

4.0 APPROVED MINE OPERATIONS

4.1 Background

The Rocglen Coal Mine (formally known as Belmont Coal Project) was originally approved by the Minister on the 15 April 2008 under Project Approval PA 06_0198. It was classified as a Major Project in accordance with the Major Projects SEPP and, subsequently, was determined under Part 3A of the EP&A Act. A copy of the original Project Approval is contained within **Appendix B** and the approved mine layout is shown on **Figure 4**.

The mining lease (ML 1620) was issued for the Rocglen operation in June 2008 and coal production subsequently commenced in late 2008. In summary, approximately 1.5 Mtpa of coal is mined using truck and excavator method. The coal is transported approximately 30 km by road to the Whitehaven CHPP for selective washing and subsequent transport by rail to the Port of Newcastle or by road to domestic customers.

On the 27 May 2010, the Minister issued an approval under Section 75W of the EP&A Act to modify Project Approval PA 06_0198 (06_0198 MOD 1). This modification permitted Whitehaven to undertake unplanned emergency earthworks to stabilise the eastern highwall following slipping adjacent to a fault structure in the north eastern portion of the approved open cut pit. It was determined that stabilisation works were required to ensure the long-term stability and safety of the highwall, which would in-turn enable on-going extraction efforts at the northern end of the approved open cut. The areas required to be worked to achieve a stable highwall were partially outside of the open cut limit approved under PA 06_0198. A copy of the Notice of Modification is contained within **Appendix C** and the works approved under MOD 1 are shown on **Figure 5**.

The following sections provide an overview of the activities approved at Rocglen under the original Project Approval PA 06_0198 and subsequent modification (MOD 1).

4.2 Vegetation Clearing

Clearing of vegetation is undertaken using a progressive campaign approach, with the extent of clearing undertaken in each campaign just sufficient for the subsequent year of mine development. Where practical, the clearing campaigns, particularly the removal of trees, are scheduled in the late summer to autumn period in order to minimise the potential impacts on fauna that may utilise the area scheduled for disturbance.

Clearing of larger vegetation is undertaken by chainsaw felling or bulldozer pushing with the bulldozer blade positioned just above ground to minimise soil disturbance. Smaller vegetation, such as pasture, crop stubble and/or shrubs, is retained and collected with topsoil during soil stripping activities. Where required, weed spraying is conducted prior to soil stripping activities.

Once felled, all logs and branches are cut/broken into manageable lengths and timber suitable for farming purposes (for example, fencing and firewood) is retrieved. The remainder is placed on mined-out surfaces within the Project Site that have been shaped as part of the on-going rehabilitation program and are to be restored to native vegetation, or stockpiled for use in subsequent rehabilitation activities. The use of the clearing debris in rehabilitation assists in vegetation establishment, provides fauna habitat and assists in reducing erosion. Large stumps and tree roots are buried within the replaced overburden.

Temporary diversion banks and catch drains are installed prior to any clearing activities, where necessary, to prevent erosion and sedimentation.

4.3 Soil Stripping and Stockpiling

As recommended by Geoff Cunningham Natural Resource Consultants (2007a), topsoil is generally stripped to a depth of approximately 15 centimetres (cm) and subsoil to a depth of 35 cm. Topsoil and subsoil stripping is undertaken separately using open bowl scrapers that lift the appropriate layer of material, transport and place it either:

- Directly on mined, backfilled and reshaped areas awaiting rehabilitation; or
- In designated topsoil and subsoil stockpile areas adjacent to the areas of surface disturbance.

The stockpiles have been established on available cleared land within the Project Site in locations that minimise the haul distance for placement and subsequent respreading, as well as in positions to visually screen mining operations from Wean Road. Where possible, stockpiles are also positioned to capitalise on surface topography and water management structures in order to avoid stockpile erosion. Additional protective earthworks and/or silt fencing (or similar) are installed where necessary.

Topsoil and subsoil from the sites of storage dams, sediment basin or other water management structures are pushed aside to enable their construction, and, on completion of construction activities, replaced on the completed surfaces and revegetated.

Topsoil and subsoil stockpiles are left with a rough surface to avoid any unnecessary mechanical working of the soil, and are constructed such that, wherever practicable, the upslope batter toe is positioned parallel to the contour. The stockpiles are progressively seeded to reduce erosion loss, improve structure and water permeability, increase soil aeration and assist in maintaining the soil's biological viability.

Subsoil stockpiles are generally established to a maximum height of approximately 3 metres, with topsoil stockpiles limited to approximately 2 metres.

4.4 Overburden and Interburden Management

The removal of overburden and interburden is the main earthmoving activity undertaken within the Project Site. As outlined in **Section 3.13.2**, the overburden and interburden removed comprises a deeply weathered section of interbedded claystone, siltstone, sandstone, conglomerate and tuffaceous claystone.

Where the overburden overlying the uppermost coal seam is sufficiently weathered, it is ripped and removed by scraper and/or pushed up by bulldozer and loaded into haul trucks by an excavator. As the overburden hardens with depth and cannot be economically ripped, the material is drilled and blasted before loading into haul trucks by an excavator. Where present, interburden between the coal seams is also blasted. All blasting is performed in accordance with the *Blasting Monitoring Program* (Whitehaven Coal Mining 2008a).

Following ripping or blasting, haul trucks transport the overburden material to the nominated out-of-pit or in-pit emplacement. The two out-of-pit emplacement areas, known as the Northern and Western Emplacement Areas, are located adjacent to the limit of mining (see **Figure 4**). The Northern and Western Emplacements were originally approved under PA 06_0198 with footprints of approximately 8 and 75 hectares, respectively, and with batter slopes at a vertical to horizontal ratio of approximately 1 to 4 (1V:4H).

The project modification PA 06_0198 MOD 1 permitted the extraction of the additional overburden material from the fault zone and emplacement of it within a disturbed area comprising approximately 23 hectares to the north and east of the stabilisation works (see **Figure 5**) originally approved for overburden emplacement and subsoil stockpiling. The subsoil stockpiled within this area was covered with overburden due to sufficient material being available for rehabilitation purposes from the Rocglen Extension Project.

Both the Northern and Western Emplacement Areas are nearing capacity. In-pit emplacement occurs within and over the finished areas of the open cut to form the final landform.

4.5 Coal Mining by Open Cut Methods

PA 06_0198 approved the extraction of coal by open cut mining methods within an area of approximately 114 hectares (see **Figure 4**). This involves the extraction of three separate coal seams, being the Upper Glenroc, Lower Glenroc and Belmont Seams, within 25 mine development blocks at a production rate of 1.5 Mtpa.

Given that the project was approved to produce up to 1.5 Mt ROM coal annually, and based on an estimated mine life of seven to ten years, the potential resource recovery under PA 06_0198 is up to approximately 15 Mt. The original EA prepared by R.W. Corkery & Co. in 2007 states an identified in-situ resource of 14.18 Mt, with a further 0.48 Mt available should auger mining proceed (i.e. a total resource of 14.66 Mt).

The project modification PA 06_0198 MOD 1 permitted the widening of the face of the open cut, outside of the approved limit, to establish a highwall within competent material that will enable development of the pit in a safe and efficient manner. The pit extensions for stabilisation works (see **Figure 5**) have a combined area of approximately 2.05 hectares, giving a total approved open cut area of approximately 116.05 hectares.

The open cut mine is being developed using haulback mining methods, involving the sequential removal of vegetation, soil, overburden and interburden above and between the coal seams, coal removal and progressive backfilling and rehabilitation of mined-out areas. To remove the coal, benches are developed along the length of coal seams by blasting and removal of the overburden and interburden. As sufficient coal is exposed, it is ripped, excavated and transported to the ROM pad within the on-site coal handling and processing area.

4.6 Auger Mining

PA 06_0198 permitted the extraction of additional coal reserves that are uneconomical to extract by open cut mining methods using auger mining techniques within an area between the western boundary of the Project Site and the western extent of the open cut pit (see **Figure 4**). Auger mining enables coal to be extracted without the need for overburden or interburden removal. The auger mining method approved under PA 06_0198 involves the drilling of a series of gently dipping 1.5 metre diameter holes into the Belmont Coal Seam for a distance of between 60 and 200 metres. Each hole, drilled at right angles to the final highwall, will be separated by a web or septum pillar that would support the overlying strata. To date there has been no auger mining undertaken within the Rocglen site.

4.7 Mine Life

Based on the identified coal reserves at the time of approval (see **Section 4.5**) and a maximum production rate of 1.5 Mtpa, the Rocglen Coal Mine was anticipated to have a production life for coal extraction of between seven to ten years.

A reduction in open cut coal production in any year would result in the mine development blocks being reached over a longer time frame (i.e. an extension in mine life).

4.8 On-Site Coal Preparation

The mined coal is transferred by haul truck to the coal handling and processing area located immediately south of the limit of the open cut pit (see **Figure 4**) for crushing, screening and loading into trucks for transport off-site. This area covers approximately 3 hectares and includes the ROM coal stockpiles, coal loading hopper, primary crusher, size reduction screen, conveyor, and the production and batch weigh bin. It has a capacity for up to 150,000 tonnes of coal to be maintained in the stockpiles, with a smaller area designated to the stockpiling of crushed coal up to 30,000 tonnes.

ROM coal is either loaded directly into the coal loading hopper or placed in one of several ROM coal stockpiles (representing different quality coal). A primary crusher reduces the size of the coal and a conveyor transfers the crushed (and screened) coal to a product coal bin, from where trucks are loaded for dispatch of the coal to the Whitehaven CHPP. PA 06_0198 permits a maximum annual ROM coal production of 1.5 Mtpa.

4.9 Transportation

Crushed and screened coal is transported approximately 30 km to the Whitehaven CHPP, via a purpose built section of road between the Rocglen Coal Mine and Hoad Lane, and from Hoad Lane via an established coal haulage route for selective washing, stockpiling and dispatch by both rail and road. The section of the road approved and constructed under PA 06_0198 traverses the "Brentry" property, along the southern edge of Vickery State Forest with a further section of private road constructed across the "Stratford" property to link with Shannon Harbour Road. The transport route then incorporates a length of upgraded Shannon Harbour Road before intersecting with Hoad Lane. The transport route then joins a previously established coal haulage route along Hoad Lane, Blue Vale Road and the Kamilaroi Highway before entering the Whitehaven CHPP.

The bulk of the truck fleet consists of 40 tonne capacity B-double trucks and the occasional semi-trailer. An average of 120 loads (4,800 tonnes) of coal is dispatched daily at the maximum production rate of 1.5 Mtpa. This equates to between 17 and 24 movements per hour over a typical operational day, with dispatch of coal permitted under PA 06_0198 between 7.00 am and 9.15 pm Monday to Friday and between 7.00 am and 5.15 pm on Saturdays.

Once reaching the Whitehaven CHPP, the coal is stockpiled for washing or placed directly on the by-pass stockpile and then either loaded into trains at the Whitehaven Rail Loading Facility for dispatch to the Port of Newcastle or loaded into trucks for road dispatch to domestic customers. These activities are covered by a separate development consent granted by Council, under the Minister's delegation, in October 2002.

A proportion of the coarse and fine reject material from the Whitehaven CHPP is approved to be backloaded to the Project Site for placement in the mined-out areas of the open cut.

4.10 Relocation of Public Roads

The limit of open cut mining approved under PA 06_0198 requires the relocation of sections of Wean Road and Jaeger Lane. Specifically:

Wean Road

Wean Road is approved to be realigned around the eastern perimeter of the Project Site over the "Roseberry" property in general accordance with Council's *Rural Local Roads Standard* and to the satisfaction of Council. To date, this realignment has not been undertaken.

Jaeger Lane

Jaeger Lane, which provides access from Wean Road through the Project Site to the Vickery State Forest and "Yarrowonga" has been relocated to the north to provide continued access to "Yarrowonga". Access to the Vickery State Forest is retained at the southern end of the mining lease off Riordan Road. Application to formally close that section of Jaeger Lane within the Project Site has been made to the NSW Department of Lands and is pending approval.

4.11 Site Services

4.11.1 Potable, Ablutions and Bathhouse Water

Potable and ablutions water is sourced and transported by water tanker from the Gunnedah or Boggabri town water supply, with additional water collected from the roofs of the buildings within the site facilities area.

4.11.2 Operational Water Requirements

Water for operational purposes, primarily dust suppression activities, is sourced from 'dirty' water run-off collected from on-site sediment basins, as well as any surface and/or groundwater that accumulates in the open cut mining pit. Additional operational water, when required, is sourced from licensed bores and clean surface water within the site's Maximum Harvestable Right Dam Capacity (MHRDC).

The annual volume of water required for dust suppression varies depending on the required frequency of water application to exposed surfaces and haul roads. However, based on the previous Annual Environmental Management Report (AEMR), water usage for general dust suppression is estimated to be approximately 0.25 megalitres per day (ML/day) on those days where rainfall is less than 5 millimetres. Dust suppression associated with the crushing facility is estimated to be approximately 0.015 ML/day.

4.11.3 Power

The power requirements of the site are supplied by diesel-powered generators positioned at the site facilities and ROM facilities areas.

Flood lighting of mining activities after dark is provided by portable lighting towers with integrated diesel-powered generators.

4.11.4 Communications

Communications to and from the site are available via external telephone landlines, mobile telephone service coverage and UHF radio. Internal communications are typically via UHF radios and hand-held radios.

4.11.5 Fuel

On-site fuel storage and refuelling facilities for mobile equipment consist of two 68,000 litre self-bunded fuel tanks and an adjacent refuelling bay, which are located in the site facilities area. Total annual diesel usage is calculated to be around 6,750 kilolitres.

4.11.6 Explosives

Bulk explosives (ammonium nitrate–fuel oil based) are used within the open cut with Nonel detonators used for blast initiation. The components of the bulk explosives, ammonium nitrate prill, emulsion and diesel, are generally transported to the site from the Orica Depot near Boggabri on the day of each blast.

4.12 Waste Management

4.12.1 Production Waste

Production wastes comprise overburden and interburden from the development of the open cut and coarse and fine reject material from processing of the coal at the Whitehaven CHPP. The management of overburden and interburden is outlined above in **Section 4.4**.

At a ROM coal production rate of 1.5 Mtpa, annual coarse and fine reject production from Rocglen operations is approximately 300,000 tonnes and 85,000 tonnes, respectively. The management of these rejects at the Whitehaven CHPP is covered by a separate development consent granted by Council, under the Minister's delegation, in October 2002.

As previously stated, a proportion of the coarse and fine reject material generated at the Whitehaven CHPP from the processing of Rocglen coal is approved to be backloaded to the Project Site for placement in the mined-out areas of the open cut. The remaining quantity of reject material is disposed of at the former Gunnedah Colliery site and/or used for maintenance works around the Whitehaven CHPP.

4.12.2 General Waste

Non-production wastes generated by Rocglen operations are:

- **General Wastes and Routine Maintenance Consumables** – all paper, general wastes and routine maintenance consumables from the daily servicing of equipment (for example, air filters) are disposed of in garbage bins located adjacent to the various site buildings. These bins are generally collected daily and the contents placed in a large waste skip bins positioned adjacent to the heavy vehicle maintenance building for removal by a licensed waste collector on a fortnightly basis. Recyclable ferrous and non-ferrous metals are collected for recycling on an irregular basis.
- **Waste Oils and Grease** – waste oils and grease from routine maintenance of mining and earthmoving equipment are removed from the equipment to bunded storage tanks by oil evacuation pumps. If emergency or breakdown maintenance of equipment is required outside of the maintenance workshop or hardstand/heavy vehicle parking area, oil and grease is pumped from the equipment to a tank on the service truck and subsequently transferred to the bulk waste oil storage tank at the maintenance workshop. Waste oils and grease stored at the maintenance workshop are collected by a licensed waste recycling contractor approximately once every two months. All parts and packaging is collected and transferred to the maintenance workshop for future recycling.
- **Sewage** – sewage generated by on-site staff amenities is managed via an on-site aerated waste water treatment system that enables irrigation of treated effluent on to nominated areas within the Mining Lease.
- **Hydrocarbon-Contaminated Water** – any hydrocarbon-contaminated water is collected in the oil/water separator and regularly removed from site by a licensed contractor.

4.13 Operational Equipment

Table 8 presents the list of typical types and numbers of items of earthmoving and mining equipment anticipated to be used throughout the life of the project approved under PA 06_0198.

Table 8 – Typical Mining Equipment

Item	Number in Operation	Function
Excavator (Hitachi EX1900)	1	Overburden and coal loading
Hitachi EX3600-6 - Excavator	1	Overburden loading
Excavator (CAT 330B)	1 (p/t)	Drainage, windrows
Rear Dump Truck (CAT 785)	6	Overburden/coal haulage
Bulldozer (CAT D10T)	1	Overburden/rip/push, clearing, emplacement maintenance
Bulldozer (CAT D9N)	1	Ripping/pushing for scrapers
Bulldozer (CAT D11R)	1	Overburden rip/push
Grader (CAT 14H)	1 (p/t)	Road maintenance
Grader (CAT 14H)	1	Road maintenance
Scraper (CAT 637D)	2	Campaign topsoil/subsoil removal and replacement
Scraper (CAT 631)	1	Campaign topsoil/subsoil removal and replacement
Drill Rig Terex SKF50	1	Campaign blasthole drilling
Water Truck (15,000 litre)	2	Dust suppression
Crushing Plant	1	Coal size reduction
Wheel Loader (CAT 988H)	1	Feeding/processing plant/product truck loading
Diesel-powered Lighting Tower	8	Light for evening, night operations
Fuel/Service Truck	1	Equipment refuelling/servicing
Forklift/Tyre Handler	1	Equipment handling

p/t – part-time

4.14 Operational Hours

Mining operations are permitted under PA 06_0198 to occur 24 hours a day, Monday to Saturday, with the exception of public holidays. Operations currently comprise a day shift between 7am and 5pm and a night shift between 4.30pm and 2.30am.

Coal transport is permitted between 7am and 9:15pm Monday to Friday, and between 7am and 5:15pm on Saturdays.

4.15 Operational Employment

Approval of the Rocglen Coal Mine under PA 06_0198 has generated employment for 35 full-time operators, 14 full-time fitters and five full-time staff. Furthermore, there is flow on employment for truck drivers (coal haulage contract) and additional indirect employment through service and supply from local businesses.

4.16 Rehabilitation

While the major portion of rehabilitation activities will occur close to the cessation of mining, Whitehaven must undertake progressive rehabilitation throughout the life of the mine. The out-of-pit and in-pit overburden emplacements will be progressively shaped to recreate a landform comparable to that of the pre-mining environment. The stripped and/or stockpiled soil resources will be placed over the shaped landform and the area seeded either with pasture species or native woodland vegetation dependent on the nominated final land use.

Approximately 84.4 hectares of the disturbed area is to be restored as rehabilitated native vegetation with the remaining 152.6 hectares to be restored to rehabilitated agricultural land. This provides an overall ratio of approximately 36% native vegetation to 64% agricultural land.

4.17 Biodiversity Offset Strategy

The flora and fauna assessments for the approved Rocglen Coal Mine (PA 06_0198) were prepared by Geoff Cunningham Natural Resource Consultants (Cunningham 2007b) and Countrywide Ecological Service (2007), respectively.

Eight vegetation communities were identified by Cunningham (2007b) including three (Communities 4, 5 and 7) that were not mapped within the original boundaries of the Project Site. The vegetation communities and the original impacts of the Rocglen Coal Mine are listed in **Table 9**.

Table 9 - Vegetation Communities and Original Project Impacts

Vegetation Community	Location	Project Impacts (hectares)
1 - Narrow-leaf Ironbark – Pilliga Grey Box Community	Project Site	11.6
2 - Pilliga Grey Box – White Cypress Pine Community	Project Site	23.4
3 - Pilliga Grey Box – White Box – Yellow Box – White Cypress Pine Community	Project Site	1.3
4 - Pilliga Grey Box – Belah – Bull Oak Community	Off Site	-
5 - Bimble Box Community	Off Site	-
6 - Brigalow Community	Project Site	-
7 - Regenerating White Cypress Pine	Off Site	-
8 - Cleared Lands – Used for Grazing and / or Cultivation	Project Site	Unspecified
Total		36.3

In addition to these vegetation communities, seven threatened fauna species were observed including *Falco hypoleucos* (Grey Falcon), *Melanodryas cucullata* (Hooded Robin), *Mormopterus beccarii* (Beccaris Mastiff-bat), *Neophema pulchella* (Turquoise Parrot), *Pachycephala inornata* (Gilbert's Whistler), *Pomatostomus temporalis* (Grey-crowned Babbler) and *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail-bat). No significant impact on these species was determined to be likely as a result of the original project proposal (Countrywide Ecological Service 2007)

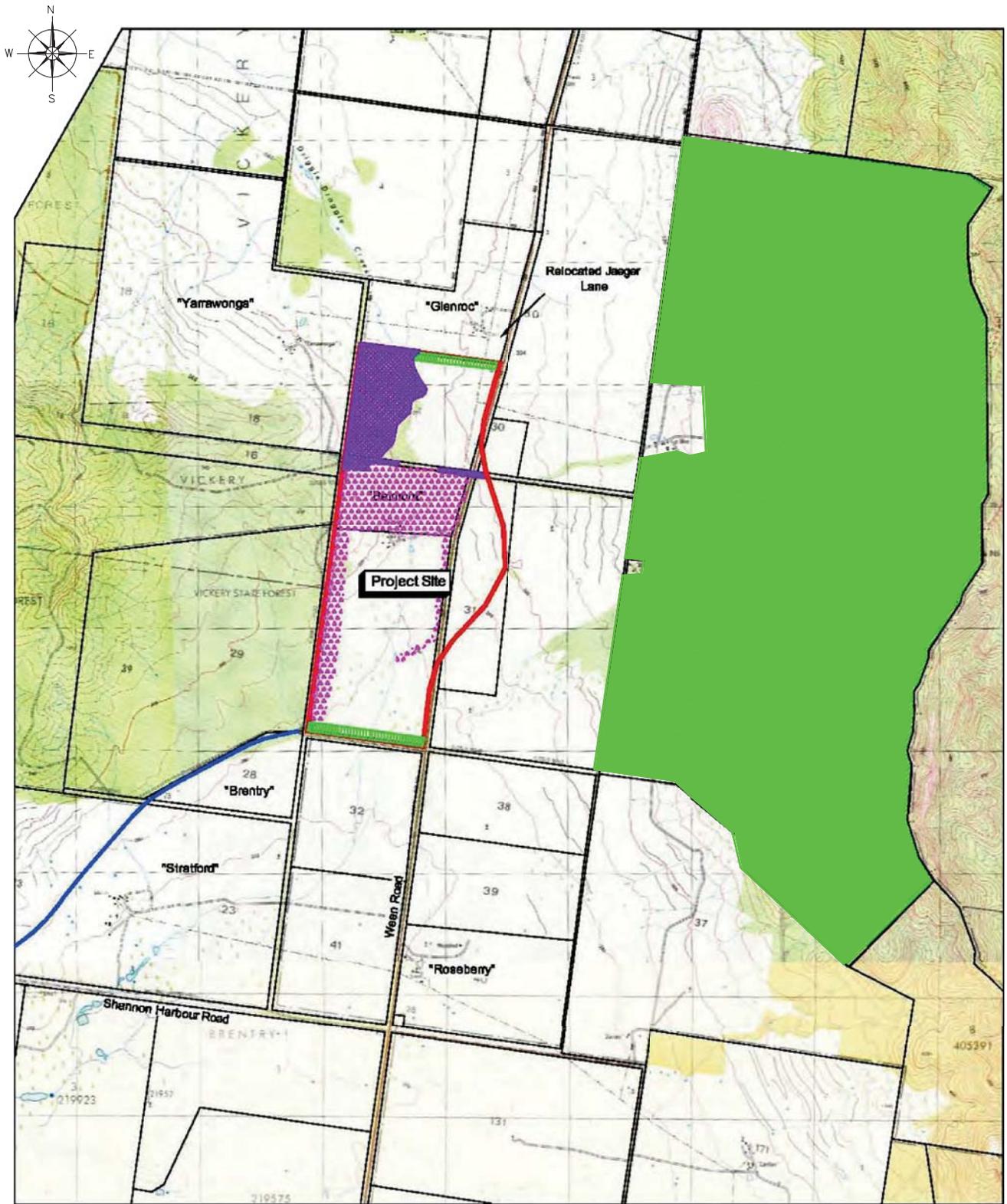
The assessment of impacts recommended that the *Biodiversity Offset Strategy* outlined in **Table 10** be implemented to compensate for the loss of the 36.3 hectares of native vegetation. This *Strategy*, which was included in the Project Approval PA 06_0198 as Condition 27, resulted in the protection and rehabilitation of approximately 195.3 hectares, comprising the protection of 44.9 hectares of remnant woodland, enhancement planting and rehabilitation to 90.4 hectares and an additional 60 hectares within the Whitehaven Regional BioBank Site.

Table 10 – Approved Biodiversity Offset Areas

Item	Description	Offset Area (ha)
1	Community 2 (Pilliga Grey Box – White Cypress Pine Community) in the north western corner of the Project Site on the “Glenroc” property.	42.3
2	Establishment of a 50 metre wide habitat corridor between the proposed offset area and Wean Road along the northern boundary of the Project Site. The vegetation enhancement activities would focus on extending the offset area proposed above. To achieve this, a small section of the offset area would be planted with native tree and shrub species representative of those occurring within Community 2. This replanted section would then be continued using the same species to provide a 50 metre wide linkage with Wean Road.	2.6
3	Protection of 2.6 hectares of Community 3 (Pilliga Grey Box – White Box – Yellow Box – White Cypress Pine) at Jaeger Lane.	2.6
4	Establishment of a 50 metre wide habitat corridor within the Project Site on the northern side of Riordan Road. This corridor is located along the southern boundary of the Project Site. This vegetation enhancement activity would involve establishing Community 1 type vegetation along the western section (i.e. west of the drainage line) and a community typical of the species found in Community 2 on the eastern section that links with Wean Road.	3.8
5	Rehabilitation to native vegetation (within the disturbance footprint).	84
6	Protection of 60 hectares of vegetation in the Whitehaven Regional BioBank Site.	60
Total		195.3

The areas of remnant woodland to be protected with the Project Site (Items 1 and 3), the two habitat corridors to be established within the Project Site (Items 2 and 4), the area within the Project Site to be rehabilitated to native vegetation (Item 5) and the Whitehaven Regional BioBank Site (Item 6) are shown on **Figure 13**.

As previously advised, the Whitehaven Regional BioBank Site is in the final stages of registration by the DECCW as a BioBank Site under Part 7A of the TSC Act. It will be actively managed via a BioBanking Management Plan with in-perpetuity management funding, and will have the highest level of conservation status outside of National Parks (via a BioBanking Agreement registered on the land title in-perpetuity).



- REFERENCE**
- Project Site Boundary
 - Transport Route
 - Proposed Biodiversity Offset Area
 - Rehabilitated Woodland
 - Additional Habitat Enhancement through Replanting
 - Whitehaven Regional Biodiversity Offset Area (BioBank Site)
Only 60 Ha of total area required for PA 06_0198

0.0 0.5 1.0 1.5 2.0km

Source: Figure 4: Biodiversity Offsets for PA06_0198 (Figure 5 of Cunningham 2007) - Eco logical Australia Pty Ltd

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4.18 Environmental Management and Monitoring

A comprehensive set of environmental management plans have been developed by Whitehaven (and engaged specialist consultants) and are implemented at Rocglen in accordance with PA 06_0198 and EPL 12870. These plans are backed by an environmental monitoring network, which includes monitoring of meteorological conditions, air quality, noise, blasting, surface water and groundwater.

The existing environmental management plans and monitoring programs include:

- *Mining Operations Plan Amendment 1* (Whitehaven Coal Mining 2010);
- *Environmental Management Strategy* (Whitehaven Coal Mining 2008b);
- *Road Noise Management Plan, incorporating a Cumulative Road Noise Monitoring Program for the Rocglen, Canyon (Whitehaven) and Tarrawonga mines* (Spectrum Acoustics 2008);
- *Air Quality Monitoring Program, incorporating an Air Quality Monitoring Protocol* (Whitehaven Coal Mining 2009a);
- *Aboriginal and Cultural Heritage Management Plan* (Whitehaven Coal Mining 2008c);
- *Blasting Monitoring Program* (Whitehaven Coal Mining 2008a);
- *Noise Monitoring Program, incorporating a Noise Management Protocol* (Whitehaven Coal Mining 2008d);
- *Site Water Management Plan* (RCA Australia in conjunction with Soil Conservation Service 2009);
- *Environmental Monitoring Program* (Whitehaven Coal Mining 2009b); and
- *Greenhouse and Energy Efficiency Plan* (Denis Cooke & Associates 2009).

Appendix H contains the adopted schedule of monitoring activities from the *Environmental Monitoring Program* (Whitehaven Coal Mining 2009b) and a plan showing the locations of the monitoring sites.