

8.0 STATEMENT OF COMMITMENTS

The DGRs for the Project require that the EA includes a Statement of Commitments detailing the measures proposed by Whitehaven for environmental mitigation, management and monitoring of the Rocglen Extension Project. If approval is granted under Part 3A of the EP&A Act for the Project, Whitehaven will commit to controls listed in the below sub-sections.

8.1 Compliance with the EA

- (a) Whitehaven will carry out the development for the Project generally in accordance with the Project Application and this EA report.

8.2 General Operation

Production Limit

- (a) Whitehaven will not extract more than 1.5 Mtpa of ROM coal from the Project Site

Hours of Operation

- (b) Mining operations may be undertaken 24 hours a day, Monday to Saturday, with the exception of public holidays.
- (c) Coal transport will be undertaken between 7am and 9:15pm Monday to Friday, and between 7am and 5:15pm on Saturdays.

Refinement of Mine Plan

- (d) Any refinements to the concept mine plan outlined in this EA report will be detailed and assessed as part of the MOP process managed by the I&I NSW.

Consultation

- (e) Routine consultation will be undertaken with residents surrounding the Project Site and along the coal transport route, as well as with the CCC, to ensure any concerns relating to mine operations are identified and appropriately addressed.

8.3 Environmental Monitoring and Reporting

Revision of Environmental Management Plans and Monitoring Programs

- (a) Within 12 months of approval, Whitehaven will review, update and integrate relevant aspects of the environmental management of the Project in the existing set of environmental management plans for the Rocglen Coal Mine. This will be undertaken in consultation with the relevant government agencies.
- (b) Within 12 months of approval, Whitehaven will review, update and integrate relevant aspects of the environmental monitoring of the Project in the existing set of environmental monitoring programs for the Rocglen Coal Mine. This will be undertaken in consultation with the relevant government agencies.

Annual Environmental Management Plan

- (c) Whitehaven will prepare an AEMR for the Project for submission to the Director-General and relevant government agencies.

8.4 Soil Stripping, Stockpiling and Re-Spreading

- (a) Soil materials within the Project Site will be stripped, handled and stockpiled in a manner that minimises the potential for soil loss and structural deterioration.
- (b) Topsoil stockpiles will be established to a maximum height of 3 metres.
- (c) Soil material will be maintained in a slightly moist condition during stripping, and will not be stripped in either an excessively dry or wet condition.
- (d) If mining sequencing, equipment scheduling and weather conditions permit, stripped material will be placed directly onto reshaped emplacement areas and spread immediately to avoid the requirement for stockpiling.
- (e) The surface of soil stockpiles will be left coarsely textured in order to promote infiltration and minimise erosion until vegetation is established, as well as to prevent anaerobic zones forming.
- (f) Where long-term stockpiling is planned (that is, greater than 3 months) the stockpiles will be seeded and fertilised as soon as possible. An annual cover crop that produces sterile florets or seeds will be sown.
- (g) Prior to re-spreading stockpiled material onto completed mining or overburden emplacement areas, an assessment of weed infestation on stockpiles will be undertaken to determine if individual stockpiles require herbicide application and/or 'scalping' of weed species prior to spreading.
- (h) A soil inventory will be maintained to ensure adequate material is available for planned rehabilitation activities.
- (i) Where natural protection from surface runoff flows is not available or achievable, protective earthworks, such as contour banks, and/or straw bale protection will be installed. Silt fencing (or similar) will be installed immediately downslope of any stockpile area potentially susceptible to erosion and maintained until the stockpile is considered stable with an effective vegetation cover.
- (j) Whitehaven will adopt the general practice, where appropriate subsoil is available and targeting areas being rehabilitated to pasture, of including an intermediate layer of subsoil between the overburden material and the topdressing to improve the water holding capacity of the rehabilitated landform and reinstate a more natural soil profile. For areas being rehabilitated to bushland, Whitehaven may preferentially reduce the subsoil replacement depth and/or exclude subsoil replacement in selected areas to establish trial areas to monitor bushland development in different soil profiles.
- (k) Where resources allow, topsoil and subsoil will each be spread to a nominal depth of between 100 to 150 mm, giving a combined depth of soil material on the rehabilitated landform of between 200 and 300 mm.
- (l) The subsoil layer will be spread on an even but roughened surface that has been ripped along the line of the contour to break any compacted and/or smooth surfaces. Ripping will also assist the keying of subsoil into the overburden, which will, in turn, assist in the prevention of land slip and can help vegetation penetrate deep into the soil profile, encourage ingress of water and minimise erosion.
- (m) Stripped soil material will be spread, treated with fertiliser and seeded in one consecutive operation in order to reduce the potential for soil loss to wind and water erosion.

8.5 Geotechnical Stability – Open Cut Pit and Highwall

- (a) Progressive stability reviews and monitoring of geological conditions will be undertaken once the pit moves within 250 metres of the realigned Wean Road to ensure geotechnical stability and safe conditions. If any unfavourable conditions are observed or detected, a detailed assessment will be undertaken by a suitably qualified geotechnical engineer before mining is allowed to continue towards Wean Road.
- (b) When the Belmont Fault (or fault zone) is more than 150 metres from Wean Road, operations will mine through the Belmont Fault. The uppermost alluvial material and weathered rock on the eastern side of the fault will have individual face angles no steeper than 45 degrees.
- (c) Benching will be adopted at a maximum interval of 25 metres in alluvial, weathered rock and brecciated rock.
- (d) In fresh strata face angles will be designed at 75 degrees to pit bottom. If in following the upturned Belmont Seam down to pit bottom the floor rock is strong and competent, then the face will be developed on the dip slope without the need for benches in rock beneath the Belmont Seam.
- (e) When the top of the stable highwall reaches 50 metres from Wean Road (i.e. when the eastern limit of the Belmont Fault zone reaches 150 metres from Wean Road), the eastern end wall will be turned at right angles to the west. Once the turned highwall encounters sound rock, as it continues to the west, it can be turned again to develop parallel to the Belmont Fault until it reaches the planned pit limit.
- (f) The turned highwall in the fault zone will be notched to achieve a stable face. This notch will not approach Wean Road any closer than 150 metres without geotechnical advice.
- (g) A block of unmined ground will be left to contain the Belmont Fault zone and prevent it causing collapse back towards Wean Road. The size of this block of unmined ground will be determined by geotechnical investigation by the time a change in highwall direction is required.
- (h) If the highwall is free of faulting mining will resume southeast towards the currently planned pit limit. Such mining will cease when the pit crest reaches 50 metres from Wean Road. If additional faulting is detected in this advancing face then the relevance of such structure on highwall stability will be investigated before continuation of highwall development.

8.6 Rehabilitation and Mine Closure

Progressive Rehabilitation

- (a) Whitehaven will adopt a progressive approach to the rehabilitation of disturbed areas within the Project Site to ensure that, where practicable, completed mining and overburden emplacement areas are quickly shaped, topdressed and vegetated to provide a stable landform. Early reshaping and revegetation of the external batter slopes of the emplacement areas is particularly important and will be targeted as a priority.
- (b) Disturbed areas will generally undergo rehabilitation within one year of overburden emplacement and reshaping.

Overburden Placement and Shaping

- (c) Placement and shaping of overburden will be undertaken to achieve stable slopes.
- (d) Placement and shaping of overburden will be undertaken in a manner which, wherever practicable, ensures that any friable or weathered materials are placed below the subsoil and topsoil layers in order to provide a cover of more competent material and avoid the exposure of large rocks on the final surface.

- (e) Any coarse coal rejects placed in the mine void will be covered with at least 3 metres of overburden material.

Subsoil and Topsoil Replacement

- (f) Refer to commitments listed above in **Section 8.4**.

Drainage and Surface Water Structure Installation

- (g) Surface water management structures will be progressively installed on the rehabilitated landform. The heights (effective depths) and cross-sectional areas of the individual banks will be determined on the basis of individual sub-catchment areas, but will typically be less than 0.7 metres and 3 square metres (m²), respectively. Rock-lined drains will be used, where required, to convey water safely from the rehabilitated landform into the surface water management system that takes water from the site.

Revegetation

- (h) The topdressed surfaces of those areas designated to be restored to rehabilitated pasture will be sown with a mixture of pasture species appropriate for the season. The seed mixture will include fast growing, short-lived species and perennial grasses and legumes.
- (i) The topdressed surfaces of those areas designated to be restored as rehabilitated bushland will be initially stabilised with a non-persistent cover crop followed by planting of a selection of locally occurring tree and shrub species that will encourage the re-establishment of the pre-mining vegetation communities and, in the medium to longer term, create habitat and corridors for native fauna.
- (j) All areas identified for bushland and pasture re-establishment will be fenced and have stock excluded until it can be demonstrated that the vegetation is stable and self-sustaining, and that grazing will not impact upon its establishment.

Rehabilitation Monitoring and Maintenance

- (k) Areas being rehabilitated will be regularly inspected and assessed against the long and short-term rehabilitation objectives. During regular inspections, aspects of rehabilitation to be monitored will include:
- Evidence of any erosion or sedimentation from areas with establishing vegetation cover;
 - Success of initial grass cover establishment;
 - Success of tree and shrub plantings;
 - Adequacy of drainage controls;
 - Presence/absence of weeds; and
 - General stability of the rehabilitation site.
- (l) Where the rehabilitation success appears limited, maintenance activities will be initiated. These may include re-seeding and where necessary, re-topdressing and/or the application of specialised treatments such as composted mulch to areas with poor vegetation establishment. Tree guards will be placed around planted tube stock if grazing by native animals is found to be excessive.
- (m) If drainage controls are found to be inadequate for their intended purpose or compromised by grazing stock or wildlife, these will be repaired and/or temporary fences installed to exclude animals. Should areas of excessive erosion and sedimentation be identified, remedial works such as importation of additional fill, soil material and/or the redesigning of water management structures to address erosion will be undertaken.

- (n) Monitoring will be conducted periodically by independent, suitably skilled and qualified persons at locations that are representative of the range of conditions on the rehabilitating areas. Annual reviews will be conducted of monitoring data to assess trends and monitoring program effectiveness.

Conceptual Post-Mining Land Use

- (o) The disturbed area within the Project Site will be restored to either rehabilitated bushland or rehabilitated pasture, with approximately 5 hectares (1 percent) remaining as a stabilised highwall of the final void.
- (p) Along the eastern boundary of the Project Site, adjacent to the realigned Wean Road, a strip of rehabilitated bushland will be established to screen the view of the final void and generally improve the visual amenity from Wean Road, as well as provide vegetation connectivity north-south on the eastern side of the void.
- (q) In addition to the large area to be rehabilitated to bushland, strategically placed tree lots will be established within rehabilitated pasture areas to break-up the landform and act as wildlife refuges and linkages.
- (r) Tree trunks and branches less than 300 mm diameter and other smaller vegetative debris removed during clearing activities will be spread over those areas to be restored as rehabilitated bushland where practical.

Final Void Management

- (s) The final void will be designed and managed as a stable landform. Appropriate long-term land use options for the void will be considered and adequately assessed in consultation with relevant stakeholders as the mine approaches closure.

Final Void Stability – Low Walls

- (t) The low walls will be battered back from the angle of repose to ensure the long term geotechnical stability of the face, with the determination of geotechnical stability and recommendations as to the final slope undertaken by a qualified geotechnical engineer on the basis of an assessment of the overburden material, the likely degree of settlement, and the degree of weathering expected in the long term. It is expected that the low wall sides of the final void will be battered back to a maximum of 18 degrees with a goal of 10 degrees being optimal.
- (u) Surface water drainage on and over the low wall will be minimised through the construction of drainage control structures, the construction of Dam F, and the aim of diverting as much of the catchment as possible away from the final void and back into the surface water system.
- (v) Erosion of the low wall will be controlled by limiting the length of slope through the use of contour and graded drains, minimising the slope, and by the establishment of suitable vegetation.

Final Void Stability – Highwall

- (w) To ensure the safety of the final void, the surrounding final slopes will be left in a condition where the risk of slope failure is minimised. The highwall of the final void will be left at 45 degrees to ensure long term geotechnical stability. This will be assessed by a suitably qualified geotechnical engineer.
- (x) Whitehaven will undertake progressive stability reviews and monitoring of the highwall once it moves to within 250 metres of the Wean Road deviation to ensure safe working conditions. If any failures are observed, or additional faulting is detected, then a detailed assessment will be undertaken by a suitably qualified geotechnical engineer before mining is allowed to continue towards Wean Road.

- (y) Whitehaven will adopt the geotechnical stability commitments listed above in **Section 8.5** as the open cut pit progresses and the final landform is being formed.

8.7 Biodiversity Offset Strategy

- (a) The revised *Biodiversity Offset Strategy* described in **Section 5.8**, which has been prepared on the basis of the BioBanking Methodology to 'improve or maintain' assessment, will be implemented. This *Strategy*, in summary, comprises the retirement of 4,859 credits from the Whitehaven Regional BioBank Site, which is in the final stages of registration by the DECCW as a BioBank Site under Part 7A of the TSC Act. It provides an offset (525 hectares) to impact (110.44 hectares comprising 95.44 hectares of impacts for mine extension and the equivalent of 15 hectares of original impacts which now needs a replacement offset) ratio of 4.75:1.
- (b) The Whitehaven Regional BioBank Site 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.

8.8 Air Quality

Vegetation Clearing and Soil Stripping

- (c) Cleared trees and branches will be retained for use in stabilising slopes identified for restoration of rehabilitated woodland. No burning of vegetation is permitted or occurs on-site.
- (d) Where practicable, soil stripping will be undertaken when there is sufficient soil moisture to prevent lift-off dust and at times that avoid periods of high winds. Where this is not possible, dust suppression by water application will be undertaken to increase soil moisture.
- (e) Land disturbance, including groundcover removal, will be limited in advance of mining activities consistent with operational requirements. Under normal circumstances, a maximum of 100 metres will be prepared in advance of mining.
- (f) Groundcover will be removed with the topsoil, as opposed to prior to topsoil removal.
- (g) Where long-term stockpiling of soil materials is planned (typically greater than 3 months) the stockpiles will be seeded and fertilised as soon as possible.

Drilling and Blasting Activities

- (h) Water injection will be used on the drilling rig.
- (i) Coarse aggregates will be used for blasthole stemming at all times.
- (j) Where practicable, blasting will be restricted during unfavourable weather conditions.
- (k) When necessary, dust aprons will be lowered during on-site drilling.

Overburden Ripping and Placement

- (l) Where practicable, ripping of softer overburden material will be avoided during periods of high winds.

Coal Mining

- (m) When necessary, low moisture coal will be sprayed with water prior to excavation.

Crushing and Screening

- (n) Notwithstanding the generally moist nature of the ROM coal pad, when necessary, water will be applied to the coal at the feed hopper, crusher and at all conveyor transfer and discharge points.
- (o) When necessary, some flexibility does exist to enable cessation of coal processing activities during periods of concurrent high winds and temperatures that have the potential to cause coal dust dispersal independent of water applications.

Internal Transport

- (p) As required, internal roads will be watered, with emphasis on those subject to frequent trafficking.
- (q) The speed of all on-site vehicles and equipment will be restricted.
- (r) All internal roads will be clearly defined to control their locations.
- (s) As roads within the Project Site become obsolete, they will be promptly ripped and revegetated.

External Transport

- (t) All trucks hauling product coal and coal rejects between Rocglen and the Whitehaven CHPP will be required to be fitted with roll-over tarpaulins.
- (u) All trucks transporting coal will be well maintained to ensure optimal operation, which will minimise the potential for noise emissions.

Rehabilitation

- (v) As per the commitments listed in **Section 8.6**, Whitehaven will adopt a progressive approach to the rehabilitation of disturbed areas within the Project Site to ensure that, where practicable, completed mining and overburden emplacement areas are quickly shaped, topdressed and vegetated to provide a stable landform.

Monitoring

- (w) The existing *Air Quality Monitoring Program* (Whitehaven 2009a) will be reviewed and, as necessary, updated to integrate relevant aspects of the Project.
- (x) A real-time PM₁₀ monitor (fitted with a weather station) will be installed and operated. As recommended by PAEHolmes (2011), it is proposed to locate this monitor at the "Roseberry" residence, co-located within one of the existing HVAS.
- (y) The existing weather station and HVAS within the "Glenroc" property will be relocated. As recommended by PAEHolmes (2011), it is proposed to move these items to "Costa Vale", which is along the axis of prevailing winds.

8.9 Noise

Project Design

- (a) The external batter slopes of the expanded Northern Emplacement Area will be re-shaped and revegetated in Years 1 and 2 of the Project to, amongst other things, minimise the projection of noise from overburden transportation and emplacement activities towards privately owned residences located to the north and north-east later in the mine life.

General Operation

- (b) Contractors, including all personnel and sub-contractors, will be advised of noise compliance limits prior to their work commencing. Contractors will be expected to take practical measures to limit noise generation during their activities where possible.
- (c) Prior to being brought on-site, all earthmoving equipment will be tested to ensure sound power levels are consistent with the previous assessments undertaken by Spectrum Acoustics.
- (d) Site personnel will be required to pay due attention to site weather conditions and modify or stand down from operational activities if directed by mine management.
- (e) Where possible, equipment with lower sound power levels will be used in preference to more noisy equipment.
- (f) All equipment used on-site will be regularly serviced to ensure the sound power levels remain at or below the levels used in the modelling undertaken by Spectrum Acoustics.
- (g) Mid-high frequency broadband reverse beepers are fitted to on-site mobile mining equipment.
- (h) The on-site road network will be maintained to limit vehicle body noise.

External Transport

- (i) All transport activities, including the haul route used between Rocglen and the Whitehaven CHPP and the hours of coal haulage, will continue to be undertaken strictly in accordance with that approved under PA 06_0198.
- (j) The haul route between Rocglen and the Whitehaven CHPP is fully sealed and will continue to be maintained under an existing contribution plan with Council.
- (k) Drivers will be instructed to operate in accordance with an existing Transport Policy and Code of Conduct, which identify aspects such as travelling speeds, general behaviour, avoidance of exhaust brakes, load coverage, complaints and disciplinary procedures. The Policy and Code apply to all employee and contractor-owned vehicles.
- (l) The trucks will be speed limited to 93 km per hour to, amongst other things, minimise engine noise.
- (m) All trucks transporting coal will be well maintained to ensure optimal operation, which will minimise the potential for noise emissions.

Monitoring

- (n) As per the commitments listed in **Section 8.3**, the existing *Noise Monitoring Program* (Whitehaven 2008d) will be reviewed and, as necessary, updated to integrate relevant aspects of the Project. Specifically, "Retreat" or "Penryn" will be included as a noise monitoring location in the revised Program in place of "Costa Vale" (which is now owned by Whitehaven).
- (o) Traffic noise monitoring will continue to be conducted at the "Brooklyn" and "Werona" residences on Blue Vale Road in accordance with the existing *Road Noise Management Plan* (Spectrum Acoustics 2008).

8.10 Blasting and Vibration

Blast Design

- (a) Blast design and implementation will be undertaken by a suitably qualified blasting engineer and/or experienced and appropriately certified shot-firer.
- (b) Burden distances and stemming lengths will be designed to ensure that explosion gases are almost completely without energy by the time they emerge into the atmosphere.

- (c) Blast design will ensure charges consistently detonate in carefully designed sequences.
- (d) Meteorological conditions will be analysed prior to blasting to avoid times when the potential for impact is heightened, and also endeavours will be made to blast at around midday over the winter period to avoid temperature inversions.

Air Vibrations (Noise and Airblasts)

- (e) Noise and airblast generation will be controlled to ensure that all, or the majority of, explosion energy is consumed in fragmenting and displacing the overburden by the time the gases vent (via the broken burden rock and/or ejected stemming material) into the atmosphere. This will be achieved via:
 - Ensuring blasthole spacing is implemented in accordance with blast design;
 - Careful selection and implementation of burden distance and stemming length;
 - Using appropriate materials (for example, 20 mm aggregates) for stemming;
 - Ensuring that charges detonate in the correct sequence and with inter-row delays that provide good progressive release of burden;
 - Limited the maximum weight of explosive detonated in a given delay period (the maximum instantaneous charge (MIC)) to conservative and proven levels; and
 - Refining these controls on the basis of the blast monitoring program.

Ground Vibrations

- (f) Blast design will ensure the minimum practicable weight of explosive detonates at an instant (minimising the MIC) by using the maximum number of delay periods in each blast.
- (g) Blast design will ensure that most of the energy liberated by the charge(s) on a given delay number is consumed in providing good fragmentation, adequate displacement and/or a loose, highly diggable muckpile.

Dust and Other Post-Blast Emissions

- (h) Stemming columns will be designed to ensure ejection velocities are low.
- (i) Appropriate aggregates for blasthole stemming and nonel delay-type or electronic detonators will be used to initiate charges.

Road Closures

- (j) For all blasts within 500 metres of Wean Road, the road will be closed with blast notice boards updated at least 24 hours prior to each blast. Road closures typically occur for a period of up to 10 minutes.
- (k) Whitehaven will inspect the road following the blast and any rock fragments removed from the road surface prior to re-opening.
- (l) Whitehaven will monitor the distance flyrock travels (if any) beyond the designed blast envelope and identify if further safeguards are required.

Consultation

- (m) The proposed blasting schedule will be provided to all residents within a 3 km radius of the blast providing advance notice of the date and time of each proposed blast. A verbal confirmation on the day of the blast will also be undertaken.
- (n) Whitehaven will erect a blast notice board near the mine entrance on Wean Road notifying passing motorists when the next blast is scheduled.

Monitoring

- (o) As per the commitments listed in **Section 8.3**, the existing *Blasting Monitoring Program* (Whitehaven 2008a) will be reviewed and, as necessary, updated to integrate relevant aspects of the Project. Specifically, "Retreat", as the nearest privately-owned residence to the north of the Project Site, will be included as a blast monitoring location in the revised Program in place of "Costa Vale" (which is now owned by Whitehaven).

8.11 Surface Water

General

- (a) All hydrocarbon products will be securely stored.
- (b) All of the mining fleet will be refuelled within designated areas of the Project Site.
- (c) With the exception of some maintenance activities on mobile equipment, all maintenance works requiring the use of oils, greases and lubricants would be undertaken within designated areas of the Project Site.
- (d) All water from wash-down areas and workshops would be directed to oil/water separators and containment systems.
- (e) All storage tanks will be either self-bunded tanks or bunded with an impermeable surface with a capacity to contain a minimum of 110% of the largest storage tank capacity.
- (f) Chemical flocculation to help increase the settling times of the sediment (TSS) in the water column will also be employed as required.
- (g) As required, appropriate drainage structures and erosion and sediment controls will be installed and maintained.
- (h) All efforts will be undertaken to ensure that any water discharged from the Project Site via the LDPs meets the quality limits imposed by the DECCW on the site's EPL.
- (i) Key changes, as detailed in **Appendix M**, to be integrated into the existing surface water management system are:
- Additional water management controls to deal with water from the increased disturbance footprint in the northern area of the site;
 - Additional water management controls to address TSS issues during wet weather discharge;
 - Relocation of the Mine Water Dam; and
 - More effective diversion of clean water from off-site catchments to the east.
- (j) Dirty water generated from disturbed areas to be captured and diverted using contour banks and drop structures in a manner that minimises the potential for concentrated overland flow and subsequent erosion. This water will be channelled through a series of sediment basins to reduce sediment loads prior to discharge.
- (k) Water generated within the open cut pit, primarily as a result of rainfall/runoff and some groundwater seepage, to be managed within the open cut via in-pit sumps. This water will be directed to and contained within these in-pit sumps until it is necessary to pump the water to the new Mine Water Dam, which will be constructed as a 'turkeys nest' to receive mine water only.
- (l) Clean water diversions will be constructed wherever possible upstream of disturbance areas to minimise the amount of dirty water to be contained and treated within the dirty water management system.

- (m) Progressive rehabilitation of all re-shaped surfaces to assist in reducing the level of TSS (and possible high pH and salinity) in runoff from disturbed areas. This will also reduce the dependence on sediment controls and generally assist in improving water quality.
- (n) Water collected in the open cut extraction pit and/or dirty water dams will be used, as much as possible, for dust suppression purposes. This is the preferential use of water on-site to minimise the chance of pollution to downstream waterways.
- (o) Sediment control structures will be maintained to ensure the design capacities are preserved for optimum settling rates. This will be most critical for those 'end-of-line' sediment basins that discharge from the Project Site.
- (p) Implementation of an effective revegetation, maintenance and monitoring program.

Site Water Management Plan

- (q) Within 12 months of Project Approval, a new *Site Water Management Plan* will be prepared in accordance with regulatory requirements and the *Blue Book (Volume 1 and Volume 2E)*.

Site Water Balance and Discharge

- (r) Whitehaven will consider and, where appropriate, adopt the following to improve site water balance and minimise uncontrolled overflow discharge:
 - The proposed dams will be built to at least the specified sizes, and made larger where practical to provide additional storage in order to further reduce the chance of uncontrolled overflow discharge. Increasing the total storage will provide opportunity to retain and treat water prior to controlled discharge;
 - Water will be promptly transferred amongst sediment basins to ensure the maximum available on-site storage capacity of rainfall events is maintained; and
 - That controlled discharge of treated (settled and/or flocculated) water will be undertaken to draw down the water storage within all the dirty water dams on-site, which will provide the capacity to contain the majority rainfall events and reduce uncontrolled overflow discharge.

Drainage Lines

- (s) Sections of drainage lines that are or will be impacted upon by the mining operation will be rehabilitated post-mining generally in accordance with Section 5.3.3 of the *Blue Book (Volume 1)* and the *Guidelines for Controlled Activities – In-Stream Works* (DWE 2008, as cited in GSSE 2010c) for watercourse rehabilitation and riparian zone rehabilitation.

Licensed Discharge Points

- (t) While LDP 11 will continue to be used at the southern end of the Project Site, LDP 12 will be superseded and relocated in consultation with the DECCW.

Monitoring

- (u) As per the commitments listed in **Section 8.3**, the existing surface water monitoring program will be reviewed and, as necessary, updated to integrate relevant aspects of the Project. **Table 47** presents a summary of the proposed surface water monitoring.

8.12 Groundwater Monitoring

- (a) All hydrocarbon products will be securely stored.
- (b) All of the mining fleet will be refuelled within designated areas of the Project Site
- (c) With the exception of some maintenance activities on mobile equipment, all maintenance works requiring the use of oils, greases and lubricants would be undertaken within designated areas of the Project Site.
- (d) All water from wash-down areas and workshops would be directed to oil/water separators and containment systems.
- (e) All storage tanks will be either self-bunded tanks or bunded with an impermeable surface with a capacity to contain a minimum of 110% of the largest storage tank capacity.
- (f) As per the commitments listed in **Section 8.3**, the existing groundwater monitoring program will be reviewed, updated and implemented to integrate relevant aspects of the Project.
- (g) Bores will be cleaned out (air-lift developed) and depth checked with a weighted tape. Bores will then be geophysically wireline logged (SP/SPR and Gamma) to confirm slotted intervals and the nature of the strata over slotted intervals.
- (h) All monitoring bores will be surveyed for location and level (both ground level and the level of the RP from which groundwater levels are measured).
- (i) Monitoring of groundwater levels will initially be undertaken on a monthly basis for the first year of the Project, after which the interval may potentially be relaxed subject to review of the results. In the longer term a monitoring interval of three months is anticipated. Samples will be analysed for all major ions, including carbonate.
- (j) Pressure transducers/dataloggers will be installed in monitoring bores MP-01 to MP-05 for the continual recording of groundwater levels. These instruments will be downloaded every 2 months. MP-04 and MP-05 will be deepened to at least 10 metres below the water table.
- (k) In order to address the concerns of the NOW in regard to the potential for impact on alluvial aquifers of the Namoi River and associated tributaries, the following program of investigations will be undertaken:
 - Bores MP-04 and WB-01 are nominally located within the alluvium south and north of the mine, respectively. Once this is confirmed through the above commitments, a second bore will be drilled adjacent to each of them, to a depth at which the base of the alluvium is intersected. This adjacent bore will be completed as a monitoring bore in the Maules Creek Formation and have a pressure transducer/datalogger installed for continuous water level monitoring. Such actions will need to be agreed to by the relevant landowners; and
 - There is some uncertainty regarding the nature of the interface between the southern alluvium and the weathered conglomerate profile of the Maules Creek Formation at the southern end of the proposed pit. On this basis, a pair of piezometers will be installed immediately to the south of the proposed pit, one in the Belmont Seam and one in the alluvium/weathered conglomerate. Also, hydraulic testing will be undertaken on the bore in the alluvium/weathered conglomerate to allow refinement of the groundwater model in this regard.

8.13 Flora and Fauna

- (a) All efforts will be made by Whitehaven to avoid disturbance of the vegetation communities within the Project Site and to maintain and enhance as much of the existing remnant vegetation on-site, in addition to the proposed biodiversity offset areas (see **Section 5.8**), as possible.

- (b) A high level of hygiene will be adopted in respect to vehicle and machinery to help prevent soil-borne disease transmission and weed seed dispersal.
- (c) Strict erosion and sediment control measures will be installed, monitored and maintained to prevent the erosion and sedimentation impact on adjacent areas.
- (d) Dust control measures will be implemented to protect adjacent retained vegetation communities.
- (e) The minimal practicable amount of clearing will be undertaken as a general objective, particularly within those areas that currently contain identified threatened species or ecological communities.
- (f) Where possible disturbance areas will be marked to protect adjoining vegetation prior to disturbance activities in order to reduce potential damage from uncontrolled or accidental access.
- (g) Stockpiling of materials will occur within already disturbed areas.
- (h) Weed management, monitoring and control practices will be implemented to minimise the spread of exotic species into natural areas within the site.
- (i) A tree felling protocol will be developed, by a suitably qualified and licensed ecologist with previous experience supervising the felling of trees, in order to minimise harm to fauna species during clearing activities.
- (j) Where possible, tree felling will be supervised by the ecologist that developed the tree felling protocol or by another suitably qualified and licensed ecologist.
- (k) Where trees are to be removed an assessment of the surrounding level of tree hollow provision will be undertaken by a suitably qualified ecologist in order to determine the need for local supplementing of tree hollows (using salvaged tree hollows or nest boxes).
- (l) Mature and hollow-bearing trees will be retained wherever feasible within the site.
- (m) Vegetation to be removed will be clearly marked in the field using temporary fencing (flagging tape or similar) so that the boundaries are clearly established and to minimise the potential for equipment to accidentally enter areas to be retained.
- (n) Where possible, the timing of clearing activities will be undertaken at such times to avoid removal of hollow-bearing trees during breeding season of threatened species.
- (o) Regular monitoring of the vegetation within the Project Site and offset areas will be undertaken in order to enable effective management with regards to rehabilitation (planting), regeneration, watering, fencing and weed control.

8.14 Aboriginal Heritage

- (a) As per the commitments listed in **Section 8.3**, the existing ACHMP (Whitehaven 2008c) will be reviewed and, as necessary, updated to integrate relevant aspects of the Project.
- (b) All efforts will be made by Whitehaven to minimise disturbance within the Project Site.
- (c) Liaisons will continue to be undertaken with the registered Aboriginal stakeholders and other interested parties until all issues in relation to the management of Aboriginal cultural heritage have been resolved.
- (d) If impact to the Aboriginal sites identified with the Project Site (RPS Rocglen IF1, RPS Rocglen AS1 and RPS Rocglen AS2) is unavoidable, a surface salvage will be undertaken in accordance with Section 3 of the ACHMP (Whitehaven 2008c). Artefacts salvaged will be transferred to relevant Aboriginal groups under a Care and Control Permit under Section 85A of the NP&W Act.

- (e) Protective measures designed to prevent damage to the scarred trees (NPWS # 20-4-0194 and NPWS #20-4-0195) will be enacted upon as per recommendations in Appleton (2007) and the ACHMP (Whitehaven 2008c).
- (f) In areas where surface excavation might occur in the future within 25 metres of the east-west oriented drainage line, Whitehaven will follow protocols in Section 4.1(iii) of the ACHMP (Whitehaven 2008c).
- (g) In general during the course of the Project, if it is suspected Aboriginal cultural heritage material has been encountered, work will cease immediately in that locale. The DECCW, along with the RCLALC, BBGTP, GGAC and MMAC, will be notified. Works will only recommence when an appropriate and approved management strategy has been agreed to by all of the relevant stakeholders.
- (h) In the event that skeletal remains are uncovered during operations, work will stop in the vicinity immediately and the NSW Coroner's Office and NSW Police contacted. If skeletal remains are deemed to be of Aboriginal origin, a representative of the local Aboriginal Community and the DECCW will be consulted.

8.15 European Heritage

- (a) If significant European cultural heritage material is uncovered during site works, work will cease in that area immediately. An archaeologist will be contacted to assess the significance of the remains and works will only recommence when an appropriate and approved management strategy is instigated.

8.16 Visual Amenity

- (a) All efforts will be made by Whitehaven to minimise the visual impact of the mine during and post-operation.
- (b) As per the commitments listed above in **Section 8.6**, Whitehaven will adopt a progressive approach to the rehabilitation of disturbed areas within the Project Site to ensure that, where practicable, completed mining and overburden emplacement areas are quickly shaped, topdressed and vegetated. Early reshaping and revegetation of the external batter slopes of the emplacement areas will be targeted as a priority.
- (c) In addition to retaining areas of existing remnant vegetation, it is proposed to restore approximately 206 hectares (58 percent) of the disturbed area within the Project Site as rehabilitated bushland. This large area, which includes the western slopes of the Northern and Western Emplacement Areas, will blend in well with the retained remnant vegetation areas within the Project Site and within the adjacent Vickery State Forest and "Yarrowonga" property.
- (d) Strategically placed bushland tree lots will be integrated into the post-mining landform to break-up the landform and provide visual texture. This will be complimented by the establishment of pasture grass areas that will provide short-term visual impact mitigation prior to the trees becoming established.
- (e) An earthen bund of appropriate height will be established between the realigned Wean Road and the active pit area. This bund will be vegetated immediately following construction. The bund will provide an effective visual screen of the site from Wean Road. In addition to the bund, a strip of bushland will be established to screen the view of the final void and generally improve the visual amenity from Wean Road.

- (f) The requirements of the Australian Standard *AS 4282 1997 – Control of Obtrusive Effects of Outdoor Lighting* will be taken into consideration when placing lights required when working outside of daylight hours. In particular, lighting plant will be positioned and directed away from surrounding residences and aimed downwards to avoid light spill onto adjoining lands and public roads.

8.17 Greenhouse Gas Emissions

- (a) The *Greenhouse and Energy Efficiency Plan* prepared by Denis Cooke & Associates in June 2009 in accordance with PA 06_0198 will continue to be implemented at Rocglen in order to promote continuous change and sustainable improvement in energy management and efficiency.

8.18 Traffic and Transport

- (a) Coal transportation will be undertaken via the approval haulage route between Rocglen and the Whitehaven CHPP.
- (b) Coal transport will be undertaken between the approved times of 7am and 9:15pm Monday to Friday, and between 7am and 5:15pm on Saturdays.
- (c) On school days, Whitehaven will maintain the communication system between the truck drivers and the local school bus driver. The system has been negotiated between Whitehaven and the local bus drivers and involves two-way radio communication to ensure that trucks do not exceed 40 km per hour when travelling in the vicinity of the school bus.
- (d) All trucks transporting coal from the mine and backloading reject from the Whitehaven CHPP will be covered with fitted roll-over tarpaulins.
- (e) All trucks transporting coal will be well maintained to ensure optimal operation.
- (f) Drivers will be instructed to operate in accordance with a Transport Policy and Code of Conduct, which identify aspects such as travelling speeds, general behaviour, avoidance of exhaust brakes, load coverage, complaints and disciplinary procedures. The Policy and Code apply to all employee and contractor-owned vehicles.
- (g) The on-going use of the road network will be covered under the arrangements of the existing road maintenance agreement with Gunnedah Shire Council to ensure the subject roads continue to be adequately maintained.

8.19 Waste Management

- (a) All production wastes and non-production wastes will be managed in accordance with current approved waste management strategies (see **Section 4.12**).
- (b) Whitehaven will approach waste generation and management according to the following principles – (a) waste avoidance; (b) waste re-use; (c) waste recycling; and (d) waste removal and disposal.

8.20 Bushfire Hazard

- (a) Vegetation will be cleared away from around blast sites for a distance of greater than 20 metres.
- (b) All coal will be removed from open cut around blast sites.

- (c) Blast design and implementation will be undertaken by a suitably qualified blasting engineer and/or experienced and appropriately certified shot-firer.
- (d) An inspection of blast sites will be undertaken prior to blast.
- (e) Water truck/cart will be available to douse any fire ignited or smouldering vegetation.
- (f) Refuelling will be undertaken within designated fuel bays or within cleared area of the Project Site and vehicles will be turned off while refuelling.
- (g) No smoking policy will be enforced in designated areas of the Project Site.
- (h) Fire extinguishers will be maintained within site vehicles.
- (i) Coal stockpiles will be regularly inspected and, as required, watered.
- (j) The height and volume of coal stockpiles will be controlled to limit the duration coal is retained in stockpiles.
- (k) Whitehaven will regularly liaise with the NSW Forests and NSW Rural Fire Service in relation to the bushfire hazard presented by the Vickery State Forest and to a lesser extent the nearby CCC Zone 2 Kelvin.

8.21 Socio-Economic

- (a) Whitehaven will continue to engage the community in consultation for the purposes of providing information relating to the Project and company operations in general. It is anticipated that consultation will include:
 - Circulation of information and newsletters, as required, relating to mining activities (for example, blasting schedule); and
 - Continuation of the Rocglen CCC established under PA 06_0198 for the existing Rocglen operation.
- (b) Whitehaven will respond to any community complaints within 24 hours of receipt. All complaints will be investigated and the results of the investigation reported to the complainant in a timely manner.