aboriginal Areas and State Conservation Areas under the NP&W Act. These dedications provide for statutory protection of the lands against development and preserve them. Those dedications were made in direct contemplation of the lands which were zoned 4, for the purposes of development (forestry and mining) including the lands which were zoned for mining in the area of the Project.

After consultation which involved the Premier's Department, OEH, DTIRIS and DP&I as well as members of the local community and other stakeholders, the BNC Agreement was entered into (between the (then) Minister for Environment, Climate Change and Water and the Minister for Industry and Investment).

The principal purpose of the BNC Agreement is to guide management of the conservation lands (in Zones 1, 2 and 3) and the Zone 4 development lands.

The arrangements described above and the process which led to them provided for and contemplated land uses in the Brigalow and Nandewar region including the (then) approved Maules Creek Coal Project. These comprehensive processes (which involved all relevant government agencies) resulted in a balanced, regional land use outcome which provides a compelling argument why the NSW Government should continue to support mining in the Leard State Forest.

4.7 COMMONWEALTH LEGISLATION

4.7.1 Environment Protection and Biodiversity Conservation Act 1999

An approval from the Minister for Environment (Commonwealth) under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is required for actions which are likely to have a significant impact on a Matter of National Environmental Significance (MNES).

Under Section 68 of the EPBC Act, a person proposing to take an “action” which the person thinks may be or is a “controlled action” is required to refer the proposal to the Minister for the Minister's decision as to whether the proposal is a “controlled action”.

A “controlled action” is defined under the EPBC Act to be an action, the taking of which without approval under Part 9 of the EPBC Act would be prohibited. If the proposal will have, or be likely to have, a significant impact on a MNES which is set out in Part 3 of the EPBC Act, then it is prohibited without an approval (subject to a few exceptions).

The Project was referred to the then Minister for Environment, Water, Heritage and the Arts (DEWHA) (now Sustainability, Environment, Water, Population and Communities (SEWPaC)) as a proposal under Section 68 of the EPBC Act on 6 July 2010.

The “controlling provisions” of the EPBC Act (for the purposes of Section 67 EPBC Act) are:

- Sections 18 and 18A; and
- Sections 20 and 20A.

The Project is considered to be likely to have a significant impact on listed CEEC (see Section 18 of the EPBC Act) including: White Box, Yellow Box, Blakely’s Gum Grassy Woodland and Derived Native Grassland (see **Section 7.6**). The Project was also considered to be likely to have a significant impact on native vegetation which provides potential habitat for listed Threatened species and migratory birds including Regent Honeyeater (*Anthochaera phrygia*) and the Swift Parrot (*Lathamus dicolor*) (see Section 20 of the EPBC Act).

The Project was deemed to be a ‘controlled action’ by the DEWHA (now SEWPaC) on 9 August 2010, with further correspondence on 13 August 2010 confirming the assessment approach being the accreditation of Part 3A of the EP&A Act (see **Appendix C**). The Minister for SEWPaC will review this EA and confirm whether an ‘Approval Decision’ can be made under Section 133 of the EPBC Act with or without conditions.

A summary of the ecological impact assessment undertaken in accordance with State and Federal requirements is provided in **Section 7.6** and **Section 7.7**.

4.7.2 Native Title Act 1993

The *Commonwealth Native Title Act 1993* (NT Act) was enacted on 1 January 1994 to provide for the recognition of Native Title and for the statutory mechanism for its protection. The NT Act considers the possible acts that may affect Native Title, provides a process to determine if Native Title exists and how compensation for acts affecting Native Title should be managed.

The NSW Minister for Resources and Energy will not issue a new mining lease unless satisfied that Native Title on all lands within the area of the lease has been extinguished or that the right to negotiate process has been carried out in connection with the proposed grant of the mining lease.

Renewals of the existing mining leases validly granted before 23 December 1996 will be subject to Section 26D of the NT Act, the effect of which is that the right to negotiate process can be dispensed with before the renewal of the mining lease. This will apply to the renewal of CL 375.

4.7.3 Water Act 2007

The *Commonwealth Water Act 2007* was commenced on 3 March 2008 with the aim of implementing some key water reforms across Australia. The *Water Act 2007* establishes the Murray Darling Basin Authority which is given the functions and powers to ensure that the water resources within the Murray Darling Basin (in which the Project is situated) are managed for the national interest in an integrated and sustainable way.

A Basin Plan and Water Resource Plans for specific Water Resource Plan Areas are currently being prepared and may affect the regulatory water regime within NSW which may indirectly affect the Project.

4.8 SUMMARY OF REQUIRED APPROVALS

Table 9 provides a summary of the key licences, leases and approvals which will be required under NSW and Commonwealth legislation to enable the construction and operation of the Project.

Table 9 Licences and Approvals Required for the Project

APPROVAL	LEGISLATION	AUTHORITY	COMMENT
Project Approval for the construction and operation of the Maules Creek Coal Project	Section 75J of Part 3A of the EP&A Act provides the Minister for Planning and Infrastructure the power to grant a Project Approval	Minister for Planning and Infrastructure (DP&I)	N/A
Various mining authorities, including: Grant of a mining lease over part of A 346 for the Northern OEA Grant of a mining lease over a small area to west of CL 375 Renewal of CL 375 as for a further 21 year period	Part 5, Division 3, Clause 63 of the Mining Act provides the Minister for Resources and Energy the power to grant or not grant a mining lease	Minister for Resources and Energy	Section 75V EP&A Act provides the granting of a mining lease must be approved substantially consistent with the Part 3A approval
Preparation of a MOP to the approval of DTIRIS	Condition of a Mining Lease issued under the Mining Act	DTIRIS	Separate approval
Approval for the carrying out of a "Controlled Action"	EPBC Act	SEWPaC	Separate approval, adopting Part 3A assessment process as decided by SEWPaC under Section 87 of the EPBC Act
EPL	Chapter 3 of the POEO Act	OEHL	Section 75V EP&A Act provides the granting of this approval must be approved substantially consistent with the Part 3A approval
Section 87 - Permit to disturb, move or take possession of an Aboriginal object	Section 87 of the NPW Act	OEHL	Section 75U EP&A Act provides that an approval of this type is not required for an approved project
Section 90 Consent to Destroy an Aboriginal object	Section 90 of the NPW Act	OEHL	Section 75U EP&A Act provides that an approval of this type is not required for an approved project
Development consent to clear Native Vegetation	Section 12 of the NV Act	OEHL	Section 75U EP&A Act provides that an approval of this type is not required for an approved project
Water Use Approval	Section 89 of the WM Act	NOW	Section 75U EP&A Act provides that an approval of this type is not required for an approved project
Water Management Work Approval	Section 90 of the WM Act	NOW	Section 75U EP&A Act provides that an approval of this type is not required for an approved project
Controlled Activity Approval	Section 91 of the WM Act	NOW	Section 75U EP&A Act provides that an approval of this type is not required for an approved project
Water Access Licence(s)	Parts 2 and 3 of Chapter 3 of the WM Act	NOW	Separate Approval
Bore Licence	Part 5 of the Water Act	NOW	Licence to be separately acquired
Licence Under Threatened Species Act	NP&W Act	OEHL	Exemption under Section 118A and 118C of the NP&W Act
Consent to carry out a work in on or over a public road	Section 138 of the Roads Act	RTA / NSW	Section 75V EP&A Act provides the granting of this approval must be approved substantially consistent with the Part 3A approval
Construction Certificates	EP&A Act	NSC	Separate Approval
Approval for works over Crown land	Crown Lands Act	DoL	Separate Approval
Compensation and Access agreement with Forests NSW	Forestry Act	Forest NSW	Separate Approval
Notification of Dangerous Goods	Occupational Health and Safety Regulation 2001	WorkCover	Separate Approval
Approval for Emplacement Area	CMH&S Act	DTIRIS	Separate Approval
Radiation Licences	Radiation Control Act 1990	OEHL	Separate Approval
Environment Management Plans	Conditions of Project Approval	DP&I	Separate Approval

SECTION
5



Stakeholder Engagement

Stakeholder Engagement

This section of this EA provides a summary of the stakeholder engagement program undertaken by Aston and Hansen Bailey for the Project. Stakeholder engagement included consultation with local and State government, industry regulators, near neighbours, the local Aboriginal community and the wider local community. This section provides an overview of the engagement process applied to the Project, its objectives, a description of the various engagement phases, the engagement activities undertaken and the findings which have been incorporated into the impact assessments undertaken for this EA.

A Social Impact Assessment (SIA) was compiled by Hansen Bailey to support this EA and is discussed further in **Section 7.20**.

The engagement process for this EA aimed to identify stakeholders' issues regarding the Project and ensuring these issues were appropriately assessed and responded to by Aston either directly or within this EA. The stakeholder engagement program is discussed further below.

5.1 STAKEHOLDER IDENTIFICATION

A range of stakeholders were identified who may have an interest in the Project through analysis of cadastral information, from Aston's records, by enquiry and by background research into the local area. As a result of the identification process, key stakeholders relevant to the Project and the engagement methods adopted for each are summarised below in **Table 10**.

5.2 ISSUE SCOPING

Engagement with the community and government stakeholders regarding the Project is outlined below. The findings of the stakeholder consultation program were incorporated into the risk assessment conducted for the Project which is discussed further in **Section 6**.

Community engagement was undertaken as part of the Stakeholder Consultation Strategy for the Project with the following key objectives:

- Engage with key stakeholders to identify potential issues and concerns in relation to the Project;
- Manage current community awareness and expectations around the Project;
- To identify the primary and higher order social impacts (direct and indirect) associated with the Project, particularly on those communities within NSC and GSC LGAs;
- Enable stakeholders to have input into the direction of this EA and project planning;
- Establishment of effective and ongoing two way consultation with key stakeholders and the community on all aspects of the Project;
- To develop clear and consistent key messages for the Project, specific to each phase of consultation, that allows for effective engagement with all relevant stakeholders; and
- Facilitate the development and implementation of proactive response strategies to address identified stakeholder issues and enhance the positive impacts associated with the Project.

Community engagement was undertaken with a range of stakeholders including near neighbours and regulators, as summarised below.

5.2.1 Near Neighbour Engagement

Project Briefings

Throughout the planning phase and the preparation of this EA, approximately 10 near neighbours located in the close proximity to the Project Boundary accepted a briefing as part of the Stakeholder Consultation Strategy for the Project. Issues raised during these Project briefings to near neighbours are discussed further in **Section 7**.

Table 10 Identified Project Stakeholders and Engagement Methods

STAKEHOLDER	ENGAGEMENT METHOD
Community Stakeholders	
Individual Near Neighbours	<ul style="list-style-type: none"> ■ Offer of Briefings to near neighbours in Project Newsletters ■ Face to face briefings (approx. 10 individual near neighbours) ■ Project Newsletters ■ Local media coverage
Gunnedah, Narrabri and Maules Creek Local Communities	<ul style="list-style-type: none"> ■ Project Newsletters ■ Local media coverage ■ Boggabri Business Promotions Association – various monthly meetings ■ Fairfax Public School Maules Creek Meeting on 16 November 2010 ■ Presentation to the Boggabri Business Community on 18 April 2011 ■ Presentation to the Narrabri Business Community on 18 April 2011 ■ Presentation to Gunnedah Business Community on 16 May 2011 ■ Maules Creek Campdraft Committee (various meetings) – Campdraft held on 26/27 March 2011 ■ Boggabri Community meeting in relation to the MAC Accommodation Village on 11 April 2011 ■ Maules Creek Recreation Reserve Committee - various meetings
Aboriginal Community	<ul style="list-style-type: none"> ■ Notice in Paper on 15 June 2010 ■ Aboriginal Heritage Planning Meeting on 10 August 2010 ■ Fieldwork on 23 August – 10 September 2010 and 29 September – 1 October 2010 ■ Review of Draft Assessment (3 November 2010 – 1 December 2010) ■ Briefing meeting with Red Chief Land Council – 9 February 2011
Relevant Neighbouring Mines, Industry and Service Providers	<ul style="list-style-type: none"> ■ Project Newsletters ■ Face to face meetings ■ Consultation in relation to the implementation of a regional EMP ■ Cotton CRC and University of NSW – discussions in relation to the groundwater impact assessment ■ Ochre Health – Discussions on Medical facilities and resources in Boggabri on 11 May 2011
Regulatory Stakeholders	
SEWPaC	<ul style="list-style-type: none"> ■ Project Briefing on 1 September 2010 ■ Project Newsletters ■ Follow up Briefing on proposed offsets on 14 December 2010 ■ Briefing with Minister T Burke on 7 March 2011
DP&I	<ul style="list-style-type: none"> ■ Initial Project Briefing on 16 March 2010 ■ Project Update Meeting on 29 June 2010 ■ Planning Focus Meeting (PFM) on 21 July 2010 ■ Cumulative impact discussions with neighbouring miners on 28 October 2010 ■ Project Newsletters ■ Follow up briefing on proposed offsets on 2 December 2010
GSC Mayor, General Manager and Planning Manager	<ul style="list-style-type: none"> ■ Project Briefing in March 2010 ■ PFM on 21 July 2010 ■ Project Newsletters ■ Various briefings and discussions, including discussions on the Voluntary Planning Agreement
NSC Mayor, General Manager and Councillors	<ul style="list-style-type: none"> ■ Project Briefing March 2010 ■ PFM on 21 July 2010 ■ Various briefings and discussions, including discussions on the Voluntary Planning Agreement ■ NSC Presentation in relation to the MAC Accommodation Village in Boggabri on 15 March 2011 ■ Project Briefing on 5 April 2011 ■ Project Newsletters

STAKEHOLDER	ENGAGEMENT METHOD
OEH	<ul style="list-style-type: none"> ■ PFM on 21 July 2010 ■ Project Newsletters ■ Presentation of draft findings for noise, air quality and Aboriginal Heritage and proposed Offsets on 20 December 2010
NOW	<ul style="list-style-type: none"> ■ PFM on 21 July 2010 ■ Meeting in Tamworth on 22 November 2010 ■ Project Newsletters ■ Various briefings and discussions
I&I NSW	<ul style="list-style-type: none"> ■ Meeting to discuss draft MOP on 9 April 2010 ■ Project Summary Note 28 April 2010 ■ Conceptual Project Development Plan (CPDP) meeting with DTIRIS to discuss mine plan on 6 May 2010 ■ PFM on 21 July 2010 ■ Mining tenement planning discussion on 27 August 2010 ■ Project Briefing on 23 February 2011 ■ Project Newsletters
Namoi CMA	<ul style="list-style-type: none"> ■ PFM on 21 July 2010 ■ Project Newsletters ■ Project briefing and discussion of Offset Strategy and findings of other technical assessments on 8 February 2011
RTA	<ul style="list-style-type: none"> ■ PFM on 21 July 2010 ■ Project Newsletters ■ Project briefing and discussion of traffic impact assessment on 16 February 2011
ARTC	<ul style="list-style-type: none"> ■ PFM on 21 July 2010 ■ Project Newsletters ■ Various briefings and discussions
Country Rail Infrastructure Authority (CRIA)	<ul style="list-style-type: none"> ■ PFM on 21 July 2010 ■ Project Newsletters
Maules Creek Community Council Committee	<ul style="list-style-type: none"> ■ Various briefings and discussions
Relevant State and Commonwealth Members of Parliament	<ul style="list-style-type: none"> ■ Project briefing with Peter Draper, Former State Member for Tamworth in March 2010 ■ Project Briefing with Kevin Humphries, Minister for Western NSW in May 2011 ■ Project Briefing with Kevin Anderson, State Member for Tamworth in May 2011 ■ Project Newsletters

Project Newsletters

Engagement with Aston's near neighbours also involved the distribution of two Project Newsletters (as provided in **Appendix D**). These Project Newsletters were developed to familiarise the local community with the Project, while providing information regarding specific timelines, the consultation process and the various technical studies associated with the EA process.

Newsletter 1 was distributed in July 2010 to stakeholders within 10 km of the Project and the key regulatory departments. This newsletter introduced Aston as the new owners of the Maules Creek Coal Project and provided an outline of the proposed exploration and environmental assessment activities to be undertaken within the current mining authorities.

Contact details were provided should any stakeholder have any question about Aston or its activities.

Newsletter 2 was distributed to the neighbouring landholders and regulatory stakeholders in September 2010. This Newsletter provided more detail on the Project description and the approvals process to be followed, including the preparation of certain studies to be included in this EA.

A third Newsletter is proposed to be distributed prior to this document being placed on public exhibition notifying stakeholders of the key findings from the assessment and where they will be able to view a copy of this EA.

Project Open Day

A community open day was held at Aston's Boggabri Office on 9 December 2010. This community open day aimed to provide information on the Project and to gain feedback from the local community in relation to the Project.

Around 60 stakeholders from the local community, councillors, political leaders and regulators attended the open day to learn more about the Project. Stakeholders asked Aston employees a number of questions which were answered on the day or have been addressed within this EA. Issues raised during the open day are discussed further in **Section 5.3.3**.

In order to provide the community with required information on the Project whilst the application and this EA are on public display, Aston proposes to hold a community workshop with key technical specialists in attendance. This will allow for community members to gain a thorough understanding of each environmental assessment within the EA and appreciate the outcomes and proposed mitigation measures that will result from the Project. It is the intention of this workshop to provide the community with further knowledge and skills to assist them in their review of the EA so that they may prepare informed constructive submissions on the Application.

5.2.2 Regulatory Engagement

Briefings and Presentations

As indicated in **Table 10**, a number of briefings and presentations were provided to regulators throughout the preparation of this EA.

These included providing details on the Project description, updates of the findings of the environmental studies and information on the planning approvals process. This level of engagement assisted with the identification of any stakeholder issues in relation to the Project that needed to be addressed within this EA. Issues raised during these Project briefings to near neighbours are discussed further in **Section 5.3.2**.

Planning Focus Meeting

A PFM was held at the Boggabri RSL Memorial Club on the 21 July 2010. The PFM included a presentation and discussion on the Project, identified potential environmental impacts, proposed assessment methodology and preliminary management and mitigation measures. Following the Project presentation, a helicopter flight over the Project Boundary was offered, incorporating the proposed Mine Access Road and Rail Corridor, mining and infrastructure area and existing Boggabri Coal Mine mining operations.

The PFM was attended by 24 government regulators representing agencies including DP&I, DTIRIS, OEH, NOW, NSC, GSC, RTA, Country Rail Infrastructure Authority (CRIA), ARTC, Namoi Catchment Management Authority (Namoi CMA) and the Project Team.

5.3 ISSUE RESPONSE

The objective of this stage of stakeholder engagement was to ensure that appropriate responses were provided for all stakeholder issues raised in relation to the Project and that relevant strategies for their management and mitigation were considered in this EA. Where possible, specific issues raised in relation to the Project were addressed with the relevant stakeholders.

5.3.1 Director-General's Environmental Assessment Requirements

In response to the stakeholder engagement undertaken for the Project and the Major Project Application, DP&I issued Director-General's EARs for the Project on 2 November 2010 which consolidated responses from other State and Federal regulators. Minor amendments to the EARs were required and revised EARs were issued on 6 December 2010 and are presented in full in **Appendix C**. **Table 11** lists each requirement under the EARs and where it is addressed in this EA.

5.3.2 Regulatory Consultation Feedback

Following the completion of the initial community and regulatory stakeholder engagement processes, all issues raised were addressed by Aston or the relevant specialists for inclusion in the impact studies undertaken as part of this EA.

Table 12 provides a summary of the specific issues raised by regulators at personal briefings and where each is addressed in this EA.

5.3.3 Near Neighbour Concerns

A range of environmental issues of concern were raised by near neighbours and local communities during the stakeholder engagement program. The potential for air quality impacts, noise and blasting impacts, visual amenity issues and cumulative impacts were commonly raised.

Other issues raised included employment and economic impacts, water management, rail and road traffic and community contributions.

Table 13 provides a summary of the issues raised by community stakeholders and where each has been addressed in this EA.

Table 11 Director-General’s Environmental Assessment Requirements

ISSUE	DESCRIPTION	EA SECTION
General Requirements	The EA of the project must include:	Executive Summary
	<ul style="list-style-type: none"> ■ An executive summary; 	
	<ul style="list-style-type: none"> ■ A detailed description of: <ul style="list-style-type: none"> – Existing and approved mining operations / facilities, including any statutory approvals that apply to these operations / facilities; – The existing environmental management and monitoring regime; and – The existing, approved and proposed mining operations in the vicinity of the site. 	2
	<ul style="list-style-type: none"> ■ A detailed description of the project, including the: <ul style="list-style-type: none"> – Need for the project; – Alternatives considered including justification for the proposed mine plan; – Likely staging of the project; – Likely interactions between the project and existing, approved and proposed mining operations in the vicinity of the site; and – Plans of any proposed building works. 	3
	<ul style="list-style-type: none"> ■ A risk assessment of the potential environmental impacts of the project, identifying the key issues for further assessment. 	6
	<ul style="list-style-type: none"> ■ A detailed assessment of the key issues specified below, and any other significant issues identified in the risk assessment (see above), which includes: <ul style="list-style-type: none"> – A description of the existing environment, using sufficient baseline data; – An assessment of the potential impacts of the project, including any cumulative impacts, taking into consideration any relevant guidelines, policies, plans and statutory provisions (see below); and – A description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the project, including detailed contingency plans for managing any significant risks to the environment. 	7
	<ul style="list-style-type: none"> ■ A statement of commitments, outlining all the proposed environmental management and monitoring measures; 	8
	<ul style="list-style-type: none"> ■ A conclusion justifying the project on economic, social and environmental grounds, taking into consideration whether the project is consistent with the objects of the EP&A Act; and 	9
	<ul style="list-style-type: none"> ■ A signed statement from the author of the EA, certifying that the information contained within the document is neither false nor misleading. 	i
Key Issues	<ul style="list-style-type: none"> ■ Biodiversity – including: <ul style="list-style-type: none"> – Measures taken to avoid impacts on biodiversity; – Accurate estimates of the proposed vegetation clearing; – A detailed assessment of the potential impacts of the project on any: <ul style="list-style-type: none"> ■ Terrestrial or aquatic Threatened species, populations, ecological communities or their habitats, including: <ul style="list-style-type: none"> – White Box-Yellow Box-Blakely’s Red Gum Grassy Woodland and Derived Native Grassland; – Regent Honeyeater; and – Swift Parrot. ■ Regionally significant remnant vegetation, or vegetation corridors. – An offset strategy to ensure the project maintains or improves the biodiversity values of the region in the medium to long term (in accordance with NSW and Commonwealth policies). 	7.6 & 7.7

ISSUE	DESCRIPTION	EA SECTION
	<ul style="list-style-type: none"> ■ Soil and Water – including: <ul style="list-style-type: none"> – Detailed modelling of the potential surface and groundwater impacts of the project; – A detailed site water balance, including a description of the measures to be implemented to minimise water use onsite; – A detailed assessment of the potential impacts of the project on: <ul style="list-style-type: none"> – The quality and quantity of both surface and groundwater resources; – Water users, both in the vicinity of and downstream of the project; – The riparian and ecological values of the watercourses both onsite and downstream of the project; and – Environmental flows. – A detailed description of the proposed water management system for the project and water monitoring program. 	7.10, 7.11, 7.12 & 7.15
	<ul style="list-style-type: none"> ■ Air Quality – including a quantitative assessment of the potential air quality impacts of the project. 	7.1
	<ul style="list-style-type: none"> ■ Noise and Blasting – including a quantitative assessment of the potential: <ul style="list-style-type: none"> – Construction, operational and transport impacts (noise modelling should be based on applicable meteorological and stability category temperature inversion conditions to be developed in consultation with OEH); and – Blasting impacts of the project on people, livestock and property. 	7.3 & 7.4
	<ul style="list-style-type: none"> ■ Transport – including: <ul style="list-style-type: none"> – Accurate predictions of the road and rail traffic of the project; – A detailed assessment of the potential impacts of this traffic on the capacity, efficiency, and safety of the road and rail networks; and – A detailed assessment of the potential impacts on the road / rail crossings at Gunnedah, Breeza and Curlewis (with suitable consultation to be undertaken with Whitehaven Coal Limited). 	7.14
	<ul style="list-style-type: none"> ■ Heritage – both Aboriginal and non-Aboriginal. 	7.8 & 7.9
	<ul style="list-style-type: none"> ■ Greenhouse Gases – including: <ul style="list-style-type: none"> – A qualitative assessment of the potential scope 1, 2 and 3 greenhouse gas emissions of the project and identification of which emissions would be covered by the Commonwealth Government's proposed Carbon Pollution Reduction Scheme; – A qualitative assessment of the potential impacts of these emissions on the environment; and – An assessment of all reasonable and feasible measures that could be implemented onsite to minimise the greenhouse gas emissions of the project and ensure it is energy efficient. 	7.2
	<ul style="list-style-type: none"> ■ Visual; 	7.5
	<ul style="list-style-type: none"> ■ Waste – including: <ul style="list-style-type: none"> – Accurate estimates of the quantity and nature of the potential waste streams of the project, including tailings and course reject; and – A detailed description of the measures that would be implemented to minimise the production of waste onsite, and ensure that any waste produced is appropriately handled and disposed of. 	7.13
	<ul style="list-style-type: none"> ■ Hazards – including bushfires; 	7.17 & 7.18
	<ul style="list-style-type: none"> ■ Rehabilitation – a detailed description of the proposed rehabilitation strategy framework for mine closure (see relevant guidelines below), including: <ul style="list-style-type: none"> – Rehabilitation objectives, methodology and proposed completion criteria; – Nominated final land use, having regard to any relevant strategic land use planning or resource management plans or policies; and – The potential for integrating this strategy with any other offset strategies in the region. 	7.16
	<ul style="list-style-type: none"> ■ Social and Economic – including: <ul style="list-style-type: none"> – An assessment of the potential impacts of the project on the local and regional community, paying particular attention to the demand it may generate for the provision of additional infrastructure and services; and – A detailed assessment of the costs and benefits of the project as a whole, and whether it would result in a net benefit for the NSW community. 	7.19 & 7.20

ISSUE	DESCRIPTION	EA SECTION
References	The environmental assessment of the key issues listed above must take into account relevant guidelines, policies, and plans. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this project.	11
Consultation	<p>During the preparation of the EA, you should consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with:</p> <ul style="list-style-type: none"> ■ The Commonwealth DEWHA; ■ Department of Environment, Climate Change and Water, including the NOW; ■ Industry and Investment NSW; ■ NSW Roads and Traffic Authority; ■ ARTC; ■ CRIA; ■ NSC; ■ GSC; and ■ Namoi CMA. <p>The consultation process and the issues raised must be described in the EA.</p>	5

Table 12 Regulatory Consultation Issues Raised

REF	ISSUE RAISED	REGULATOR	EA SECTION
1	Air Quality		
a	An assessment of PM10 24 hour average on a cumulative basis in accordance with the Approved Methods	OEH	7.1
b	Air quality predictions provided for vacant land, receivers and background levels	DP&I	7.1
c	Demonstrate predicted impacts can be managed under a management plan	OEH	7.1.4
2	Employment and Community		
a	Socio-economic study with regard to employment	GSC	7.20
b	Socio-economic study with regard to cumulative impacts of population growth	GSC	7.20
c	Potential conflicts with Agriculture such as employment base, accommodation and rail competition	I&I NSW	7.20
d	Training and employment opportunities for cleanskin local labour	NSC	7.20
e	Housing requirements and opportunities as a result of the Project	NSC	7.20
f	Early development of Community Consultative Committee	NSC	5.5
g	Cumulative impacts of mining on sense of community and local agriculture	NSC, GSC	7.20
h	Impact on the local housing and development market	NSC, GSC	7.20
i	Economic impacts to LGAs and provision of services and infrastructure	NSC, GSC	7.19 & 7.20
j	Shortages for childcare and staffing of hospitals, both nursing and doctors	NSC	7.20
k	Mitigation measures to minimise social impacts and ensuring infrastructure and services are provided	DP&I	7.20
l	Potential amenity / health issues <ul style="list-style-type: none"> – feasible and reasonable mitigation measures – predicted exceedances – explanation of 'real time' management 	DP&I	7.1 & 7.3

REF	ISSUE RAISED	REGULATOR	EA SECTION
3 Noise and Blasting			
a	Operational noise for the Project kept below 35dB	OEH	7.3
b	Requirement to include inversions within the Noise Assessment	OEH	7.3
c	Noise generated from additional rail movements as a result of the Project	DP&I, RTA	7.3
d	Noise assessment to provide a detailed review of potential cumulative noise impacts from the Project and other mining operations	OEH, DP&I	7.3
e	Cumulative blasting impacts from the Project and other mining operations in relation to the number of blasts per day	OEH	7.4
f	Noise impacts on passive recreation criteria in the Leard State Conservation Area	OEH	7.3
g	Sleep disturbance noise assessment to include noise levels associated with wagon bunching and stretching on the rail loop	OEH	7.3
h	Consideration of noise impacts on the public rail network	OEH	7.3
4 Surface Water			
a	Maintenance of Namoi River flow throughout bridge construction	DTIRIS	7.10.3
b	Address the Namoi Catchment Action Plan targets	Namoi CMA	7.10.3
c	The potential impact on regional surface water catchments and water quality	I&I NSW	7.10.3
d	Mine water management system designed to ensure water does not discharge from the site	OEH, NOW	7.10.3
e	Concern that Surface Water Management Plan does not consider the design of both dirty and contaminated water structures	OEH	7.10.3
f	Further information for design and diversions for overbank flow management, and mitigation and energy management for the Back Creek tributary	NOW	7.10.3
g	Further explanation of how water efficiency is maximised on site	NOW	7.10.3
h	Details relating to the potential loss of runoff into Back Creek	NOW	7.10.3
5 Groundwater			
a	The potential for impacts on local and regional groundwater reserves	I&I NSW	7.11
b	Impact on nearby residents as a result of connection between the alluvium and the Permian coal measures	DTIRIS	7.11
c	Cumulative impact of neighbouring mines altering regional groundwater resources including depressurisation linkage with Boggabri Coal	DTIRIS	7.11
d	Permeability of base of water structures	OEH	7.10
6 Traffic			
a	One rail line and bridge in consultation with Boggabri Coal	DP&I	3.4
b	Assumptions used with regard to cumulative impacts of rail additions	DP&I	7.14
c	Concern relating to the noise impacts of rail movement on the Werris Creek and wider community	DP&I, NSC, OEH	7.3
d	Increased traffic volumes for local road and rail network as a result of the Project	DP&I, RTA, NSC, GSC	7.14
e	Increased number of rail movements travelling through Gunnedah township, dividing the town	GSC	7.14
f	Request provision of information and input into rail bridge spur and access road prior to lodgement	NSC	7.14
g	Consideration of seasonal traffic associated with grain and cotton harvesting	NSC	7.14

REF	ISSUE RAISED	REGULATOR	EA SECTION
h	Rail traffic does not consider trains transporting grain in association with coal	NSC	7.14
i	Increased growth leading to increased general and long distance freight adding pressure to local and state roads	NSC	7.14
7 Final Land Use and Void Management			
a	Potential land use for the area on completion of the Project and potential loss of agricultural land	I&I NSW	7.16
b	Rehabilitation should be described as part of the proposal rather than an impact	DP&I	3
c	Rehabilitation objectives, monitoring and ongoing management is required for a successful valued outcome.	SEWPaC	7.7
d	Long term environmental benefits of Option 1 compared to Option 2 for the final void	OEH	7.16
e	Final dump heights incorporate some relief to the landscape	DTIRIS	7.16
8 Cumulative Impacts			
a	Expectation that Aston will work with Boggabri Coal to resolve any cumulative impact issues	DP&I, GSC	7
b	Cumulative impacts on agricultural resurgence, growth in research institutions, trucking sector and grain consolidation have not been included.	NSC	7.14
c	Cumulative impacts on Matters of National Environmental Significance (NES)	SEWPaC	7.6
9 Flora, Fauna and Heritage			
a	Development of appropriate offset commitments	OEH	7.7
b	Direct impacts of Project on CEEC Box Gum Woodland Community	OEH	7.6
c	Cumulative impact (including indirect impacts) of mining on the local environment and flora and fauna species, especially with regard to CEEC	OEH	7.6
d	Upgrading riparian corridor on Namoi River would be positive	DP&I	7.6
e	Offsets should be considered strategically with other mines and a bio banking assessment of the offsets should be completed	OEH	7.7
f	Assessment of impacts is not adequately supported, with impacts not assessed in relation to project specific, site specific and species specific impacts	OEH	7.6
h	Direct or indirect impacts on suitable and potential habitat for EPBC listed communities	SEWPaC	7.6
i	Further detail on matters of NES and offset ratios and values for each matter of NES	SEWPaC	7.6