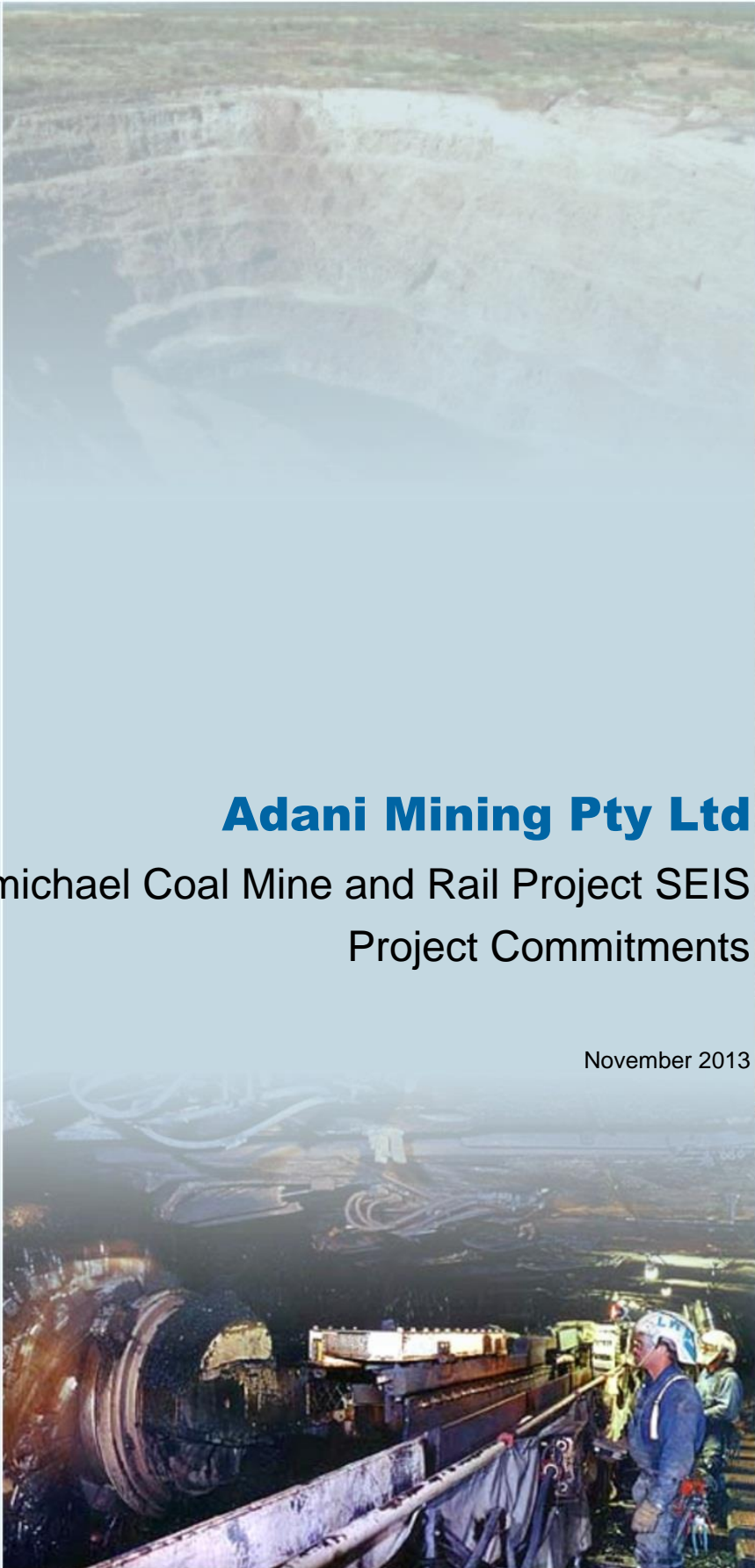




Adani Mining Pty Ltd



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Carmichael Coal Mine and Rail Project SEIS Project Commitments

November 2013





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1. Introduction

The Project ToR requires a list of all commitments made by Adani in the Project EIS and SEIS, together with a reference to the relevant section of the EIS.

The commitments below add to those provided in Volume 1 Section 10 of the EIS. They have been presented under each relevant Project area and aspect. Importantly, mitigation measures have been detailed under management plans prepared for the EIS and SEIS. These plans should be read alongside this commitment register and include:

- Multiple site-based management plans and species management plans – Rail (SEIS Volume 4 Appendix C3)
- Offsite infrastructure site-based management plans (refer to SEIS Volume 4 Appendix C4)
- Quarry site-based management plans (refer to SEIS Volume 4 Appendix C5)
- Social Impact Management Plan (SEIS Volume 4 Appendix D2)
- Offsets Strategy (SEIS Volume 4 Appendix F)
- Draft Subsidence Management Plan (SEIS Volume 4 Appendix I2)
- Mine Waste Management Strategy – Mine (SEIS Volume 4 Appendix O2)
- Environmental Management Plan – Mine (SEIS Volume 4 Appendix Q1)
- Environmental Management Plan – Offsite (SEIS Volume 4 Appendix Q2)
- Closure and Rehabilitation Strategy – Mine (SEIS Volume 4 Appendix R1)
- Closure and Rehabilitation Strategy – Offsite (SEIS Volume 4 Appendix R2)
- Bushfire Management Plan (SEIS Volume 4 Appendix S2)
- Fauna Crossing Strategy – Rail (SEIS Volume 4 Appendix U)
- Emergency Management Plan – Rail (SEIS Volume 4 Appendix V)
- Environmental Management Plan – Rail (SEIS Volume 4 Appendix W)
- Closure and Rehabilitation Strategy – Rail (SEIS Volume 4 Appendix X1)
- Closure and Rehabilitation Strategy – Quarries (SEIS Volume 4 Appendix X2)

Important mitigation measures have been included in this revised Commitment Register. A brief summary of each of the above listed plans and strategies is provided in Section 3.

2. Project commitments

2.1 Project commitments (Project wide)

2.1.1 Social Impacts Management Strategies

Refer to SEIS Volume 4 Appendix D2 for the Social Impact Management Strategies which consolidate the various mitigation and management measures developed in the Project SIA report (SEIS Volume 4 Appendix D1) into key/overarching management strategies that will be implemented by Adani. The strategies also outline the monitoring mechanisms and stakeholders who will be involved in the finalisation and implementation of the strategies.

Proponent Commitment	
P1.1	Development of recruitment and training programs that address skills shortages and sustainably maintain a reliable, skilled workforce, and address potential hurdles to traditionally underrepresented groups joining the mining industry.
P1.2	Development of a Local Industry Participation Strategy that complies with Adani's Local Buying Policy and maximises opportunities for businesses in the district and regional areas to provide goods and services to the project.
P1.3	Working collaboratively with IRC and other representative bodies, such as the Clermont Preferred Futures Group, to provide strategic direction and investment for whole of community benefit, including establishing a community fund providing financial support targeting community activities, capacity and services.
P1.4	Development of a Workforce Management Strategy that includes a comprehensive employee induction programme addressing, among other things, a Code of Conduct for Employees and contractors regarding behaviour, alcohol and drug use, cultural awareness and safety.
P1.5	Development of a Housing and Accommodation Strategy that provides a workers accommodation village and temporary construction camps for the construction and operations workforce and responds to housing and accommodation issues in local and regional communities.
P1.6	For properties impacted by the project (Rail) there will be the need to relocate some fences, build new ones to fully fence the rail corridor and construct occupational crossings and additional stock holding yards where required.
P1.7	An Emergency Management Plan will be developed for all components of the Project in consultation with relevant emergency service providers and this will include response to injuries and medical evacuations as well as fire response and response to road accidents.
P1.8	Development of Workforce Health and Safety Plans within the Workforce Management Strategy that will include a wellbeing program, including safe work practices, fatigue management, management of medical conditions (including communicable diseases), fitness, emotional and mental health and programs for financial planning.
P1.9	Ongoing consultation with DATSIMA during the development of Indigenous Participation Plan.
P1.10	Establishment of an emergency services consultative committee to coordinate the management of potential impacts on emergency services.



2.1.2 Indigenous and non-indigenous cultural heritage

Commitments and mitigation measures are detailed under Cultural Heritage Management Plans prepared in consultation with Native Title/Aboriginal parties and approved through the State government and as such are not able to be reproduced in the SEIS.

Proponent Commitment	
P2.1	Adani will continue to carry out full cultural heritage surveys of all Project areas with relevant Aboriginal Parties in accordance with the provision of approved CHMPs
P2.2	Adani will maintain communication with the Wangan and Jagalingou and Jangga Peoples through the established CHMP implementation committees, and other relevant Aboriginal parties through the establishment of implementation committees made up of representatives of both Adani and relevant Aboriginal parties.
P2.3	Ongoing cultural awareness training will continue to be provided to personnel with the intention of training people involved in the Project in avoidance and protection of known cultural heritage sites and management procedures in the event of a cultural heritage find not previously identified during the cultural heritage surveys.

2.1.3 Economics

Proponent Commitment	
P3.1	Adani has purchased the leasehold for the Moray Downs property and a package of compensation will be provided for impacts to the properties affected by the Mining Lease.
P3.2	Adani will work with landowners to agree on the location of easements to reduce impacts e.g. outside property boundaries and/or along fence lines, rather than through middle of property where practicable.
P3.3	Adani will develop appropriate biosecurity protocols including, but not limited to; potentially restricted access and vehicle/plant wash down. Information will also be provided on road closures/detours and alternative routes provided in appropriate media and with signage during railway construction.
P3.4	Adani will work with both Councils, Clermont Preferred Futures Group, and local businesses in conjunction with government agencies (Office of Advanced Manufacturing) and the Industry Capability Network (ICN) in developing a plan to provide robust, integrated and sustainable local business participation opportunities.
P3.5	Whilst there will predominantly be a FIFO workforce, Adani will identify opportunities for Drive in Drive Out and Bus in Bus Out employment options.

2.1.4 Cumulative impacts

Proponent Commitment	
P4.1	No specific commitments.

2.1.5 Offsets

Please refer to SEIS Volume 4 Appendix F for the Offsets Strategy which includes specific commitments.

2.1.6 Matters of national environmental significance

Proponent Commitment	
P6.1	Detailed design and layout for construction will further consider opportunities to avoid sensitive habitat, including aquatic habitat, and make use of non-remnant/cleared land. Clearance extent will be restricted to only that necessary for the Project. Rehabilitation of cleared areas is to occur as soon as practically possible after cleared areas are no longer required. Areas to be cleared are to be identified onsite and clearance operations are to be supervised by a suitably experienced ecologist to monitor compliance to clearance extents and for avoidance of impacts to fauna.
P6.2	Vegetation clearing will be undertaken in a sequential manner to allow mobile fauna to disperse away from clearing areas. Prior to clearing, all demarcated habitat features will be checked for fauna by a fauna spotter-catcher and at risk, species will be relocated. A Fauna Species Relocation and Salvage Plan (part of the Rail and Offsite Infrastructure Threatened Species Management Plans (SEIS Volume 4, Appendix C3)) will be developed to facilitate relocation of fauna individuals according to species requirements (particularly if conservation significant fauna species are encountered during clearing activities). A fauna mortality register will be maintained to document the location and frequency of mortality and the fauna species most susceptible to injury and death, to enable on-going modifications to fauna conservation management strategies where necessary.
P6.3	Design will work to minimise impacts as far as practical by avoiding fragmenting habitat, including suitable watercourse crossings and fauna passages. Measures to mitigate and ameliorate potential impacts that may occur during the operation of the rail will, therefore, be implemented during construction.
P6.4	Fauna corridors will require revegetation, fencing and grids/gaps to promote fauna use. Consideration will be given to fauna/fish passage requirements and design will adopt criteria, which promote fauna use.
P6.5	Fauna underpasses within important habitat areas will be incorporated into the design of the rail corridor, where possible. Appropriate fencing and revegetation is required to encourage use by fauna species.
P6.6	Fencing, waste management, speed limits, fire controls, pest and weed controls, vehicle maintenance and pollutant and waste/hazardous substance management, to be coordinated under the EMP (operation), will be utilised onsite to minimise direct or indirect impacts to flora or fauna or pollution of the environment.
P6.7	Incidents of fauna strike and mortality are to be monitored during operation. Dead carcasses are to be disposed of away from the rail corridor to reduce the occurrence of predators, such as raptors and pest fauna, also being struck by moving trains.
P6.8	The rail will be fenced to restrict ability of fauna to move across the rail line.
P6.9	Site specific, risk specific, management plans will be developed to control for potential impacts associated with matters including, but not restricted to, fire, pollution, introduction or spread of weeds or pests and release of contaminants. These management actions seek to avoid or reduce impacts and will be implemented and controlled through an EMP for the Rail Project.
P6.10	Landscape permeability will be retained where possible. Where fencing is required around cleared areas, it will be designed such that fauna can move through it excluding those instances where fenced areas seek to protect fauna from threats such as trenches. Consideration will be given to not using barbed wire on the top strand of wire fences.
P6.11	Prior to construction and mining operation, baseline field surveys to identify initial weed populations and ongoing monitoring of these populations and for any new occurrences are to be undertaken. Any weed populations identified are to be actively managed with the goal to reduce the spread of and eradicate weed species from the Study Area. This will be detailed in the Project Weed and Pest Management Plan.
P6.12	All vehicles and plant associated with vegetation clearing will adhere to site rules relating to speed limits. Speed limits will be developed, and clearly signposted so as to minimise the potential for road kill.
P6.13	Landscape permeability will be retained where possible. Staged Mine development



Proponent Commitment

	should seek to maintain east-west connectivity where possible throughout the Mine's operational life. The strip of land to be protected on either side of the Carmichael River will be managed so as to maintain and provide biodiversity values.
P6.14	Work areas are to be checked regularly for fauna that may have entered the work area or become trapped and fauna are to be relocated. Management of work areas should seek to avoid attracting fauna. All vehicles and plant will adhere to designated tracks/roads to avoid unnecessary habitat impacts and will adhere to site rules relating to speed limits to minimise potential for road kill.
P6.15	Vegetation clearing will be undertaken in a sequential manner to allow more mobile fauna species the opportunity to disperse away from clearing areas. Employees will be made aware of environmental management requirements for vegetation clearing and fauna management and all employees will adhere to requirements at all times.
P6.16	Management actions seeking to avoid or reduce impacts will be implemented, under the guidance of key strategies including the Project Land Management (Flora and Fauna) Plan and the Draft Closure and Rehabilitation Strategy – Mine (SEIS, Volume 4, Appendix R1 and the Draft Closure and Rehabilitation Strategy – Offsite (SEIS Volume 4, Appendix R2). Standardised monitoring and auditing of the application and performance of management and mitigation strategies will be undertaken, with corrective actions implemented where required.
P6.17	Design and sequencing of site use to incorporate stormwater management infrastructure and mechanisms to manage runoff. Stormwater management mechanisms and monitoring requirements will be developed prior to any operational activities for each operational area of the Study Area (as it is progressively developed) and incorporated in the Water Quality Management Plan.
P6.18	Watercourse diversion required will be achieved prior to any clearing to manage impacts to downstream habitats. Activities that affect watercourse path, including stormwater flow paths or creation of dams, are not to commence until suitable diversion and management of flows is achieved to avoid unnecessary interruption of flows, erosion and water quality degradation.
P6.19	Vegetation clearing activities will, where possible, seek to avoid alteration to waterways such that the impacts to water quality and downstream flows are minimised to the greatest extent possible. Dust suppression activities to be undertaken where appropriate.
P6.20	Management of erosion and sedimentation will be undertaken in accordance with a Project Erosion and Sediment Management Plan. This plan will identify all practices to be implemented prior to, during, and post-construction to minimise the potential for erosion to occur, including (but not limited to) timing of clearing activities, sediment and erosion control measures to be implemented, performance criteria and corrective actions. Monitoring and reporting protocols will be detailed within this plan, and responsible parties for implementing the plan's actions should be identified.
P6.21	Management of potential contaminant or waste release, or emergency response to such, to be documented within the EMP (operation). Regular water quality monitoring to be completed to confirm adequacy of management and mitigation measures. Monitoring requirements, water quality targets, corrective actions and reporting requirements to be clearly articulated in an Operational Water Quality Management Plan, embedded within the EMP (operation).
P6.22	No water will be sourced from the Carmichael River.
P6.23	Sewage will be treated to Class A standard such that value and quality of aquatic habitats is not adversely impacted.
P6.24	Flow monitoring will occur at the outlet at Joshua Spring to monitor changes in output, and in the Carmichael River immediately adjacent to Joshua Spring, to monitor contributions to surface water flow and seasonal changes.
P6.25	Mapping and measurement (using GPS equipment capable of sub-metre accuracy)

Proponent Commitment

	of the 'vegetated area' perimeter of the main wetland areas at the Moses Spring group quarterly (there are five main wetland areas) will occur.
P6.26	Mapping and measurement (using GPS equipment capable of sub-metre accuracy) of selected isolated mound springs (those discrete mounds outside the wetland areas) at Moses Spring group will be conducted on a seasonal basis by a suitably qualified botanist prior to and during the predicted drawdown impact. At least 10 will be selected over the entire spring group (these same 10 to then be resurveyed at each repeat survey), focussing on differing sized mounds and gaining a good geographic spread over the entire group. This will include a complete species list of the mound vegetation, a photographic record (taken from at least two locations consistently), diameter, height and perimeter measurements (diameter taken from the same places each time), and flow measurements. If a mound should disappear during the Mine life, a nearest neighbour replacement will be selected.
P6.27	Ecological studies of the two threatened species listed under the EPBC Act that occur at Moses Spring – blue devil and salt pipewort – will be conducted annually. This will be done in consultation with the Queensland Herbarium using an appropriate survey method for small herbs (the latter of which is a clumping species). Consideration will be given to changing the frequency of surveys if population changes are noted.
P6.28	A baseline survey of aquatic invertebrates at Moses Spring will be conducted by a suitably qualified ecologist/entomologist prior to mining operations commencing, to determine the presence of endemic species.
P6.29	A baseline water level will be established at a reference location for the springs, and water levels will be measured against this baseline on a quarterly basis during mining operations.
P6.30	Monitoring events will commence at least one year before mining operations (in order to continue a baseline understanding of existing conditions), and continue for at least two years after mining operations are completed.
P6.31	At the conclusion of baseline surveys (after at least one year of surveys prior to commencement of mining operations) a Baseline Ecological Condition report will be prepared for the springs.
P6.32	An annual report on the spring condition, including statistical comparison to baseline condition, will be provided including reporting on any change from baseline conditions and planned actions.
P6.33	Spring surveys will utilise data gained from studies into groundwater levels conducted by the Mine in the vicinity.
P6.34	Ongoing monitoring of Mellaluka Springs will be focused on groundwater studies and is outlined in the Mine Hydrogeology Report (GHD, 2013r).
P6.35	Pumping groundwater to the surface may act to offset the loss of some sections of the Mellaluka Spring wetland, and Adani will consider installing electric submersible pumps when drawdown commences for this purpose. A wetland remediation and management plan will be prepared at this time in consultation with the Mellaluka owner. A pump may also be required to ensure the continuation of water to the Mellaluka homestead.
P6.36	All surveys and other works will be conducted in consultation with the Doongmabulla and Mellaluka property owners.
P6.37	Water recycling to supplement base flows in the Carmichael River during dry periods will be conducted in accordance with procedures outlined in the Water Balance Report (SEIS Volume 4 Appendix K2). This will see excess and treated water reintroduced to the river near the western Mine Area boundary, with due consideration to water quality. The intent is that this water will be introduced to the channel in a 'gaining' section of the river, where it will remain in the channel and thus contribute to base flows downstream.
P6.38	A detailed 'ecological features' map will be made for the Carmichael River to assist in dieback and river health monitoring, identifying priority management areas including the locations of waxy cabbage palms, rubber vine infestations, riparian composition and health, areas of connectivity/disconnection with the groundwater based on the modelling, gaining/losing areas of the river relative to the groundwater, as a minimum.
P6.39	In order to reduce the likelihood that canopy dieback will result in the excessive



Proponent Commitment

	<p>growth of weeds, and so as to safeguard existing populations of waxy cabbage palm, the infestation of rubber vine present within the river bed (that is still at a manageable stage) will be removed and ongoing management measures will be implemented to monitor any resurgence. In addition, the existing pig population, which is damaging waxy cabbage palm habitat and seedlings, will be controlled.</p>
P6.40	<p>Permanent CORVEG primary monitoring transects will be established at regular intervals along the river for the purpose of establishing a riparian community health baseline. In the initial development/operational phases of the Mine monitoring of the plots will be seasonal, reflecting high flow/low flow variability in the Carmichael River (twice annually). This monitoring will continue into the mid operational life of the Mine, and increase to a quarterly frequency when drawdown is at its maximum. If possible, depth to groundwater data will be incorporated.</p>
P6.41	<p>Monitoring of the health of the waxy cabbage palm population will be undertaken on a bi-annual basis, preferably at the start of the wet season and the start of the dry season (December and May). Cabbage palms are able to be transplanted, and where practical and feasible (given that large machinery is required, gaining access may do more damage to the river than is practical), advice will be sought from the relevant agency at the time to transplant as many of these as possible to other locations, should there be evidence of stress that can be directly related to reductions in river base flows. If possible, this will be done in partnership with a university or the Queensland Herbarium.</p>
P6.42	<p>Long-term research on the waxy cabbage palm will be conducted, preferably in partnership with a university, on the population on the Carmichael River and its response to observed changes in groundwater depth and base flow volume and frequency. This will include long-term flow monitoring and measurements of groundwater depth changes at least three locations along the river where adult waxy cabbage palms are located (preferably, chosen to contrast different change regimes). Complete mapping of the Carmichael River waxy cabbage palm population (particularly downstream of the Mine Area, where base flow reductions will have an impact) will be undertaken.</p>
P6.43	<p>Vegetation monitoring will be undertaken having regard to groundwater monitoring/base flow monitoring. Locations for monitoring bores will be chosen with respect to selected environmental features along the Carmichael River (such as deep pools, particular riparian communities, areas with waxy cabbage palm) to enable more meaningful interpretation of potential direct interactions between these features and the groundwater.</p>
P6.44	<p>Monitoring the base river flow, including the establishment of gauging stations, will be undertaken in areas of particular ecological interest. Flow data will be monitored on an ongoing basis prior to construction, during operation and post operation upstream, downstream and within the Mine Area.</p>
P6.45	<p>Detailed monitoring of groundwater levels and surface water flows at the Carmichael and Belyando Rivers prior to construction, during operation and post operation upstream, downstream and within the Mine Area will be undertaken to measure changes to groundwater and surface flows.</p>
P6.46	<p>A Project Waste and Resources Management Plan and Hazardous Substances Management Plan will be implemented, and include waste management and disposal protocols and procedures. This plan will incorporate protocols relating to the:</p> <ul style="list-style-type: none"> • Disposal of vegetation waste (in a manner that minimises potential for spread of weeds) • Disposal of food scraps and the like (to minimise potential for pest animals to access food wastes).
P6.47	<p>All construction machinery and materials brought onto site will be certified as free of weeds and weed seeds. Records are to be kept of compliance with this requirement.</p>
P6.48	<p>Additional field studies will be undertaken, prior to clearance during the post EIS phase, to determine the presence of individuals, populations/colonies and/or</p>

Proponent Commitment

	important habitat areas for threatened species not detected during field surveys for the EIS, which are considered likely to occur at the Study Area (i.e. yakka skink). The findings of such studies will be a component of Project Species Specific Management Plan(s) (SEIS Volume 4, Appendix C3, Rail Applications) for these animals, and the outcomes will be directly linked to the Revised Offset Strategy Report (see SEIS Volume 4, Appendix F).
P6.49	The Revised Project Offset Strategy (SEIS Volume 4, Appendix F) will provide a framework for the identification of measures designed to provide regional biodiversity benefits, where onsite impacts cannot be avoided.
P6.50	Data gathered from onsite and offsite monitoring of koala populations, densities and habitats will be incorporated into the National and State database of koala population distribution, density and habitat mapping data.
P6.51	With respect to koalas, monitoring of pest dog populations in the Study Area and implementation of an eradication program will occur if necessary.
P6.52	The loss of habitat for the black-throated finch (southern) will occur in stages, in accordance with the staged development of the operational components of the Mine Area. Management actions to encourage dispersal away from areas that will be cleared for staged Mine operations will also be developed.
P6.53	Management actions for black-throated finch will seek to maintain and where possible enhance habitats and populations (e.g. through pest control, provision of water sources, appropriate grazing and fire management) in unmined parts of the Mine Area, as well as in offset areas.
P6.54	Offsets for black-throated finch (southern) habitat will be provided and an offsets strategy has been prepared that identifies suitable offsets on the Moray Downs property adjacent to the Mine Area.
P6.55	Important population, movement and habitat information for black-throated finch will be collected, particularly with respect to seasonal use, key areas, nest sites, important feeding areas and management of threatening processes.
P6.56	Adani will provide a Draft Black-throated Finch Management Plan for approval prior to the commencement of construction. The Plan will include the following: <ul style="list-style-type: none"> • A management framework that aligns with the other project management plans • Clear statements regarding the intent, approval requirements, objectives and actions • Details of how the management plan will be applied across the project phases – pre construction / construction / operation / post operations, offset areas • Details of the current and proposed adaptive monitoring program to support the plan objectives. • Details of how experts will be used in a review capacity to inform ongoing monitoring and management • Incorporates all proposed management and mitigation measures, including reference to how these will align with the Significant Impact Guidelines and the National Recovery Plan. • Specific performance targets and how these will be measured and reported.
P6.57	Black-throated finch surveys will continue over time to provide data on temporal and spatial variation of habitat use in the Mine Area and will contribute significant local data for incorporation into the Black-throated Finch Species Management Plan for the Mine Area, which will assist in refinement of species recovery actions and mitigation of impacts on the Mine Area. In the case of subsidence, which will occur gradually and in a complex and partly unpredictable manner, the data being collected by this monitoring will provide information regarding the best strategies over time to mitigate negative effects and manage key resources for black-throated finch on the Mine Area.
P6.58	The onsite and offsite (offset areas) habitat management and complementary monitoring program, as described above, will be developed and implemented in consultation with relevant stakeholders (i.e. Black-throated Finch Recovery Team,



Proponent Commitment	
	Commonwealth and State governments).
P6.59	The habitat values for black-throated finch will be maintained, and where possible enhanced, in the local landscape.
P6.60	The management of areas for biodiversity onsite (in the Mine Area) and in the Mine (Offsite) area (in offset areas) will contribute to the recovery actions for the black-throated finch (southern).
P6.61	Regional distribution (black-throated finch distribution modelling). The intent of this component of the monitoring program is to review all records in the region (Einasleigh Uplands and Desert Uplands) and refine a habitat and distribution model using a combination of expert opinion and temporal and spatial species distribution models.
P6.62	Regional distribution (black-throated finch surveys). The aim of this component of the monitoring program is to undertake systematic surveys in the adjacent Desert Uplands, Einasleigh Uplands and perhaps Northern Brigalow Belt regions in order to understand the regional distribution of the black-throated finch (southern).
P6.63	Local monitoring (black-throated finch observations) on the Mine Area. The aim of this component of the monitoring is to undertake repeated and systematic surveys of black-throated finch (southern) distribution and habitat at the Mine Area to collect more detailed data regarding (i) habitat preferences, local habitat use (i.e. hotspots), preferred habitat structure and vegetation composition, diet, nesting sites and reliance on mixed species flocks, (ii) temporal variation in habitat use, (iii) coarse population estimates and any spatial and temporal variation in numbers, and (iv) response to existing land management effects (i.e. grazing, fire, weeds, water array).
P6.64	Local monitoring (detailed black-throated finch surveys) on the Mine Area. The aim of this component of the monitoring is to undertake detailed surveys of black-throated finch (southern) habitat use, home range sizes, fine scale distribution changes over seasons, the genetic status of the local population and physiological health of the black-throated finch (southern) populations over time and especially in times of resource bottlenecks.
P6.65	For the implementation of offsets, ground-truthing will be required with the areas proposed for offsetting confirmed following detailed design plans for the Mine.
P6.66	In recognition of the nature and scale of impacts, and the impact previous land use has had on biodiversity in the region, a framework is proposed to manage these impacts and assist with biodiversity recovery over the life of Project operations. It is critically important that implementation of the framework becomes a collaboration between the proponent, land managers, research organisations and government so that the package of mitigation measures are able to meet the framework's objective.
P6.67	In recognition of the variable, staged disturbance that will occur over the life of the Mine, the framework will provide detailed adaptive management strategies across a number of key elements that require mitigation. Indeed, the framework will be underpinned by monitoring programs and on-going research such that management actions can be appropriately targeted, implemented, and where required, modified. This approach will need to be linked to the offsets strategy for the Project so that enhancement of biodiversity occurs at both local and regional scales.
P6.68	<p>Project Land Management (Flora and Fauna) Plan</p> <p>Key actions</p> <p>Identify priorities for further field studies and targeted research in the Study Area.</p> <p>Undertake mapping on and offsite to identify areas to be managed under this plan (and the sub-plans listed below). This should be done in consideration of staged Project operations.</p>

Proponent Commitment

Identify parts of the Study Area that should be targeted for ecological management, so as to enhance the value of these areas. This should be done in consideration of staged Project operations.

Develop monitoring programs, research projects and natural resource management trials to inform flora and fauna management.

Incorporate the findings of onsite research and monitoring into management activities (as detailed in sub-plans listed below).

Timeframes

This overarching management plan (and the component sub-plans) listed will be prepared prior to the commencement of Mine operations.

The actions detailed in this overarching management plan (and its component sub-plans) will be implemented throughout the Mine's operation phase.

Five yearly revision and updating of this plan (and its component sub-plans) will be undertaken to reflect regulatory and environmental circumstances, and will incorporate the most up to date scientific information, including that collected from ongoing research and monitoring programs at and near the Study Area.

P6.69

Project Vegetation Management Plan

Key actions

Map areas of remnant vegetation to be managed, in for each of the staged Project operations.

Develop and implement a monitoring protocol, involving demarcated sites in managed areas within the Study Area, and reference sites outside of the Study Area.

Collaborate with research institutions to determine a program to identify remnant vegetation changes resulting from subsidence, with the objective of informing management of this process and retaining environmental values.

Timeframes

Management plan to be prepared prior to commencement of Project operations.

Plan's actions to be implemented throughout life of Mine operations.

Five yearly revisions and updating of this plan based on currency of information available.

Initiate program at commencement of underground mining operations.

P6.70

Project Species Specific Management Plan(s)

Key actions

Develop and implement programs to provide a greater level of detail on the ecology of threatened species at the Study Area – to be undertaken in collaboration with applicable research organisations, conservation groups and government agencies.

With respect to the black-throated finch (southern), research initiatives (and habitat management) to be directed by the recovery actions presented in the National Recovery Plan for the Black-throated Finch Southern Subspecies (Black-throated Finch Recovery Team, 2007).

Manage habitats at (and in the vicinity of) the Study Area, in accordance with the findings of ongoing research at the site.

Implement a monitoring program to review the efficacy of management actions.

Timeframes

Project Species Specific Management Plan(s) (SEIS Volume 4 Appendix C3 Rail Applications) has been prepared.

Implement targeted ecology and threatened species programs prior to and during



Proponent Commitment

	<p>Mine operations. Five yearly revisions and updating of this plan based on currency of information available.</p>
P6.71	<p>Project Weed and Pest Management Plan (weeds)</p> <p>Key actions</p> <p>Identification of weed infested areas at the Study Area (Year 1 of Project life). Development and implementation of protocols for eradicating weeds at the Study Area (Year 2 of Project life). Implementation of measures to minimise the introduction and spread of weeds at the Study Area (i.e. provision of weed wash down facilities, requirement for weed-free certification of vehicles entering Study Area) – throughout life of Mine. Development and implementation of a weed monitoring program for the Study Area – throughout life of Mine.</p> <p>Timeframes</p> <p>Management plan to be prepared prior to commencement of Project operations. Five yearly revisions and updating of this plan based on currency of information available.</p>
P6.72	<p>Project Weed and Pest Management Plan (introduced animals)</p> <p>Key actions</p> <p>Development and implementation of protocols for eradicating/controlling introduced animals at the Study Area (Year 1 and 2 of Project life). Development and implementation of an introduced animals monitoring program for the Study Area – throughout life of Mine.</p> <p>Timeframes</p> <p>Management plan to be prepared prior to commencement of Project operations. Five yearly revisions and updating of this plan based on currency of information available.</p>
P6.73	<p>Project Erosion and Sediment Management Plan</p> <p>Key actions</p> <p>Identify and map erosive soils and potential erosion areas across Study Area – Year 1 of Mine life. Implement standard erosion control measures wherever operations have the potential to facilitate erosion – throughout life of Mine. Monitor the efficacy of erosion control measures, such that measures can be constantly improved – throughout life of Mine.</p> <p>Timeframes</p> <p>Management plan to be prepared prior to commencement of Project operations. Plan's actions to be implemented throughout life of Mine operations. Five yearly revisions and updating of this plan based on currency of information available.</p>
P6.74	<p>Project Waste and Resource Management Plan and Project Hazardous Substances Management Plan</p> <p>Key actions</p>

Proponent Commitment

	<p>Design storage and handling facilities of hazardous and waste materials, such that potential for accidental release (i.e. leaks, spills, explosions) is minimised to the greatest extent possible.</p> <p>Develop a protocol for the management of hazardous material/waste products in instances where spills, leaks or explosions occur.</p> <p>Timeframes</p> <p>Management plan to be prepared prior to commencement of Project operations.</p> <p>Plan's actions to be implemented throughout life of Mine operations.</p> <p>Five yearly revisions and updating of this plan based on currency of information available.</p>
P6.75	<p>Project Bushfire Management Plan</p> <p>Key Actions</p> <p>Develop a protocol for fire management at the Study Area. Ecological considerations, informed by onsite studies and input from relevant stakeholders (i.e. university researchers, government agencies), should be incorporated into this protocol, to the extent that Mine operations and safety are not compromised.</p> <p>Timeframes</p> <p>Management plan to be prepared prior to commencement of Project operations. The Rail Bushfire Management Plan has been developed (refer to SEIS, Volume 4, Appendix S2).</p> <p>Plan's actions to be implemented throughout life of Mine operations.</p> <p>Five yearly revisions and updating of this plan based on currency of information available.</p>
P6.76	<p>Draft Closure and Rehabilitation Strategy – Mine (SEIS, Volume 4, Appendix R1 and the Draft Closure and Rehabilitation Strategy – Offsite (SEIS Volume 4, Appendix R2)</p> <p>Key actions</p> <p>Review existing literature relating to Mine rehabilitation, and consult with applicable organisations (universities, government agencies) to determine a detailed procedure for rehabilitation of land post-disturbance.</p> <p>Where required, undertake/contribute to onsite and offsite research (including trials) relating to post-mining rehabilitation, so as to increase the knowledgebase on this subject, and inform the design of the rehabilitation protocol to be implemented at the Study Area.</p> <p>Develop and implement a monitoring protocol to assess rehabilitated areas.</p> <p>Timeframes</p> <p>Draft Closure and Rehabilitation Strategy – Mine (SEIS, Volume 4, Appendix R1 and the Draft Closure and Rehabilitation Strategy – Offsite (SEIS Volume 4, Appendix R2) prepared – to be finalised prior to conclusion of the first stage of mining operations at the Study Area.</p> <p>Research trials to commence with mining operations.</p> <p>Rehabilitation to commence immediately following conclusion of staged mining operations, and continue to such time that pre-determined rehabilitation targets/benchmarks have been achieved (as revealed through on-going monitoring of rehabilitated areas).</p>
P6.77	<p>Project Biodiversity Offsets Package</p> <p>Key actions</p> <p>Prepare a framework for the identification of opportunities to enhance biodiversity values within the Study Area and in the region.</p>



Proponent Commitment

	<p>Secure offsets as identified through the Revised Project Offset Strategy (SEIS Volume 4, Appendix F), and undertake all management and research obligations committed to through the securement of these offsets.</p> <p>Timeframes</p> <p>Revised Offset Strategy Report has been prepared (SEIS Volume 4, Appendix F). Identified offsets (in accordance with staging of Mine operations) to be secured/committed to prior to commencement of staged mining operations, such that net loss of ecological values is prevented or minimised.</p>
P6.78	Regular, standardised monitoring will be a core component of the successful implementation of these plans, and provide the means for adaptive management to maintain relevance of proposed actions across the life cycle of the Project.
P6.79	<p>A comprehensive monitoring program will be developed as part of the site water management plan. The site water management plan will include the following monitoring measures as outlined in SEIS Volume 4, Appendix Q1 Environmental Management Plan for the Mine:</p> <ul style="list-style-type: none"> • Surface flows will be monitored on an ongoing basis prior to construction, during operation and post operation upstream, downstream and within the Study Area to measure changes • All regulated water management infrastructures (dams, levees, diversion dams) will be annually inspected at a minimum by a suitably qualified and experienced person. A report will be produced with any recommendations required to ensure the structural integrity, as recommended in the DEHP (2012) guidelines Structures which are dams or levees constructed as part of environmentally relevant activities (EM634) • Dam capacity must be reviewed annually to ensure that sufficient capacity exists to meet the design storage allowance as determined by the Manual for assessing hazard categories and hydraulic performance of dams (EM635) • Diversion drains, floodplains and discharge points to downstream waterways will be inspected regularly during the wet season and after any flow event to identify any scouring, instability or erosion. Corrective action will be taken promptly.
P6.80	All Project Environmental Management Plans will be informed by monitoring works to be completed pre-construction and during delivery of the Project. They will be adaptable and include provision for revision and update based on monitoring feedback, changes in operational or construction work plans, changes in legislation and to maintain currency against political, social and environmental circumstances.

2.2 Project commitments (Rail)

2.2.1 Project Description

Proponent Commitment	
R1.1	Relevant approval applications will be prepared and submitted by Adani
R1.2	A Decommissioning and Rehabilitation Plan will be required to be developed with the overall aim of minimising the amount of land disturbed at any one time during the life of the Project (Rail). It will be required to be developed in accordance with the current Queensland legislative requirements (refer Volume 4 Appendix D), particularly DERM's Guideline 18 – Rehabilitation Requirements for Mining Projects, which provides information on progressive and final rehabilitation for mining projects in Queensland.

2.2.2 Climate, Natural Hazards and Climate Change

Proponent Commitment	
R2.1	Sufficient hydraulic capacity to allow conveyance of natural flows with minimal increase in velocity or afflux are to be maintained in the advent of causeway construction.
R2.2	Low flow channels and culverts throughout the study area are to be kept free of debris.
R2.3	A detailed scour assessment is to be conducted to determine the appropriate depth of cover or scour protection measures to be adopted at each crossing. The detail design of the creek crossings will incorporate works and measures to minimise the following: <ul style="list-style-type: none"> • The risk of damage to the creek banks during construction • Change in the sediment transport regime at the crossing • The risk of creek bank collapse or erosion during flood events.
R2.4	Continued and iterative flood modelling through detailed design will determine afflux values in association with refinement in bridge and culvert crossing design and will determine flood inundation duration.
R2.5	Further work will be undertaken to catalogue the impacts of afflux on the floodplain, properties, assets and infrastructure.
R2.6	Ongoing consultation with affected landowners and asset owners to assist in further refinement of project design and ongoing flood modelling.
R2.7	Selectively raising farm roads by placing fill material, will reduce the impact on farm roads subject to negotiations and agreements with landholders and asset owners.
R2.8	Consideration of compensation to flood affected land and asset owners in relation to excessive afflux.
R2.9	Maintain adequate firebreaks on either side of the rail corridor, particularly during prolonged dry periods. Negotiate land management practices with adjacent landholders to maintain firebreaks.
R2.10	Develop a plan for recovery of Adani rail equipment from third party infrastructure including rollingstock.
R2.11	Develop an Emergency Response Plan (ERP) for construction, operations and decommissioning phase, which will incorporate the requirements for workplace health and safety, community and environmental hazard management. The ERP will include responses for natural events such as cyclones, flooding and earthquake.

2.2.3 Land

Proponent Commitment	
Scenic Amenity and Lighting	
R3.1	Vegetation will be planted around maintenance facilities and alongside the Project (Rail) corridor in sensitive locations where landowner permission is granted.
R3.2	Light spillage from artificial night-lighting used during night works will be designed such that the site is not over-lit unnecessarily and light spillage into adjacent areas is minimised. Minimise security lighting to reduce additional sky glow. Specify appropriate luminaires to reduce light spill, sky glow and glare. Minimise any potential increase in light pollution within the natural environment by sensitive placement and specification of lighting. Directional lighting will be used and shields provided to minimise spill outside the working area. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution. Fauna-sensitive lighting will be considered during construction camp design.
R3.3	Develop and implement a traffic management plan to control road usage routes and traffic speed to reduce the visual impact of vehicle movements and dust generation.
R3.4	Progressive rehabilitation of temporary infrastructure sites and non-operational areas. This will assist in providing texture and contrast in the visual landscape.
Topography, Geology and Soils	



Proponent Commitment

R3.5	Further soil surveys will be developed and undertaken to determine the actual presence of strategic cropping land (SCL) prior to construction. This survey will evaluate soils within the western cropping zone and in particular those mapped as SCL against eight criteria prescribed by the legislation. An appropriate soil survey methodology will be developed in consultation with DNRM according to criteria of SCL in the Western Cropping Zone.
R3.6	Maintain the integrity of topsoil resources (associated with construction and temporary disturbances outside of the rail corridor) as close to pre-disturbance conditions as possible, which may require the addition of ameliorants.
R3.7	Maintain the overall catchment gradients as close to that of pre-disturbance condition.
R3.8	An Erosion and Sediment Control Plan (ESCP) will be developed to manage areas of steep slopes, areas to undergo significant landform change and areas with problematic soils. Appropriate erosion and sediment controls, such as sediment fences, will be implemented in these areas.
R3.9	Clearing will be confined to the Project (Rail) corridor and infrastructure areas and minimised wherever possible, particularly in areas where temporary infrastructure is to be established. Existing trees and shrubs, particularly in discharge and just above the discharge areas, will be retained as far as is practicable. Retention of vegetation assists in maintaining groundwater levels at sufficient depths below ground level.
R3.10	Temporarily disturbed areas will be stabilised as soon as practical by reinstating topsoil and subsoil and compacting replaced soils. Any bare ground associated with temporary infrastructure (e.g. construction camps) after the completion of the Project will be re-vegetated in line with pre clearing conditions, such as suitable pasture or native vegetation.
R3.11	Continued consultation with directly affected landowners in relation to the limiting effects of fragmentation, for example by providing stock crossings and other crossings as necessary and the provision of compensation.
R3.12	Where closure of Stock Routes is required Adani will conduct discussions with DNRM, IRC and landholders regarding re-alignment.
R3.13	Limit vehicle movements to designated access tracks during construction.
R3.14	Limit overall areas of disturbance during construction.
R3.15	Maintain surface drainage patterns through design of culverts and cut/fill areas. Where changes in flows cannot be avoided, soil stabilisation to prevent salinisation or other forms of soil degradation will be considered.
R3.16	Ongoing consultation with landholders regarding specific management measures contained within Environmental Risk Management Plans (ERMPs) will be undertaken.

Land Contamination

R3.17	Sewage will be treated on-site with a package sewage treatment plant. Disposal options will be assessed during the design phase of the Project.
R3.18	Undertake a Site Contamination Assessment (SCA) in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM, 1999).
R3.19	Where contamination is identified, will be managed and/or remediated via a DEHP approved Site Management Plan (SMP) and/or a Remediation Action Plan (RAP).
R3.20	A spill response plan will be prepared and incorporated into an incident response plan, including requirements for spills to be reported, contained and cleaned.
R3.21	Potential for spillage of hydrocarbons will be minimised through implementation of standard operating procedures for transport, handling and storage of hydrocarbons. Hydrocarbons will be stored and handled in accordance with the bunding requirements of AS 1940:2004.
R3.22	Chemical storage areas will be suitably bunded and constructed to minimise the potential for leaks. Chemicals will be stored, handled and used in accordance with the Material Safety Data Sheets. Small quantities of chemicals, fuels and oils will be stored

Proponent Commitment

within a bunded area within workshops or in a bunded container.

Land Use and Tenure

R3.23	Adani will comply with the requirements outlined in the <i>Mineral Resources Act 1989</i> regarding construction on a granted Mining Tenure.
R3.24	Holding yards will be established at either side of stock crossings as necessary.
R3.25	Private tracks will be joined to local roads or grade separated where possible to preserve their utility. Occupational crossings will be constructed to provide access typically under the Project (Rail). The design of the Project (Rail) may be further modified based on the outcomes from Adani's consultation with landholders.
R3.26	Surface drainage patterns will be preserved (where possible) with the design of culverts and cut/fill areas.
R3.27	Considerations such as the raising of farm roads and additional bridges or culverts will be informed by the iterative design process in order to reduce the impacts of afflux.
R3.28	Compensation will be considered for owners of land or infrastructure adversely impacted by residual afflux.
R3.29	Clearing of REs with Threatened Ecological Communities or REs of special conservation significance will be avoided where possible. Where clearing of REs is unavoidable, vegetation offsets may apply.
R3.30	The Project will develop and implement ESCPs and Construction Management Plan (CMPs) to minimise erosion and avoid sedimentation of existing water storages.
R3.31	Ongoing consultation with landholders regarding specific management measures contained within Environmental Risk Management Plans (ERMPs) will be undertaken.

2.2.4 Nature Conservation

Proponent Commitment

R4.1	Design and layout of the temporary and permanent structures and infrastructure within the construction footprint (including construction areas, such as site offices, construction stockpile locations, machinery/equipment laydown areas and storages, access tracks and accommodation camps) will as far as possible avoid areas of remnant vegetation (in particular endangered, of concern and threatened REs) and make use of previously cleared, non-remnant land.
R4.2	Where clearing TECs and REs of conservation significance is absolutely unavoidable, offsets will be provided in accordance with the offset strategy.
R4.3	The extent of vegetation clearing must be clearly identified on construction plans and in the field. Areas that must not be cleared or damaged are to also be clearly identified on construction plans and in the field. Clearing extents are to be communicated to all necessary construction personnel involved.
R4.4	Vegetation clearing operations are to be supervised by a suitably qualified ecologist to monitor compliance of vegetation clearing with the defined clearing extents.
R4.5	Clearing within areas of high ecological value, such as riparian corridors, must be undertaken with care, and rehabilitated to restore connectivity to the highest realistic extent following clearing (i.e. to a level that considers the requirements of maintaining permanent infrastructure but rehabilitates in all areas no longer required in a way that facilitates the movement of fauna).
R4.6	Land clearing activities will, where possible, seek to avoid alteration to waterways such that the impacts to water quality and downstream flows are minimised to the greatest extent possible. Management of erosion and sedimentation in and adjacent to cleared areas must be undertaken in accordance with a Project Construction Environmental Management Plan (Section 13 Environmental Management Plan).
R4.7	Vegetation clearing will be undertaken in a sequential manner to allow more mobile fauna species the opportunity to disperse away from cleared areas and clearing activities.
R4.8	Landscape permeability will be retained where possible. Where fencing is required around cleared areas, it will be designed such that fauna can move through it (excluding those instances where fenced areas seek to protect fauna from threats such



Proponent Commitment

	as trenches, human contact). Consideration will be given to not using barbed wire on the top strand of wire fences.
R4.9	Fauna underpasses/culverts will be incorporated into the design within suitable habitats and mapped bioregional corridors (often at watercourses) to promote fauna movement and reduce the ecological impacts that the rail corridor incurs. Fauna underpasses should be vegetated, sized and fenced appropriately to encourage fauna use. The use of underpasses by fauna will be monitored.
R4.10	Disturbance to wildlife corridors, particularly within riparian vegetation and at watercourses will be minimised. Operational activities in the vicinity of watercourse crossings will be minimised and riparian habitat below infrastructure will be reinstated where possible.
R4.11	Prior to vegetation clearing, trees and habitat features (i.e. log piles) that may be used by fauna for nesting or shelter will be marked. During clearing activities, a qualified fauna spotter-catcher will supervise the activity and recommend provisions for the relocation of fauna. Pre-demarcated habitat features will be thoroughly checked by fauna spotter-catcher prior to clearing. Provisions for the relocation of fauna should be made prior to the commencement of clearing.
R4.12	Habitat features such as hollows and log piles will be salvaged, where possible, and placed in nearby (retained) habitat areas. Where this is not possible, the loss of habitat features will be supplemented in adjacent habitat areas with artificial habitat (i.e. nest boxes, artificial water sources).
R4.13	Weeds in and adjacent to cleared areas will be managed in accordance with a Project Weed Management Plan. This plan should include details relating to the monitoring, management and where necessary, eradication of weeds, disposal of green waste, and vehicle/plant weed wash down protocols (refer Volume 3 Section 13).
R4.14	All plant and equipment brought onto site will be cleaned and weed free. Wash downs between construction areas (as appropriate) will be undertaken during construction and in accordance with landholder agreements.
R4.15	Management of fauna pest species during construction in and adjacent to cleared areas in accordance with a Project Fauna Pest Species Plan. This plan should include details relating to the monitoring and management of pest animals (refer Volume 3 Section 13). Camps and laydown areas to be fenced to prevent encroachment of feral species. Waste material to be appropriately sealed and stored to discourage encroachment by feral species.
R4.16	Staff involved with the construction activities must be educated on weed management procedures and protocols and restrictions placed on bringing domestic animals to the Study Area.
R4.17	Avoid and minimise human and vehicle access to river and creek bed and banks. Construction of river/watercourse crossings ahead of rail construction (as far as is possible) will reduce the need for personnel, equipment, machinery and plant to traverse the river/watercourse and limit disturbance to bed and banks.
R4.18	Temporary stream or channel diversion may be required to facilitate activities in wet periods. Stream flow is maintained to provide connectivity between aquatic habitats and facilitate aquatic fauna passage.
R4.19	Clear, on-ground demarcation of areas to be cleared adjacent to watercourse crossing locations will be undertaken prior to clearing to avoid accidental clearing or stockpiling of cleared vegetation in sensitive areas. Identification of this area for protection where possible will minimise the potential for unnecessary impact to the creek and consequently downstream areas.
R4.20	Regular, standardised monitoring will be a core component of the successful implementation of actions pertaining to watercourses, with corrective actions to be undertaken at the earliest opportunity should monitoring reveal a detrimental change in floodplain hydrology.
R4.21	A fauna species relocation plan will be developed to facilitate relocation of fauna

Proponent Commitment

	individuals according to species requirements (particularly if conservation significant fauna species are encountered during clearing activities).
R4.22	Install fencing along the rail corridor. Consideration should be given to reducing the chance of fauna mortality by avoiding the use of barbed wire on the top strand of wire fences.
R4.23	A fauna mortality register will be maintained to document the location and frequency of mortality and the fauna species most susceptible to injury and death, to enable on-going modifications to fauna conservation management strategies where necessary.
R4.24	Site inductions for all staff are to include education sessions regarding the local fauna that may be present on the site and protocols to be undertaken if fauna are encountered.
R4.25	Work areas are to be inspected daily prior to commencement and fauna trapped or present are to be relocated or moved.
R4.26	If any pits/trenches are to remain open after daily site works have been completed, they will be fenced, covered by an impenetrable barrier, or if possible, fauna ramps should be put in place to provide a potential means of escape for trapped fauna.
R4.27	Reduce the number of construction vehicles mobilising to and from site daily – retain vehicles within the construction zone and transfer personnel by means of bus to and from the work front daily to reduce the exposure for animal strike in areas away from the construction footprint.
R4.28	An offset strategy will be prepared which clearly identifies the Project impacts and associated offset requirements, and proposes various offset options that meet relevant legislative requirements.

2.2.5 Water Resources

Proponent Commitment

R5.1	A surface water monitoring program will be developed and implemented for the Belyando River in accordance with the Australian Guidelines for Water Quality Monitoring and Reporting (NWQMS 2000) for the construction phase of the Project (Rail).
R5.2	Incorporate into the detail design scour protection measures at all locations where analysis of the <i>in situ</i> material and modelled flow velocities suggest the potential for scour. Erosion prevention measures include: rip-rap pads, wing walls on embankments, shotcrete, rip rap and/or gabion bed protection.
R5.3	Conduct a detailed scour assessment to determine the appropriate depth of cover or scour protection measures to be adopted at each crossing. The detail design of the creek crossings will incorporate works and measures to minimise the following: <ul style="list-style-type: none"> • The risk of damage to the creek banks during construction • Change in the sediment transport regime at the crossing • The risk of creek bank collapse or erosion during flood events.
R5.4	A hydrological/hydraulic report will be prepared to identify drainage structure dimension requirements based on the proposed design basis including afflux limitations, velocity limitation and stakeholder requirements in order that the construction of the railway and associated infrastructure has an acceptable effect on the hydrological behaviour of the associated region in its current state. In production of this report, a field work component is described.
R5.5	Minimise any runoff and sedimentation from the construction to waterways. Before commencement of earthworks, install perimeter catch drains to prevent upslope clean water runoff from entering the site and bunding and basins downslope to confine dirty water within the site. Design and manage the installation of such controls in accordance with IECA guidelines (IECA 2008).
R5.6	Minimise the area of vegetation disturbance and bare ground within the floodplain and conduct rehabilitation of disturbed ground progressively as soon as construction activities are complete in any area.
R5.7	Use bridges in preference to causeways as temporary building platforms/vehicle access as they involve less disturbance to the bed of the low flow channel.



Proponent Commitment

R5.8	Do not permit stockpiling of soil in the bed of the low flow channel or floodplain.
R5.9	Laydown areas for vehicles and machinery and storage areas for chemicals, oils and fuels will be contained in appropriately designed facilities. Containment may include: sealed/lined surfaces and hard stand areas; bunded areas; containerised storage. In addition, chemicals, oils, fluids and other hazardous substances will be stored in accordance with the specifications of the material safety data sheet, as appropriate.
R5.10	Spill kits will be available to all personnel in the event of a spill or leak. Booms and spill kits will be on-site at refuelling facilities. Refuelling will only occur at designated sites away from watercourse and sensitive receptors. All machinery will have its own designated spill kit.
R5.11	During detailed design, fill and capping material details will be defined and water demand curves formulated. A range of water sources will be investigated and developed.
R5.12	Laydown and storage areas will not be placed in the vicinity of creeks or rivers or close-by to sensitive receptors (i.e. groundwater bores or GDEs).
R5.13	Do not permit spillages of concrete or wash down to enter water courses.
R5.14	Do not permit refuelling or servicing of vehicles and plant within the low flow channel. Clean up spills immediately and dispose of contaminated soil and clean-up materials off site at an appropriate facility.
R5.15	Set the invert of culverts below the ground surface.
R5.16	If a causeway is used provide sufficient hydraulic capacity to allow the conveyance of natural flows with minimal increase in velocity or afflux.
R5.17	Any boring or similar activity during construction will utilise drilling fluids and chemicals that are environmentally neutral and biodegradable. Machinery and equipment will be maintained in accordance with manufacturer requirements and regularly maintained to minimise breakdown and decrease risk of contamination.
R5.18	Dewatering of shallow groundwater, if required for bridge pylons and/or culverts construction, will be of a short duration and no long-term impacts are expected. However, if extended dewatering is identified during detailed design and major drawdown of the alluvial aquifer is expected, a groundwater management plan may be required. The management plan will include objectives and targets to be met and detail monitoring requirements.
R5.19	Pylon structures, culverts and filling activities are designed and will be constructed to minimise the loading and compaction of alluvial sediments, which may alter shallow groundwater regimes and recharge.

2.2.6 Air Quality

Proponent Commitment

R6.1	Vehicles, plant and equipment will be regularly serviced and comply with manufacturers'. Specifications during construction and operation activities to minimise impacts of particulate impacts, minor air pollutants, amenity impact of dust deposition and impacts on flora, fauna, pasture and crops.
R6.2	Watering of construction site and access roads will be undertaken as required using water sprays.
R6.3	The coal train operators will maintain clear and regular communication with community groups, councils, forums and individuals by listening to and discussing issues. Information on train-related coal dust mitigation initiatives being undertaken will be provided to the appropriate forums.
R6.4	Adani will prepare a Coal Dust Management Plan identifying control measures to mitigate the emission of dust from loaded and unloaded coal trains. When operating on any Aurizon Operation Ltd (Aurizon) railway line, Adani will comply

Proponent Commitment

with the recommendations stated in the Aurizon (2010) Coal Dust Management Plan. Please refer to SEIS Volume 4, Appendix W for the Rail EMP, section 6.5.3 for Rail Operations related to coal dust.

2.2.7 Greenhouse Gas Emissions

Proponent Commitment

R7.1	Identify the significant energy consuming equipment and recognise opportunities where technical efficiencies in plant and equipment can be applied
R7.2	Adani will investigate the applicability of the following options in regards to a wider fuel management strategy applying technical efficiencies in train operations and more efficiency in operations: <ul style="list-style-type: none">• Use of newer locomotives, or old locomotives with new engines to improve operational efficiency.• Fitting electronically controlled pneumatic (ECP) braking to locomotives and wagons, enabling all wagons to brake simultaneously, reducing fuel consumption.• Improving the aerodynamics of locomotives and wagons.• Use of anti-idling engine management software to balance energy demand and fuel consumption. Similar technologies such as automatic engine stop start (AESS) systems, which shuts down the engine if it has been idling for more than 10 minutes.
R7.3	Commitments to energy management will be developed as part of a detailed energy efficiency assessment. Monitoring and implementation of energy efficient improvements are also required under the <i>Energy Efficiency Opportunities Act 2006</i> (EEO Act). Regular energy audits and reviews of railway operations will identify possible energy efficiency improvement opportunities which will be implemented to progressively improve operations and subsequent energy efficiency.
R7.4	Adani have committed to ensuring that all quarry related vehicles will be suitably fitted with exhaust systems that minimise gaseous and particulate emissions to meet vehicle design standards.

2.2.8 Noise and Vibration

Proponent Commitment

R8.1	Locate mobile plant (e.g. compressors, generators), concrete batching plants and construction camps as far as practicable away from the nearest potential sensitive receptors.
R8.2	Fitting of equipment with effective and properly maintained noise suppression equipment consistent with the requirements of the activity, where possible.
R8.3	Maintenance activities and potential noise from maintenance facilities will be managed through operational controls developed specifically for the sites (e.g. maintenance yard, bad order sidings) and documented in a Noise Management Plan.

2.2.9 Waste

Proponent Commitment

R9.1	A project procurement plan will outline requirements to avoid the purchase of excess materials: quantities of materials will be carefully managed during procurement to avoid ordering and delivery of excess materials which may be wasted.
R9.2	Prior to the commencement of construction, operation and decommissioning phases a Waste Management Plan (WMP) will be developed that will include waste management measures controls, monitoring and other safeguards, in line with the relevant legislation and government waste reduction strategies.
R9.3	Cleared material will be mulched, chipped and stockpiled for rehabilitation and revegetation works on-site. Larger vegetation materials like hollow logs and hollow bearing trees will be reused in rehabilitation activities where possible or in adjoining



Proponent Commitment

	bushland to provide habitat for fauna.
R9.4	Putrescible wastes will be separated and stored in allocated waste disposal bins for collection by a licensed contractor for disposal to a licensed facility.
R9.5	Recycling bins will be provided around the construction camps. Recyclable materials such as glass, aluminium, plastic and paper will then be taken offsite for recycling.
R9.6	Non-recyclables will be taken offsite for disposal by a licenced contractor for disposal to a licensed facility.
R9.7	All chemicals, fuels and oils will be stored in bunded areas in accordance with Australian Standards to minimise potential for any spills. Oily water generated at interceptors or in the event of a spill involving oil or diesel will be treated to separate oil from water. The separated water will be directed for evaporation or reused on-site for dust suppression. Spilled oil will be removed by a licensed vacuum truck contractor and disposed of at a licensed facility. Oil drums will be drained of all remaining product and stored on-site within a bunded facility for collection by a licensed contractor and recycler.
R9.8	Sewage and grey water will be treated on-site prior to disposal and site specific wastewater management plans will be developed and implemented to ensure compliance with effluent treatment and discharge requirements.
R9.9	Maintenance of vehicles, plant and machinery will be implemented to ensure efficient operation which will reduce unnecessary exhaust emissions.
R9.10	Any transfers of waste will take place in accordance with legislated docket tracking systems that ensure waste reaches the appropriate destination. Only licensed contractors and drivers will be utilised. Any transporters will be expected to meet legislative requirements for spill control and be equipped with emergency equipment.
R9.11	A designated waste management area will be constructed for waste sorting and waste storage prior to transport offsite. The waste management area will be a hardstand area and bunded or have a suitable containment system in place for the type of waste to be stored. The area will have appropriate drainage and leachate collection system in place to assist with the drainage and collection and storage of any potential leachate.

2.2.10 Transport

Proponent Commitment

R10.1	Traffic management issues will be addressed through the preparation and implementation of a Construction Traffic Management Plan, which will be developed during the detailed design phase. The TMP will consider impacts on bus school routes and other relevant impacts and will propose management and mitigation procedures outlining emergency response times for emergency.
R10.2	Final treatment options of grade separated crossings will be developed during detailed design in accordance with DTMR and IRC specifications.
R10.3	Ongoing consultation with DTMR, IRC and Queensland Police Services will be undertaken during the construction period.
R10.4	Specific warning signs at access roads to the construction corridor will be installed to warn road users of entering and exiting traffic. Adequacy of signposting will be continually reviewed and new measures implemented.
R10.5	Advance notice of road/lane closures and advice on alternative routes will be provided to local users.
R10.6	Logistics technology will be used to plan heavy vehicle movements and the loading of equipment on these vehicles to address the appropriate Queensland Police Service and Pilot support when delivering equipment.
R10.7	Traffic management will focus on vehicle crossings at major and minor road intersections, safety risks brought about by increased heavy vehicle traffic and movement of stock, lane closures and the use of single-lane access roads.

Proponent Commitment	
R10.8	Adani will consult with DTMR, QPS and other proponents (where applicable) regarding the need for additional 'park up' rest areas and road signage. Relevant management and mitigation measures regarding fatigue management will be identified from consultation and will be incorporated into the revised traffic management plan for the Project (Rail).
R10.9	Adani will continue consultation with and undertaking agreements with IRC, QPS and DTMR in regards to impacts to road infrastructure on the local and SCR network.
R10.10	Adani is currently in discussions with IRC to draft an infrastructure agreement regarding the long term maintenance of impacted local roads.
R10.11	Upgrade the existing Carmichael – Elgin Road to become a sealed, single lane carriageway so as to provide a trafficable road under most rain event conditions and minimise the risk of closure.
R10.12	Upgrade the existing Carmichael – Elgin Road/Gregory Developmental Road intersection – as part of the upgrade works for the Carmichael – Elgin Road it is recommended that the existing intersection be upgraded to include protected right turn and left movements at this intersection.
R10.13	Signage at the Gregory Developmental Road/Kilcummin Downs Road – it is recommended that during the course of the construction period (2014 and 2015), including the life of the Rail Camp 1, “Trucks Turning” signage be installed at the intersection so as to advise road users of the potential for heavy vehicles to be negotiating this intersection.
R10.14	Upgrade Kilcummin Downs Road/Rail Camp 1 Site access – it is recommended that the proposed site access location be upgraded to allow for a protected right turn into the site access.
R10.15	Signage located at the intersection of the Peak Downs Highway with the Gregory Developmental Road and also north of the proposed Disney Quarry along the Gregory Developmental Road to advise motorists of the construction activities along this road section.
R10.16	The Gregory Developmental Road and Peak Downs Highway are not approved for HML vehicles. Should these routes be required to be used by HML a separate application will be required for these routes. This will go through to DTMR for their review and is subject to their approval.
R10.17	A bus fleet will be required to support both the construction and operational phases of the Project. The buses will primarily transport the workforce to/from the Airport(s) (FIFO) and each work site.

2.2.11 Hazard and Risk

Proponent Commitment	
R11.1	The Project will develop and implement water supply management plans to address water usage, treatment of the recycled water and compliance with the requirements of Queensland Water Recycling Guidelines.
R11.2	A geotechnical investigation will be conducted to assess potential for landslides especially during and after heavy rains. Detailed design will consider issues around landslides.
R11.3	The Project will develop a fire management system (FMS) for the prevention, early detection and suppression of fires at their coal mines and accommodation village. A Fire Management Plan (FMP) will be developed during the detailed design phase with an approach to safety.
R11.4	The Project will ensure compliance with the QFRS guidelines for rail infrastructure.
R11.5	All buildings, structures and fixed plants will be protected with a suitable water supply, water reticulation and hydrant system. For buildings and occupied facilities, a fire hose system or a fire hydrant system, and/or pump sets will be in compliance with the Building Code of Australia (BCA).
R11.6	The fire safety systems installed in a building will be any one or combination of the methods in a building to warn people of emergency, provide for safe evacuation, restrict the spread of fire and extinguish fire.



Proponent Commitment	
R11.7	An adequate supply of water for fire fighting purposes will be provided at the rail maintenance facility. The acceptable sources of water supply will be in accordance with Section 4 Water Supplies of Australian Standard AS 2419.1-2005 Fire hydrant installations Part 1: System design, installation and commissioning (AS 2419.1), as applicable.
R11.8	Water storage tanks and their capacities will be in accordance Section 5 Water Storage of AS 2419.1, as applicable. Maintenance of onsite storages will be carried out during periods of least risk, e.g. nonproduction and kept to a minimum time frame
R11.9	Fire protection pump sets will be installed in accordance with Australian Standard AS 2941-2008 Fixed fire protection installations - Pumpset systems. All fire extinguishers will be maintained in accordance with Australian Standard AS 1851-2005 Maintenance of Fire Protection Systems and Equipment.
R11.10	A fire station, fully equipped with fire truck and other fire fighting equipment will be constructed at the Mine, and will be available to attend to emergencies within the Project (Rail). During the detailed design phase, the Project will consult the emergency services (including QFRS) to comply with their requirements.
R11.11	Provision of adequate and safe access for fire fighting/other emergency vehicles and safe evacuation. Adani will work closely with QPS, DCS and other emergency service providers with regards to services and emergency responses.
R11.12	First aid equipment will be available with each Project related vehicle.
R11.13	A risk management plan (RMP) has been developed for the risks that have been identified through the PHA. The RMP will be periodically updated and expanded throughout the life cycle of the Project (Rail) as more information is available, design progresses and risks further defined.
R11.14	The Project (Rail) will develop and implement a Safety Management System (SMS) for the mitigation of risk so far as is reasonably practicable (SFAIRP). The SMS will provide a systematic way to identify hazards and control risks while maintaining assurance that the risk controls are effective, to provide a safe and healthy work environment to its employees, contractors and visitors.
R11.15	Untreated sewage tanks and pipes will be monitored for leaks. Design, storage, pumping and transmission systems of untreated sewage tanks will be designed to Australian standards.
R11.16	Design and construction of diesel storage tanks will comply with AS 1692-2006 Steel tanks for flammable and combustible liquids. These tanks will be installed on impervious surfaces and fully bunded. The storages will comply with the requirements of AS 1940 – The storage and handling of flammable and combustible liquids.
R11.17	Emergency Services will be notified in the case of diesel spills on public roads.
R11.18	DEHP will be notified of diesel spills as required under the Environmental Authority conditions.
R11.19	Oils will be stored in above ground tanks and will be fully bunded. Activities involving oils will be undertaken on a hard stand area, and drip trays will be provided during transfer operations. Controls and management procedures will be adopted for servicing of machinery.
R11.20	Spillages will be prevented from entering drains or water courses and absorbent material will be placed on spillages which will be collected for disposal and any contaminated soil removed for treatment and disposal.
R11.21	A licenced contractor will be used for removal and disposal of spilled waste oil and clean-up material.
R11.22	Fatigue management strategies for drivers will be developed.
R11.23	Emergency services are to notified of any vehicle accidents on Bowen Developmental Road, Gregory Developmental Road, Suttor Developmental Road, Flinders Highway, Peaks Down Highway, primary access roads or other public

Proponent Commitment	
	roads.
R11.24	Designated travel routes for heavy vehicles will be designed through townships.
R11.25	Rail safety accreditation will be obtained and maintained.
R11.26	Tracks will be routinely inspected and maintained.
R11.27	Speed restrictions are to be followed at all times.
R11.28	Wagons and locomotives will be routinely inspected and maintained.
R11.29	Signalling equipment will be routinely inspected and maintained.
R11.30	The Project (Rail) will install either passive or active controls at level crossings.
R11.31	Grade separators will be constructed at identified crossings as required by DTMR
R11.32	Proper signalling systems will be installed.
R11.33	Train speeds will be reduced to 60 km/hr when crossing roads at level crossings.
R11.34	The Project (Rail) will provide radio communication systems, transponders/GPS, rail track signalling systems and in-vehicle communications as per Australian Standards.
R11.35	A central first aid room equipped with response facilities such as oxygen cylinder, defibrillators and basic medical supplies will be available to support incident response.
R11.36	Air quality at the nearby sensitive receptors will be monitored in accordance with the DEHP guidelines and Australian Standards and limit “trigger level” events. A register of complaints will be maintained with information on corrective actions.
R11.37	Zero tolerance for drug and alcohol use will be enforced.
R11.38	Road markings and signage will minimise impact and improve road safety.
R11.39	If installed, rainwater tanks will be maintained and include checks.
R11.40	Refer to the Mosquito/Biting Midge Management Plan for control measures to avoid ponding of water that promotes local populations of potential mosquitoes and biting midges.
R11.41	Kitchen facilities at the construction camps will be provided in accordance with statutory requirement, which will be operated in compliance with food legislation by qualified contractors. Appropriate publications regarding personal hygiene will be provided.
R11.42	Adani will develop a Disaster Management Plan in consultation with emergency service providers, as required, prior to commencement of work onsite.

2.3 Project commitments (Mine)

2.3.1 Project Description

Proponent Commitment	
M1.1	Relevant approval applications will be prepared and submitted by Adani.
M1.2	<p>In the event that the significant impacts to regional groundwater is observed due to final voids Adani is committed to taking any further steps necessary to reduce post closure impacts on groundwater levels and/or flows to acceptable levels. Potential mitigation measures which may reduce and/or mitigate impacts during the post closure phase include:</p> <ul style="list-style-type: none"> • Reviewing and revising the extent, location and/or timing of the proposed mine workings • Reviewing the backfilling level of final voids in order to minimise or prevent ongoing losses due to evaporation • Entering into make good agreements with neighbouring landholders where residual impacts cannot be mitigated • Offsetting impacts to MNES and SSBV under relevant policies where residual impacts cannot be mitigated
M1.3	An ongoing programme of geological and geotechnical investigations will be carried out to further define the coal resources and refine the Mine Plan as mining progresses. This will include lease-wide coverage as well as more intense drilling of the sub-crop in the area of early production, covering both the open cut mine areas and underground



Proponent Commitment

	mine. This drilling program will increase knowledge of the deposit for resource estimation, washability testing, hydrogeological and geotechnical evaluation. These investigations will also provide further detail on ground conditions and enable detailed design of all infrastructure and structures associated with the Project (Mine).
M1.4	A corridor, at a minimum of 500 m will be retained either side of the centre line of the Carmichael River to protect it and the riparian zone from mining operations.
M1.5	All maintenance facilities will be contained such that any oil leaks or spills are captured.
M1.6	The vehicle wash facilities will allow for capture and recirculation of water or return of water to the mine water system.
M1.7	The MIA will include emergency response equipment including a fire station and ambulance as well as mine rescue equipment.
M1.8	The MIA will include a stormwater collection system. It is proposed that mine affected water, being water from coal stockpiles, the CHPP area and any other potentially dirty water areas will be collected and transferred to the nearest mine affected water dam. Clean water will be diverted around the MIA, and water from uncontaminated areas will be captured and drained to a sediment pond.
M1.9	Subject to detailed design investigations into dust levels, conveyors are expected to be partially enclosed and will be roofed. Belt cleaning facilities and enclosure of any towers (where conveyors change direction) will also minimise dust and coal spillage from conveyors. Conveyors will also be fitted with heat and smoke detectors and fire suppression systems.
M1.10	Stockpiles will also be visually monitored for signs of spontaneous combustion. If spontaneous combustion occurs, the affected coal will be spread out using earthmoving equipment and sprayed with water to cool it down. The coal will then be replaced in the stockpile and compacted to prevent oxygen ingress.
M1.11	Stockpiles will also be fitted with pole mounted water sprays to control dust. These will rotate to ensure coverage of the entire stockpile. The product coal stackers will also be fitted with luffing booms which adjust to minimise the drop height of coal from the stacker to the stockpile limit dust generation and also formation of coal fines from break up of lumps of coal landing on the stockpile.
M1.12	The above ground tailings storage facility will be an engineered structure with hydraulic capacity as required by the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (Queensland DERM 2012).
M1.13	The above ground tailing storage facility will be lined with a very low permeability liner.
M1.14	Water will evaporate and decant from tailings placed in the tailings storage facility. Decanted water will be collected, treated to remove suspended solids and adjust pH if necessary and returned to the mine water management system.
M1.15	The train loading system will be fitted with a wagon derailment detector and spillage pit, with a sump and pump for removal of any rainwater or dust suppression water, which will be returned to the mine water management system.
M1.16	An upgrade of the Moray-Carmichael Road will take place in the main construction period. This will include some minor realignment, including realignment to remove two crossings of North Creek, and reforming of the road to allow heavy vehicle traffic.
M1.17	Construction of access roads from Moray-Carmichael Road to the workers accommodation village, airstrip and industrial area will take place in the main construction period. These will be bitumen sealed provided year round access.
M1.18	Installation of sewage treatment systems at the workers accommodation village and also the industrial area and airport will take place in the main construction period. The type of sewage treatment facilities and whether treated wastewater will be reused or disposed of by irrigation is to be determined in the detailed design stage.
M1.19	The temporary and final roads will meet the relevant rural road design standards that are in place at the time from IRC and Department of Transport and Main Roads (DTMR).
M1.20	The Belyando River storage dam is an off-steam storage and will be located on the footprint of an old quarry. Any excess spoil will be transported to the mine site for later disposal with mine waste. A liner will be installed using either compacted clay material

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	which will be imported or a high density poly-ethylene (HDPE) liner.
M1.21	The pump station structure in the Belyando River will be cast in situ during non-flood periods. The excavation of the channel and pump station invert river level will be done in phases, with connection to the river made late in the construction period as the river level is higher in this area due to the retarding effect of the downstream causeway.
M1.22	Permanent, long-term and/or high volume access roads will be constructed from bitumen or gravel and will have drainage provided to prevent concentration of flows across or along road alignments.
M1.23	For permanent, long-term and/or high volume access roads, culverts will be used with flood immunity design criteria. Codes and guidelines will be followed as closely as possible, particularly in relation to minimising damage to the bed and banks of watercourses and maintaining flows and fish passage.
M1.24	For minor access roads, crossings will either be at bed level, or with a low flow pipe installed under a slightly elevated crossing. Again, locations will be selected to minimise clearing of riparian vegetation or in-stream vegetation and codes and guidelines will be followed as far as practicable. Crossing locations will be stabilised such that erosion and scouring does not occur.
M1.25	The bridge will span the main channel of the Carmichael River, with no pylons or supports within the low flow channel.
M1.26	Flood levees will be constructed to protect the open cut pits and underground mine portals from flooding from the Carmichael River and possibly Eight Mile Creek. While geotechnical investigations have not yet been undertaken, it is expected that levees will be able to be constructed from locally available materials. Flood levees will meet hydraulic design criteria and structural and hydraulic requirements.
M1.27	For mine infrastructure, temporary construction and laydown areas have been located in areas that will be required for mine operations to minimise the overall disturbance footprint. Hence, rehabilitation of these areas will not be required. Areas that are not to be used immediately will be stabilised by placement of gravel or seeding with grass if necessary to minimise erosion risk.
M1.28	For the off-site infrastructure, temporary construction and laydown areas have been located in areas already cleared of native vegetation. If any areas are not required once construction is completed these will be ripped, topsoil replaced, and grass sown to provide ground cover. Erosion and sediment controls will be left in place until 70 percent ground cover is achieved.
M1.29	Topsoil will be stripped prior to mining or dumping in each area. Topsoil stripping depth will be determined prior to stripping as will the need for single or two phase stripping. The topsoil will be stockpiled until it is required for rehabilitation, or hauled directly for respreading on the completed and re-profiled mining areas. Depending on requirements to be specified in the Rehabilitation Management Plan, some amelioration of topsoil may take place prior to or at the time of stripping and replacement. A topsoil register will be retained to track the origin, interim storage and final destination of topsoil.
M1.30	Vegetation clearing will be undertaken using bulldozers or similar equipment. In areas of high ecological value, pre-clearing surveys will be undertaken to identify conservation significant flora and fauna and determine appropriate methods to avoid or minimise harm. The clearing method and whether vegetation is stockpiled, mulched or otherwise treated will depend on the type of vegetation in a particular area, and the level of weed infestation.
M1.31	Sediment basins will be constructed prior to the commencement of operations within the corresponding spoil areas to treat stormwater runoff from these areas. Diversion drains will be installed to prevent any water from undisturbed areas from entering into sediment basins.

2.3.2 Climate, natural hazards and climate change

Proponent Commitment

M2.1	The Proponent will prepare an Emergency Response Plan (ERP) for construction, operations and decommissioning phase, which will incorporate the requirements for workplace health and safety, community and environmental hazard management. The ERP will include responses for natural events such as cyclones, flooding and
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Proponent Commitment

	earthquake.
M2.2	Staff will be educated in relation to bushfire prevention, including possible ignition sources. Staff will also be trained in procedures for welding and any other activities with high risk of starting fires.
M2.3	A fire management system for prevention, early detection and suppression of fires at the Project (Mine) and workers accommodation village will be implemented. The Project (Mine) will aim to ensure the safety of personnel and assets for all structures within the Project including buildings at the mine site, accommodation village and airstrip for event like fire or hazardous material spills/emergencies. Building fire safety will be incorporated into the design of Project (Mine) infrastructure, including adherence to QFRS guidelines and provision of a water supply, water reticulation and hydrant system.
M2.4	Maintain adequate firebreaks around the Project (Mine), particularly during prolonged dry periods. Negotiate land management practices with adjacent landholders to maintain firebreaks and consult with DCS in the development.

2.3.3 Land

Proponent Commitment

Scenic Amenity and Lighting

M3.1	The Project will aim to achieve construction without causing undue visual disruption to existing receptors. The following mitigation measures will be employed in regard to changes in the landscape character for the Project (Mine): <ul style="list-style-type: none"> • Removal of hoardings, barriers and traffic management signage when no longer required • Minimisation of dust emissions onto retained areas outside the Project (Mine) footprint • Limiting vegetation clearance to required areas only
M3.2	The Project will aim to achieve construction without causing undue visual disruption to existing receptors. The following mitigation measures will be employed in regard to changes in the landscape character for the Project (Mine): <ul style="list-style-type: none"> • Removal of hoardings, barriers and traffic management signage when no longer required • Minimisation of dust emissions onto retained areas outside the Project (Mine) footprint • Limiting vegetation clearance to required areas only

Topography, Geology and Soils

M3.3	A detailed topsoil management plan will be developed for the Project (Mine). The aim of any such plan should be to ensure optimal allocation of available primary and secondary growth media reserves across all future rehabilitation activities proposed for the mine.
M3.4	More detailed surveys will be conducted over specific areas to be disturbed by mining operations to more accurately define topsoil management plans and depth of useable soil material.
M3.5	Stormwater will be diverted around final voids so that the only inflows are groundwater and incident rainfall. Once the final landform has been achieved, topsoil will be replaced on disturbed areas and these areas revegetated.
M3.6	In any topsoil stripping, stockpiling and replacement operation, planned activities will carefully follow actions outlined in a detailed topsoil management plan. The aim of any such plan will be to ensure optimal allocation of appropriate media reserves across all future rehabilitation activities proposed for the mine.
M3.7	Soil material with poor physical properties (such as slaking and sealing) will only be utilized on very gentle slopes to minimise erosion risk.

Proponent Commitment

M3.8	Stockpiles containing soil material for reuse will ideally be formed no more than 1.5 m in height and will be ripped and seeded (with species selection based on the desired outcome of rehabilitation) as soon as practical following stockpile laydown.
M3.9	Stripped materials will be segregated into stockpiles, which have similar reuse characteristics.
M3.10	Soils with good surface physical characteristics will not be stockpiled with soils with poorer physical attributes.
M3.11	<p>Erosion and sediment control will be based on a hierarchy of controls as follows:</p> <ul style="list-style-type: none"> • Avoid disturbance of very steep slopes, drainage lines and watercourses wherever possible • Avoiding works in watercourses in flow conditions wherever possible • Divert surface flows around disturbed areas. This will include permanent diversion of minor watercourses that currently pass through the proposed open cut and overburden dump areas • Minimise exposure of soils to erosive forces. This is largely achieved by clearing vegetation progressively with minimal time lag between clearing and construction or mining works, and stabilising and/or rehabilitating cleared areas and stockpiles as quickly as possible • Detain sediment laden runoff using sediment fences, check dams and sediment dams to allow sediment to settle out • For permanent or long term facilities, install permanent stormwater control works as quickly as possible <p>Selection of particular controls will then depend on the nature of works being undertaken and the erosion risk.</p>
M3.12	For the relatively flat workers accommodation village, airport, off-site industrial area and on-site infrastructure areas, erosion control will require capture of overland flow in sediment fences and, for larger areas, sediment basins. As these areas are to remain as permanent features of the proposed mine, stormwater collection systems will be installed as early as possible during construction to capture and control runoff.
M3.13	Water supply pipeline alignments will be stabilised and revegetated after construction so that these do not become preferential flow paths. Topsoil will be replaced and the pipeline alignments will be sown with pasture species or small shrubs as larger plants cannot be placed directly over pipelines.
M3.14	Haul roads and other roads will have drainage systems to capture and control runoff from the road surfaces.
M3.15	Runoff from overburden stockpiles will be captured in sediment basins designed in accordance with IECA 2008 guidelines.
M3.16	<p>A subsidence management plan will be developed, setting out:</p> <ul style="list-style-type: none"> • Monitoring locations and methods • Detailed baseline and performance criteria, drawing on baseline monitoring results • Management responses to failure to meet performance criteria • A system for recording monitoring data, required management responses and confirmation that management responses have been implemented effectively • Rehabilitation success criteria for subsided areas.
M3.17	Humans and cattle will be excluded from underground mining areas until subsidence has occurred and any cracks or other hazards are made safe.
M3.18	<p>A subsidence baseline monitoring program will be undertaken including:</p> <ul style="list-style-type: none"> • Stream monitoring points immediately upstream, at mid-point and immediately downstream of underground footprint on each mapped watercourse • Vegetation characteristics and health monitoring transects and control points • Habitat value transects • Topographical survey transects • Establishment of photo-monitoring points corresponding with each of the above monitoring locations.
M3.19	Soil survey assessment will be undertaken on EPC 1080.

Land Contamination



Proponent Commitment

M3.20	Sewage will be treated on-site with a package sewage treatment plant. Disposal options will be assessed during the design phase of the Project.
M3.21	It is intended that neither phase of the Project will lead to land contamination requiring registration in the CLR. Furthermore, any notifiable activities under Schedule 3 of the EP Act, such as the storage of hazardous material, will be reported to DEHP. Sites notified under this process will be registered on the EMR.
M3.22	If site contamination is incidentally found to occur or a previously existing contaminated site is encountered, then the site will be assessed and managed in accordance with the contaminated land provisions of the EP Act, National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM, 1999) and Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (DoE, 1998; now administered by DEHP).
M3.23	Contaminated materials will be placed within waste landforms where the likelihood of contacting runoff water would be reduced. Stormwater will be diverted away from disturbed areas. Sediment laden water will be treated on site.
M3.24	The storage of overburden is a notifiable activity under the Schedule 3 of the EP Act and will be reported to DEHP for registration on the EMR.
M3.25	In the event that spills and leaks occur to soils, the contaminated material will be removed as soon as practicable after the spill, unless the quantity is very small and the spill occurred in a location where there is a low risk of any further environmental impacts occurring. Contaminated soil material will either be stockpiled and bio-remediated or disposed of as a regulated waste.
M3.26	Sewage will be treated on-site with package sewage treatment plants to Class A or Class A+ in relation to pathogens. Reuse and disposal options will be assessed during the design phase of the Project.

Land Use and Tenure

M3.27	Adani will undertake ongoing consultation with the holder of the EPC1957 in regards to project timing and progress in order to minimise where possible any sterilisation of coal resource which may be present.
M3.28	The alignment of the Moray Carmichael Road running through the Mine may move from time to time to accommodate mining activity, however it will continue to be open to the public and meet a required engineering standard.
M3.29	Ultimate road closure of the Moray Carmichael Road will not be considered and the utility of Moray Carmichael Road as a public road link will be maintained at all times.
M3.30	Progressive rehabilitation of the Project Area will be undertaken. Upon completion of the Project (Mine) life, decommissioning of the Project Area will be undertaken.
M3.31	Where closure of Stock Routes is required Adani will conduct discussions with DNRM, DTMR, IRC and landholders regarding re-alignment.

2.3.4 Nature Conservation

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M4.1	Pre-clearance surveys will be undertaken in areas identified as potential habitat for threatened species, prior to commencement of clearing. In areas where these surveys indicate the presence of habitat features observed to (or with the potential to) provide habitat for these species, a fauna spotter catcher will be engaged to accompany clearing crews.
M4.2	Unavoidable loss of vegetation and fauna habitat will be offset in accordance with relevant Queensland and Commonwealth policies, as detailed in the Project Offset Strategy.
M4.3	Landscape permeability will be retained where possible. Where fencing is required around cleared areas, it will be designed such that fauna can move through it (excluding those instances where fenced areas seek to protect fauna from threats such

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	as trenches). Consideration will be given to avoiding the use of barbed wire on the top strand of wire fences.
M4.4	Vegetation clearing will be undertaken in a sequential manner to allow more mobile fauna species the opportunity to disperse away from clearing areas.
M4.5	Mitigation measures will be detailed in the Mine and Offsite Environmental Management Plans, which will include erosion and sediment control requirements to be implemented and monitored throughout the construction phase of the Project.
M4.6	To limit the degradation of downstream aquatic habitat during construction activities, mitigation and management will focus on reducing the potential mobilisation of sediments or pollutants, diversion of stormwater flows from disturbed areas and limiting sediment transport from exposed areas.
M4.7	The design of the MIA, workers accommodation village, industrial precinct and airport will incorporate stormwater management infrastructure and mechanisms to manage runoff.
M4.8	<p>The design and layout of the offsite water supply infrastructure will minimise the width of disturbance to the riparian zone. Sensitive areas in the vicinity of all construction will be clearly demarcated prior to construction to avoid accidental clearing or disturbance. A suitably qualified ecologist will be required to provide advice on the location of sensitive areas for demarcation.</p> <p>These measures will be incorporated into the Mine and Offsite Environmental Management Plans to be prepared prior to any construction at the site.</p>
M4.9	<p>Potential to further reduce disturbance to stream habitats by infrastructure will be reviewed in the detailed design phase, including consideration of:</p> <ul style="list-style-type: none"> • Selection of crossing locations to avoid or minimise disturbance to important areas of aquatic flora, waterholes, watercourse junctions and watercourses with steep banks • Opportunities to use existing access tracks and other previously disturbed areas wherever possible • Further opportunities to consolidate infrastructure alignments to minimise the number of crossings • Design of pipeline crossings such that the level of the stream bed is not altered
M4.10	Mitigation strategies for aquatic habitats will be based on compliance with the relevant DEHP Guidelines for carrying out activities in a watercourse, lake or spring and, if a riverine protection permit is required for any of the works, the conditions of this permit.
M4.11	To avoid potential mortality of aquatic fauna during construction within riparian zones and within the bed and banks of ephemeral creeks, construction activities will be undertaken during dry or controlled conditions.
M4.12	<p>The management and mitigation of changes to water will include (but are not limited to):</p> <ul style="list-style-type: none"> • Development of emergency response protocols and procedures for implementation in the event of a contaminant spill or leak and provision of spill response equipment • Storage of fuels, chemicals, wastes and other potentially environmentally hazardous substances in bunded or otherwise contained areas away from watercourses • Refuelling in areas away from watercourses • Regularly checking vehicles and equipment for oil leaks
M4.13	The design of the MIA, workers accommodation village, industrial precinct and airport will incorporate stormwater management infrastructure and mechanisms to manage runoff. Stormwater management mechanisms and monitoring requirements will be developed prior to any construction activities and incorporated in the Environmental Management Plan.



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M4.14	<p>Stormwater monitoring will include:</p> <ul style="list-style-type: none"> • Regular checks of fuel, chemical and waste storage areas for leaks or improper storage • Regular checks, including checks prior to forecast rain events, of erosion and sediment control devices to make sure these are in good working order • Pre-rain checks of erosion and sediment control devices • Inspections of streams for scouring and sediment deposition • Ongoing water quality monitoring
M4.15	<p>Non-remnant areas within the Study Area that are to remain unmined will be rehabilitated and managed (including monitoring) with the objective being to gradually achieve regrowth and remnant status to vegetation communities that are associated with similar land zones in the local landscape. This active management will occur to contribute to the maintenance of ecological values of the local landscape in which the Study Area occurs, though it is recognised that cleared lands are generally seeded with exotic pastures and restoration of a native ground cover may be difficult to achieve, or a very long term outcome. A component of active management will be the removal of cattle, or the implementation of ecologically sensitive grazing strategies.</p>
M4.16	<p>The ecological values within the buffer area surrounding the Carmichael River are to be enhanced through a revegetation and active vegetation and habitat management program. The program will focus on providing habitat for key threatened species, and on providing east-west connectivity. A monitoring program will be implemented to monitor success of the revegetation and enhancement program as well as presence and utilisation by fauna, including threatened fauna.</p>
M4.17	<p>The extent of vegetation clearing is to be restricted to the minimal amount necessary for mining operations. Areas that must not be cleared or damaged will be clearly identified on operation plans and in the field. Clearing extents are to be communicated to all necessary personnel involved.</p>
M4.18	<p>Unavoidable (staged) loss of vegetation will be offset in accordance with Commonwealth and Queensland policies, with the objective of maintaining, and where at all possible, enhancing local biodiversity values. Identification of offsets will seek to realise opportunities to enhance local and regional biodiversity values, for example, through the procurement and management of areas that contribute to corridors in the region. Furthermore, these areas will be identified with a view to achieving a 'no net loss' of local biodiversity values, in consideration of the types of vegetation that will be cleared, and the conservation status of those vegetation communities.</p>
M4.19	<p>Vegetation clearing for discrete phases of the Project operations will be undertaken in a manner that maximises the potential for fauna to disperse away from habitats within the clearing footprint, to adjacent areas, including onsite and offsite (offset) areas that are being actively managed for biodiversity outcomes. Vegetation clearing within the clearing footprint will be undertaken sequentially, in a manner that encourages animals to disperse towards adjacent habitats that will remain intact.</p>
M4.20	<p>The extent of vegetation clearing is to be restricted to the minimal amount necessary for the development of each applicable operational component of the Mine.</p>
M4.21	<p>The extent of vegetation clearing is to be clearly identified on construction plans and in the field. Areas that must not be cleared or damaged are to also be clearly identified on construction plans and in the field. Clearing extents are to be communicated to all necessary construction supervisors.</p>
M4.22	<p>Pre-clearance surveys will be undertaken in areas identified as potential habitat for threatened species, prior to commencement of clearing. In areas where these surveys indicate the presence of habitat features observed to (or with the potential to) provide habitat for these species, a fauna spotter catcher will be engaged to accompany clearing crews. Habitat features identified during the pre-clearance survey will be thoroughly checked by fauna spotter-catcher prior to clearing. Provision for the relocation of fauna will be made prior to the commencement of clearing.</p>

Proponent Commitment

M4.23	<p>Impacts to the waxy cabbage palm will be managed and mitigated through:</p> <ul style="list-style-type: none"> • The supplementary introduction of surface water to the channel near the upstream Mine Area boundary through controlled discharges • Intensive monitoring of riparian condition, base flows and groundwater levels • Removal of weeds and pest animals • Possible translocation of individual plants (if deemed viable), seed collection and planting programs • Research and monitoring to understand distributional range, water dependency requirements and threatening process triggers
M4.24	Flow and groundwater level monitoring, mapping and measurements of the perimeter of the main wetland areas and selected isolated mound springs to monitor changes to the springs.
M4.25	Ecological studies of aquatic invertebrates, blue devil, salt pipewort and stygofauna will be conducted in the springs with associated reporting of results.
M4.26	Pumping groundwater to the surface may act to offset the loss of some sections of the Mellaluka Spring wetland, and the proponent will install electric submersible pumps when drawdown commences for this purpose. Additional detail will be presented in the Draft GDE Management Plan.
M4.27	<p>Adani will provide a Draft Groundwater Dependant Ecosystem (GDE) Management Plan for approval prior to the commencement of construction. This plan will address impacts to the following GDE's:</p> <ul style="list-style-type: none"> • Doongmabulla Springs Complex • Mellaluka Springs Complex • Carmichael River , particularly the Waxy Cabbage Palm <p>The Plan will include the following:</p> <ul style="list-style-type: none"> • A management framework that aligns with the other project management plans • Clear statements regarding the intent, approval requirements, objectives and actions • Details of how the management plan will be applied across the project phases – pre construction / construction / operation / post operations, offset areas • Details of any proposed adaptive monitoring program to support the plan objectives. • Details of how experts will be used in a review capacity to inform ongoing monitoring and management • Incorporates all proposed management and mitigation measures, including reference to relevant State and Federal Guidelines of relevance to these GDE's. <p>Specific performance targets and how these will be measured and reported.</p>
M4.28	Detailed design of the Central MAW Dam North will take into account the location of GBR WPA 1. Any loss of the GBR WPAs will require an offset. It is suggested that the wetlands contained on the Moray Downs property be rehabilitated to offset the GBR WPAs.
M4.29	Management actions will seek to maintain and where possible enhance black-throated finch habitats and populations (e.g. pest control, water source, grazing and fire management) in unmined parts of the Mine Area, as well as in offset areas.
M4.30	Black-throated finch surveys will continue so as to provide data on temporal and spatial variation of habitat use in the Mine Area and will contribute significant local data for incorporation into the Black-throated Finch Species Management Plan for the Mine Area, which will assist in refinement of species recovery actions and mitigation of impacts on the Mine Area.

2.3.5 Water Resources

Proponent Commitment

M5.1	Construction of a flood protection levee along either side of the Carmichael River designed to withstand with a 1,000 year ARI immunity.
M5.2	Construction of watercourse diversions around open cut pits to divert clean water from



Proponent Commitment

	entering the site, maintain existing flows in waterways as practicable, and minimise disturbance to existing waterways. These diversions link existing sections of waterway to minimise changes to existing hydrology downstream of the mine site.
M5.3	<p>Potential impacts on groundwater quality due to the discharge of potentially contaminated runoff will be prevented through the development and operation of a suitable surface water management system and associated management plan (SWMP).</p> <p>The overall aim of the system and plan would be to ensure that all water leaving the operational mine site is captured, treated and recycled (where possible).</p>
M5.4	<p>Prior to the commencement of construction activities, the status of each of the existing registered bores that could be significantly affected by the proposed Project (Mine) will be confirmed and a baseline assessment undertaken at each of the active bores in order to establish their pre-operational condition. Where operational registered bores are identified, which may be impacted by the development, then consideration would be given to incorporating them into the Project (Mine) monitoring network and/or installing observation bores in the area between the mine and the bores in order to identify the development of the mine cone of depression in the direction of the bores. Any monitoring of registered bores will be incorporated into the EMP.</p>
M5.5	<p>All pipelines will include flow meters and all pumps will be controlled remotely to ensure that permitted groundwater extraction volumes are not exceeded.</p>
M5.6	<p>Storage extension works will be undertaken offline from the existing storages to minimise the duration of lowered water levels. During initial fill of the storages, low flows will be released to ensure local flow conditions are maintained downstream.</p>
M5.7	<p>In the event that groundwater level and/or surface water flow impacts are identified post development, Adani will work with relevant parties to compensate the water balance for identified losses.</p>
M5.8	<p>Belyando River flood harvesting station will be constructed during non-flood periods to minimise impact to water quality. Belyando River Flood harvesting station will operate according to operating rules developed using the IQQM to limit impacts to downstream users.</p>
M5.9	<p>Prior to the commencement of construction activities the status of each of the existing registered bores that could be significantly affected by the proposed Project (Mine), including the bores installed close to the Mellaluka, Storie's and Lignum springs, should be confirmed and a baseline assessment undertaken at each of the active bores in order to establish their pre-operational condition.</p>
M5.10	<p>Where operational registered bores are identified, which may be impacted by the development, then consideration would be given to incorporating them into the Project (Mine) monitoring network and/or installing further observation bores in the area between the mine and the bores in order to identify the development of the mine cone of depression in the direction of the bores. This will be determined in consultation with landholders.</p>
M5.11	<p>Given the potential for a reduction in surface water flows in the Carmichael River, supported by numerical modelling, continued detailed monitoring of groundwater levels and flows in the Carmichael River corridor will be undertaken. In particular, further manual gauging will be undertaken at upstream and downstream level monitoring sites so that a reliable pre-development flow record can be developed for these gauges.</p>
M5.12	<p>Establishment and operation of a dedicated groundwater monitoring network around the perimeter of the proposed above ground tailings dam, comprising a minimum of four locations, prior to commencement of the operation of the dam.</p>
M5.13	<p>Leach testing of tailings generated from coal washing (or other processing activities) and materials proposed for disposal in the in pit and above ground tailings facilities prior to the start of mining, in order to identify any contaminants that might leach to groundwater. This will assist with the development and implementation of suitable treatment and, or, management measures in order to minimise impacts on groundwater</p>

Proponent Commitment

	quality from disposal.
M5.14	Location of in-pit and above ground facilities in the northern half and towards the eastern edge of the site and more than five kilometres from the Carmichael River (i.e. areas thought to be characterised by a relatively thick unsaturated zone and as far as possible from any Triassic-age GAB units).
M5.15	Post closure capping of in-pit and above ground tailings facilities.
M5.16	Treatment of spoil and tailings prior to disposal, if necessary, in order to minimise acid generation from any materials with AMD potential.
M5.17	As far as possible, the location and elevation of the diversion system will be designed to minimise areas where the drain invert is below the current water table. Where this cannot be achieved, due to practical or other constraints, then the impacts of the final design will be assessed by completing further numerical modelling work and implementing additional mitigation measures to further reduce potential impacts on groundwater resources.
M5.18	The water balance and proposed site water management infrastructure will undergo refinement during future design stages in order to adequately represent the mine development.
M5.19	If treated waste water is not reused onsite the water must be managed appropriately such as disposal via an irrigation system downwind of the mine site.
M5.20	Operational dam management solutions will be embedded as part of the mine water management plan and releases will be made when required to avoid uncontrolled overtopping during larger events. Regular inspection and servicing of all water management infrastructure will be part of the management strategy. Ongoing monitoring of the discharge water quality will be required to confirm the efficacy of the water management infrastructure. Monitoring requirements will form part of the receiving environment monitoring program and include sites upstream and downstream of the discharge point.
M5.21	Clean-out frequencies for the sediment dams will form part of the site EMP. Frequent clean-outs will reduce the risk of sediments being resuspended in the event of an overflow, thereby reducing the risk of high sediment loads being released to the environment.
M5.22	A warning threshold indicator will be established for flooding of operational areas. This threshold could be an agreed flow or water level in the Carmichael River or rainfall intensity at the nearest gauge. Should this threshold be reached, works onsite will cease and workers will be evacuated prior to flooding occurring. Works will not recommence until all relevant impact management infrastructure has been inspected and re-established to good working order.
M5.23	The design of the MAW dams will be based on the water balance assessment with sufficient capacity to manage MAW not reused in operational processes such as dust suppression (refer to SEIS Volume 4 Appendix K2 for details on preliminary dam sizing requirements). This will manage the potential for overtopping and uncontrolled releases from the MAW dams.
M5.24	Contaminants that have the potential to cause environmental harm will not be released to the environment except under environmental authority permit conditions.
M5.25	Regular inspection and servicing of all water management infrastructure. Ongoing monitoring of the receiving environment will be required to confirm the efficacy of the water management infrastructure. Monitoring requirements will form part of the Receiving Environment Monitoring Program.
M5.26	A hazard assessment for all dams on site will be required during future design stages. Note that for dams without an actual catchment, like the MAW transfer dams, allowing for the DSA will be a matter of increasing the storage depth.
M5.27	Runoff within the mine footprint will be managed via a number of management and engineering solutions including: <ul style="list-style-type: none"> • Development and maintenance of clean water diversion drains to be established along the western boundary of the lease, and separating clean inflows from dirty water areas • Management of clean water through sediment basins/traps prior to discharge



Proponent Commitment

	<ul style="list-style-type: none"> • Management of dirty water from operations through capture in sediment ponds for reuse • Overflows of water from sediment ponds to nearest drainage line only to occur in accordance with environmental authority conditions • Sewage waste will be treated to Class A standard and preferentially recycled onsite. • Contaminants that have the potential to cause environmental harm will not be released to the environment except under environmental authority conditions. Waters to be released to the environment must comply with the contaminant release limits which will be identified in a Receiving Environment Monitoring Program • Identifying and implementing enhancement opportunities in newly created aquatic habitats that may arise as a result of subsidence.
M5.28	The design of the workers accommodation village, industrial precinct and airport will incorporate stormwater management infrastructure and mechanisms to manage runoff. This may include holding tanks and/or gross pollutant traps or other stormwater management techniques. Stormwater management mechanisms and monitoring requirements will be developed prior to any construction activities and incorporated in the Mine and Offsite Environmental Management Plans.
M5.29	Drinking water will comply with Australian Guidelines for Water Recycling - managing health and environmental risks (Phase 1) (2006) and (Phase 2) as released by the National Environmental Protection Council.

2.3.6 Air Quality

Proponent Commitment

M6.1	In order to monitor background dust levels, a system of dust monitors will be installed upwind and downwind of the Project (Mine). Dust deposition gauges have already been established at several nearby homesteads to establish a background. This pre-mining network will be augmented by monitoring at sensitive receptors, predicted to receive dust levels close to or reaching the EPP Air objectives, at the workers accommodation village for example. Dust monitoring of PM10 may also be performed at any post-mining offsite sensitive receptors identified as being 'at risk'. By monitoring dust upwind of the Project (Mine), downwind of the Project (Mine) and at sensitive receptor locations, dust impacts can be quantified. The Carmichael AWS will record local wind conditions at the Project (Mine) that can be used to assess high-dust events. Management measures will be applied to mitigate emissions impacts wherever a criterion is shown to be exceeded.
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2.3.7 Greenhouse Gas Emissions

Proponent Commitment

M7.1	Adani is committed to managing its greenhouse gas emissions to reduce the impacts identified above on the surrounding environment and its people.
M7.2	Site offices and accommodation buildings will be designed and constructed in accordance with the Australian BCA requirements for insulation, building materials and energy efficiency and include energy efficient lighting, energy efficient appliances (4 star and above); and the use of solar/gas hot water systems.
M7.3	Site offices and accommodation will include water efficiency measures, water efficient appliances and fittings, rainwater harvesting and plumbing to toilets, grey water recycling and onsite reuse. Energy efficient pumps and equipment will also be utilised associated with water and wastewater treatment infrastructure.
M7.4	A comprehensive greenhouse gas emissions inventory will be developed prior to operation that provides greater detail on the operation emissions as an opportunity to identify areas for increased efficiency and hence, reduced greenhouse gas emissions.

2.3.8 Noise and Vibration

Proponent Commitment	
M8.1	Monitor vibration levels during construction to prevent sustained vibration levels causing unacceptable loading.
M8.2	A complaint system will be implemented during construction of the Project (Mine).

2.3.9 Waste

Proponent Commitment	
M9.1	A project procurement plan will outline requirements to avoid the purchase of excess materials: quantities of materials will be carefully managed during procurement to avoid ordering and delivery of excess materials which may be wasted.
M9.2	Prior to the commencement of construction, operation and decommissioning phases a Waste Management Plan (WMP) will be developed that will include waste management measures controls, monitoring and other safeguards, in line with the relevant legislation and government waste reduction strategies.
M9.3	Cleared material will be mulched, chipped and stockpiled for rehabilitation and revegetation works on-site. Larger vegetation materials like hollow logs and hollow bearing trees will be reused in rehabilitation activities where possible or in adjoining bushland to provide habitat for fauna.
M9.4	All chemicals, fuels and oils will be stored in bunded areas in accordance with Australian Standards to minimise potential for any spills. Oily water generated at interceptors or in the event of a spill involving oil or diesel will be treated to separate oil from water. The separated water will be directed for evaporation or reused on-site for dust suppression. Spilled oil will be removed by a licensed vacuum truck contractor and disposed of at a licensed facility. Oil drums will be drained of all remaining product and stored on-site within a bunded facility for collection by a licensed contractor and recycler.
M9.5	Sewage and grey water will be treated on-site prior to disposal and site specific wastewater management plans will be developed and implemented to ensure compliance with effluent treatment and discharge requirements.
M9.6	Maintenance of vehicles, plant and machinery will be implemented to ensure efficient operation which will reduce unnecessary exhaust emissions
M9.7	Any transfers of waste will take place in accordance with legislated docket tracking systems that ensure waste reaches the appropriate destination. Only licensed contractors and drivers will be utilised. Any transporters will be expected to meet legislative requirements for spill control and be equipped with emergency equipment
M9.8	A designated waste management area will be constructed for waste sorting and waste storage prior to transport offsite. The waste management area will be a hardstand area and bunded or have a suitable containment system in place for the type of waste to be stored. The area will have appropriate drainage and leachate collection system in place to assist with the drainage and collection and storage of any potential leachate.
M9.9	Wastewater would be treated using package collection and treatment systems that comply with Queensland standards and regulations.
M9.10	Suitable precautions will be undertaken to prevent water contact with dispersive materials Soils, clays and weathered mudstone, claystone and siltstone which show a high potential for dispersion will be stored within the core of the overburden storage areas.
M9.11	A mineral waste management plan will be developed and will clearly define mine waste validation sampling, analysis and reporting throughout the life of the mine.
M9.12	Mine tailings will undergo geochemical assessment as they become available.
M9.13	Potentially acid forming materials including tailings should be placed in clay lined encapsulation cells within overburden dumps and located at least 5 m below the dump surface. During dump and cell construction, contact between UC, PAF and dispersive materials should be avoided. In the short term, surface and percolate water would need to be managed.
M9.14	Design and operation of the tailings storage facilities in accordance with appropriate



Proponent Commitment

	legislation to minimise impacts to surface and groundwater resources.
M9.15	Establishment and operation of a surface and groundwater monitoring network for the proposed tailings dams, and out of pit overburden storage areas.
M9.16	Leach testing of tailings generated from coal washing proposed for disposal in cells in out of pit storage emplacements at pits D and E prior to the commencement of mining, in order to supplement the findings of the SRK acid and metalliferous drainage report (refer SEIS Volume 4, Appendix O2). Due to the unavailability of tailings at the SEIS stage, coal was used as a tailings surrogate. This will assist with the development and implementation of suitable treatment and, or, management measures to minimise impacts on surface and/or groundwater quality from tailings disposal.
M9.17	Continuing with the geochemical kinetic leach column tests that commenced in May 2013 for a minimum of 6 months to assess the longer term risk of acid and metalliferous drainage generation from the higher risk lithological units.
M9.18	Appropriately designed MAW dams at out of pit storage emplacements at pits D and E.
M9.19	Recycling of recoverable MAW from the tailings back into the CHPP.
M9.20	Disposal of tailings in engineered, clay lined containment cells within out of pit overburden storage areas D and E.
M9.21	Post closure capping and rehabilitation of the out of pit overburden storage facilities. Additional work being undertaken by Landloch in July 2013 will add knowledge to determining stable final landform slopes at the Project, and would be incorporated into the conceptual rehabilitation strategy.

2.3.10 Transport

Proponent Commitment

M10.1	Traffic management issues will be addressed through the preparation and implementation of a Construction Traffic Management Plan, which will be developed during the detailed design phase. The TMP will consider impacts on bus school routes and other relevant impacts and will propose management and mitigation procedures outlining emergency response times for emergency.
M10.2	Advance notice of road/lane closures and advice on alternative routes will be provided to local users.
M10.3	Logistics technology will be used to plan heavy vehicle movements and the loading of equipment on these vehicles to address the appropriate Queensland Police Service and Pilot support when delivering equipment.
M10.4	Traffic management will focus on vehicle crossings at major and minor road intersections, safety risks brought about by increased heavy vehicle traffic and movement of stock, lane closures and the use of single-lane access roads.
M10.5	Adani has made a commitment to install meteorological monitoring stations, and flow gauging stations on the key watercourses that would affect flooding in proximity to the Mine and Offsite Infrastructure.
M10.6	Adani will consult with DTMR, QPS and other proponents (where required) regarding the need for additional 'park up' rest areas and road signage. Relevant management and mitigation measures regarding fatigue management will be identified from consultation and will be incorporated into the revised traffic management plan for the Project (Rail).
M10.7	Adani will continue consultation with and undertaking agreements with IRC, QPS and DTMR in regards to impacts to road infrastructure on the local and SCR network.
M10.8	Adani is currently in discussions with IRC to draft an infrastructure agreement regarding the long term maintenance of impacted local roads.
M10.9	Upgrade the existing Carmichael – Elgin Road to become a sealed, single lane carriageway so as to provide a trafficable road under most rain event conditions and minimise the risk of closure.

Proponent Commitment

M10.10	Upgrade the existing Carmichael – Elgin Road/Gregory Developmental Road intersection – as part of the upgrade works for the Carmichael – Elgin Road it is recommended that the existing intersection be upgraded to include protected right turn and left movements at this intersection.
M10.11	Signage at the Gregory Developmental Road/Kilcummin Downs Road – it is recommended that during the course of the construction period (2014 and 2015), including the life of the Rail Camp 1, “Trucks Turning” signage be installed at the intersection so as to advise road users of the potential for heavy vehicles to be negotiating this intersection.
M10.12	Upgrade Kilcummin Downs Road/Rail Camp 1 Site access – it is recommended that the proposed site access location be upgraded to allow for a protected right turn into the site access.
M10.13	Signage located at the intersection of the Peak Downs Highway with the Gregory Developmental Road and also north of the proposed Disney Quarry along the Gregory Developmental Road to advise motorists of the construction activities along this road section.
M10.14	The Gregory Developmental Road and Peak Downs Highway are not approved for HML vehicles. Should these routes be required to be used by HML a separate application will be required for these routes. This will go through to DTMR for their review and is subject to their approval.
M10.15	A bus fleet will be required to support both the construction and operational phases of the Project. The buses will primarily transport the workforce to/from the Airport(s) (FIFO) and each work site.
M10.16	The Traffic Management Plan which will identify management and mitigation procedures in events where increased traffic on road cause delays for QFRS and other emergency services response.

2.3.11 Hazard and Risk

Proponent Commitment

M11.1	The Project will develop and implement water supply management plans to address water usage, treatment of the recycled water and compliance with the requirements of Queensland Water Recycling Guidelines.
M11.2	The Project will develop a fire management system (FMS) for the prevention, early detection and suppression of fires at their coal mines and accommodation village. A Fire Management Plan (FMP) will be developed during the detailed design phase with an approach to safety.
M11.3	All buildings, structures and fixed plants will be protected with a suitable water supply, water reticulation and hydrant system. For buildings and occupied facilities, a fire hose system or a fire hydrant system, and/or pump sets will be in compliance with the Building Code of Australia (BCA).
M11.4	The fire safety systems installed in a building will be any one or combination of the methods in a building to warn people of emergency, provide for safe evacuation, restrict the spread of fire and extinguish fire.
M11.5	Water storage tanks and their capacities will be in accordance Section 5 Water Storage of AS 2419.1, as applicable. Maintenance of onsite storages will be carried out during periods of least risk, e.g. nonproduction and kept to a minimum time frame.
M11.6	Fire protection pump sets will be installed in accordance with Australian Standard AS 2941-2008 Fixed fire protection installations - Pumpset systems. All fire extinguishers will be maintained in accordance with Australian Standard AS 1851-2005 Maintenance of Fire Protection Systems and Equipment.
M11.7	A fire station, fully equipped with fire truck and other fire fighting equipment will be constructed at the Mine. During the detailed design phase, the Project will consult the emergency services (including QFRS) to comply with their requirements.
M11.8	First aid equipment will be available with each Project related vehicle.
M11.9	A risk management plan (RMP) has been developed for the risks that have been identified through the PHA.



Proponent Commitment

M11.10	The Project will develop and implement a Safety Management System (SMS) for the mitigation of risk so far as is reasonably practicable (SFAIRP). The SMS will provide a systematic way to identify hazards and control risks while maintaining assurance that the risk controls are effective, to provide a safe and healthy work environment to its employees, contractors and visitors
M11.11	Untreated sewage tanks and pipes will be monitored for leaks. Design, storage, pumping and transmission systems of untreated sewage tanks will be designed to Australian standards.
M11.12	Design and construction of diesel storage tanks will comply with AS 1692-2006 Steel tanks for flammable and combustible liquids. These tanks will be installed on impervious surfaces and fully bunded. The storages will comply with the requirements of AS 1940 – The storage and handling of flammable and combustible liquids.
M11.13	Emergency Services will be notified in the case of diesel spills on public roads
M11.14	DEHP will be notified of diesel spills as required under the Environmental Authority conditions.
M11.15	Oils will be stored in above ground tanks and will be fully bunded. Activities involving oils will be undertaken on a hard stand area, and drip trays will be provided during transfer operations. Controls and management procedures will be adopted for servicing of machinery.
M11.16	Spillages will be prevented from entering drains or water courses and absorbent material will be placed on spillages which will be collected for disposal and any contaminated soil removed for treatment and disposal.
M11.17	A licenced contractor will be used for removal and disposal of spilled waste oil and clean-up material.
M11.18	Fatigue management strategies for drivers will be developed.
M11.19	Designated travel routes for heavy vehicles will be designed through townships.
M11.20	Tracks will be routinely inspected and maintained.
M11.21	Speed restrictions are to be followed at all times
M11.22	A central first aid room equipped with response facilities such as oxygen cylinder, defibrillators and basic medical supplies will be available to support incident response.
M11.23	Air quality at the nearby sensitive receptors will be monitored in accordance with the DEHP guidelines and Australian Standards and limit “trigger level” events. A register of complaints will be maintained with information on corrective actions.
M11.24	Zero tolerance for drug and alcohol use will be enforced.
M11.25	Road markings and signage will minimise impact and improve road safety.
M11.26	If installed, rainwater tanks will be maintained and include checks.
M11.27	Kitchen facilities at the construction camps will be provided in accordance with statutory requirement, which will be operated in compliance with food legislation by qualified contractors. Appropriate publications regarding personal hygiene will be provided.
M11.28	The Project will develop a fire and evacuation plan with adequate instructions to people concerning the action to be taken by them in the event of fire will be provided in a building as required under the <i>Fire and Rescue Service Act 1990</i> .
M11.29	The Project will establish and implement a Safety Management System (SMS) for the management of risk to a level that is as low as is reasonably practical.
M11.30	The Project will develop a fire management system (FMS) for the prevention, early detection and suppression of fires at their coal mines and accommodation village.
M11.31	A fire station, fully equipped with fire truck and other fire fighting equipment will be constructed at the mine site. During the detailed design phase, the Project will consult the emergency services (including QFRS) to comply with their requirements.
M11.32	Provision of adequate and safe access for fire fighting/other emergency vehicles and safe evacuation. Adani will work closely with QPS, DCS and other emergency service

Proponent Commitment

	providers with regards to services and emergency responses.
M11.33	An Emergency Response Team will be established at the mine site to ensure trained and equipped personnel are available in the event of an incident.
M11.34	Adani will prepare an Emergency Response Plan (ERP) for construction, operations and decommissioning phase.
M11.35	Adani will develop a Disaster Management Plan in consultation with emergency service providers, as required, prior to commencement of work onsite.
M11.36	Adani will develop a Mosquito/Biting Management Plan.
M11.37	<p>To manage potential impacts on emergency services Adani will engage in ongoing consultations with the regional service providers to further investigate and monitor resourcing requirements. This includes investigating vehicles and staff requirements, through liaising with QPS at a State and local level. This process will be supported through the formation of an Emergency Services Consultative Committee. Adani has further committed to:</p> <ul style="list-style-type: none">• 1 x office• 2 x workstations• Access to a meeting room• 1 x vehicle• Accommodation at the village• Upgrade to existing communication towers for secure network. This would also accommodate other services such as QRFS and QAS.



3. Project management plans and strategies

3.1 Multiple site-based management plans and species management plans – Rail

Please refer to Volume 4 Appendix C3 of the SEIS for further details on:

- Material change of use applications for rail laydown areas
- Operational works applications for excavation and filling for the Rail corridor
- Updated application forms for Rail camps 1 to 3
- Vegetation reports for the Project (Rail) west rail line and laydown areas
- Waterway barrier works applications for the Project (Rail) west
- Vegetation reports for the Project (Rail) east rail line
- Species management plans for the Project (Rail)
- Watercourse determination review for the Project (Rail)

3.2 Offsite infrastructure site-based management plans

Please refer to Volume 4 Appendix C4 of the SEIS, which provides further details on the approvals applications and processes (including impacts assessments) for a Preliminary Approval Affecting a Local Planning Instrument for a Material Change of Use (s.242 of the *Sustainable Planning Act 2009*).

3.3 Quarry site-based management plans

Please refer to Volume 4 Appendix C5 of the SEIS for further information on the approvals applications and processes (including impacts assessments) for Material Change of Use applications for each quarry (including ERAs and vegetation clearing) and disturbance to threatened species habitat.

3.4 Social Impact Management Plan

Please refer to Volume 4 Appendix D2 of the SEIS, which details the Social Impact Management Plan, including the action plans, monitoring and reporting requirements, in addition to the stakeholder engagement strategy.

3.5 Offsets Strategy

Please refer to Volume 4 Appendix F of the SEIS, which documents the Environmental Offsets Strategy for the Project. The Environmental Offsets Strategy identifies the initial residual impacts on environmental values, the offset requirements under relevant Australian and Queensland Government policies and provides an overview of potential offset areas and delivery methods.

3.6 Mine Waste Management Strategy – Mine

Please refer to Volume 4 Appendix O2 of the SEIS for the Mine Waste Management Strategy. This document details the predicted waste volumes, the tailings management strategy, and the waste mitigation and management measures (including objectives).

3.7 Environmental Management Plan – Mine

Please refer to Volume 4 Appendix Q1 of the SEIS for the Environmental Management Plan – Mine which includes monitoring and management measures and commitments applicable to the construction, operation and decommissioning of this aspect of the project. The EMP includes commitments made during the EIS.

3.8 Environmental Management Plan – Offsite

Please refer to Volume 4 Appendix Q2 of the SEIS for the Environmental Management Plan – Offsite which includes monitoring and management measures and commitments applicable to the construction, operation and decommissioning of this aspect of the project. The EMP includes commitments made during the EIS.

3.9 Closure and Rehabilitation Strategy – Mine

Please refer to Volume 4 Appendix R1 of the SEIS for the Closure and Rehabilitation Strategy – Mine which includes monitoring and management measures and commitments.

3.10 Closure and Rehabilitation Strategy – Offsite

Please refer to Volume 4 Appendix R2 of the SEIS for the Closure and Rehabilitation Strategy – Offsite which includes monitoring and management measures and commitments.

3.11 Bushfire Management Plan – Rail

Please refer to Volume 4 Appendix S2 which details the Rail Safety – Bushfire Management Plan, and specifically prevention and mitigation measures, preparation objectives and the response and recovery strategies and processes.

3.12 Fauna Crossing Strategy – Rail

Please refer to Volume 4 Appendix U of the SEIS for the Fauna Crossing Strategy. This document provides further information on the potential impacts, mitigation and design considerations and commitments (including guidelines).

3.13 Emergency Management Plan – Rail

Please refer to Volume 4 Appendix V of the SEIS. This document details the objectives and commitments to rail safety standards, specifically for emergency procedures, plans and structures.

3.14 Environmental Management Plan – Rail

Please refer to Volume 4 Appendix W – the Carmichael Coal Mine and Rail Project Environmental Management Plan – Rail. This document has been developed to provide a comprehensive framework for environmental management goals and activities within the Project (Rail). This plan details the Environmental Management Framework for the Project (Rail), and the monitoring, reporting and reviewing requirements and processes. The Environmental Management Plan details the specific legislative framework, environmental values and



management processes (including potential impacts and prevention measures) of ecological values pertinent to:

- Surface water
- Groundwater
- General and hazardous waste management
- Flora and fauna management
- Emergency management and response

3.15 Closure and Rehabilitation Strategy – Rail

Please refer to Volume 4 Appendix X1 of the SEIS for the preliminary closure and rehabilitation management strategy for the Project (Rail). This strategy details the rehabilitation process, objectives and commitments for the Project (Rail). The document also provides further information on the completion criteria, monitoring and maintenance procedures for closure and rehabilitation.

3.16 Closure and Rehabilitation Strategy – Quarries

Please refer to Volume 4 Appendix X2 of the SEIS for the preliminary closure and rehabilitation management strategy for the Moray, North Creek, Disney, Borrow 7 and Back Creek South quarries. This strategy details the rehabilitation process, objectives and commitments for the Project. The document also provides further information on the completion criteria, monitoring and maintenance procedures for closure and rehabilitation.